A review of existing funding models, economic regulatory frameworks, policies and mechanisms

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A review of existing funding models, economic regulatory frameworks, policies and mechanisms
Milestone Report (Work Package 4)
Integrated Research Project 2 (IRP2) – Comprehensive Economic Evaluation Framework (2017 – 2019)
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Executive summary

Broadly, this review of funding models, economic regulatory frameworks, policies and mechanisms concluded that although funding and financing issues are widely cited as an impediment to delivering water sensitive urban design (WSUD), funding and financing issues are not the main impediment to delivering WSUD, at scale. Rather, the main issue is the 'authorising environment' for investment decision making.

The authorising environment for water infrastructure investments determines what is achievable. Within Australia, financing and funding decisions for water infrastructure projects are made relatively systematically across jurisdictions, and these approaches to financing and funding reflect decisions made within the authorising environment. Therefore, progress in delivering WSUD projects at scale will be made only by changing the authorising environment. Once that is done, objectives can be set that reflect the broader public health and environmental benefits delivered through WSUD. With clear, measurable, time bound objectives, the question then becomes how to deliver these objectives at the least cost.

Although this report does not make specific recommendations, it does identify reform options for further debate and discussion. The first three options can be collectively viewed as policy and institutional reforms aimed at elevating WSUD as a priority for government, and putting in place the necessary enabling architecture to equip regulators, utilities, local government and other parties with the authority to deliver WSUD.

These reforms include:

- strengthening government policy support for water sensitive cities, including articulating measurable outcomes being sought and embedding these objectives, targets and standards in statutory planning processes

- updating regulatory frameworks to ensure that the amenity, public health and environmental benefits of WSUD are recognised as a legitimate community service obligation. These obligations may be achieved by either water utilities or other responsible parties who can then collect the revenue required to achieve these public good objectives.

- improving system level accountability for outcomes by assigning responsibilities to a lead authority that is best placed to: coordinate and/or deliver WSUD projects; collect and distribute the funding required through regulated prices, and; identify beneficiaries that may be charged with specific levies, when appropriate.

The other three reform initiatives may help motivate increased investment in WSUD, primarily through:

- providing utilities with investment incentives, within the regulatory pricing framework, that ensure utilities understand the objectives of the communities they serve and provide improved service levels to their customers and the community

- removing pricing distortions that could be constraining and/or distorting private sector investment in WSUD

- equipping decision makers (regulators and the market more broadly) with the necessary detail to identify efficient water sensitive solutions, compliance with stated objectives, and appropriate cost recovery mechanisms in a timely and efficient manner.

1.0 Introduction

Water sensitive urban design (WSUD) has the potential to deliver significant net benefits to the community, as demonstrated through previous cost–benefit research conducted by the Cooperative Research Centre for Water Sensitive Cities (CRCWSC). Yet despite this, the observed level of public and private investment in WSUD is low, relative to the $5.8 billion annual spend on water, sewerage, and drainage infrastructure across the nation[1]. As with any innovative approach, some specific projects provide a higher return than other projects, and it is understandable that water utilities adopt a conservative approach to project evaluation. Yet even within a conservative culture, the overall level of funding directed to WSUD projects in Australia is low, even for projects that ex-ante demonstrate high returns, and are similar to projects that ex-post, have been shown to deliver total benefits greater than total costs.

To help progress industry thinking about how to most appropriately evaluate WSUD projects, the CRCWSC's Integrated Research Project 2 (IRP2) has developed a comprehensive economic evaluation framework for water related investments, including decision evaluation tools, planning resources, guidelines, and case studies. Combined, these resources equip the CRCWSC's industry partners with skills to identify and quantify the economic, environmental, and community benefits and costs of investments in water sensitive practices and systems. The overall decision framework is referred to as INFFEWS: Investment Framework For Economics of Water Sensitive Cities.

A core decision making resource within INFFEWS is a comprehensive database that provides dollar value estimates for the non-market benefits generated by water sensitive systems and practices: the INFFEWS Value Tool. Many of the values in the database were derived from the primary case study research undertaken as part of IRP2. Including information on both hard infrastructure costs and benefits and locally relevant environmental and social benefits and costs within a unified decision making framework has the potential to fundamentally transform investment decision making in the water sector.

Another core element is the INFFEWS Benefit: Cost Analysis (BCA) Tool, which can be used to evaluate complex project alternatives—for example, a traditional infrastructure pipes and pumps solution versus a hybrid hard and soft infrastructure solution, where both options meet the same standard of service provision for flood mitigation and water supply certainty. The tool provides a detailed account of the total economic, social, and environmental benefits and costs associated with a project, and importantly, allocates total benefits and costs to different groups. This process of allocating costs and benefits to different stakeholders highlights a key barrier to progressing investment in WSUD projects. While it is often the case that the total net benefits from WSUD projects are greater than traditional infrastructure alternatives, the lack of alignment between where costs and benefits fall means that these projects are not funded.

The IRP2 team has developed this discussion paper to help overcome this disconnect between the stakeholders that benefit from WSUD projects, and the stakeholders that incur WSUD system costs. The paper focuses on potential regulatory and policy reforms that would foster increased public and private investment in water sensitive cities. To prepare this paper, the IRP2 team reviewed existing funding models, economic regulation frameworks, policies and mechanisms, to understand what is hindering investment in WSUD. This milestone report outlines the findings of the review, and the accompanying final report includes case study applications of the suggested reforms to demonstrate how the reforms could work in practice.

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1 BITRE (Bureau of Infrastructure, Transport and Regional Economics) (2019) *Yearbook 2019: Australian Infrastructure Statistics*, Statistical Report, BITRE, Canberra

1.1 Objective and scope

The purpose of this report is to promote discussion and debate about potential options for increasing the levels of investment in WSUD across Australia's cities and regional urban centres. The report does not seek to provide a comprehensive set of answers. Instead, the discussion paper shines light on possible regulatory and policy deficiencies that are giving rise to less than optimal levels of investment in WSUD.

The report focuses on the constraints encountered by major public water utilities. While acknowledging that local government and private water utilities play an important role in delivering WSUD projects at a local level, this research is interested in understanding what is impeding major, 'at scale' investment in WSUD. This is not to ignore the importance of small scale projects at the local level, but to highlight the need for strategic management of urban water resources, given that sub-catchments often span more than one local government authority. While not always the case, water utilities typically operate over a wider geographic footprint than local government authorities. Further, effective delivery of outcomes 'at scale' requires significant capital investment, which may be outside the capacity of local governments to secure.

By way of introduction, we propose that constraints lie within three main areas:

- economic regulatory frameworks and decisions
- government policy and governance
- government fiscal constraints.

Box 1 summarises individual examples of possible factors within each area.

The rest of the report examines the relative importance of each factor; some, noting that some are likely to be more constraining than others. To assess the relative significance of each factor, a desktop review of the regulatory frameworks, policies, and funding mechanisms adopted by each mainland state (New South Wales, Victoria, Queensland, South Australia and Western Australia).) was conducted. We assess how the different operating environments in each jurisdiction are either hindering or facilitating WSUD.

The report concludes with a discussion of potential reforms for promoting efficient levels of investment in water sensitive cities.

Box 1: Constraints encountered by major water utilities and some possible factors

Economic regulation

- *Economic regulatory regimes too focused on inputs, not outcomes:* Traditional regulatory frameworks are designed to assess the efficiency and effectiveness of a utility's inputs to produce a uniform level of service to customers. Efficiency assessments tend to rely heavily on technical, engineering standards, and whether a utility has used the least-cost combination of inputs to produce the standard. This approach can stifle innovation, because there is no incentive for a utility to strive for better levels of service for customers.
- *Non-market benefits not widely accepted as valid measures:* WSUD yields environmental, health and social benefits – all of which are typically not priced in markets. The lack of market values can lead to these benefits being overlooked by regulators and others when determining allowable levels of expenditure on capital projects.
- *Dominance of the WACC:* The funding available to water utilities through customer revenue is predominantly determined through the allowable return on their suite of assets, as given by an approved weighted average cost of capital (WACC) applied to the value of the utility's 'regulated asset base' (RAB). Small changes to the WACC typically produce very large changes in allowable revenue, and therefore parameters of the WACC attract a great deal of attention from utilities and regulators alike – potentially to the detriment of assessing what projects and outcomes actually matter to customers.
- *Multiple and dispersed beneficiaries:* The benefits of WSUD accrue to both water customers and the broader community. Regulators typically do not allow utilities to charge customers for services that do not relate specifically to a wastewater or water supply service for the benefit of the utility's customers.
- *Distorted prices:* The regulated charges applied by water utilities to customers do not necessarily reflect the cost of servicing an individual customer. For example, all state and territory governments apply postage-stamp prices for water supply within a scheme area (uniform prices across all customers). Some states allow utilities to charge a 'developer contribution' for headworks, while others do not. These pricing policies may have a significant bearing on whether a WSUD project is financially viable.
- *Discretionary versus non-discretionary services:* Following on from the above point, there may be some uncertainty around what a utility's legislative obligations are relating to drainage or stormwater management. Economic regulators are more likely to allow a water utility to pass through a project's costs to customers if the project has a clear legislative driver.
- *Benchmarking projects against LRMC:* Regulators generally favour projects that can supply water at costs below – or near to – what is assessed to be the long run marginal cost (LRMC) of water supply. A regulator is unlikely to allow funding regulators for WSUD projects that do not meet this criteria. However, this begs the question of whether the correct values for LRMC are being used to evaluate projects with long asset lives. Under climate change, LRMC of water supply will increase because more climate-independent water supply will need to be built (desalination and wastewater recycling).

Government policy and governance

- *Outcomes poorly defined:* Statutory planning authorities and policy agencies may not have adequately articulated what outcomes are being sought from WSUD.
- *Multiple parties responsible for WSUD delivery:* The responsibility for funding and delivering WSUD projects is often dispersed across local government, water utilities, and developers. This can make it difficult for any one party to raise sufficient levels of revenue through charges or other mechanisms to fund WSUD.
- *Ill-defined responsibilities for stormwater and drainage:* Unlike water supply and wastewater management services, the parties responsible for managing stormwater and drainage as part of an integrated water cycle, and their respective roles, rights and obligations, are often ill-defined.
- *Uncertainty around public funding for WSUD projects:* Governments may agree to compensate water utilities where there is a legislative obligation for the utility to deliver a service to the broader community. Alternatively, or in addition to this approach, governments may raise funding for WSUD projects through a hypothecated levy on water customers or ratepayers. However, there is often a degree of uncertainty around what is eligible for public funding and the duration of funding.

State government fiscal constraints

- *Constrained state budgets:* Because the majority of water utilities in Australia are government-owned, they are often subject to capital expenditure and/or borrowing constraints by their government shareholders. So even if a WSUD project is economically sound, it may not be prioritised or approved by a government that has a policy objective of reducing debt from its state accounts.
- *Dividend payments:* Publicly-owned water utilities are required to pay dividends to their government owners. While it is reasonable for government shareholders to expect a return on their utility assets, dividend payments may have the effect of reducing the amount of funding available to the utility for re-investing back into service delivery and innovation.

1.2 Organisation of report

The report is organised as follows:

- Section 2 briefly sets out the economic case for water sensitive cities, the characteristics of WSUD, and provides some examples of WSUD projects across Australia that have been analysed by the CRCWSC.
- Section 3 describes the role of economic regulation in determining funding levels and investment incentives for water utilities.
- Section 4 presents a comparative review of economic regulatory frameworks across each mainland state, the main ways in which frameworks differ, and what this means for funding WSUD.
- Section 5 concludes the paper with reform options, drawing on the evidence of this review.

Appendix A contains a tabulated summary of key characteristics of funding and economic regulation frameworks in each jurisdiction.

Appendix B examines the extent to which non-market values are accounted for by regulators and other decision makers when evaluating the worthiness of a WSUD project for funding.

2.0 The economic case for water sensitive cities

The National Water Initiative defines WSUD as 'the integration of urban planning with the management, protection and conservation of the urban water cycle that ensures that urban water management is sensitive to hydrological and ecological processes' (COAG 2004). For example, water sensitive infrastructure includes decentralised wastewater recycling plants, stormwater harvesting and reuse, and sustainable drainage systems.

