



Improving economic regulation of urban water

A REPORT PREPARED FOR THE WATER SERVICES ASSOCIATION OF AUSTRALIA

August 2014

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Executive summary

Key messages

This report contains a detailed analysis of economic regulation of the urban water industry in Australia. It finds that:

- The current arrangements for economic regulation of the urban water industry in Australia have some significant shortcomings when compared to best practice.
- The most fundamental problems are the lack of independent economic regulation in some jurisdictions, unclear or conflicting remits given to regulators, and inadequate rights of review of regulatory decisions. This undermines the certainty needed for long-term planning and also means that current arrangements are not sufficiently robust to support more extensive private sector involvement.
- There is no ‘silver bullet’ regulatory approach to achieve the underlying objectives of economic regulation while simultaneously minimising compliance and other costs. There are likely to be trade-offs between the alternatives so that the best approach will depend on views on these trade-offs and the particular circumstances applying in specific jurisdictions.
- There is considerable scope to improve current arrangements with a particular focus on:
 - Enshrining the role of economic regulators as genuinely independent decision-makers with powers to make binding determinations
 - Less prescriptive approaches: water businesses are best-placed to understand customers’ needs and demands, and economic regulators should not impose inflexible arrangements, especially as competition emerges
 - Reducing unnecessary regulatory burden: while the costs of economic regulation need to be kept in perspective, there are opportunities to reduce the costs associated with current arrangements
 - Providing more high-powered incentives: the long-standing problem of information asymmetry faced by economic regulators is likely to be best addressed through designing incentives for regulated businesses to act appropriately based on their knowledge rather than regulators seeking more and more detailed information
 - Strengthening accountability: particularly by clarifying regulatory objectives and providing for independent review of regulator’s decisions.

- There is a need to re-focus on the appropriate role of economic regulation relative to policy formulation, service provision, and governance (in particular the shareholder role).

Background

Independent economic regulation of utility businesses was a key plank of a major pro-competitive microeconomic reform program in Australia commencing in the 1990s. It has been progressively applied to the urban water sector in Australia in each State and Territory. Independent economic regulators now have jurisdiction over the publicly-owned water utilities in NSW, Victoria, WA, SA, the ACT, Tasmania and the NT (although the precise arrangements and degree of independence vary significantly). The future arrangements for SEQ are currently under review.

Better economic regulation has many potential positives for regulated businesses by providing clearer price paths to support long-term planning, and reducing scope for arbitrary political intervention in price setting and business planning. It has also brought significant benefits to customers. However, it also entails significant costs and it is therefore vital to ensure that economic regulation is applied in a way which maximises its net benefits.

At present WSAA believes that the consistency, predictability and transparency of economic regulation of urban water across Australia needs to be improved to ensure that it delivers outcomes that are in the long-term interests of customers. Potential deficiencies identified by WSAA include:

- unstable price paths with volatile increases and decreases in prices to customers. Some price determinations have exposed customers to potential future price shocks or reductions in service levels while placing some utilities under financial stress over the longer term
- prescriptive approaches to regulation which may inadvertently discourage efficiency and innovation
- an increasing burden associated with participating in regulatory processes
- arrangements which do not provide the certainty and consistency to support greater private sector investment and adoption of new business models for which investors will be seeking an appropriate rate of return
- insufficient accountability of regulators for their decisions
- lack of cohesive regulatory frameworks and supporting instruments for effective competition in potentially contestable parts of the industry
- lack of consistency across jurisdictions.

More broadly, there is a need to ensure that the regulatory framework for the urban water industry is able to evolve to address the specific issues and future

challenges faced by the urban water industry in Australia. These include the inherent uncertainty of inflows and the potential impacts of climate change, the recognition and treatment of broader costs and benefits associated with urban water supply around the issue of liveability, and policy initiatives directed towards greater competition and diversity of supply sources.

Approach to this review

Against this background, WSAA engaged Frontier Economics to review economic regulation of the urban water industry in Australia and to identify improvements that would be in the long-term interests of customers. This review seeks to:

- set out the objectives and rationale for economic regulation of urban water
- determine the extent to which the objectives are being achieved
- identify elements of a best practice model of economic regulation that align with the stated objectives and rationale
- assess the current state of the arrangements for economic regulation of the water industry against the best practice mode.
- identify the changes necessary to align with best practice.

This report provides a comprehensive analysis of the state of economic regulation of the Australian urban water industry and how it measures up against a best practice model. This best practice model, developed through drawing on the literature and practical experience with economic regulation in the Australian water industry, other utility sectors in Australia and the UK water sector, identifies 'best practice' in each of four broad elements of economic regulation, namely:

- governance arrangements
- broad approaches and methodologies for regulation
- regulatory decision-making processes
- instruments of regulation.

Assessment against best practice

While recognising that the current regulatory arrangements in some jurisdictions are currently under review, for the purpose of this report we have assessed the regulatory arrangement as they currently exist. Our assessment is summarised in the following tables.

Table 1: Governance arrangements

Area	Best practice	Assessment of current arrangements
Regulatory objectives and principles	<ul style="list-style-type: none"> • Are clearly specified in legislation or regulation and as far as possible, are non-conflicting. Where objectives are potentially conflicting, there should be some formal direction to guide the regulator in how to make trade-offs between objectives. • Give primacy to the long-term interests of customer and efficient investment. 	<ul style="list-style-type: none"> • While some economic regulators responsible for economic regulation of urban water have clear objectives consistent with best practice, others have multiple, conflicting objectives
Institutional form, structure and organisational capacity	<ul style="list-style-type: none"> • The economic regulator should be an independent body clearly at arms-length from government, should be governed under its own Act and report to a Minister not responsible for the sectors they are regulating • The economic regulator should have a separate board (commission/tribunal) for decision making • The economic regulator should have adequate resourcing and staffing levels including staff trained in economics 	<ul style="list-style-type: none"> • While the State-based economic regulators which oversee the urban water sector are already established as arms-lengths bodies from government, the independence from government has not always been maintained in respect to regulatory decisions. • The economic regulators have separate commissions established for decision-making • With one exception, water businesses consulted as part of this review generally felt the economic regulators have sufficient resources to undertake their activities in regulating the urban water sector
Powers and functions	<ul style="list-style-type: none"> • Economic regulators should have powers to regulate activities which are supplied under conditions of market power but decisions on the scope of the regulator's jurisdiction should be made by policymakers (i.e. government) • Economic regulators should have deterministic powers rather than being a recommendatory body • The jurisdiction of the economic regulator should be sufficiently broad to allow for comprehensive and consistent regulation of the services being provided. 	<ul style="list-style-type: none"> • The extent to which current arrangements for economic regulation of the urban water industry meets best practice in this area is somewhat mixed. • Most economic regulators do have powers to regulate services which are provided under conditions of market power, and this power has been appropriately bestowed on them by government. • While economic regulators in NSW, Victoria, South Australia, the ACT and Tasmania have deterministic powers, notable exceptions are in Western Australia and the NT where final

Area	Best practice	Assessment of current arrangements
	<ul style="list-style-type: none"> ● Clearly defined powers and functions necessary to undertake their role and achieve the regulatory objectives should be set out in legislation and should typically include: <ul style="list-style-type: none"> □ determination or oversight of the prices and service levels provided by monopoly suppliers □ licensing of suppliers as a means of monitoring and enforcing compliance with these service levels/prices □ overseeing competition in contestable elements of these industries (e.g. via regulation of third party access to essential facilities). 	<p>decisions on prices/service standards are made by the Government.</p>
Review and appeals mechanisms	<ul style="list-style-type: none"> ● Independent merits review (based on a re-hearing) on clearly specified grounds should be available to both businesses and customers ● The appeal body should be independent from the regulator and government and be drawn from a panel of experts when required 	<ul style="list-style-type: none"> ● At present the review and appeals mechanisms applying to regulatory decisions in the urban water sector fall far short of best practice. ● While judicial review of decisions by economic regulators is available under common law, this is very limited and does not provide sufficient accountability for regulatory decisions. Somewhat broader appeals mechanisms are available in the ACT and Victoria.
Congruence with broader government policy	<ul style="list-style-type: none"> ● All regulators should be explicitly empowered and required to cooperate with other bodies where this will assist in meeting their common objectives ● There should be regular reviews of the economic regulatory framework itself. 	<ul style="list-style-type: none"> ● Reviews of the regulatory frameworks in Victorian and SEQ respectively are currently being undertaken by the Office of Living Victoria and the QCA. ● The frameworks in South Australia and Tasmania are relatively new.

Table 2: Broad approaches and methodologies for regulation

Area	Best practice	Assessment of current arrangements
Alternative approaches and forms of regulation	<ul style="list-style-type: none"> ● The framework within which the economic regulator operates should not preclude the adoption of alternative approaches to regulation which are most likely to achieve the regulatory objectives ● Economic regulators periodically seek feedback on and review their broad approaches to regulation with a view to identifying ways to improving it, and in particular to: <ul style="list-style-type: none"> □ minimise the level of prescription wherever possible □ minimise the regulatory burden by ensuring benefits of regulation outweigh the costs ● Economic regulators should apply a financeability test as a sense check on proposed prices. 	<ul style="list-style-type: none"> ● The approach adopted to economic regulation by most economic regulators of the urban water sector in Australia is the CPI-X building block approach. ● There appear to be some aspects of the legislative arrangements which limit the discretion of economic regulators to adopt alternative approaches ● There do not appear to have been any comprehensive 'stand-back' reviews of the sort recently undertaken by economic regulators in the UK. ● None appeared to have contemplated significant changes to the building block approach such as 'menu regulation' or fast-tracking. ● Some regulators have however reconsidered at least parts of their current approaches (e.g. IPART has recently re-considered its approach to WACC). ● IPART and the ESC have considered the use of financeability tests as part of their approach. Other regulators do not appear to undertake such financeability tests, and in this regard fall short of best practice.