Integrated Water Cycle Management (IWCM), a closely related concept, seeks to manage the urban water cycle to use resources more efficiently, so that they provide not only economic benefits but also improved social and environmental outcomes. IWCM has 'liveability' as a core focus, and therefore includes additional urban design considerations such as urban amenity, public health, urban microclimates and heat mitigation, biodiversity and the ecological health of natural environments and receiving waters. IWCM includes 'green and blue' infrastructure such as parks, trees, lakes and ponds.

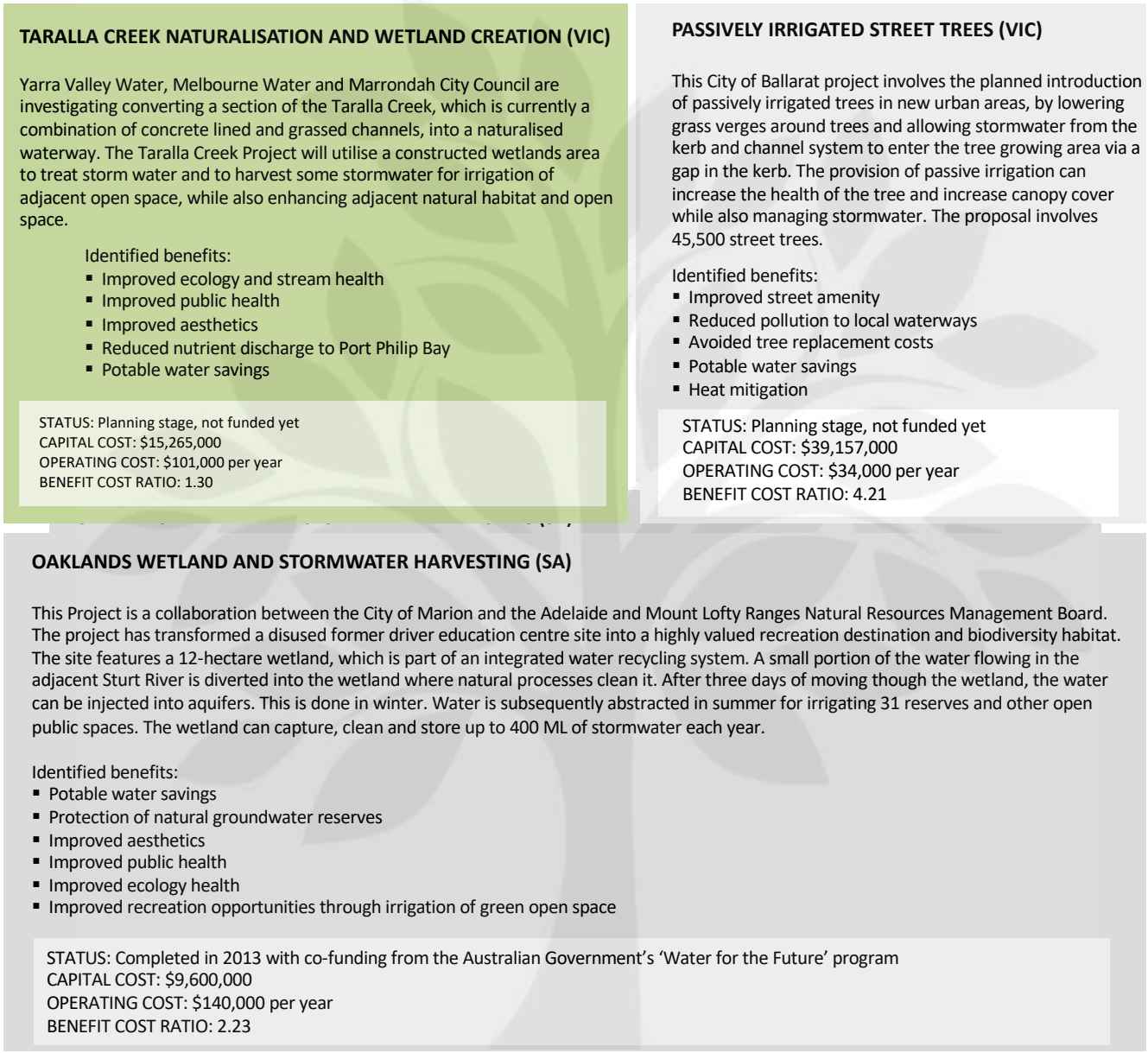
For convenience, this report adopts the convention of referring to WSUD, but the issues of funding, regulatory and policy constraints apply equally to IWCM.

2.1 Economic and social benefits

The economic case for WSUD is compelling. The CRCWSC has evaluated a range of different projects using its INFFEWS Benefit–Cost Analysis Tool, which is tailored specifically to assessing investments for water sensitive cities[2]. Figure 1 summarises the results of several case studies that have been evaluated. The CRCWSC found that it is not uncommon for WSUD projects to have a benefit–cost ratio ranging from 1.2 to 4.0, implying that for every dollar invested there is a return of up to $4 in financial and non-market benefit.

[2] Benefit–cost analysis results for these case examples were arrived at using the beta version 2019-03 of INFFEWS.

Figure 1: WSUD case studies



Source: CRCWSC 2020.

Despite these benefits, WSUD has not been widely adopted 'at scale'. Much of the uptake to date has been smaller-scale projects implemented by local councils. For instance, Water Sensitive SA maintains an interactive map of WSUD projects in South Australia. The map currently shows 276 WSUD projects.[3] Similarly, the Western Australian organisation New WAter Ways has identified 61 WSUD local-scale projects in the Perth metropolitan region.[4]

[3] Water Sensitive SA, *WSUD Projects Interactive Map*, available at https://www.watersensitivesa.com/wsud-projects/.

[4] New Water Ways, *WSUD asset map*, available at https://www.newwaterways.org.au/map/.

There is much less evidence of large-scale investment being made by the major utilities. This is not a criticism of the utilities. Rather, it raises the possibility that despite WSUD having solid economic credentials, the institutional, policy, and investment incentives are not sufficiently aligned to enable funding for these projects.

2.2 Characteristics

Part of the answer about why WSUD has not gained widespread traction may be due to the characteristics that set it apart from conventional water and wastewater services that utilities usually deliver:

- Often, many parties are involved in implementing WSUD, including water utilities, local government authorities, developers, and state government planning authorities. It is unusual for any one party to have sole 'ownership' over a WSUD initiative.

- WSUD projects often require access to monopoly infrastructure and/or water and wastewater resources being managed by an incumbent authority. This can give rise to the need for access pricing and other contractual arrangements about how the access is managed.

- Benefits accrue to multiple parties, often dispersed across time and space. Some beneficiaries are discrete and easily identified, while others are more difficult to categorise as an identifiable group. This makes it hard to identify who should pay for a WSUD project, and which organisation is ultimately accountable for delivering the outcomes.

- Some of the benefits, such as amenity and ecological improvements, are 'non-market' public goods and can be difficult to quantify, which can make it challenging to assess whether benefits outweigh costs. Further, the 'provider' of these services has no specific customers and no market, making it difficult to recover the cost of service provision in the absence of a regulated charge or payment from government.

The next sections examine how these characteristics influence the treatment of WSUD within an operational context.

3.0 Economic regulation frameworks

Water and wastewater services are typically regarded as being a 'natural monopoly' owing to the significant fixed costs associated with delivering them. While some parts of the supply chain may be contestable (e.g. bulk supply and water treatment), assets such as distribution pipes and drainage networks would be costly to duplicate so competition is limited. In the absence of a competitive market, there is potential for monopoly suppliers to charge customers prices that are higher than 'efficient' prices. One of the primary objectives of economic regulation is therefore to look after the long term interests of customers by protecting them from inefficient prices.

Economic regulation also aims to:

- promote efficient in service delivery by putting in place financial incentives that motivate better practice

- curb investment in projects that are inefficient (i.e. do not represent the best use of scarce resources)

- identify the amount of revenue required to ensure utilities cover their efficient costs, and thus remain financially viable. (If prices are too low, customers may benefit in the short term, but in the long run the standard of service will deteriorate and/or the utility business may become unviable if it is held to levels of service that it cannot fund.)

- facilitate competition in service delivery, when doing so leads to better services and prices for customers.

The overarching principles and objectives of economic regulation are not controversial and are reflected in the National Water Initiative (NWI).

3.1 National Water Initiative principles

All state and territory governments are signatories to the 2004 NWI, which provides a blueprint for managing water resources efficiently. The NWI sets out a range of outcomes for the urban water sector, which parties to the agreement committed to deliver:

- provide healthy, safe and reliable water supplies
- increase water use efficiency in domestic and commercial settings
- encourage the reuse and recycling of wastewater where cost effective
- encourage innovation in water supply sourcing, treatment, storage and discharge
- achieve improved pricing for metropolitan water.[5]

Importantly, the parties agreed to use independent bodies (economic regulators) to set and review prices or pricing processes for water storage and delivery and publicly report. This goal has been partly achieved. All states have an economic regulator, but not all have the authority to set prices independently of government.

3.2 Agreed actions on water sensitive cities

The NWI has a specific section on agreed actions relating to innovation and capacity building to create water sensitive Australian cities. These actions include:

- developing national health and environmental guidelines for priority elements of WSUDWSUDs (initially recycled water and stormwater)
- developing national guidelines for evaluating options for water sensitive urban developments, both in new urban subdivisions and high rise buildings
- evaluating existing 'icon water sensitive urban developments' to identify gaps in knowledge and lessons for future strategically located developments
- reviewing the institutional and regulatory models for achieving IWCM, and then preparing best practice guidelines
- reviewing incentives to stimulate innovation.

In 2017 the Productivity Commission (PC) reviewed the progress of state and territory governments in achieving these commitments.[6] The PC concluded the jurisdictions have generally made good progress in delivering on

[5] NWI principles require prices to be consistent with upper-bound levels that recover the full, 'efficient' cost of water service provision, including recovery of environmental externalities, where feasible and practical; and consistent with the commitment to develop pricing policies for recycled water and stormwater that are congruent with pricing policies for potable water, and stimulate efficient water use no matter what the source.

[6] Productivity Commission (2017) *National Water Reform*, No. 87, 19 December 2017.

their specific commitments. However, there is unfinished business in several areas, primarily extending the use of independent bodies to set or review prices, and improving pricing practices by some jurisdictions.

The PC also identified new challenges in urban water management, which will require a new reform effort:

> *"Urban water customers are demanding more from the water services they receive, including improved urban amenity and liveability, requiring a more integrated approach to managing all elements of the water cycle than has been common in the past."*[7]

The PC recommended further reform in planning for growth in major cities. Specifically, it recommended improving major water supply augmentation by clarifying roles and responsibilities, and ensuring that emerging decentralised IWCM approaches are considered on a level playing field alongside conventional centralised options.

3.3 Relevance of economic regulation for WSUD

Economic regulation has a direct bearing on the uptake of WSUD, because these projects tend to be capital-intensive and so compete with other projects for investment. Economic regulators are responsible for ensuring any capital projects a utility puts forward for cost recovery through pricing are efficient. The principles and methods economic regulators use to assess the 'allowable revenue' for utilities are therefore critical determinants of whether WSUD is funded. Further, the decisions and rules made by regulators shape the financial incentives for utilities to invest in these types of projects.

While the mechanisms for economic regulation are now well established and reasonably standardised across jurisdictions, there are differences in how each Australian state and territory applies the regulatory mechanisms.

3.4 A generic regulatory framework

Economic regulation typically follows a five-step process (Figure 2). Each step is described below:

Step 1: Identify the monopoly service

Step 1 involves identifying which services provided by a utility constitute a 'monopoly service', and thus are subject to economic regulation. While a water utility's core activities will generally meet the criteria of a monopoly service, these businesses may also offer other services that are notionally contestable. If a regulator is satisfied there is sufficient competition in the market, these contestable services will not be subject to regulated pricing, and so will not form part of a utility's regulated cost base. The utility can charge its own prices. The regulator will typically perform a price-monitoring role rather than a price-setting role.

Some WSUD projects may be delivered through a competitive market. However, these projects often rely on access to monopoly infrastructure, such as an existing drainage network or a wastewater pipeline. In these situations, the regulator sets infrastructure access prices.

Step 2: Assess efficiency

Having identified the services subject to price regulation, Step 2 involves assessing whether the utility's proposed expenditure over the forthcoming regulatory period (usually five years) is efficient and prudent. The regulator typically assesses both technical efficiency (whether the services are delivered via the least cost combination of inputs) and allocative efficiency (whether the service aligns with customer preferences). Usually, the regulator also considers whether the services form part of the utility's legislative obligations, or whether they are

[7] Productivity Commission (2017) *National Water Reform*, Final Report No. 87, December, Canberra. p. 182.

discretionary services. The latter will typically attract greater scrutiny from a regulator, and be subject to a 'public interest test' – i.e. are customers and/or the wider community willing to pay for the service?

At the end of this step, the regulator will decide the proportion of the utility's costs that are efficient, and may be recovered from customers through prices.

Step 3: Identify cost shares

Step 3 involves assessing what share of the efficient costs (identified at Step 2) should be passed through to customers, noting that not all services provided by utilities may be directly attributable to customers. This step is particularly relevant to WSUD because often the benefits of these projects accrue to the broader community, and so a different mechanism (other than water or wastewater tariffs) may be used to fund these costs (e.g. by applying the 'beneficiary pays' principle). Further, it may not be appropriate to require today's customers to pay for projects that address legacy environmental problems caused long ago.

Step 4: Determine allowable annual revenue

At this step, the regulator determines the amount of revenue that a utility can recover each year. Efficient operating costs are generally passed through to users as they arise. The value of capital costs able to be recovered in any given year is typically calculated by allowing the utility to generate a specified 'rate of return' on the value of its assets (referred to as the regulated asset base, or RAB), plus an allowance for depreciation.

A system of RAB 'roll forward' is applied, whereby any new capital costs a utility incurs (and assessed by the regulator as being efficient) are added to the opening RAB value for the regulatory period. The rate of return is applied to this entire RAB, not just the new capital expenditure.

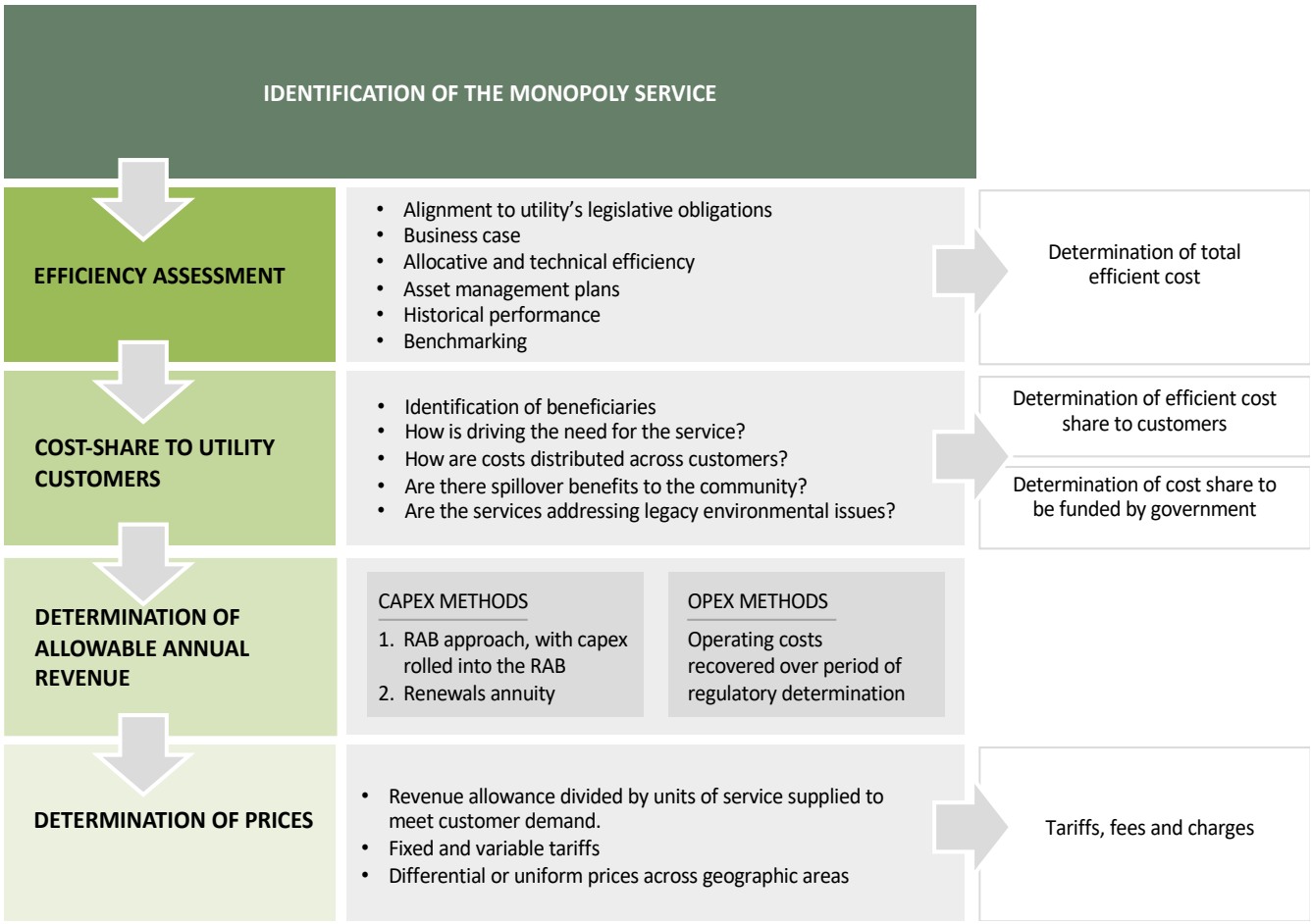
The regulator determines the rate of return a utility can earn with reference to an appropriate 'weighted average cost of capital' (WACC). The WACC is the rate of return required by both debt and equity investors, weighted by the proportion of these funding sources in the capital structure of the business.

The parameters used to calculate the WACC are often the focus of much attention by regulators and utilities alike, because very small changes in the WACC can significantly affect how much revenue a utility is allowed to generate. For instance, the WACC represents approximately 40% of SA Water's costs. Similarly, Sydney Water reported a RAB of $19.1 billion in its 2019-20 pricing proposal to IPART. So even an extremely modest change of 15 basis points (0.15%) in the WACC would increase (or decrease) the revenue allowance by $28.7 million – equivalent to approximately 1% of Sydney Water's average target annual revenue requirement over the next regulatory period.

Step 5: Determine prices

The final step involves setting prices for each service and customer group (tariffs, fees and charges). In simplified terms, the total annual revenue requirement is divided by a forecast of the units of service delivered in a year. The outcome is the utility's notional revenue allowance over a fixed period, set by the prices permitted to be charged.

Figure 2: A generic economic regulation framework



3.4 Section summary

Water utilities make significant capital investments over time, to maintain compliance with regulatory requirements or to improve water system resilience, particularly as climate change impacts become more significant. Economic regulators examine proposed expenditures very thoroughly to ensure that such investments benefit customers and do not abuse monopoly power. Regulators must consider whether proposed expenditure is likely to deliver benefits to consumers that outweigh the costs.

In most instances, capital expenditure on WSUD projects will ultimately be incorporated into the regulated asset base (RAB). This means that the utility will then earn a rate of return on this investment. Because projects are capital intensive, decisions made today have implications for the prices consumers will pay for many years to come. Further, given limited investment funds, a prospective WSUD initiative will compete not just with other WSUD opportunities, but also other conventional projects. In approving expenditure, regulators must weigh up whether a proposed investment represents the lowest sustainable cost of achieving an intended outcome over the long term, when compared against other plausible options for achieving the same outcome. For this reason, regulators must assess both capital and operating expenditure.

The economic regulation process and principles presented in this section have generally been adopted Australia-wide. However, how economic regulation is applied in each jurisdiction varies. Further, the degree to which prices that emerge from regulatory processes are legally binding varies across jurisdictions, depending on whether or

not the regulator has the authority to determine prices or whether it has only advisory powers, with government being the decision making entity.

The next section reviews and compares the approaches used across different Australian jurisdictions.

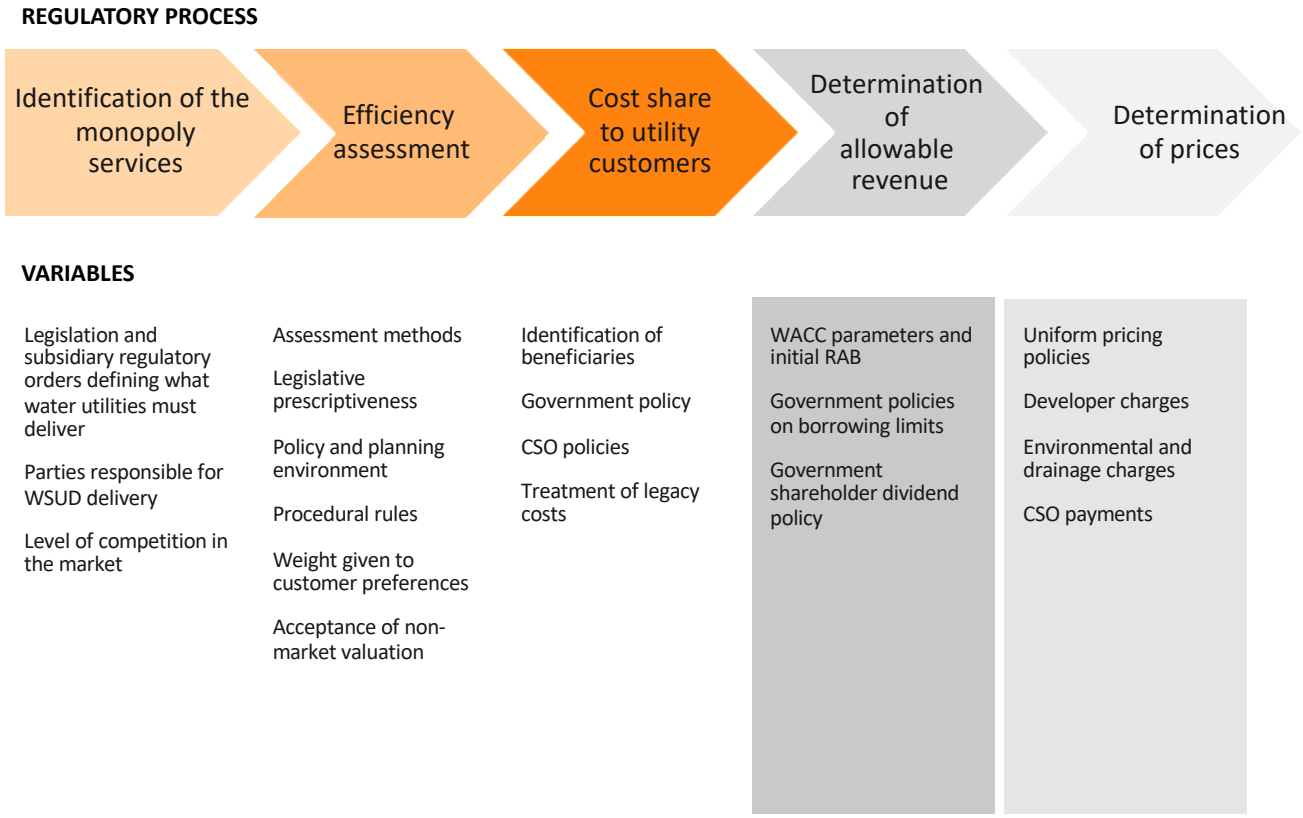
4.0 Interjurisdictional review

This section presents a comparative review of regulatory frameworks and funding mechanisms across five state jurisdictions. The review is not intended to be a comprehensive analysis of all features. Instead, we focus on those variables that are likely to influence funding for WSUD.

4.1 Variables

Several variables may influence how a regulatory regime operates and how funds may be made available for capital projects (Figure 3).