Table 3: Regulatory decision making processes

Area	Best practice	Assessment of current arrangements
Price review and other decision making processes	<ul style="list-style-type: none"> • The regulatory process should show consideration for cost-effectiveness, including cost reporting by the regulator. • The economic regulator should adopt an approve/reject framework • The level of consultation undertaken during the review process should be adequate and inclusive • The economic regulator should undertake a transparent process including clear specification of the rationale underlying any regulatory decisions • Economic regulators should propose and consult on draft decisions. 	<ul style="list-style-type: none"> • Those Australian jurisdictions that have deterministic economic regulation generally follow set procedures that allow for consultation on draft decisions and facilitate consultation throughout the review • Victoria appears to be the only jurisdiction in Australia that has explicitly adopted an approve/reject framework. NSW, SA, ACT and Tasmania do not appear to have approve/reject frameworks.
Setting service standards	<ul style="list-style-type: none"> • Service standards should be clearly specified/well defined, measurable, and meaningful • Changes in customer service standards overseen by economic regulators should be subject to willingness to pay assessments • Regulators or agencies making decisions on standards to apply to water and related services should fully comply with RIS requirements. 	<ul style="list-style-type: none"> • Economic regulators such as IPART and the ESC require clear evidence that regulated water businesses have consulted with customers before they will approve 'discretionary' spending that goes beyond meeting the minimum obligations. • However, some businesses contended that some licence conditions had by-passed sound cost-benefit analysis.
Stakeholder engagement	<ul style="list-style-type: none"> • Procedures and mechanisms for engagement with regulated entities and other stakeholders should be institutionalised as consistent transparent practices • Economic regulators should clearly articulate their expectations for water businesses' consultation in developing their pricing submissions. 	<ul style="list-style-type: none"> • In recent years economic regulators have placed increasing emphasis on the importance of businesses engaging with customers in developing their regulatory proposals.
Interaction between regulators	<ul style="list-style-type: none"> • Formalised and transparent procedures for consultation between economic regulators and regulators responsible for other matters including protection of the environment, public health, and safety • Recognition from other regulators of the regulatory cycle (regulatory periods and price reviews) 	<ul style="list-style-type: none"> • A number of economic regulators have established formal and transparent procedures for consultation with other regulators. • However, there appears to be significant scope for improving the interaction between regulators in the context of price review processes.

Table 4: Instruments of regulation

Area	Best practice	Assessment of current arrangements
Form of price control	<ul style="list-style-type: none"> • Appropriate and well-defined forms of price control are applied to meet the relevant circumstances (with a strong case for revenue caps where there is significant uncertainty over demand) 	<ul style="list-style-type: none"> • While price caps appear to be the default form of price regulation for water businesses there are examples where regulators have approved revenue caps for individual businesses.
Regulation of tariff structure	<ul style="list-style-type: none"> • Economic regulators should take a light handed approach that allows businesses the flexibility to design tariff structures that meet the needs of their customers 	<ul style="list-style-type: none"> • In contrast to the ESC’s light-handed approach the NSW regulator IPART takes a much more prescriptive approach.
Incentive and risk sharing mechanisms	<ul style="list-style-type: none"> • Clearly specified incentive mechanisms that allow businesses to capture the gains of late-term investments in productivity • Clearly specified incentive mechanisms based on observable/measurable outcomes that provide for increased service standards • Clearly specified and appropriately defined re-opening mechanisms for unanticipated events • Appropriate pass-through mechanisms for known but uncertain expenditures 	<ul style="list-style-type: none"> • Incentive mechanisms such as efficiency carryover mechanisms do not appear to have been implemented in the water sector in any of the Australian jurisdictions. • Some economic regulators of urban water in Australia have implemented service quality mechanisms, particularly GSL schemes • Pass-through mechanisms have been implemented or are under consideration in a number of jurisdictions.
Operating licences	<ul style="list-style-type: none"> • Clearly specifies the obligations and performance targets imposed on the business, adopts a risk-based approach, and is subject to periodic review 	<ul style="list-style-type: none"> • Most Australian regulators have an administrative role in the granting, monitoring and revoking of operating licences for water businesses. The two exceptions are the ESC in Victoria and the QCA in Queensland. • While no jurisdiction has a framework explicitly based on risk, a number of jurisdictions have adopted approaches that differentiate between licensed activities based either on scale or ownership.

Area	Best practice	Assessment of current arrangements
Compliance monitoring and enforcement	<p>Monitoring frameworks should:</p> <ul style="list-style-type: none"> ● Seek to limit the burden on businesses by being consistent with existing reporting requirements, adopting a risk based approach, and allowing for some degree of self review and audit. ● Be subject to periodic review to ensure suitability to changes in circumstance and to try and minimise burdens on businesses <p>Enforcement frameworks should:</p> <ul style="list-style-type: none"> ● Be simple and easily understood and enforced consistently in a predictable and non-discriminatory manner through decision making processes and decisions which are transparent to the both businesses and customers ● Be proportional — use a risk-based approach as far as possible. 	<ul style="list-style-type: none"> ● The monitoring frameworks adopted by economic regulators in the urban water sector vary in their comprehensiveness and approach. ● The economic regulators in some jurisdictions have developed detailed documents or guidelines aimed at informing businesses of how they intend to undertake both their enforcement roles and any related enforcement actions.

Recommendations

Addressing these gaps will require actions from government, economic regulators, and water businesses.

Moving towards best practice will require legislative changes in some jurisdictions, the most important being to provide economic regulators with deterministic powers to regulate prices and service standards in those jurisdictions where this is not already the case (WA and NT); to clarify regulatory objectives and provide greater guidance on trade-offs; and to provide for a limited merits review of decisions by economic regulators. State Governments should also ensure that cost-benefit analysis and rigorous RISs are undertaken in regard to standards set by other regulators.

There is a range of actions which economic regulators could take that would improve economic regulation of the sector and should more effectively achieve the underlying objectives. These include:

- Undertaking periodic ‘step back’ reviews of their broad approaches and methodologies for economic regulation with a view to adopting approaches which would reduce prescription and regulatory burden.
- Undertaking financeability tests as a matter of course.
- Considering potential adjustments to methodologies adopted in applying the building blocks model, including:
 - setting a WACC based on a longer-term view
 - using totex rather than capex and opex
 - alternative approaches to scrutinising capex and opex
 - greater focus on material issues.
- Adopting appropriate forms of price control that suit the particular circumstances, with a strong case for a revenue cap where there is significant demand risk.
- Seeking to include more incentive and risk sharing mechanisms in their regulatory controls such as longer regulatory periods, efficiency carryover mechanisms, and service efficiency mechanisms.

Finally, there are some actions which urban water businesses themselves could take to improve economic regulation of the sector. These include improving customer engagement processes, improving the quality of their regulatory submissions and ensuring that each business institutes internal reporting and accounting processes which integrate into regulatory process requirements.

1 Introduction

1.1 Contextual background

Independent economic regulators now have jurisdiction over the publicly-owned water utilities in NSW, Victoria, WA, SA, the ACT, Tasmania and the NT (although the precise arrangements and degree of independence vary significantly). The future arrangements for SEQ are currently under review.

Better economic regulation has many potential positives for regulated businesses by providing clearer price paths to support long-term planning, and reducing scope for arbitrary political intervention in price setting and business planning. The National Water Commission found that the independent oversight of water businesses by independent economic regulators has been and continues to be a major driver of improved productivity and service standards by water businesses.

While there have been clear benefits from the introduction of economic regulation to the sector relative to direct price setting by government, this does not preclude the scope for improvement in its design and operation. Economic regulation can and does have a pervasive impact on the way in which urban water businesses invest and operate and it is therefore vital that the regulatory framework achieves its underlying objectives in a cost-effective manner. WSAA (2013a) have therefore identified that regulatory arrangements that promote efficiency and productivity through transparent predictable outcomes is a prerequisite to achieving the strategic outcomes for the industry espoused in its recent *Vision & outcomes to 2030*.

At present WSAA believes that the consistency, predictability and transparency of economic regulation of urban water across Australia needs to be improved to ensure that it delivers outcomes that are in the long-term interests of customers. Potential deficiencies identified by WSAA include:

- unstable price paths with volatile increases and decreases in prices to customers. Some price determinations have exposed customers to potential future price shocks or reductions in service levels while placing some utilities under financial stress over the longer term
- prescriptive approaches to regulation which may inadvertently discourage efficiency and innovation
- an increasing burden associated with participating in regulatory processes
- arrangements which do not provide the certainty and consistency to support greater private sector investment and adoption of new business models for which investors will be seeking an appropriate rate of return
- insufficient accountability of regulators for their decisions

- lack of cohesive regulatory frameworks and supporting instruments for effective competition in potentially contestable parts of the industry
- lack of consistency across jurisdictions.

More broadly, there is a need to ensure that the regulatory framework for the urban water industry is able to evolve to address the specific issues and future challenges faced by the urban water industry in Australia. These include the inherent uncertainty of inflows and the potential impacts of climate change, the recognition and treatment of broader costs and benefits associated with urban water supply around the issue of liveability, and policy initiatives directed towards greater competition and diversity of supply sources. It will be important that as far as possible the regulatory regime and the prices which it sets ensures a level playing field that enable new entrants to emerge where they can better serve particular needs but does not unnecessarily inhibit incumbents' ability to compete. It is important that regulatory models applied in the urban water sector reflect emerging trends in best practice in other sectors and jurisdictions.

1.2 Purpose and scope of this report

Against this background, WSAA has engaged Frontier Economics to review economic regulation of the urban water industry in Australia and to identify improvements that would be in the long-term interests of customers. This review is to:

- Set out the objectives and rationale for economic regulation of urban water.
- Determine the extent to which the objectives are being achieved.
- Identify elements of a best practice model of economic regulation that align with the stated objectives and rationale.
- Assess the current state of the water industry economic regulation against the best practice model.
- Identify the changes necessary to align with best practice.

This report undertakes a systematic and robust analysis of the current state of economic regulation in the urban water sector in Australia leading to a clear articulation or vision of what 'best practice' regulation would look like.