Figure 3: **Key variables influencing the regulatory process**



In effect, the approach used at each step of the regulatory process is driven mostly by how these regulatory 'design variables' are specified and the contextual factors in each state. Figure 3 is therefore a useful structure to examine the similarities and differences across jurisdictions.

Our assessment centres on the following variables:

- approach used to assess project efficiency and prudency
- policy environment
- weight given to customer preferences
- degree of acceptance of non-market values
- cost-sharing policies and charging mechanisms
- level of competition in the market and pricing policies
- government borrowing limits and dividend policy.

Appendix A contains a tabulated summary of the assessment findings for each jurisdiction. We discuss our key observations below.

4.2 Efficiency assessment methods

There is a reasonable degree of commonality across economic regulators in their approach to assessing efficiency, but some have more formalised processes than others, particularly relating to WSUD.

The NSW Independent Pricing and Regulatory Tribunal (IPART) has clearly articulated its approach for assessing WSUD projects utilities put forward in pricing submissions.[8] IPART has amended its regulatory framework to allow external benefits to be recovered from the broader customer base, where external benefits are 'additional to any health, environmental, or liveability outcomes already mandated by Parliament and/or Government' and are 'specific to recycled water and the recycled water scheme in question.'

The approach consists of a sequence of diagnostic questions:

1. Does the project align to outcomes that have been defined as being a regulatory obligation for the water utility to deliver? If yes, IPART will assess whether the proposed scheme is a least cost way of delivering the outcome.

2. If no, IPART will treat the expenditure as 'discretionary' and will assess the project as follows:

    a) Is the project (e.g. water recycling) the least cost solution for wastewater treatment (where wastewater treatment is a regulatory obligation)? If yes, then expenditure is approved, and costs are passed through to wastewater customers.

    b) If no, does the solution give rise to avoided costs (e.g. deferral of wastewater treatment upgrades and/or deferral of augmentation of potable water supply)? If yes, are these avoided costs sufficient to tip the balance in favour of making the solution a least cost option? If yes, then expenditure is approved, and costs are passed through to wastewater customers.

    c) If no, are customers and/or the community willing to pay for the project? If yes, the scheme may be shown to be efficient if the sum of willingness to pay and any avoided costs exceeds the cost of the project. If efficiency can be demonstrated using this test, IPART will approve the expenditure and

[8] This approach has evolved over several years, starting with IPART's 2016 review of Sydney Water's pricing submission (in which liveability was a key issue), and culminating with the IPART's 2019 report on pricing arrangements for recycled water and related services.

costs are shared across the customers that benefit from the scheme and possibly the government (who may fund the project on behalf of community through a direct payment to the utility).

This procedure gives NSW regulated utilities some degree of confidence about how their funding requests will be assessed. However, there is still some ambiguity around what constitutes a 'regulatory obligation' and what is discretionary. The PC has identified this as a universal problem across Australia and stems from the lack of government policy on what 'liveable city' outcomes are being sought, and which parties are responsible for delivering them.

The NSW Government has ministerial powers under the *State Owned Corporations Act 1989* and the *IPART Act 1992* to direct IPART to include costs that would otherwise be regarded as 'non-commercial'. Directional powers may be enacted in circumstances where the government prefers to avoid using consolidated revenue to fund public policy objectives. The government has used these directional powers on occasion.

4.2.1 Economic level of water conservation

IPART requires Sydney Water and Hunter Water to self-report on the efficiency of their water conservation projects (e.g.eg stormwater recycling and leakage reduction). This mandatory requirement of each utility's operating licence is referred to as the 'Economic level of water conservation' framework. The framework prompts utilities to compare the marginal cost of water savings secured through water conservation projects with the marginal benefit of these savings, where benefits are equated to the LRMC of water supply (or short run marginal cost for projects that make water available over a shorter timeframe).

This process aims to increase the rigour for assessing benefits and costs of water conservation projects, including WSUD projects, and therefore promote outcomes that are in the best interest of customers and the broader community. But in practice, some may view the process as frustrating the delivery of WSUD, because it places an additional hurdle in the way of obtaining funding. This is particularly so when the information inputs can be difficult to acquire (e.g. estimates of costs avoided through wastewater recycling schemes).

4.2.2 Legislative prescriptiveness

Some jurisdictions have imposed more prescriptive legislative criteria that economic regulators must consider than others. In New South Wales and South Australia, legislation requires regulators to consider an extensive list of matters (which are largely focused on financial inputs). Box 2 summarises the criteria contained in IPART's legislation as an example.

In contrast, Victoria takes a less prescriptive approach, which may offer the Essential Services Commission (ESC) greater flexibility in appraising the merits of WSUD investment proposals when determining a water utility's revenue requirements.

In Western Australia, the economic regulator has no authority to determine prices for water utilities. It fulfils an advisory role only; the state government sets prices. Similarly in Queensland, the Queensland Competition Authority (QCA) does not currently have an active role in regulating or monitoring retail water prices.

Box 2: IPART's pricing determination

In making determinations, section 15 of the *IPART Act 1992* requires IPART to have regard to the following matters (in addition to any other matters IPART considers relevant):

a) the cost of providing the services concerned

b) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services

c) the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales

d) the effect on general price inflation over the medium term

e) the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers

f) the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all the feasible options available to protect the environment

g) the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets

h) the impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body

i) the need to promote competition in the supply of the services concerned

j) considerations of demand management (including levels of demand) and least cost planning

k) the social impact of the determinations and recommendations

l) standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise).

Source: *Independent Pricing and Regulatory Tribunal Act 1992***,** no. 39.

4.3 Policy and planning environment

Economic regulators are informed by government direction in determining what services and outcomes are regarded as being obligatory versus discretionary. To the extent that governments are able to provide strong and unambiguous policy direction on what outcomes it is seeking for liveable cities, this will assist with determining that levels of investment that should be channelled into WSUD to meet public objectives.

The PC observed that government policy direction about IWCM is relatively weak, and highlighted this deficiency as a fundamental reason why IWCM is not being adopted widely in Australian cities.[9] The PC recommended state governments strengthen their role in determining the policy framework within which IWCM planning decisions are made, including specifying the outcomes being sought by the community and the responsibilities / accountabilities

[9] Productivity Commission (2017) *National Water Reform*, Final Report No. 87, 19 December, Canberra.

of relevant parties for these outcomes. Because multiple entities often need to be involved in WSUD projects, state governments should take a more active role in planning and coordinating the contributions of these parties. The PC advanced that funding and financing issues are a second order issue, which will likely be resolved once the right 'authorising environment' is created.

4.3.1 Division of responsibilities for water utilities and local government

Responsibility for managing stormwater, drainage and urban waterways differs from state to state. In New South Wales and Queensland, local government authorities are largely responsible for these assets. In Victoria and Western Australia, water utilities have a more substantial role for managing local water resources.

From an efficiency perspective, the accountability for outcomes should be assigned to the party most capable of coordinating and securing funding to deliver the outcomes. Existing legislative assignment of responsibilities may need to be tested to assess whether the roles currently assigned to local government and utilities meets these criteria. What has traditionally been done in the past may not be the optimal way of implementing WSUD projects in the future. Having fragmented responsibilities for outcome delivery, with no lead party, is unlikely to be an optimal arrangement.

4.4 The weight given to customer preferences

In Victoria, the ESC has strongly endorsed the principle that utilities should make customer preferences for outcomes central to their decision making around service delivery. In 2018 it introduced the 'PREMO' approach to regulating Victoria's 19 water utilities (Box 3). This new approach to regulation is consistent with recent developments in the United Kingdom, where an outcomes-based approach is being used to promote improved services to customers.[10]

The Victorian model aims to incentivise water utilities to deliver what customers value. It rewards utilities that perform highly against the PREMO criteria with a higher WACC. The model represents a move away from highly technical assessments of input costs, and a shift towards increased weight on whether a utility's proposed services align with what customers want and are prepared to pay for.

It is unclear whether a WSUD proposal would be assessed more favourably under the ESC's PREMO model compared with IPART's framework. It is possible that PREMO is superior at incentivising utilities to explore WSUD projects with their customers, and to seek out opportunities to be innovative, because there is a clear reward for this behaviour. Over time, Victorian utilities may put forward more projects, and receive increased funding through the regulatory pricing process, to the extent customers value these projects.

[10] The UK water regulator, Ofwat, is a pioneer in this area – partly influenced by the work of Stephen Littlechild (see Littlechild, S. (2014) *RPI-X, competition as a rivalrous discovery process, and customer engagement*).

Box 3: **The PREMO approach**

The PREMO assessment framework is based on five principles. An ambitious submission is one that rates highly against each of the five criteria:

- **Performance** measures for outcomes have been specified and adhered to
- **Risks** to operations have been adequately managed and allocated appropriately
- **Engagement** with customers has been adequately demonstrated and shown to have informed the business strategy and service levels
- **Management** is effective, demonstrated through expenditure and demand forecasts that are well supported by data, based on sound methodology and aligned with outcomes to be delivered
- **Outcomes** are defined that represent an improvement in service standards.

A pricing submission is assessed as being 'high quality' if it scores well against each of the five criteria.

The PREMO approach has four key features:

Customers — the pricing approach will pivot the businesses' attention squarely towards their customers. The water businesses must express their price submissions in terms that reflect the outcomes they will be delivering to their customers. The future will be about customer outcomes rather than compliance with regulatory tick-boxes. Businesses are expected to couch their price submissions in terms that reflect the concerns, priorities and preferences of their customers, to achieve a successful regulatory outcome.

Autonomy — in consultation with customers, water businesses will decide on the services to be delivered and the prices to be paid. Boards will determine the risk their businesses assume on behalf of their customers. Having committed to those decisions, each Board will be responsible for self-assessing the level of ambition of its pricing proposals. The level of ambition will determine the return on equity reflected in the business's proposed prices.

Performance — the pricing approach provides new incentives for ambition in delivering services and outcomes that matter most to customers, and to deliver these as efficiently as possible.

Simplicity — the pricing approach attempts to avoid focusing on matters that make little difference to the outcomes experienced by customers. The ESC seeks to achieve this by choosing simplicity whenever it can.

4.5 Degree of acceptance of non-market values

Evaluating customer and community preferences often involves applying non-market valuation (NMV) techniques. This is particularly true for WSUD projects because of the public good nature of many of the benefits generated. Incorporating non-market values into benefit–cost assessments of WSUD projects is therefore important.

NMV, when done well, could (and should) have a role in influencing both government policy and planning regarding water sensitive cities, and decisions made by economic regulators about the prudency and efficiency of utilities' proposed WSUD projects that are deemed 'discretionary expenditure'. But historically, Australian regulators and policy makers have not held NMV in high regard[11].

[11] Baker, R. and Ruting, B. (2014) *Environmental Policy Analysis: A Guide to Non-Market Valuation*, Productivity Commission Staff Working Paper, Canberra.

There has been a long history of concerns around the validity of NMV (particularly stated preference techniques) to accurately represent customer and community values. This has led to a degree of scepticism about its usefulness as tool for decision making. Deep debate among economists and others followed two major test cases of NMV. The first was the use of contingent valuation to estimate damages from the 1989 Exxon Valdez oil spill in Alaska. The second was a study relating to the proposed Coronation Hill gold mine in Kakadu (commissioned in 1990 by the Commonwealth Resource Assessment Commission).

The findings of both these studies were widely scrutinised at the time, with debate focusing on whether people have well-formed preferences over non-use environmental outcomes and, if so, whether these can be accurately elicited by a survey. Opinion among economists was divided about the validity of NMV techniques in the form that existed at the time.[12]

However, with progressive improvement in the techniques and the quality of studies being conducted, evidence indicates this situation may be changing. Major water utilities are now incorporating willingness to pay studies in their pricing submissions to support business cases for WSUD projects[13], and regulators and government policy agencies are beginning to take more serious note of the NMV evidence being presented.

4.5.1 Economic regulators

IPART's current position on NMV is expressed in a recent report that sets out its pricing arrangements for recycled water and its treatment of 'external benefits' relating to water recycling.[14] The report defines external benefits as positive externalities, including 'environmental, health, and liveability benefits, that arise as a result of recycled water schemes operating.' To qualify for funding (of recycled water schemes):

> *the onus would be on the public water utilities to identify external benefits and demonstrate customers' willingness to pay for them. Further, external benefits must be additional to those achieved through existing regulatory standards and specific to the provision of recycled water.*[15]

IPART considers willingness to pay should be the primary indicator of whether external benefits of recycled water should be paid for by the broader customer base. IPART draws on the PC's principles when assessing the robustness of willingness to pay evidence submitted by water utilities.

As discussed above, the PREMO model adopted by the ESC emphasises customer engagement and understanding customer values. In relation to NMV, the ESC considers each water business is best positioned to explore different approaches to find the engagement strategy that works best for its customers. As a guide for utilities, ESC has developed principles for good customer engagement[16] but has not been prescriptive on what NMV should be applied, or how it should assess the validity of these techniques.

Appendix B examines Australian water utilities' use of NMV in business cases and pricing submissions, and the responses by regulators to these submissions.

4.5.2 Government

In 2017, the NSW Government updated its guide to BCA to 'reflect developments in analytical techniques that have increased in prominence over the last decade, such as non-market valuation'.[17] The guidance goes on to

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[12] For example, Diamond and Hausman (1994) were highly critical of the contingent valuation technique while Carson (2012) and others such as Kling, Phaneuf and Zhao (2012) present evidence to support NMV, particularly in light of progressive improvements to techniques.

[13] For example, both Sydney Water and Hunter Water have incorporated willingness to pay estimates in their respective 2020 pricing submissions. The NMV estimates relate to stormwater management projects.

[14] IPART (2019) *Pricing arrangements for recycled water and related services*, Final Report, 1 July, Sydney.

[15] IPART (2019) *Pricing arrangements for recycled water and related services*, Final Report, 1 July, Sydney, p. 55.

[16] Essential Services Commission (2016) *Water Pricing Framework and Approach – Implementing PREMO from 2018*, Melbourne.

[17] New South Wales Government (2017) *NSW Government Guide to Cost-Benefit Analysis*, Sydney, p. ii.

state that 'when non-market valuation methods are used, all else equal, revealed preference methods tend to be more reliable than stated preference methods and are generally preferred for this reason'.

Infrastructure Australia advocates for greater use of NMV in planning and decision making. In a 2017 report on urban water reform[18], Infrastructure Australia recommended that 'community's expectations towards service offerings should form an integral part of investment decision making' and that 'service providers should consider the community's willingness to pay before committing to roll out upgrades'. The report noted different communities have different needs, wants and willingness to pay, and therefore:

> *a one-size-fits-all approach to water service provision across all cities and towns is neither efficient nor desirable. Utilities may even need to provide tailored options for varying service levels within each community to ensure water services are affordable and suitable for all Australians.*

Infrastructure Victoria takes a similar view. It has published a series of papers on how governments may better and more consistently assess non-market values by finding ways to place monetary values on economic, social and environmental impact. In its paper on reforming water sector governance, Infrastructure Victoria noted that:

> *alongside the challenges posed by population and climate change, there are changing community expectations and customer needs surrounding the water sector. Increasingly, the provision of water services is being viewed within the context of delivering broader liveability benefits, while customers expect to be more meaningfully engaged in decision making, such as when options for future supply augmentation are being considered.[19]*

It also highlighted that:

> *the community wants to be – and needs to be – more involved in decision making about water supply augmentation options. We need a better understanding of consumer preferences about how water augmentations are planned, how decisions are made in relation to the use of water from different sources, and the trade-offs that customers are prepared to make between different supply options and impacts on their household water bills…urban water planning in Victoria should reflect customers' preferred service levels and their willingness to pay for these service levels.[20]*

The Victorian Government has developed a guide on quantifying and monetising non-market impacts and recognises the importance of including estimates of non-market impacts in economic assessment where possible to ensure the efficient allocation of public resources.[21]

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[18] Infrastructure Australia (2017) *Reforming Urban Water: A national pathway for changes,* December, Sydney, p. 28.

[19] Infrastructure Victoria (2019) *Reforming water sector governance: key findings to inform the update of Victoria's 30-year infrastructure strategy*, October, Melbourne, p. 3.

[20] Infrastructure Victoria (2019) *Reforming water sector governance: key findings to inform the update of Victoria's 30-year infrastructure strategy*, October, Melbourne, pp. 4, 16.

[21] Victorian Government (2019) *Guidance on valuing non-market impacts in economic assessments*, Melbourne.

4.6 Cost-sharing policies and charging mechanisms

Cost sharing policies stipulate how costs of WSUD are to be shared between utility customers and the broader community (usually via government payments). Cost sharing is a means of equitably recovering the efficient costs of a project from different parties that benefit from the project. The main charging mechanisms for recovering revenue and/or funding WSUD projects include:

- water, wastewater and recycled water tariffs to utility customers
- specific environmental levies – e.g. a waterway health charge or drainage charge on utility customers
- developer charges, which ultimately get passed onto property owners
- general government taxation – which can be used to directly fund projects
- market-driven, private investment.

Setting water, wastewater and recycled water tariffs was discussed above relating to regulatory assessment and pricing process. The other mechanisms are discussed below. While the analysis focuses on water utilities, similar findings apply to local government authorities. Both entities are constrained by the types of charges that can be levied and the settings for these charges.

4.6.1 Environmental, drainage, and waterway health levies

There are considerable differences across jurisdictions about how waterway management, stormwater and drainage costs are recovered. Some utilities have the authority to charge specific drainage levies to property owners, while others must fund stormwater management activities through developer charges. In all cases, charges are either capped through regulation or controlled by the state economic regulator.

- In Victoria, all properties serviced with a scheme water supply by one of the state's water corporations are levied a Waterways and Drainage Charge, which is regulated by the ESC. Revenue raised by this charge is administered by Melbourne Water. It funds a range of programs to protect and improve the health of rivers and creeks. It also provides regional drainage services, flood protection and flood warning systems throughout the Port Phillip and Westernport region. The water corporations collect the charge revenue on behalf of Melbourne Water. According to Melbourne Water's 2018-19 annual report, this charge raised $243 million in revenue in the last financial year, which was used to fund projects to improve the health of waterways and drainage services in Victoria.

- Victoria's environmental contributions levy (ECL) is another significant source of funding for water-related environmental initiatives. The ECL is collected from water corporations under the *Water Industry Act 1994* (the cost of which is subsequently passed onto utility customers). The Department of Environment, Land, Water and Planning (DELWP) is responsible for administering the ECL and the initiatives it funds. Over the four-year period 1 July 2016 to 1 July 2020, the levy is expected to raise $537 million. Of this total, $22.8 million has been spent on 'Resilient and Liveable Cities'.[22]

- In New South Wales, utilities such as Hunter Water and Sydney Water levy stormwater drainage charges on properties located in catchments that require drainage infrastructure. For example, Sydney Water charges property owners a stormwater service fee if the property is within a stormwater drainage area Sydney Water manages (local councils manage stormwater in most areas of Sydney). Specific charges apply for residents in the Rouse Hill development.[23] For example, the Rouse Hill stormwater charge

[22] https://www.water.vic.gov.au/planning/environmental-contributions.

[23] The Rouse Hill Development Area (RHDA) covers about 13,000 hectares and was established by a consortium of public and private sector land holders in 1998. The stormwater drainage system at the RHDA consists of large areas of open space to accommodate flood flows,

covers the cost to Sydney Water of managing bush generation, weed control and trash racks on the land. The Rouse Hill land charge covers the purchase of land to create grass channels and artificial wetlands. It applies quarterly over five years. All stormwater-related charges are regulated through IPART.

- South Australia has a natural resource management levy (NRM Levy) which is charged to holders of bulk water allocation. SA Water is subject to this levy, the cost of which is ultimately passed back to customers through water prices. Revenue raised through the levy is used to manage prescribed water resources (e.g. monitoring waterway health and developing water allocation plans).

- Queensland water utilities (distributor–retailers) do not levy specific charges to fund urban waterway health. The costs of stormwater services are generally covered through a combination of developer charges for new infrastructure and rate-based fees for ongoing management. Typically, stormwater drainage costs are aggregated with other costs such as for wastewater or for roads management and maintenance. Queensland Urban Utilities and Unitywater do not levy any charges associated with stormwater drainage given they have no responsibility for associated infrastructure. In contrast, Gold Coast, Logan City and Redland City Councils include stormwater drainage costs in general rates.

- In Western Australia, the Water Corporation levies a drainage charge to customers in 'declared drainage catchment areas' to recover the cost of drainage services provided by the utility's main drains. The charges are regulated under the Water Services (Water Corporations Charges) Regulations 2014 and are levied on the basis of gross rental value of property. Revenue generated through this charge is used to fund drainage infrastructure, as opposed to being used to fund WSUD or external benefits to the community.

4.6.2 Developer charges

Most jurisdictions charge land developers a 'contribution charge' (or headworks infrastructure charge) to help pay for installation of new headworks (pipes, pumps, drains, water treatment) to service new urban development on the perimeter of the utility's network. The principle underpinning these charges is that the cost of new infrastructure associated with new urban developments should be passed on to customers who are the beneficiaries of this new infrastructure – i.e. property owners at the urban fringe, as opposed to costs being socialised across all customers in the network. Further, contribution charges send signals to developers about the costs of developing in different locations, thus promoting efficient levels of investment.

The practices across states are as follows:

- In Victoria, developer charges are referred to as 'new customers contribution (NCC)' charges, which are levied on developers who are subdividing land or redeveloping sites within built up areas. NCC charges can also be levied when an existing property owner connects to a service for the first time. The ESC regulates these charges through a principles-based NCC charging framework, which was introduced on 1 July 2013.[24] Victorian water businesses must use the approved principles to calculate the net incremental cost of connections. NCCs are either standard NCCs (approved by the ESC in each water business's pricing determination), or negotiated NCCs (agreed between a developer and water business).

- The NSW Government has set developer charges to zero for the Greater Sydney and Hunter regions. The capital cost of water, sewerage and stormwater development in brownfield and greenfield areas is instead recovered from the general customer base. Developer charges are levied in other regions.

- In South Australia, the state's water utility (SA Water) levies developer contributions, which are monitored by the state's economic regulator (ESCOSA). SA Water must provide an annual compliance statement

natural creeks and grass lined channels, and artificial wetlands. Currently Sydney Water owns and manages the trunk drainage services and about 215 hectares of flood prone land. Sydney Water also manages an additional 27 hectares of flood prone land owned by other parties.

[24] Essential Services Commission (2012) *Estimating new customer contributions*, September, TRIM Reference: C/12/, Melbourne./

relating to 'excluded services'[25], which includes developer contributions. SA Water has developed a developer contribution framework[26] which recognises four types of developments where contribution charges may apply: new connections, extensions to existing mains, augmentation charges, and additional infrastructure (upsizing). The share of contribution sought by SA Water varies for each of these.

- In Queensland, a 'maximum charges framework' applies to water utilities (distributor–retailers) and local government authorities. The legislation that covers infrastructure charges includes the *SEQ Water (Distribution and Retail Restructuring) Act 2009*, the *Planning Act 2016* and related Planning Regulation 2017. Whether infrastructure charges are payable is determined as part of assessing all development applications that require water or sewer services. Infrastructure charges are calculated by reducing the assessed 'additional' demand generated by the new development, by the demand 'credit'. A demand credit is existing demand on the site, for example, the demand created by an existing dwelling that is connected.

- In Western Australia, standard infrastructure contributions are typically payable by anyone increasing the potential demand on the Water Corporation's existing water and wastewater infrastructure. A separate charge applies for installing a reticulated service to new building developments, based on meter size and flow rate. Water Corporation must adhere to statutory guidelines[27] on contribution charges, which are made by the Department of Water and Environmental Regulation under the *Water Services Act 2012* and monitored by the Economic Regulation Authority.