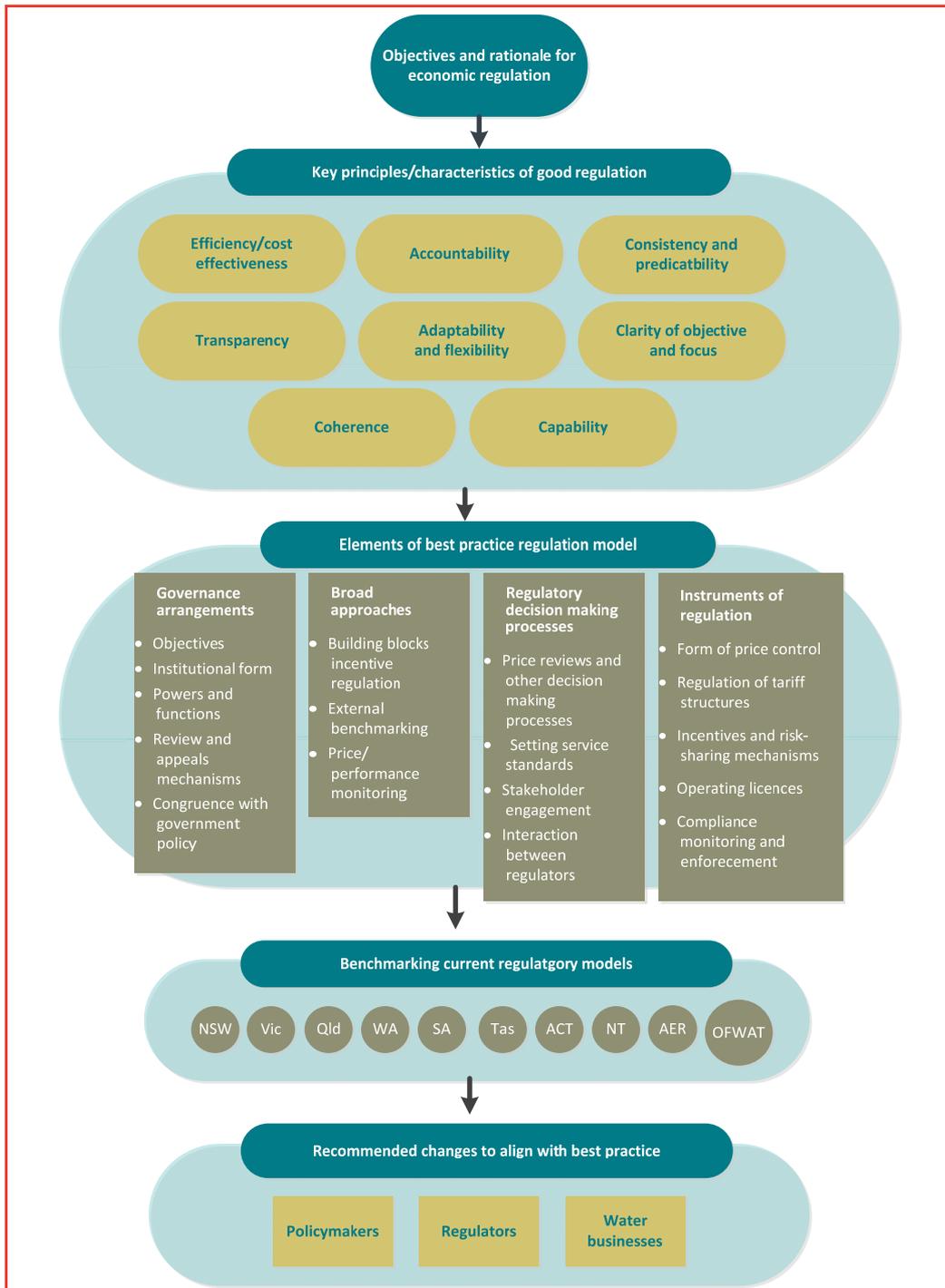
The potential scope of issues that could be addressed in a review of regulatory frameworks is very large, ranging from high-level institutional design to detailed matters of process and price-setting methodologies. We have focused on those areas that are likely to deliver the broadest benefits across all water businesses. This means that we have focused on the higher-level aspects of the regulatory framework, such as the appropriate governance and appeal arrangements for regulatory decisions, rather than on detailed methodological issues, such as how

specific WACC parameters should be estimated. The form of pricing of water is outside the scope of this project.

1.3 Framework for analysis

We have developed a framework for structured analysis of the issues (see Figure 1) to ensure that the report focuses on the elements that matter most, and to present a cohesive vision of a 'best practice' regulatory model.

Figure 1: Framework for analysis



Source: Frontier Economics.

The schematic illustrates that the starting point for designing or assessing any regulatory framework is to clearly articulate its underlying rationale and objectives which it is seeking to achieve. Given that regulation can be seen as a proxy for competitive markets, this objective is around the long-term interests of

customers with regard to the price and quality of services, which in turn encompasses the efficient investment in and operation of water infrastructure.

The second step is to identify key guiding principles for the development of the best practice economic regulation model.

These guiding principles then need to be translated into specific practical elements of economic regulation in order to identify a ‘best practice’ regulatory model that is most likely to meet the underlying policy objectives. Drawing on the literature and practical experience with economic regulation in the Australian and UK water industries and in other utility sectors, we have articulated a view of ‘best practice’ in each of four broad elements of economic regulation:

- governance arrangements for the economic regulator
- broad approaches and methodologies adopted by the economic regulator
- regulatory decision-making processes
- the instruments of regulation.

1.4 Conduct of this study

This review has been undertaken through desktop analysis, a literature review drawing on experience in a range of other utility sectors, and through consultation with WSAA members.

1.5 Structure of this report

The remainder of this report is structured as follows:

- Section 2 identifies the underlying objectives of economic regulation and undertakes a high-level assessment as to whether these have been achieved.
- Section 3 identifies key principles of effective regulation and outlines our approach to defining best practice for economic regulation of the urban water sector.
- Sections 4 to 8 articulate best practice economic regulation for urban water in Australia and assess current arrangements in each of the four broad elements identified above.
- Section 9 contains recommendations for improving economic regulation of the water sector in Australia to more closely reflect best practice.

2 Objectives of economic regulation

2.1 Underlying rationale and objectives of economic regulation

Economic regulation of utility businesses was a key plank of a major pro-competitive microeconomic reform program in Australia commencing in the 1990s. In the context of utility industries such as water, economic regulatory functions typically entail:

- determination or oversight of the prices and service levels provided by monopoly suppliers
- licensing of suppliers as a means of monitoring and enforcing compliance with these service levels/prices
- overseeing competition in contestable elements of these industries (e.g. via regulation of third party access to essential facilities).

Economic regulation aims to promote effective competition where this is possible, and to reproduce the disciplines otherwise provided by competition, where it is not feasible to introduce competition. In particular where network effect and/or economies of scale gives rise to natural monopoly, economic regulation seeks to ensure that monopoly businesses do not earn monopoly profits or provide sub-standard services, but does enable them to cover the efficient costs of operating and maintaining the network assets¹. As discussed in more detail in section 4.2 below, it is widely accepted that this translates into regulatory objectives to protect the long-term interest of customers through promoting efficient investment in and operation of, network assets. This objective includes ensuring prices and service standards are appropriate and that businesses are financially sustainable.

The rationale for economic regulation is typically seen as valid even where the monopoly service provider is a publicly-owned utility. While the profit motive that might drive private monopolies to exploit customers may not apply to publicly owned utilities, the monopoly position of a publicly owned utility may nevertheless blunt its incentives to maximise efficiency and/or encourage it to 'gold-plate' its activities. In the case of government-owned water businesses, concerns may be about under-pricing rather than over-pricing. In this regard the Productivity Commission (2011) has observed:

¹ We note that there are alternative theories on the rationale for economic regulation. For example, Biggar (2009) hypothesises that natural monopoly regulation exists to protect sunk investments made by consumers of the regulated firm.

Independent economic regulation of urban water utilities has been seen as important in the absence of competitive markets because the alternative has been high levels of interference in pricing. This has meant prices have often been set at levels well below cost recovery levels, possibly leading to inefficiently high water consumption and probably resulting in underinvestment and deferred maintenance.

2.2 Have the objectives been achieved?

The National Water Commission (2011) found that the independent and oversight of water businesses by independent economic regulators has been and continues to be a major driver of improved productivity and service standards by water businesses. In the words of one Victorian water business:

The Victorian water industry has been under economic regulation since 2005 and this has resulted in the following benefits to customers:

- creation of business cases for improved customer service outcomes through willingness to pay customer research – that is, customer preferences and specifically willingness to pay drives service standards
- improved internal planning processes particularly associated with investment planning including the need to take a medium to long term perspective rather than the previous annual approach
- more robust consultation with our customers and stakeholders on the outcomes we are planning to achieve and on our investment plans
- setting benchmark levels for efficient operating and capital expenditure
- broken the nexus between government ownership of utilities and government setting prices.

2.2.1 Outcomes for customers

In terms of outcomes for customers the two primary measures are prices and service standards. CUAC (2014) made the following observations of the ESC's 2013-18 water price review of the Melbourne metropolitan water businesses:

As water is the most essential of all services, an independent regulator to ensure that pricing is fair and efficient and – through a robust monitoring, enforcement and compliance regime – that consumers are appropriately protected, and water quality and reliability is optimised, is critical. The Commission has shown itself to be effective in this regard. For example, key aspects of its role in the recent 2013-18 Victorian water price review included:

- Minimising price rises without compromising service levels
- Ensuring water businesses continue to pursue service and operational efficiency improvements
- Considering whether businesses have understood customers' expectations and willingness to pay for different service offerings; and
- Ensuring the financial viability of the water entities.

Measuring the impact that economic regulation has had on the outcomes for urban water and sewerage customers is problematic. It is difficult to identify and quantify the impact of regulation when we cannot directly observe what the outcomes would have been had there been no regulation. While we can make the observation that prices under a regulatory framework may have increased over time, we cannot observe exactly what the prices would otherwise had been. Prices may have increased under regulation, but they may have increased at a rate lower than they would have otherwise. Such an outcome was outlined by the CUAC (2014) in a recent submission regarding the ESC:

In their final decision for the Greater Metropolitan water businesses, the Commission identified \$1billion in savings, resulting in price rises for Victorian consumers of between 12 and 25 per cent over the regulatory cycle, instead of up to 32 per cent as originally proposed by the water businesses.(CUAC, 2014)

While it is difficult to quantify the impact of economic regulation, it is possible to make observations regarding how prices and service standards have changed over time and how these changes may have occurred under different regulatory regimes. We can also note the price outcomes that businesses have proposed to regulators. The difference between these proposals and the regulators' decisions provides some indication of the potential impact of regulation on prices².

Service Standards

Reported in Table 5 below are the average annual compounding growth rates for a set of four indicative service standards based on water and sewerage. These service standards have been chosen as representative of broad levels of service provision. They are not fully illustrative of all service provided by businesses.

Based on these representative standards it would generally appear that businesses have been improving or maintaining standards over the period, although there are some mixed results. It would also appear that those businesses subject to deterministic economic regulation for the period (ACT, NSW, VIC) appear to have produced service standard outcomes that are better than those under recommendatory frameworks such as that in WA.

² This type of analysis is indicative only. We are mindful that the actual price outcomes under alternative governance frameworks that did not include economic regulation would potentially differ from those price outcomes put forward by businesses in their proposals to economic regulators.

Table 5: Average annual change in service standards 2006-07 to 2012-13

State	Business	Main Breaks ^a	Duration of water interruption ^b	Frequency of water interruption ^c	Duration of sewerage interruption ^d
ACT	ACTEW	-14%	4%	-4%	3%
NSW	Hunter Water Corporation	-3%	-4%	-7%	0%
NSW	Sydney Water Corporation	-3%	1%	n.a. ^e	n.a. ^e
NT	Power and Water	-14%	n.a. ^f	n.a. ^f	n.a. ^f
SA	SA Water (Adelaide)	-7%	n.a. ^f	n.a. ^f	n.a. ^f
Vic	City West Water	-22%	0%	-11%	-6%
Vic	South East Water	-8%	0%	-1%	-20%
Vic	Yarra Valley Water	-17%	4%	-3%	-1%
WA	Water Corporation (Perth)	0%	2%	11%	n.a. ^f
WA	Water Corporation (Albany)	1%	6%	0%	n.a. ^f

Source: Frontier Economics, National Performance Report for Urban Water Businesses 2012-13

Notes: ^a Water main breaks (no per 100km of water main). ^b Average duration of an unplanned interruption – water (minutes). ^c Average frequency of unplanned interruptions – water (no per 1000 properties). ^d Average sewerage interruption (minutes). Average annual change is measured as the compounding rate of change over the seven year period from 2006-07 to 2012-13. ^e The NPR data does not appear to be consistently reported over the period. ^f Adequate data was not available. A complete series of data covering the time period was not available for Queensland Urban Utilities or for Gold Coast City Council. Consolidated data was also not available for TasWater.

Key observations from the data reported in Table 5 include:

- the number of mains breaks per 100kms of main has decreased significantly over the last seven years
- the duration of water interruptions is either maintained or slightly increasing
- the frequency of water interruptions has declined significantly in regulated jurisdictions
- there is insufficient data on the duration of sewerage interruptions to draw firm conclusions but in Victoria these have declined significantly and in NSW have been maintained.

While it is not possible to draw definitive conclusions from this analysis it does not any material decrease in service standards in those jurisdictions that are regulated - if anything there may be slight improvement.

Prices

It is also difficult to quantify the impacts that economic regulation have had on pricing outcomes. One way in which it is possible to obtain a broad impression of the impact of regulation on prices is to compare the prices proposed by businesses in their submission to regulators with those prices ultimately approved by regulators in their final decisions.

Such comparisons should give some indication of the impact that regulators have had on price outcomes. However, we do note that the prices proposed by businesses are not necessarily those that they would have adopted in the absence of a regulator. The table below outlines the difference between businesses' proposed revenue requirements and those actually approved by the relevant regulator in the most recent price determination for each of the listed businesses. It is reasonable to assume, holding demand constant, that the lower the revenue requirement the lower the associated prices.

Table 6: Proposed and approved regulated revenues

State	Business	Proposed Revenue (\$m)	Approved Revenue (\$m)	Difference
ACT	ACTEW	718.2	530	-26%
NSW	Hunter Water Corporation	2,233.30	2,109.00	-6%
NSW	Sydney Water Corporation	10,471.80	9,243.80	-12%
NT	Power and Water			
SA	SA Water (Adelaide)			
Vic	City West Water	3,157.2	2,917.5	-8%
Vic	South East Water	4,560.5	4,210.1	-8%
Vic	Yarra Valley Water	4,936.6	4,569.7	-7%

Source: ICRC Price Direction 1 July 2013 to 30 June 2019. IPART Water - Final Report June 2013. IPART Water – Final Report 2012. ESC Price Review 2013: Greater Metropolitan Water Businesses — Final Decision.

Notable omissions from the table include the Queensland businesses, SA Water and the WA Water Corporation. The Queensland businesses have recently been

operating under price caps that have been imposed by Government. These caps have generally allowed for revenue outcomes that are less than those included by the regulator (QCA) in their relevant Maximum Allowable Revenues (MARs). Water Corporation is not included in the table on the basis that the WA regulator ERA is recommendatory and not deterministic. SA Water is not reported because at the time that it developed its proposal its regulatory asset base had no formal valuation. However, we do note that ESCoSA made a number of amendments to both the capital expenditure and operating expenditure proposed by SA Water that would ordinarily lead to lower pricing outcomes.

Nevertheless, the pricing outcomes reported in Table 6 are consistent with the contention that economic regulation has provided customers with lower prices than they otherwise would have faced. This is not to overlook the fact that there have been significant overall price increases in recent years driven predominantly by the major investment in water security assets and compliance with environmental and public health standards.

2.2.2 Efficient investment in and operation of infrastructure

Another key objective of economic regulation is to ensure that regulated businesses invest efficiently in long-term infrastructure and other assets and that they operate efficiently. This is a necessary prerequisite to ensuring that customers are provided with the services that they want at lowest long-term cost.

As with service standards and pricing outcomes, it is inherently difficult to quantify the impact that economic regulation has had on levels of efficient investment in the water sector.

It is possible to make some broad observations. The first is that if economic regulation has generally kept prices lower than they otherwise would be and service standards have generally been either maintained or improved, this would imply that economic regulators may have had a positive impact on efficiency. This is because businesses are delivering the same services or better services for prices lower than they otherwise would. ESCOSA, writing in 2008, noted that under the then regulatory arrangements, whereby prices were set by Government, suggested that incentives to drive efficiency gains in the regulated business were largely absent:

The current regulatory arrangements for SA Water are heavily reliant on parties such as the Minister, Cabinet and PWC being sufficiently informed as to the merits of investment and pricing proposals, alternative options considered, and the practicality of alternative options. ...The approach does not create a positive incentive for SA Water to seek out more cost savings, particularly where such cost savings may be difficult to achieve. This is not to suggest that SA Water is becoming less efficient... But the Commission contends that the current arrangements provide weak incentives for efficiency gains, given the likelihood that the business will either lose the benefits of efficiency gains, or be compensated for efficiency reductions, at the time of the next price adjustment... The Commission also notes that the current arrangements

contain no explicit linkage between the service to be delivered by SA Water to its customers (quality of water supply, responsiveness to supply interruptions, customer service etc) and the prices to be charged to those customers. The regulatory arrangements should provide an incentive for SA Water to at least maintain, if not improve, agreed service levels.

The second broad observation is that the general regulatory practice of reviewing capital expenditure for both prudency and efficiency is consistent with the processes and procedures (such as cost benefit analysis) that underlie efficient investment.

Despite the difficulties in making firm conclusions, there is evidence that economic regulation of urban water businesses in Australia has supported water business' efforts to invest and operate efficiently, relative to the counterfactual of a regime where water businesses were regulated directly by government. Table 7 reports the difference between the capital expenditure proposed by business and that approved by the relevant regulator in the most recent review undertaken by each business. The difference provides some indication of what capital expenditure may have been in the absence of the regulator. However, as with pricing and service outcomes, we note that this difference is indicative only.

Table 7: Proposed and approved capital expenditure

State	Business	Proposed capital expenditure (\$m)	Approved capital expenditure (\$m)	Difference
ACT	ACTEW	153.3	152.7	-0.4%
NSW	Hunter Water Corporation	299.3	299.3	0.0%
NSW	Sydney Water Corporation	3,007.0	2,553.3	-15%
NT	Power and Water			
SA	SA Water (Adelaide)	1,148.6	962.6	-16%
Vic	City West Water	794.8	678.8	-15%
Vic	South East Water	1,134.7	1,135.5	0%
Vic	Yarra Valley Water	1,147.1	1,147.1	0%
Vic	Melbourne Water	2,457.1	2,409.1	-2%

Source: ICRC Price Direction 1 July 2013 to 30 June 2019. IPART Water - Final Report June 2013. IPART Water – Final Report 2012. ESC Price Review 2013: Greater Metropolitan Water Businesses — Final Decision.

There are many examples where economic regulators have disallowed the costs of proposed capital investments which they have deemed not to have been demonstrated to be prudent or efficient.

The Productivity Commission in a 2011 inquiry found that there was inefficient investment in the augmenting of water supplies in most of Australia's largest cities. The Commission calculated the associated costs to be over \$3 billion. The Commission (2011) argued that:

Although some of the recent investment in desalination plants ... might have been appropriate in the circumstances to maintain security of supply, there is sufficient evidence available to conclude that many projects could have been deferred for a number of years, smaller in scale, or replaced with investment in lower-cost sources of water. Although the Commission found potentially inefficient investment it did not identify economic regulation as the driver:

The causes of poor project selection can be many and varied. In the case of urban water, unclear roles and responsibilities, policy prohibitions on particular supply options, deficiencies in analysis of options and grants/subsidies provided by governments were involved.

Indeed, it needs to be recognised that many capital investment decisions in the Australian urban water industry, particularly those associated with providing water security during the drought, have been made directly by government and have largely by-passed the economic regulatory process. As noted by the NWC Future Directions Report (2011):

Another gap in the coverage of economic regulation relates to the scrutiny of major investment decisions made by governments (such as water security investments made in response to the drought), notwithstanding that those decisions account for most of the increase in costs and hence price increases to customers.