Developer charges can be an important mechanism for funding WSUD, particularly in major greenfield development corridors, and in situations where the utility takes on the role of delivering the WSUD project. However, developer charges need to be cost-reflective and recognise the cost differential between servicing a new greenfield site using conventional methods (i.e. a centralised water and wastewater service) as opposed to decentralised services more in line with WSUD (e.g. local scale wastewater recycling and stormwater reuse). For example, if a private water utility wishes to implement a WSUD solution in competition with an incumbent water utility, setting a developer charge below the true cost of a centralised service (or at zero cost, as is the case in New South Wales) will dissuade private sector investment in a decentralised scheme that would otherwise provide a cost-competitive (more efficient) service.

4.6.3 General government taxation

Sometimes, state governments provide subsidy payments to water utilities to deliver services that meet public policy objectives, and that are otherwise difficult to cost recover from customers. These subsidies are referred to as community service obligation (CSO) payments and are recognised by the NWI as legitimate mechanisms for funding public outcomes, provided the transfer payments are transparent.

A CSO arises when a government specifically requires a utility to carry out activities that it would not elect to do on a commercial basis. The payment is designed to cover any additional costs the utility incurs to fulfil the obligation, plus any foregone revenue. The NSW Treasury sets out guidance on what constitutes a CSO (Table 1).

[25] 'Excluded Services' are defined by ESCOSA as those services that are not subject to direct price regulation; instead, these services are subject to pricing principles developed by ESCOSA.

[26] SA Water (2016) *Developer Contribution Framework*, SA Water's 2016-17 Pricing Policy Statement, Adelaide.

[27] Department of Water (2013) *Guidelines for infrastructure contributions – Water Corporation*, Perth.

Table 1: What constitutes and does not constitute a CSO?

Community service obligation	Not a community service obligation
It would not be pursued by a Government business operating on a purely commercial basis . It has a specified policy objective. There is an explicit Government agreement, as in either a Portfolio Minister directive or Government Department agreement, with the business that the activity should be pursued The responsible Government Department provides funding	Regulatory requirements (e.g. environmental standards), which are considered part of the commercial environment within which the industry operates Any legislative requirements (e.g. objectives and functions under enabling legislation) Corporate social responsibility activities, which are good management practices that lead to both tangible and intangible benefits (e.g. hardship programs). Commercial price discrimination (e.g. pricing to attract more business). Demand management (e.g. encouraging use of off-peak services). Government reporting and other 'head office' type requirements (e.g. Budget and Statement of Intent requirements).

Source: NSW Treasury guidelines for community service obligations.

The Productivity Commission[28] endorses CSOs as the most transparent mechanism for providing government assistance:

> *The Australian Government has also provided capital grants for urban water projects, contrary to NWI principles. These capital grants should be replaced by CSO payments that are tightly targeted at high-cost service areas and not tied to capital expenditure. CSO payments should be made contingent on the recipient providers exploring all opportunities to improve the efficiency of their services, taking into account the future viability of services and alternative options.*

To the extent that WSUD provides ecological benefits that cannot be readily assigned to utility customers, a CSO may be an appropriate funding mechanism. State governments could use CSOs to promote WSUD, either through direct payments to utilities (a contract for outcomes) or through a 'contestable' payment which would enable multiple parties to bid for the right to deliver the outcomes in return for the CSO payment. However, CSOs have not been used widely in the past as a mechanism to explicitly fund WSUD.

To the extent that WSUD provides essential 'social infrastructure' and is capable of addressing 'legacy' environmental costs, there is a prima facie case for CSO payments as a funding mechanism. Legacy costs are the result of past users and activities and are typically not related to the efficient costs to service current and

[28] Productivity Commission (2017) *National Water Reform*, Final Report No. 87, Canberra.

future water customers[29]. As such, forward-looking legacy costs should not be reflected in the prices paid by current and future users, and should instead be allocated to governments.

Governments may be reluctant to provide CSO funding for WSUD projects because CSOs are funded from consolidated revenue which has direct consequences for the state budget. Governments experiencing fiscal constraints on credit ratings may prefer to fund WUSD through customer charges.

Importantly, CSOs provided as a capital payment for WSUD will typically not be included in a utility's RAB. This gives rise to an ongoing problem of ensuring sufficient revenue is available to appropriately operate and maintain the WSUD assets. This fact points to the need for an ongoing CSO payment to fund a share of operational costs.

Western Australia has a special purpose land tax – the Metropolitan Region Improvement Fund – which is levied on owners of undeveloped land in the metropolitan area with a taxable value in excess of $300,000. Revenue raised by the tax is used to finance the cost of providing land for roads, open spaces, parks and similar public facilities. It could also be a source of funding for WSUD, albeit limited. In effect, this is a tax payable by land developers, and is ultimately passed through to buyers of new residential and commercial lots.

4.6.4 Market-driven private investment

Private sector investment could support WSUD projects via several pathways, including but not limited to:

- crowdfunding
- philanthropy
- water quality offset programs
- health insurance providers
- flooding and drought insurance providers
- ethical superannuation funds.

Except for philanthropists, investors will still expect a financial return on their investment, and therefore will need some certainty about the value proposition and how they will capture the benefit of their investment.[30]

People contributing to a crowdfunding scheme generally expect a return. Contributions may be sought from residents of an area who will benefit from a new WSUD project, for example. But if they cannot secure an exclusive benefit stream (e.g. a financial or non-pecuniary reward for each contributor), such schemes suffer from 'free-riding' behaviour and thus are unlikely to be a reliable funding mechanism for WSUD.

Water quality offset programs involve 'securitising' which the water quality improvements from WSUD and marketing them to developers as a way of meeting their regulatory obligations relating to stormwater discharge. A commercial market in 'offset credits' could be established if WSUD provides cheaper means of meeting discharge requirements than conventional on-site treatment of stormwater. Several Victorian councils offer a scheme through which developers can offset their onsite stormwater obligations by paying the council, which uses these moneys to fund WSUD capital works. For example, the City of Moonee Valley operates a WSUD Voluntary Contribution Scheme that allows planning applicants to offset a proportion (up to 20 per cent) of their onsite stormwater requirements through a financial contribution to Council. The funds are used to deliver WSUD capital works projects that deliver an equivalent stormwater quality benefit to the Maribyrnong Waterway Catchment and

[29] Independent Pricing and Regulatory Tribunal (2019) *Rural water cost shares*, Final report, February, Sydney.

[30] It is important to distinguish between financiers and funders. Financiers raise the cash for a project. Funders are the parties (or party) that ultimately pays for the project. Revenues raised from those that fund the project are returned to the financiers, plus an appropriate rate of return on the finance.

Port Phillip Bay. Another example is Melbourne Water's Stormwater Offset Payments scheme (see Box 4 for further details).

The Queensland Government recently released its Point Source Water Quality Offsets Policy[31], which provides an alternative mechanism for sewage treatment plants, abattoirs and other such activities to meet wastewater discharge requirements.

Health insurers may be motivated to invest in WSUD projects if these investments resulted in a measurable reduction in the risk of health claims. However, the evidence for this link may not yet be strong enough for health insurers to be interested in WSUD – other than for marketing and reputational purposes.

Similarly, there may be scope some form of co-contribution from flooding and drought insurance providers, however they too will need to be convinced of the link between WSUD and reduced probability of claims by policy holders. However, it is unlikely that an insurer would invest unilaterally without government taking the lead.

Box 4: **Melbourne Water's Stormwater Offset Payment Scheme**

Melbourne Water's stormwater offset scheme is designed to give developers flexibility in meeting their obligations under the Victorian Planning Policy regarding stormwater treatment. It assists in situations in which stormwater treatment is not practical or feasible. A stormwater offset is a financial contribution residential developers pay to Melbourne Water to undertake stormwater management works another 'off site' location. These works 'offset' stormwater impacts not treated within the development site.

Stormwater offsets are based on the area developed and the development type. For example, industrial development pays a higher rate than low density residential development, because it generates a higher level of stormwater runoff. Nitrogen is measured for the Stormwater Offsets Program. If nitrogen (the limiting pollutant) targets are achieved, then phosphorus and suspended solid targets are also achieved. The offset payment rate is based on the cost of future stormwater treatment works constructed by Melbourne Water, and is calculated per kilogram of the annual total nitrogen load.

The offset payment provides funds to construct assets only. Melbourne Water and other agencies cover the costs for ongoing maintenance of the asset.

Source: www.melbournewater.com.au.

Institutional investors and superannuation funds already invest in public infrastructure and utilities where there is a bankable revenue stream underpinned by regulated prices. If services from WSUD assets could similarly be marketed to utility customers, ratepayers, or government, and this yielded a competitive rate of return on project investment, institutional investors may provide an alternative source of debt funding.

The next section examines the scope for private water utilities and/or developers to fund WSUD projects through a commercial market for the services provided by WSUD.

4.7 Pricing and competition

The entry of private sector entities into the water market may be an opportunity to channel increased investment into WSUD and possibly harness greater innovation in water cycle management.

Activities such as stormwater harvesting, passive irrigation, and wetland creation do not readily fall under the classification of natural monopolies (discussed earlier) and could therefore be open to competition. For example, developers may be able to incorporate WSUD systems into new residential developments and be compensated

[31] Department of Environment and Science (2019) *Point Source Water Quality Offsets Policy*, November, Brisbane.

for these initiatives through a premium on lot sales. Or developers could engage the services of a private water utility to deliver a decentralised water management solution to a residential estate, at a cost that is competitive with a centralised solution provided by an incumbent government-owned utility. In this way, WSUD outcomes could be delivered through the market as opposed to the monopoly water businesses.

However, in most Australian cities, competition is weak or only slowly emerging. Competition in wastewater and recycled water provision is most evident in New South Wales, partly due to the deliberate efforts of that state to develop legislation that facilitates competition. The NSW *Water Industry Competition Act 2006* (WIC Act) contains provisions that enable private water utilities to enter the market and provide recycled water, sewerage services and/or water services to customers. In some cases, private water utilities on-sell wholesale water or wastewater services purchased from major public utilities such as Sydney Water or Hunter Water.

One reason why competition has been slow to develop relates to pricing distortions in the market. In addition to the fact that developer charges do not necessarily reflect the actual cost of headworks (see earlier discussion), a large water utility is able to average its costs across different customers and parts of the network. That is, the prices paid by any one group of customers for wastewater do not necessarily reflect true cost of service. Further, governments typically require utilities to apply uniform (postage stamp) pricing for metropolitan water customers, which again distorts the pricing signals for investment.

These distorted prices may deter private water utilities from entering the market, even if they could offer a lower cost drainage or wastewater solution through a decentralised scheme. A new entrant may not be able to compete with an artificially low, regulated price.

4.8 Government borrowing limits and dividend policy

4.8.1 Government-imposed borrowing limits

Due to constrained state budgets, some states impose explicit capital expenditure and/or borrowing limits on utilities to control state liabilities. Therefore, even if a project is demonstrably efficient and in the long term interest of customers, the utility may not be able to implement the project due to a lack of finance.

The evidence suggests that water utilities are constrained both in how much they can borrow, as well as which sources they can draw upon. Generally, a state-government owned water utility's main source of debt is the relevant state's Treasury Corporation. For example, Yarra Valley Water is subject to two externally imposed capital requirements:

- financial accommodation does not exceed the approval limits set by the Treasurer of Victoria pursuant to the *Borrowing and Investment Powers Act 1987*, and

- with the exception of an operating account with overdraft facilities, it is required to borrow exclusively with the Treasury Corporation of Victoria (TCV).

In New South Wales, Hunter Water borrows through NSW Treasury Corporation (it does have minor lending facilities with commercial banks), and the NSW Treasurer must approve the maximum amount of funding that Hunter Water can use from this source[32]. Likewise, Sydney Water's debt portfolio is sourced almost entirely through NSW Treasury Corporation[33].

4.8.2 Government dividend policy

All state-owned utilities must pay a divided (or shareholder return) to their government owners. The rate of dividend varies across jurisdictions. The dividend rate determines how much profit a government-owned utility is

[32] Hunter Water (2019) *Annual Report 2018-19*, Newcastle, p. 94.

[33] Sydney Water (2019) *Annual report 2018-19*, Sydney.

allowed to keep for reinvesting without needing to borrow, including in service improvements, R&D and possibly innovative trials of WSUD.