2.2.3 Financial viability of regulated businesses

One of the primary concerns of regulators should be to ensure that the regulatory framework and regulatory decisions do not undermine the financial viability of regulated businesses. Recently there has been some public concern regarding the financial viability of water businesses. As noted by the NSW Commission of Audit (2012):

However under the IPART Act the objectives set for IPART are not clear and over time the weight that the Tribunal has placed on commercial outcomes in comparison to consumer price reductions has varied. While IPART has focussed on efficient operations and efficient capital spending they have paid less attention to what an optimal capital structure would be for each utility. This has in turn led to little focus on the cost of borrowing and the return on equity, and insufficient focus on the significantly impaired asset values. Possibly because of this lack of attention to capital structure, State Water is at risk of financial non-viability with a credit rating below investment grade. Sydney Water while not yet in such dire straits, has an increasing debt position which must be allowed to stabilise though appropriate price determinations.

The Queensland Commission of Audit (2013) observed that:

There has been a tendency for governments to use price regulation as a mechanism to protect consumers from 'price shocks', where prices or price increases are considered to be excessive. This type of government intervention in pricing arrangements may provide some temporary or short-term price relief for consumers.

However, it creates regulatory uncertainty and inconsistency for existing and potential industry participants, which can discourage investment. Over time, it is unsustainable to have a situation in which prices do not reflect the actual cost to deliver services as this will require an ever-increasing call on the Budget which Government will find too costly to sustain.

Data relating to the overall trends of short-term financeability in the Australian water sector is not generally available. We do note that since it began regulating water in Victoria in 2004 the ESC has only made a viability adjustment for one business (of the 19 water businesses)(ESC, 2013, p. 2). IPART has also formally adopted financeability testing as part of its price review process.

In a 2013 financial stocktake undertaken by WSAA the financial viability of water businesses over a longer time period was assessed based on a number of

common measures. WSAA found that the Australian water industry, on average, has financial ratios that are consistent with an investment grade credit rating. While WSAA found that individual results varied, it concluded that nearly all of the participating businesses were likely to be able to maintain an investment grade rating. However, the WSAA study did identify a number of areas which may generate concern in the future:

- All the financial ratios are declining and are expected to decline further over the next four years.
- The ratios for some utilities are at levels which could limit their ability to make investment and operational decisions in customers' best interests.
- In aggregate the industry is now not well placed to deal with significant downside shocks.

WSAA also noted that some businesses have moved from low levels of gearing to more commercial levels of debt and that some businesses have reached the stage where financial viability will be the dominant issue at their next price determinations (WSAA, 2013b).

This underscores the need to supplement existing regulatory approaches with tests for financeability (see section 5.4.3).

2.2.4 The costs of economic regulation

In order to assess the overall impact of economic regulation, account needs to be taken of its costs as well as its benefits.

A number of businesses provided information regarding the costs of complying with economic regulation. One noted that it:

... has estimated the regulatory burden at \$0.8m pa, including the cost recovery through licence fees. This does not include costs related to activities that would be undertaken regardless such as business planning, asset management plans and demand forecasting.

Regardless of the regulatory model used, some costs will be incurred. Data will still need to be collected and there will be a process to go through with the entity that sets the prices. We do not think the current level is an undue burden, though a more light-handed regulatory framework should reduce some of the costs at the time of price reviews.

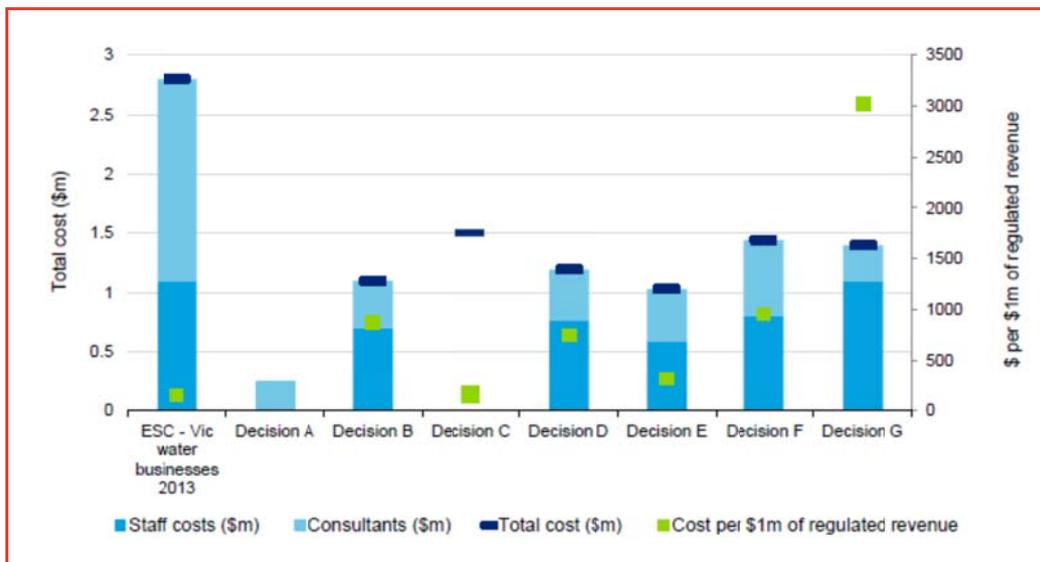
Other submissions made similar statements regarding the cost of compliance:

For major urban water utilities, the cost of economic regulation is of the order of \$1 to 2 million for the price review process every 5 years. In addition, there is the annual cost of [the regulator] which is about \$650,000 per year for us. So the cost is about 1% of revenue which is relatively immaterial compared to the benefits that customers' receive – these include that, as a consequence of the transparent process undertaken, the pricing outcome is fair and under investment in essential infrastructure is less likely.

A typical “building blocks” price review process would require ... in the order of \$0.5m to \$1m on external consultants. Customers also expend money on submissions to the price review process. We estimate that direct costs of the current framework (i.e. excluding staff time and costs) exceed c. \$4m per regulatory cycle (or \$0.8m per year in perpetuity).

In addition to the costs incurred by businesses there are also direct costs incurred by regulators undertaking price reviews. These costs are typically passed through to businesses in the form of licence fees. The ESC has recently commissioned a comparison study of regulatory approaches across the Australian jurisdictions, including an assessment of the costs incurred by regulators in price reviews (see Figure 2). The study is based on the most recent price review undertaken by each of the regulators. While the study does not identify each regulator (with the exception of the ESC) it does indicate that the costs of price reviews vary across the different regulators. While the most expensive price review process is reported for the ESC, this reflects its wide scope covering 19 water businesses and approximately \$18 billion dollars of regulated revenue. Most other regulators review a single business. In order to account for this difference in scope the ESC also present costs per \$1million of regulated revenue.

Figure 2: Regulatory costs of undertaking price reviews



Source: Deloitte (2014)

2.2.5 Conclusion

While subject to important caveats, the available evidence would suggest that, overall, independent economic regulation of the urban water industry in Australia has led to significant benefits relative to the alternative model of governments setting prices directly. However it also entails significant costs. It is therefore vital that economic regulation is applied in a way which maximises its net benefits and reflects ‘best practice’.

Objectives of economic regulation

3 Approach to best practice model

3.1 Principles of effective regulation

To achieve the underlying policy objectives set for it, a regulatory framework will need to comply with a number of high-level principles or possess a number of characteristics of effective regulation. We have distilled a set of principles from our experience, the literature and recent policy reviews which are commonly seen as reflecting key features of best practice economic regulatory regimes. These are further elaborated in Table 8 below.

Table 8: High-level principles/characteristics of effective regulation

Principle	Implication for regulatory framework
Clarity of objectives/focus	<p>Economic regulators should have clearly specified and prioritised objectives concentrated on protecting the long-term interests of end users of infrastructure services</p> <p>The role of economic regulators should be focussed on outcomes rather than specified inputs or tools by ensuring the operation of well-functioning and contestable markets where appropriate or by designing a system of incentives and penalties that replicate as far as possible the outcomes of competitive markets</p>
Efficiency/cost-effectiveness	<p>Regulatory interventions should be proportionate and cost-effective to ensure that the benefits from regulation outweigh the costs</p> <p>Compliance costs should be minimised through avoiding delays and excessive information requirements and undertaking regulatory reviews in a timely manner</p> <p>Unnecessary duplication between regulators should be eliminated</p>
Consistency/predictability	<p>The framework for economic regulation should provide a stable and objective environment (e.g. well-defined decision making criteria and clear timetables) enabling all those affected to anticipate the context for future decisions and to make long term investment decisions with confidence</p> <p>The framework of economic regulation should not unreasonably unravel past decisions, and should allow efficient and necessary investments to receive a reasonable return, subject to the normal risks inherent in markets</p> <p>Ensure consistency of treatment of participants across service sectors, over time and across jurisdictions</p>

Principle	Implication for regulatory framework
Accountability	<p>Roles and responsibilities between Government and economic regulators should be allocated in such a way as to ensure that regulatory decisions are taken by the body that has the legitimacy, expertise and capability to arbitrate between the required trade-offs</p> <p>Regulatory decisions should be subject to appropriate scrutiny and challenge including effective appeal mechanisms</p>
Transparency	<p>Decision-making powers of regulators should be exercised transparently (e.g. reasons for decisions clearly articulated and publicly available) and with procedural fairness</p> <p>Explain rules about the treatment of confidential information</p>
Adaptability/flexibility	<p>The framework of economic regulation needs capacity to evolve to respond to changing circumstances and continue to be relevant and effective over time</p> <p>Where possible use a goals-based approach, giving businesses flexibility to decide how best to achieve clear targets</p>
Independence	<p>The regulator should ideally be free of conflicting objectives and independent of both the policy processes of government and stakeholders and the operational activities of businesses</p> <p>Ensure regulatory decisions are free from undue influences that could compromise regulatory outcomes</p>
Capability	<p>Ensure regulators have appropriate expertise and resources to effectively undertake their functions</p>
Coherence	<p>Regulatory frameworks should form a logical part of the Government's broader policy context, consistent with established priorities</p> <p>Regulatory frameworks should enable cross-sector delivery of policy goals where appropriate</p>

3.2 Approach to defining and assessing best practice

While the previous section identified useful guiding principles for an effective regulatory regime, there is a need to translate these into what they mean for specific practical elements of economic regulation in order to identify a 'best practice' regulatory model for urban water in Australia. By drawing on the literature and practical experience with economic regulation in the Australian

Approach to best practice model

water industry, other utility sectors and the UK water sector, we articulate below our informed view of ‘best practice’ in each of the elements of economic regulation outlined below that is most likely to meet the underlying policy objectives and adherence to the best practice principles identified above.