Yarra Valley Water's final dividend each year, for example, is determined after consultation between the business, the Minister for Water and the Treasurer. Similar protocols are in place for other water utilities across Australia.

Sometimes, shareholding Ministers reduce the dividend rate in return for the utility committing to deliver a particular water infrastructure project. For example, in Queensland the Minister directed SunWater to not pay a dividend for the 2016-17 financial year and instead commit its full 2016-17 dividend (and an additional $100 million) to a water augmentation project[34].

These examples indicate the government of the day can exert leverage over a utility through dividend settings, which may either help or hinder delivering significant capital projects such as WSUD.

5.0 Conclusion

This report has explored possible reasons for why WSUD is not being adopted and funded at scale in Australia, despite there being compelling evidence of the benefits of water sensitive cities. To diagnose the most constraining factors, the report sets out how WSUD projects are currently assessed and treated under existing policy and regulatory frameworks, and examines instances where projects are being held back due to the institutional environment.

Our findings point to the need for some significant changes in government policy settings. While incremental changes at the margin may assist, we consider this will not be sufficient to increase the funding needed to motivate change at the scale needed to realise the vision of water sensitive cities.

The purpose of this report is not to make recommendations, but to identify reform options for debate and discussion. Figure 4 summarises several possible areas for reform that emerged from this review.

The first three options are policy and institutional reforms aimed at elevating WSUD as a priority for government, and putting in place the enabling architecture to equip regulators, utilities, local government and other parties with the authority to deliver WSUD. These three reforms are:

- strengthening government policy support for water sensitive cities, including articulating measurable outcomes being sought and embedding these objectives, targets and standards in statutory planning processes

- updating regulatory frameworks to ensure that the amenity, public health and environmental benefits of WSUD are recognised as a legitimate community service obligation. These obligations may be achieved by either water utilities or other responsible parties who can then collect the revenue required to achieve these public good objectives.

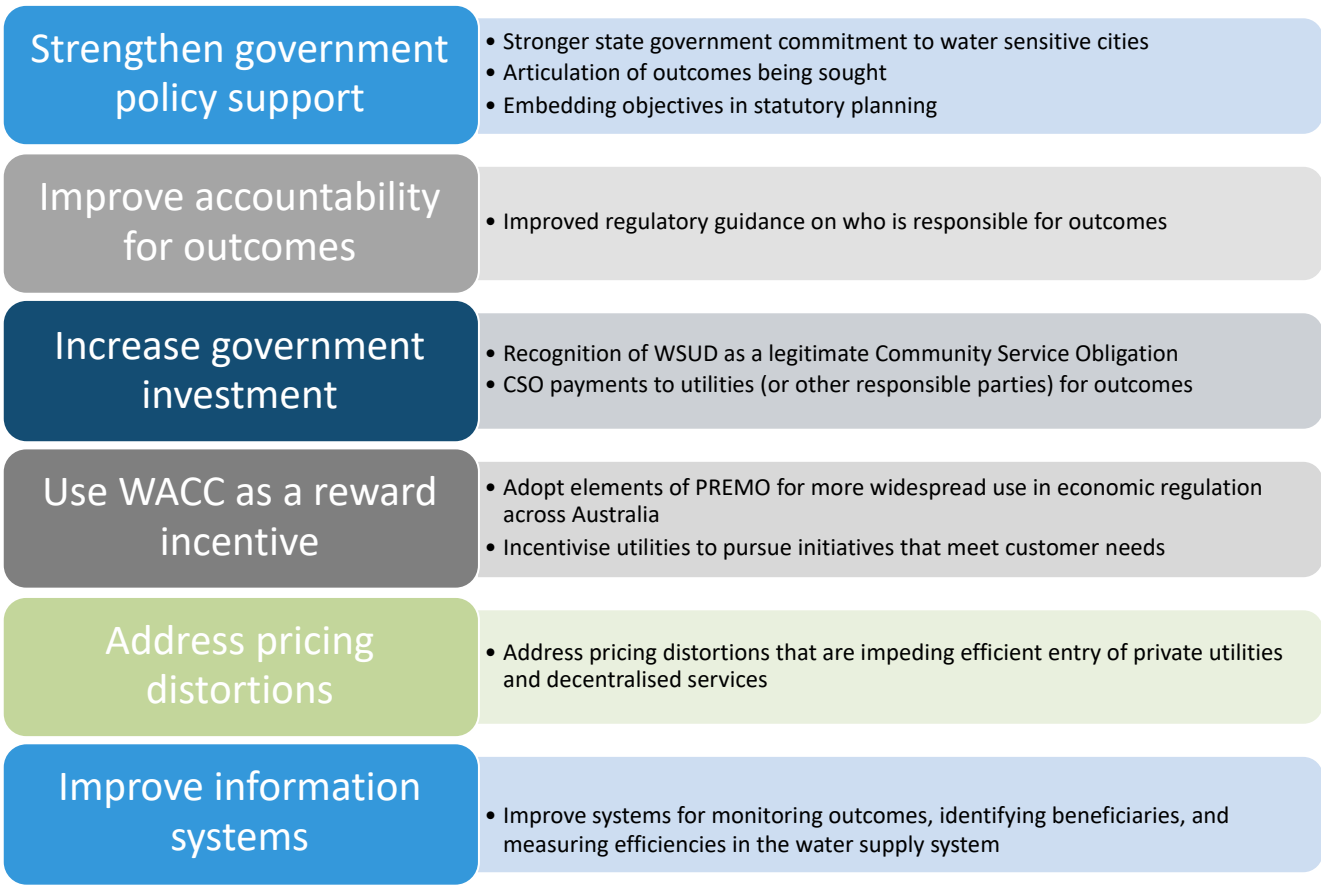
- improving system level accountability for outcomes by assigning responsibilities to a lead authority that is best placed to: coordinate and/or deliver WSUD projects; collect and distribute the funding required through regulated prices, and; identify beneficiaries that may be charged with specific levies, when appropriate.

[34] SunWater (2017) *Annual Report 2016-17*, Brisbane, p. 39.

The other three reform initiatives may help motivate increased investment in WSUD, primarily through:

- providing utilities with investment incentives, within the regulatory pricing framework, that ensure utilities understand the objectives of the communities they serve and provide improved service levels to their customers and the community
- removing pricing distortions that could be constraining and/or distorting private sector investment in WSUD
- equipping decision makers (regulators and the market more broadly) with the necessary detail to identify efficient water sensitive solutions, compliance with stated objectives, and appropriate cost recovery mechanisms in a timely and efficient manner.

Figure 4: Reform options



The next steps involved in putting forward these alternative approaches are:

1) **Engage with economic regulatory authorities and major water utilities to obtain feedback and views on the proposed reforms.** The findings in this paper were presented and discussed at a half day workshop in April 2020. The group – representing Western Australia, New South Wales, Queensland, South Australia and Victoria generally supported the reform options identified, other than the option of using WACC as a financial incentive.

2) **Illustrate how the reforms can be implemented via case study examples.** As agreed in the workshop, the IRP2 team will develop two case studies to demonstrate how various WSUD projects can be evaluated and funded under the proposed policy and regulatory reforms.

3) **Engage and negotiate with policy makers to understand the political, financial, legal and practical feasibility of implementing a new approach**. The IRP2 team will work with policy makers to better understand how the specific reforms should be presented to get traction and leverage. An understanding of the policy implications and opportunities inherent in supporting the proposed reforms will inform how the final framework is put forward.

4) **Publish a final report on alternative approaches to funding water sensitive cities**. This report will outline the CRCWSC's proposed reforms for promoting increased investment in water sensitive cities and include case study applications and policy recommendations for implementation.

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Appendix A Interjurisdictional review

Table A1 Summary of key characteristics of each jurisdiction's regulatory and funding models as they apply to water utilities

Variable	QLD	NSW	VIC	SA	WA
Economic regulator	QCA	IPART	ESC	ESCOSA	ERA
Regulator's powers	Advisory	Price determination	Price determination	Price determination	Advisory
Prescriptiveness of regulator's legislation in guiding assessment of revenue requirement	Detailed legislative requirements	Detailed legislative requirements	Legislative guidance on factors to be considered	Detailed legislative requirements	Legislative guidance on factors to be considered
Initial RAB valuations	Late 2000s Economic value method	2000 Economic value method (first applied to Sydney Water)	2004 Economic value method and DORC method	2012 DORC method	2005 DORC method
WACC	No formal guideline, differs by decision	Formal guideline for all sectors regulated by IPART	Submission quality determines WACC within envelope	Currently under review for 2020	Formal guideline
Government imposed borrowing limits	Yes – State Borrowing Program approves a government-owned corporation's proposed borrowing limit	Reflective of individual credit worthiness	Must receive approval of Treasurer to borrow or raise money	No – legislation does not limit or affect the powers of a semi-government authority to borrow otherwise than from the Authority	Lends to any state government agency which: is constituted as a body corporate empowered to borrow and has Treasury approved borrowing program
Weight given to customer preferences	Customer preferences are rarely considered in decision making	Customer preferences are somewhat considered.	Customer preferences is a primary consideration	Customer preferences are somewhat considered.	Customer preferences are somewhat considered
Acceptance of non-market values (NMV)	No evidence of NVM influencing decision making	Limited evidence of NVM influencing decision making	Evidence of NVM influencing decision making	No evidence of NVM influencing decision making	No evidence of NVM influencing decision making

Variable	QLD	NSW	VIC	SA	WA
Environmental charges, waterway health levies, and drainage charges	Queensland water utilities (distributor–retailers) do not levy specific charges to fund waterway health, stormwater or drainage. These costs are recovered via water and sewerage charges.	Hunter Water levies a fixed stormwater drainage charge on properties located in catchments where the utility's stormwater drains are located. Similarly, Sydney Water levies stormwater service charges. These charges are regulated by IPART.	A Waterways and Drainage Charge is levied on all properties serviced with scheme water by one of the state's water corporations. The charge is regulated by the ESC. Revenue raised by this charge is administered by Melbourne Water and is used to fund a range of programs to protect and improve the health of rivers and creeks. Melbourne Water also funds stormwater infrastructure through Stormwater Quality Offset Contributions made by developers that cannot meet water quality requirements on-site. This option is approved only in circumstances where the developer has demonstrated that WSUD treatment cannot be achieved onsite. An Environmental Contribution Levy is collected from water supply authorities under	The NRM Water Levy is charged to water licence holders who have a water allocation, and is based on the volume of the water allocation listed on the water licence. SA Water is also a water licence holder in the Western Mount Lofty Ranges, and it pays a water levy which is charged at a fixed fee of $1.2 million. The NRM Water Levy partially recovers the costs of managing prescribed water resources.	Water Corporation levies a Drainage Charge to customers in 'declared drainage catchment areas' to recover the cost of drainage services provided by the utility's main drains. The charges are regulated under the Water Services (Water Corporations Charges) Regulations 2014 and are levied on the basis of gross rental value of property.

			the *Water Industry Act 1994*. The funds raised through the levy are used to address adverse water-related environmental impacts. Over a three-year period since 2016-17, $22.8m has been spent on 'Resilient and Liveable Cities'.		
Variable	**QLD**	**NSW**	**VIC**	**SA**	**WA**
Developer charges (or infrastructure contribution charges)	A 'maximum charges framework' applies to water utilities (distributor–retailers) and local government authorities. The legislation that covers infrastructure charges includes the *SEQ Water (Distribution and Retail Restructuring) Act 2009*, the *Planning Act 2016* and related Planning Regulation 2017.	Developer charges set to zero for the Greater Sydney and Hunter regions. The cost of water, sewerage and stormwater development in brownfield and greenfield areas is instead recovered through the general customer base. Developer charges continue to apply in all other regions of NSW.	Developer charges are referred to as new customers contribution (NCC) charges, The ESC regulates NCC charges through a principles-based charging framework. Victorian water businesses must use the approved principles to calculate the net incremental cost of connections.	SA Water has developed a developer contribution framework which recognises four types of developments where contribution charges may apply: new connections, extensions to existing mains, augmentation charges, and additional infrastructure (upsizing). The share of contribution sought by SA Water varies for each of these. The charges are monitored by ESCOSA.	Standard infrastructure contributions are typically payable by anyone increasing the potential demand on the Water Corporation's existing water and wastewater infrastructure. A separate charge applies for installing a reticulated service to new building developments, based on meter size and flow rate. Statutory guidelines on contribution charges are made under the *Water Services Act 2012*.

Appendix B Regulators' acceptance of non-market valuation

Water utilities are beginning to embrace customer engagement and NMV as a means of building business cases for WSUD projects. This section explores some recent examples and examines how economic regulators have responded to these studies. No examples from Western Australia or Queensland have been included because the economic regulators in these states do not set water utility prices, so examining evidence on 'level of influence' is not particularly instructive.

Hunter Water – Munibung Creek Rehabilitation

In its 2016 pricing proposal, Hunter Water proposed stormwater capital expenditure of $1.8 million over the 2016–20 period to help rehabilitate the Munibung Creek. The works aimed to reduce community dissatisfaction with creek pollution by removing rubbish and weeds and prevent future erosion and sediment build-up.

Benefits identified and valuation method

Direct benefits were the amenity and environmental benefits of the improved creek. An indirect benefit was the avoided risk of flooding impacts due to erosion build-up on the creek. To measure the value of these non-market benefits to residents, Hunter Water conducted a community survey of residents and businesses that were located on or near the creek. Despite conducting a community survey, Hunter Water did not provide a monetary estimate of the external benefits associated with the creek rehabilitation.

Regulator's response

IPART's consultant for the project (Jacobs Engineering Group) found the expenditure to be not prudent because it did not identify a direct link between Hunter Water's assigned driver of community dissatisfaction and IPART's allowable drivers (e.g. asset and service reliability). Jacobs also highlighted that Hunter Water is not obliged to undertake measures to prevent erosion (unless this will lead to flooding) or weed control, and that undertaking these activities are discretionary and are subject to Hunter Water demonstrating its customers' willingness to pay. While not recommending including this expenditure in its regulatory allowance, Jacobs did find Hunter Water undertook options analysis, and found the proposed expenditure to be efficient.

Ultimately, IPART deemed that the project was prudent, because:

> *a business in a competitive market would weigh up the pros and cons of negative publicity against the least cost option of addressing the problem. We consider that Hunter Water has undertaken such a process, despite not explicitly asking customers whether they were willing to fund the expenditure. We consider it appropriate to consider such matters on a case by case basis.*[35]

[35] IPART (2016) *Review of prices for Hunter Water Corporation from 1 July 206 to 30 June 2020*, Final Report, June, pp. 64–65.

Yarra Valley Water – Water efficiency programs

As part of its 2013 price submission, Yarra Valley Water conducted several customer willingness to pay studies focused on customer support for Yarra Valley Water to invest in water efficiency programs. This survey was conducted as part of Yarra Valley Water's wider focus on customer engagement.

Benefits identified and valuation method

The benefits related to improved water conservation and the benefits it would provide in the long term with expected less favourable rainfall supply into the future. Yarra Valley Water conducted a quantitative survey asked customers to rate their willingness to pay for water efficiency investment from 0–10. The other asked customers to rate their willingness to pay for water efficiency investment from 'unacceptable' to 'very acceptable'). Assessing results from this study, Yarra Valley Water identified 'strong customer support and willingness to pay' and proposed to invest $1.7 million per year on water efficiency programs.

Regulator's response

The ESC accepted Yarra Valley Water's proposed water efficiency program investment based on the support from PWC that the customer willingness to pay studies were in line with ESC guidelines and showed clear evidence of customer willingness to pay for the external benefits provided by such investment. However, the ESC lowered the allowable expenditure by approximately $29 million per year (out of around $550 million per year).[36]

Melbourne Water – Recycled water initiatives

Melbourne Water proposed capital expenditure of $25.5 million over the 2013–18 pricing period into recycled water initiatives. These initiatives included renewing the Western Treatment Plant supply channel; mechanical and electrical renewals; and a plant capacity upgrade.

Benefits identified and valuation method

The main benefits were the avoided costs of augmenting existing water supply networks and reduced dependency on rainfall. Melbourne Water consulted directly with customers about the impact of such investments on water prices (as required by ESC regulation) and conducted willingness to pay studies to identify price efficiency. However, Melbourne Water found that cost recovery prices would be higher than customer willingness to pay, due to lower customer recycled water demand and the proposed recycled water expenditures. As a result, Melbourne Water proposed annual recycled water prices (including customer willingness to pay) that were lower than cost recovery prices.

Regulator's response

The ESC removed the proposed expenditure of the capacity upgrade to the Western Treatment Plant. To support its decision, the ESC referred to PWC's recommendation to decline City West Water's proposed expenditure on a treatment plant, which Melbourne Water had cited as the main driver for the Western Treatment Plant upgrade. The ESC did not specifically acknowledge the customer engagement efforts of Melbourne Water, so it is unclear

[36] Essential Services Commission (2013) *2013-2018 Water Price Review*, Draft Decision Volume II: Yarra Valley Water, April, Melbourne, p. 10.

what influence this information had on the ESC's decision. Ultimately, the expenditure was denied because it was not deemed to be cost effective.

Melbourne Water – Activities funded through waterways and drainage charges

In 2016 Melbourne Water investigated the non-market benefits of the community driven services activities it delivers which are funded by the waterways and drainage charges. These activities address flooding, waterway condition (e.g. building wetlands, renewing urban drain environments), liveability (e.g. green spaces, walking paths) and other activities such as harvesting stormwater and rainwater.

Benefits identified and valuation method

Melbourne Water conducted two online surveys with a statistically representative sample of their Melbourne customer base, which asked customers to place value on 18 activities undertaken by Melbourne Water.

Respondents were asked to make choices using a simultaneous multi-attribute level trade-off methodology (SIMALTO). The surveys revealed the following results:

- Residential customers with a low capacity to pay value the external benefits at approximately a third of those with high capacity.
- Customers who believe they are at greater risk of flood do not show much interest in or preparedness to pay for flooding-related activities.
- Customers who are more environmentally aware do not show greater willingness to pay for waterway conditioning or pollution-abatement activities.
- Those who regularly spend time in outdoor activities are very prepared to pay for more cycle and walking paths.

Melbourne Water concluded these results indicated a broad support for the current level of investment in activities that deliver non-market benefits. Importantly Melbourne Water noted that there may be a mismatch in customer understanding or expectations in the benefits they expect to see, and the benefits realised from activities funded by the waterways and drainage charge.

Regulator's response

In its pricing determination[37], the ESC noted Melbourne Water could better align the benefits that customers receive from the desalination security service with the payments that customers make. With regard to capital expenditure for improved community assets (green space and urban cooling), the ESC found it lacked information to properly assess the extent of expected benefits to customers. In particular, it was unclear who will benefit from the green space and what the efficient distribution of those benefits across Melbourne Water's customer would be.

[37] Essential Services Commission (2016) *Melbourne Water Price Review 2016*, Final Decision, June, Melbourne.

Sydney Water – Waterway Health Program

Sydney Water proposed an investment of $18 million over the 2016–20 regulatory period in its pricing proposal to improve the health of waterways and improve amenity across three rivers.

Benefits identified and valuation method

Sydney Water argued customers would benefit from maintaining investment in the Waterway Health Program. These benefits related to improved environment and amenity: good health of waterways, increased area of planted native vegetation, recreation facilities and removal of rubbish from Sydney waterways. To assess customer willingness to pay for these benefits, Sydney Water surveyed stormwater and non-stormwater customers. Improved health of waterways mattered to most participants, and most were willing to pay between $3 and $10 per quarter to cover investment in such improvements.

Regulator's response

In its draft decision, IPART allowed the proposed capital investment into waterway health. However it did not support spreading stormwater infrastructure costs across both stormwater and non-stormwater customers, because properties outside stormwater catchment areas already pay for all stormwater costs through their local government rates or stormwater levies.

Sydney Water – Vaucluse Diamond Bay Project

Sydney Water proposed an investment of $49 million over the 2012–16 regulatory period in its pricing proposal to commence a wastewater scheme to prevent discharge of untreated wastewater from the three ocean outfalls at Vaucluse and Diamond Bay.

Benefits identified and valuation method

The benefits were improved quality of water discharged into the ocean and the associated amenity benefits. A NSW Environmental Protection Agency report noted that people often saw a pollution plume at the top of the ocean water near the discharge and that some public health risks also existed to people who use the area for recreational purposes.

To value the non-market benefits, Sydney Water conducted customer engagement surveys and forums to identify customer willingness to pay for such benefits[38]. The results revealed 87 per cent of forum customers and 65 per cent of survey customers were willing to pay $2.30 per year for the benefits the wastewater scheme would bring, which was well above current cost estimates.

Regulator's response

In its final report, IPART did not make a specific reference to the proposed capital expenditure of the Vaucluse and Diamond Bay wastewater scheme. However, it did expect deferral of $97 million worth of growth assets until the next regulatory period, which included the Vaucluse and Diamond Bay wastewater scheme.

[38] This customer engagement was undertaken in preparation for the 2019 pricing proposal, because Sydney Water will build the proposed wastewater treatment plant in the 2020-2024 regulatory period.

IPART has not yet released a draft determination for the 2020 price review, and thus has not provided a comment on the validity of the customer willingness to pay surveys. In the 2020 Issue Paper, IPART stated 'our position is that discretionary expenditure should only be recovered via regulated prices if the utility provides sufficient evidence that its customer base is willing to pay'.

SA Water – Orroroo Water Quality Improvement

As part of its business proposal for the 2016–2020 regulatory price review, SA Water sought to invest $12.6 million over the four-year period to improve water quality aesthetics and reduce salinity for customers at Orroroo, a small South Australian town.

Benefits identified and valuation method

SA Water identified significant environmental and amenity benefits of the project. It conducted a customer engagement program – Your Say – from 2014 to 2016, to identify support for investment in water quality initiatives. The survey results revealed both regional and metropolitan customers were willing to incur an additional cost of $1.30 per year.

Regulator's response

ESCOSA determined SA Water's proposal to spend $12.6 million on the Orroroo Water Improvement Project was not prudent or efficient based on the evidence presented in the submission. Around 30 towns in South Australia also had poor water quality issues, but SA Water did not identify why the Orroroo project should proceed as opposed to other water quality improvement programs elsewhere.

ESCOSA accepted the validity of the results from the customer engagement showing strong local support for the proposed project. However, SA Water did not demonstrate why the Orroroo project should be undertaken as a standalone project ahead of projects in other towns with poor quality drinking water. If SA Water undertook a prioritisation process and identified Orroroo as highest priority, then ESCOSA considered $10 million (over the regulatory period) would be prudent and efficient expenditure for the project.

Table B1 synthesises findings from these case studies. Of the seven case study projects, four had their proposed expenditures accepted while the regulator rejected the other three.

- For two of the projects that were accepted, the NMV seems to have influenced the regulator's decision. But for the other two projects, the NMV does not appear to have played a role in the regulator's decision.
- Of the projects that were rejected, factors other than the NMV evidence determined the regulator's decision. The regulator may have considered the NMV results, and the results may have influenced the outcome, but they were not the primary factor.
- In only one case did a regulator explicitly criticise the NMV methodology and question the validity of the results.

While this analysis is based on only a small sample of cases, it suggests regulators are not dismissing NMV evidence outright, and in two out of seven cases the evidence presented influenced the regulator's decision to allow the project expenditure.

Table B1: Summary of evidence on the influence of NMV

Project	Regulator's determination
Hunter Water – Munibung Creek Rehabilitation	Accepted, but NMV was not influential
Yarra Valley Water – Water efficiency programs	Accepted, and NMV was influential
Melbourne Water – Recycled water initiatives	Rejected, but for reasons other than NMV
Melbourne Water – Drainage and waterway health improvements	Rejected the NMV results
Sydney Water – Waterway Health Program	Accepted, and NMV possibly influential
Sydney Water – Vaucluse Diamond Bay Project	Accepted, but for reasons other than NMV
SA Water – Orroroo Water Quality Improvement	Rejected, but for reasons other than NMV

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