In doing so we have also taken into account key features of the urban water sector in Australia which may have implications for the appropriate framework for economic regulation. These include:

- the typically large diversified customer base of urban water business encompassing households, and commercial and industrial customers (noting that there is significant variation across Australia ranging from major urban businesses covering entire capital cities/states to authorities serving regional towns)
- the inherently uncertain nature of the availability and cost of water supply in future periods reflecting the significant variability in inflows and uncertainty on extent of recourse to rainfall-independent sources such as desalination
- the government ownership of the urban water authorities throughout Australia and implications for governance and commercial incentives
- the role of urban water supply in protecting public health and environmental outcomes and urban amenity values
- the long-lived nature of network assets and the state of the investment cycle for both water supply and wastewater treatment and disposal
- the emergence of private sector competition (at the margins).

We also recognise that economic regulatory regimes for urban water are at different stages of maturity across Australia:

- The regulatory regimes in New South Wales, Victoria, Western Australia, the ACT and the NT are of the longest standing, although several are in a state of flux (in Victorian the Office of Living Victoria is currently reviewing the framework for economic regulation whilst the ACT water price review process for ACTEW has recently been the subject of an Auditor-General’s investigation).
- Independent economic regulation of the urban water sector has only recently been introduced in South Australia and Tasmania and there has been only had one initial price review in these States.
- The long-term regulatory arrangements for south–east Queensland are currently under review.

While recognising that the current regulatory arrangements in some jurisdictions are currently under review, for the purpose of this report we have assessed the regulatory arrangement as they currently exist against a best practice model encompassing four broad elements, namely:

- governance arrangements
- broad approaches and methodologies for regulation
- regulatory decision-making processes
- instruments of regulation.

In some cases there may not be a single ‘best practice’ model, as the appropriate approach may vary depending on particular circumstances (e.g. whether a price cap or revenue cap is appropriate may vary depending on the likelihood and potential magnitude of significant exogenous events, while the appropriate process for a price review may vary depending on the nature and size of the regulated water businesses). In these cases, however, we identify the factors which would determine which approach would represent best practice.

4 Governance arrangements

4.1 Introduction

This element of the regulatory framework encompasses the various elements which define the roles and responsibilities of the economic regulator including its specified objectives and functions, powers and extent of jurisdiction, institutional form and appeal and review mechanisms. These matters are typically defined in legislation and subsidiary instruments. As noted by the OECD (2013):

How a regulator is set up, directed, controlled, resourced and held to account — including the nature of the relationships between the regulatory decision-maker, political actors, the legislature, the executive administration, judicial processes and regulated entities — builds trust in the regulator and is crucial to the overall effectiveness of regulation. Improving governance arrangements can benefit the community by enhancing the effectiveness of regulators and, ultimately, the achievement of important public policy goals.

Another key element of an economic regulation model is ensuring the economic regulator has the capability to effectively undertake its functions, encompassing its culture, capacity, and resourcing.

The following discussion articulates best practice for following elements of the governance arrangements for economic regulation of urban water in Australia:

- the regulatory objectives and principles specified for the economic regulator
- the institutional form and structure and organisational capacity of regulators
- the powers and functions of the regulator
- the review and appeal mechanisms
- the economic regulatory framework's broader congruence with government policy.

Recognising that a number of these governance arrangements apply to the economic regulator as an entity in itself (which may regulate other sectors in addition to urban water), we focus in particular on the application of these to economic regulation of the urban water sector.

4.2 Regulatory objectives and principles

4.2.1 The issue

The objectives which are specified for the economic regulator will have a key influence on the decisions it makes and how it undertakes its functions.

These objectives are typically specified in legislation establishing the regulatory body, and, where the economic regulator's functions extend across a number of

industries, there may also be industry-specific regulatory objectives specified in industry-specific legislation. These objectives may also be supplemented by 'guiding principles' to which the economic regulator is required to have regard.

4.2.2 Discussion

The literature and accepted practice on best practice regulation makes it clear that legislation that confers regulatory powers should clearly articulate the underlying objectives of the regulation (i.e. the outcome the regulation is aiming to achieve):

Clear objectives assist regulators to understand the boundaries of their authority and prioritise areas of work. They also provide a clear focus to hold the regulator accountable for its performance. Conversely, vague or unclear regulatory objectives can undermine public confidence in both the regulator and the legislation under which the regulator operates. Further, vague or poorly-specified objectives can make it difficult for regulated parties to understand their regulatory obligations, or conversely, make it easier for them to develop strategies to avoid or minimised compliance. (NZ Productivity Commission 2013)

In similar terms, the UK Department for Business Innovation & Skills (2011) noted:

Economic regulators are established by statute and legally bound to execute their duties. To understand their behaviour, regulated firms and other interested parties must refer to the duties and to relevant guidance. The design of regulators' duties is crucial to the conduct of both regulators and the regulated.

It is therefore essential that the regulator's priorities are clear. To provide clarity of objectives for the regulator and to help monitor the regulators' performance, regulators in many sectors have been given a single overarching primary duty, typically to promote the interests of customers.

The OECD (2012) states that the legislation establishing a regulatory scheme should be written so that the purpose of the regulator and the objectives of the regulatory scheme are clear to the regulator's staff, regulated entities and citizens. The OECD (2012) suggests that:

- The regulatory and other functions to be carried out to achieve the regulator's objectives should be clearly specified in the establishing legislation.
- Regulators should not be assigned conflicting or competing functions or goals. The assignment of potentially conflicting functions to any regulator should only occur if there is a clear public benefit in combining these functions and the risks of conflict can be managed.
- Where a regulator is given potentially conflicting or competing functions, there should be a mandatory mechanism whereby conflicts arising are made transparent and processes for resolving such conflicts are specified. There should also be legal ground for cooperation and protocols between relevant regulators.

- Where a regulator is assigned competing functions, the legislation should provide a framework to guide the regulator in making trade-offs between the functions, or require the regulator to develop such a framework with the necessary bodies (e.g. legislature, executive, judiciary).

Box 1: Review of economic regulators' remits in the UK

The UK House Of Lords Review of economic regulators in 2007 reported that regulators themselves were unanimous in their belief that clarity was the most important quality a statutory remit could have and that clarity enabled regulators to readily understand their purpose "so that they do not march off, wandering around trying to work out what they are for and to focus their mind quickly on the work in hand. In addition, clarity in a remit brought other major benefits:

- increased legitimacy for the regulator
- greater consistency in regulators' decision-making
- a greater likelihood of an internally well-organised, well run regulator
- greater opportunities to monitor regulatory performance successfully
- an increased ability for regulated industries and consumers to judge the legitimacy and appropriateness of regulatory policies and actions.

It stated (p.21) that:

Regulators were most likely to be effective when they are working towards limited and relatively narrow defined duties and objectives. Where a regulator was handed an unclear remit, comprised of broad and imprecise duties, it would necessarily have to exercise broad discretion over how it handled that remit and, in a worse case scenario, objectives which Parliament intended to be central to that regulator's work could fall by the wayside.

Even where the statutory remit of the regulator is clear in prescribing well defined duties there can be problems when the regulator is given no statutory guidance on how to prioritise those duties. There is an acknowledgement that the regulators are required to pursue a range of duties and pursue a variety of objectives which may not be consistent with one another and that occasionally this can produce conflicts...

When the original privatisation statutes were put in place, the regulators' duties were more focussed than they are now on their economic roles of regulating monopolies, promoting competition and setting prices. Determining which policy issues were for government and which for regulators was therefore relatively clearcut. However, the later increase in the importance within the regulators' roles of other duties (particularly social and environmental duties) means there is now a less clearcut distinction between what policy issues should be dealt with by government and which by regulators. Such an expansion of duties, along with a lack of clarity about the respective roles of government and regulators, can arguably reduce the effectiveness of the regulator, create regulatory uncertainty and risk compromising the independence of the regulator.

The review (p.25) concluded that:

Independent regulators' statutory remits should be comprised of limited, clearly set out duties and that those statutes should give a clear steer to the regulators on how those duties should be prioritised. Government should be careful not to offload political policy issues onto unelected regulators.

Source: UK House of Lords (2007).

When applied to economic regulation of utility networks, this implies that the economic regulator should be given overarching objectives which closely align to the underlying objectives and rationale for economic regulation as described in section 2.1 above. The guiding principle here is that economic regulators should have clearly specified and prioritised objectives concentrated on protecting the long-term interests of end users of infrastructure services.

For example, the National electricity objective is to promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to:

- price, quality, safety, reliability and security of supply of electricity
- the reliability, safety and security of the national electricity system.

In some cases economic regulators are also given a number of subsidiary objectives or guiding principles which they are also required to take into account. For example, the primary duties of the economic regulator of the UK water industry, OfWat, are to:

- protect the interests of consumers, wherever appropriate by promoting competition
- ensure that the companies properly carry out their functions
- ensure that the companies can finance their functions.

Its secondary duties include:

- promoting economy and efficiency
- contributing to the achievement of sustainable development.

Ideally, where a regulator has multiple objectives these should complement rather than conflict with each other. However, where objectives are potentially conflicting, there should be some formal direction to guide the regulator in how to make tradeoffs between objectives.

4.2.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice in relation to regulatory objectives and principles given to economic regulators that they:

- Are clearly specified in legislation or regulation and as far as possible, are non-conflicting. Where objectives are potentially conflicting, there should be some formal direction to guide the regulator in how to make trade-offs between objectives.
- Give primacy to the long-term interests of customer and efficient investment.

4.2.4 Assessment against best practice

A number of the economic regulators responsible for economic regulation of urban water in Australia do have clear objectives consistent with best practice. For example, in undertaking its regulatory functions, ESCOSA's primary objective is "the protection of the long-term interests of South Australian consumers with respect to the price, quality and reliability of essential services".

It is also worth noting that the overarching regulatory objective specified in the QCA's terms of reference for its review of the long-term regulatory framework for the SEQ water distribution businesses is to protect the long term interests of the users of SEQ water and sewerage services by ensuring that the prices of these services reflect prudent and efficient costs, while promoting efficient investment in and the use of these services, having regard to the reliability, safety and security over the long term.

However, in other cases the objectives do not meet best practice in terms of clarity of objectives. For example, the ACT Auditor-General's Office (2014) in its review noted that:

The matters to be considered by the ICRC in a water and sewerage pricing investigation are established by section 20 in Part 4 of the ICRC Act and the terms of reference for the investigation. Together, these require a range of economic, environmental and regulatory objectives to be considered. As some of these objectives conflict, trade-offs need to be made by the ICRC. The investigation and price direction process is open to wide differences of opinion, interpretation and emphasis.

Compounding the challenge of considering the breadth of matters and objectives in the water and sewerage pricing investigation in the ACT, is the lack of documented principles for setting water and sewerage prices, including policy guidance on the relative weight or merit of objectives.

Similarly, IPART is not given a clear underlying objective but rather is required to have regard to a wide range of factors when making price determinations.

Box 2: IPART's legislative remit

In making determinations and recommendations under the Independent Pricing and Regulatory Tribunal Act 1992, IPART is to have regard to the following matters (in addition to any other matters IPART considers relevant) (s. 15):

- 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).

In addition to the tension between many of the section 15 matters, it is important to note the residual discretion given to IPART, to have regard to “any other matters” the Tribunal considers relevant.

Recognising that the legislation governing IPART pre-dates the competition policy reforms of the 1990s and perhaps as a result has no “over-arching statement of lofty principle”, it has been argued (Krieger 2010) that weighing up and balancing these conflicting policy objectives and the competing interest of stakeholders is “what economic regulators do”, and that “it is hard to see what the law could do to facilitate the ability of IPART to weigh up all these objectives.” This view, however, is not consistent with accepted best practice for regulatory governance.

In a recent submission to a review of the economic regulatory framework for the Victorian water industry by the Victorian Government, the ESC (2014) noted that:

There are many objectives and principles which either guide or bind the Commission, as set out in the Essential Services Commission Act 2001 and the WIRO. The effect of the long list of objectives and principles is to reduce clarity and add to uncertainty. Further, a number of the WIRO regulatory principles require subjective assessments and there is potential for conflict between some of the principles, adding to the lack of clarity and uncertainty about pricing objectives.

One result of this is the creation of unnecessary costs for water businesses and the Commission during price reviews as the merits of claims are debated against unclear or competing objectives. The range of objectives and principles (some of which in the WIRO relate to non-economic considerations) also acts to dilute a focus on efficiency. In particular, under the WIRO, the Commission must assess prices against a business’s own cost. This limits our ability to apply tools such as external benchmarking in the price review process.

In summary, while there is considerable variation, most economic regulatory regimes for the urban water industry in Australia fall well short of best practice with regard to clear regulatory objectives.

4.3 Institutional form, structure and organisational capacity

4.3.1 The issue

‘Institutional form’ refers to a regulator’s decision-making body and legal form, the degree of organisational separation from Ministries, sources of operating funds, employment powers and financial accountability obligations. Organisational capacity refers to the level of resourcing and skills available to the regulator.

4.3.2 Discussion

As noted above, introduction of independent economic regulation of utility businesses was a key plank of a major pro-competitive microeconomic reform program in Australia commencing in the 1990s.

This was also reflected in the 1994 COAG Water Reform Framework which obliged States to ensure that “as far as possible, the roles of water resource management, standard setting and regulatory enforcement and service provision are to be separated institutionally.” The rationale for this separation centred around clarifying and simplifying roles and responsibilities, enhanced transparency and accountability, minimising conflicts of interest (e.g. where prices were set by the owner/shareholder), improving regulation by effective and professional regulators, and the determination of prices in a transparent and independent manner. The NWI recommitted signatory governments to use independent bodies to set or review prices or the price setting process.

The OECD (2012) suggests that:

The governing body structure of a regulator should be determined by the nature of and reason for the regulated activities and the regulation being administered, including its level of risk, degree of discretion, level of strategic oversight required and the importance of consistency over time.

It also suggest that the autonomy of regulators (organisational, financial and decision-making) situated within a Ministry should be safeguarded by provisions in their empowering legislation.

In terms of the relationship between the responsible Minister, the governing body and the Chief Executive Officer, the OECD states that:

- There should be a clear allocation of decision-making and other responsibilities between the Minister, the governing body and the Chief Executive Officer (CEO) or individual in charge of the organisation’s performance and implementation of decisions.

- Where a regulator has a multi-member governing body, the CEO or individual responsible for managing the organisation's performance and implementing regulatory decisions should be primarily accountable to the regulator's governing body.
- To avoid conflicts of interest, where there is a need for formal representation of specific stakeholders in strategic decision-making, stakeholder engagement mechanisms such as an advisory or consultative committee should be established, rather than making those stakeholders members of the regulator's governing body.
- The role of members of the governing body who are appointed for their technical expertise or industry knowledge should clearly be to support robust decision-making in the public interest, rather than to represent stakeholder interests.
- Policies, procedures and criteria for selection and terms of appointment of the governing body should be documented and readily available to aid transparency and attract appropriate candidates.
- Any communication between the Minister, the Ministry and an independent regulator should occur in a way that does not compromise the actual or perceived independence of regulatory decision making.

There is a strong argument that economic regulators should be independent of both government and regulated business, but nevertheless be accountable. For example, OfWat is not subject to direction from Ministers in its day-to-day work. However, it is accountable to Parliament and where required will give evidence to select committees. Each year it provides an annual report to the Secretary of State for the Environment, Food and Rural Affairs and the First Minister of Wales, which is laid before Parliament and is published.

A further issue relates to the organisational capability of the regulator. The OECD suggests that:

- Funding levels should be adequate to enable the regulator, operating efficiently, to effectively fulfil the objectives set by government, including obligations imposed by other legislation.
- Funding processes should be transparent, efficient and as simple as possible.
- Regulators should not set the level of their cost recovery fees, or the scope of activities that incur fees, without arm's-length oversight.
- Where cost recovery is pursued, the regulator should avoid imposing unnecessary or inefficient administrative burdens or compliance costs on regulated entities.

4.3.3 Best practice for urban water in Australia

Given the water industry is government-owned, there is a strong case that the economic regulator needs to be independent from government in order to avoid conflicts of interests as owner, policymaker and regulator.

Drawing on the discussion above, best practice economic regulation of urban water would require that:

- The economic regulator should be an independent body clearly at arms-length from government, should be governed under its own Act and report to a Minister not responsible for the sectors they are regulating
- The economic regulator should have a separate board (commission/tribunal) for decision making
- The economic regulator should have adequate resourcing and staffing levels including staff trained in economics.

4.3.4 Assessment against best practice

The State-based economic regulators which oversee the urban water sector in Australia also regulate other industries in each jurisdiction and are already established as arms-lengths bodies from government.

As discussed further in section 4.4 below, however, the independence from government has not always been maintained in respect to regulatory decisions. In particular, in Western Australia the WA Government makes final pricing decisions while in Victoria the price review process conducted by the ESC has in the past been overturned.

They also have separate commissions established for decision-making. The ACT Auditor-General's Office (2014) has however recently found that:

There are conflicts in the roles of the Treasurer in the setting of water and sewerage prices in the ACT. The Treasurer is a voting shareholder of ACTEW and is also the Minister responsible for water and sewerage price setting policy. As part of the 2013 water and sewerage price setting process, the Treasurer set the terms of reference for the investigation and provided submissions to the ICRC on behalf of the ACT Government. While there are practices that mitigate the risk of adverse effects due to the conflicts in roles, such conflicts remain. Given the importance of the roles it would be prudent to further mitigate (and if possible) eliminate the conflicts in roles.

With one exception, water businesses consulted as part of this review generally felt the economic regulators have sufficient resources to undertake their activities in regulating the urban water sector.

4.4 Powers and functions

4.4.1 The issue

A fundamental issue in the governance and institutional arrangements for the economic regulator is the nature and scope of the powers and functions conferred on the economic regulator.

4.4.2 Discussion

Scope of regulation

A threshold issue is which activities the economic regulator should have jurisdiction over, or what services should be subject to independent economic regulation and how (and by whom) these should be determined.

Consistent with the underlying rationale for economic regulation, it is generally seen as appropriate that economic regulators should have powers to regulate activities which are supplied under conditions of market power. For example, in the utility sector, economic regulation of natural monopoly network services (e.g. electricity and gas transmission and distribution) is generally seen as appropriate given the market conditions clearly provide the potential for exercise of market power.

In contrast, it is widely accepted that economic regulators should generally not have powers to regulate services which are provided in competitive or contestable segments of these industries (i.e. generation and retail supply). There may also be some activities which are provided under conditions of potential market power, or which are in transition to a more competitive market, where the case for or against regulation is less clear-cut — or where the appropriate form of regulation may be different.

A related question here is who should determine which activities should be subject to economic regulation. While there are examples of approaches where the economic regulator itself is able to determine the scope of activities it regulates, there are strong arguments that such decisions should be made by policymakers (i.e. government) rather than regulators who may have vested interests in expanding the scope of their role. This should not rule out the ability of economic regulators to make recommendations on these matters.

In making decisions on the scope of regulation, a test should be applied that ensures that regulation is imposed only where it can be clearly demonstrated to have net public benefits. For example, in New Zealand the test for a market without workable competition was suggested as “goods or services may be regulated if economic regulation is necessary or desirable to (a) provide efficiencies in a market or (b) provide long-term benefits to person acquiring the goods or services that clearly exceed the direct and indirect costs of regulation.

While it would be expected that many of the services provided in the Australian urban water industry are supplied in markets with a high degree of market power, it needs to be recognised that there are increasing areas where competition is emerging. This suggests that policymakers should periodically review the extent of services provided by the Australian urban water sector which are subject to formal economic regulation.

Decision-making and other powers

Another key issue in establishing appropriate governance arrangements for the economic regulator is defining the powers that it should be able to exercise in undertaking its role.

A key issue here is whether the economic regulator should have the power to make binding regulatory decisions (rather than, for example, a recommendatory body). The OECD (2012) suggests that independent regulatory decision-making, at arm's length from the political process, is likely to be appropriate where:

- there is a need for the regulator to be seen as independent, to maintain public confidence in the objectivity and impartiality of decisions;
- both government and non-government entities are regulated under the same framework and competitive neutrality is therefore required; or
- the decisions of the regulator can have a significant impact on particular interests and there is a need to protect its impartiality.

It further suggests that:

Where legislation empowers the Minister to direct an independent regulator, the limits of the power to direct the regulator should be clearly set out. The legislation should be clear about what can be directed and when. Any direction made by the Minister or politicians should be documented and published. **In the case of economic regulators, legislation should not permit powers to direct by Ministers.** [emphasis added]

At the same time, the OECD notes that all regulators should operate within the power delegated by the legislature and remain subject to long-term national policy.

This highlights the importance placed on the economic regulator being able to make independent decisions. This is seen by many commentators as a crucial component in the ability of an independent economic regulation regime being able to achieve its underlying objectives. For example, if the economic regulator merely recommends regulatory outcomes to another decision-maker (e.g. government), the underlying benefits of independent regulation are lost, as the regime becomes subject to political fiat giving rise to regulatory uncertainty for all stakeholders. As observed by the ERA (2006):

Independence is important because regulatory decisions should be free from inappropriate influences that compromise regulatory outcomes. The ACCC published

a discussion paper on Best Practice Utility Regulation in July 1999, which referred to the need for the utility regulators' decisions being "free from undue influences that could compromise regulatory outcomes. According to the ACCC, the principle of independence is "a necessary element in providing stakeholders with confidence in the regulatory system, and is linked to achieving the principles of consistency and predictability".

The argument that economic regulators should be independent of both government and regulated business applies equally to the Australian urban water sector. IPART (2011) noted in its submission to the Productivity Commission's Draft Report on Urban Water that:

..any analysis of the most efficient structure for the regulation of water utilities' prices should take account of the government ownership characteristics of these monopolies. The experiences of Australia and other jurisdictions reveals a strong tendency towards social or political pricing, extensive non-transparent cross-subsidies and under-pricing, even where utilities have been established on a more commercial basis. Under the current price regulation framework these pressures for hidden subsidies are contained through the regulator's processes of transparency and public participation and through the clear separation of the policy, shareholder and regulator roles.

An economic regulator is likely to require a number of other powers to be able to effectively fulfil its responsibilities. These include powers to compel the provision of information by the businesses it regulates, and appropriate enforcement powers to deal with breaches (see section 7.6).

Specified functions

A third and closely-related issue is the nature and extent of functions which the economic regulator should undertake.

A fundamental principle here is that there should be a clear separation of regulation, policy and service provision so that the economic regulators' functions should be clearly related to tasks associated with economic regulation and not to matters of government policy.

Economic regulators should be given clearly defined powers and functions (set out in legislation) necessary to undertake their role and achieve their regulatory objectives. These functions should typically include:

- determination or oversight of the prices and service levels provided by monopoly suppliers
- licensing of suppliers as a means of monitoring and enforcing compliance with these service levels/prices
- overseeing competition in contestable elements of these industries (e.g. via regulation of third party access to essential facilities).

However, care should be taken not to prescribe precisely how the regulator should undertake its functions to best achieve the underlying regulatory objectives.

4.4.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice regulation in relation to regulatory powers and functions requires that:

- Economic regulators should have powers to regulate activities which are supplied under conditions of market power but decisions on the scope of the regulator's jurisdiction should be made by policymakers (i.e. government)
- Economic regulators should have deterministic powers rather than being a recommendatory body
- The jurisdiction of the economic regulator should be sufficiently broad to allow for comprehensive and consistent regulation of the services being provided.
- Clearly defined powers and functions necessary to undertake their role and achieve the regulatory objectives should be set out in legislation and should typically include:
 - determination or oversight of the prices and service levels provided by monopoly suppliers
 - licensing of suppliers as a means of monitoring and enforcing compliance with these service levels/prices
 - overseeing competition in contestable elements of these industries (e.g. via regulation of third party access to essential facilities).

4.4.4 Assessment against best practice

The extent to which current arrangements for economic regulation of the urban water industry meets best practice in this area is somewhat mixed.

Most economic regulators of the urban water industry across Australia do have powers to regulate services which are provided under conditions of market power, and this power has been appropriately bestowed on them by government.

While economic regulators in NSW, Victoria, South Australia, the ACT and Tasmania have deterministic powers, a notable exception is in Western Australia where the Economic Regulatory Authority (ERA) only makes recommendations and final decisions on prices/service standards are made by the WA Government. Water Corp stated that

Our preferred position would be the establishment of a formal independent economic framework for the setting of water services tariffs, based on sound economic and commercial principles. At present, the Economic Regulatory Authority (ERA) is

generally requested by the State Government of Western Australia to undertake a pricing inquiry every 3 years. The 'terms of reference' is issued by the Treasurer to the ERA. However, the Government is not obliged to implement any of the recommendations of the inquiry.

In Queensland, the QCA Act provides for the regulatory oversight of water monopoly business activities, but its powers are limited to making recommendations to the Ministers about their pricing practices. To date the QCA's role has been limited to price monitoring of the SEQ water businesses and undertaking price investigations of the pricing practices of the Gladstone Area Water Board (GAWB).

Another exception is the Northern Territory, where the Treasurer is responsible for regulating water and sewerage prices and service standards, with these prices and standards being enforced by the Utilities Commission.

In a number of jurisdictions the Government retains significant powers to direct the economic regulator in their decision-making functions, although the extent of this varies. As noted in a recent Deloitte (2014) report for the ESC:

The existence of the WIRO provides the ESC and businesses with a stable, well understood and pre-defined approach to the pricing review. The Victorian regulatory framework still allows for Ministerial guidance to be provided, but this is preferable to Ministerial references being written for each price review, which can add uncertainty and creates a higher risk of political interference.

One business submitted to our review that:

The parameters for each price review are set by terms of reference that are drafted specifically for each review. This does not provide certainty of scope or process. [The business] considers that the institutional arrangements would be strengthened by codification of scope and process of periodic price reviews.

4.5 Review and appeals mechanisms

4.5.1 The issue

One of the principal features of any economic regulatory framework is the existence and extent of review and appeals mechanisms. In most jurisdictions, independent economic regulatory authorities (especially those with deterministic powers) are granted a discretionary authority to make pricing and revenue decisions that have far-reaching consequences for the businesses they regulate and for the customers of those businesses.

There is a large body of literature regarding economic regulation frameworks that stresses the importance of ensuring that regulatory authorities exercise their authority within the scope permitted by their legal powers, exhibit procedural fairness and have justifiable reasons for decisions. An effective review or appeals process helps prevent abuse of discretionary authority, and preserves the integrity

of the regulatory system by making the regulator accountable for their decisions. Accountability is important because it makes regulators responsive to the public, heightens the sense of legitimacy, and reduces regulatory risks as the regulator is in most cases constrained from taking decisions that will undermine the financial viability of the business (Taylor & Ballance, 2000).

4.5.2 Discussion

While there is widespread support for the concept that review or appeals of economic regulators' decisions is a key element to ensuring accountability, there is also a need to ensure that the review mechanisms adopted are themselves cost-effective. While it is widely recognised that it is important to ensure that access to appeal procedures is swift and uncomplicated without the excessive burden of legal costs, it is also recognised that it may be necessary to prevent creating the incentives for forum shopping or for frivolous and vexatious appeals by those affected by regulatory decisions, which unnecessarily ties up the resources of regulators and reduces regulatory certainty. (OECD, 2012).

In considering the appropriate review/appeal mechanism, key issues that need to be addressed include:

- the type of review/appeal mechanism
- the basis or grounds for review/appeal
- which parties are able to seek a review/appeal
- which body should conduct a review or appeal and what powers this body should have.

The type of review/appeal mechanism

There are three types of appeals processes, merits reviews and judicial reviews:

- Internal review — a review undertaken by the original decision-maker (i.e. the economic regulator)
- Judicial review — type of proceeding where a Court looks at the lawfulness of the decision-making process. If the Court finds that a decision is unlawful, that decision will be quashed and the regulator can be forced to re-make the decision according to the law. Some of the common types of faults in decision-making which could lead to the court invalidating a decision include: an error of law, taking into account irrelevant considerations, and that the decision was not free of bias or the appearance of bias.
- Independent merits review — a type of review that considers all the evidence about the merits of a decision and decides whether or not a correct and preferable decision should be made. It is sometimes called a “*de novo*” appeal. These reviews are generally heard by a tribunal or panel. Typically the tribunal or panel puts itself in the shoes of the regulator and considers all the

evidence from a fresh perspective. Generally such tribunals or panels only have the power to review a decision if there is an Act that gives them that power.

There would appear to be limited value in a review process which involved the original decision-maker (i.e. the economic regulator) re-considering its decision. As noted in section 6.2 below, best practice economic regulation generally involves a process involving the issuing of a draft decision for comments before a final decision, and in this sense an internal ‘review’ process is already built in to the current arrangements.

Under common law in Australia relating to administrative law, executive power in making administrative decisions must be exercised according to law. Administrative decisions made by regulators may be challenged before independent tribunals or courts to determine their validity. In general, decisions are reviewed to determine whether they have been made lawfully: for example the power must be exercised bona fide for the purpose for which it was given (and not for an ulterior purpose); the decision-maker must be impartial in terms of having no stake in the outcome and in terms of having an open mind and not being biased; the decision-maker must take relevant material into account but must exclude irrelevant material; and the decision-maker must actually make the decision and not be beholden to someone else who has not been given the decision-making power.

A judicial review does not however consider the decision itself. Such a review, known as a ‘merits review’, allows the reviewing body to substitute its views on what is the right or preferable decision for that of the original decision-maker. Merits review is only available where it is specifically provided for in the legislation governing the regulator’s decision-making. Merits review is almost always carried out by administrative tribunals such as the Commonwealth Administrative Appeals Tribunal which have among their members a mixture of lawyers and subject-matter experts. The NZ Ministry of Economic Development (New Zealand MED 2007) has summarised the case for merits reviews of regulatory decision as follows:

Regulatory decisions are complex and often require difficult judgements. A key design parameter of an effective regulatory regime is therefore to ensure that accountability mechanisms provide strong incentives for high-quality decision making by the regulator, error correction, and guidance to the regulator and stakeholders (so that the quality of decisions improves over time, and the regime is more predictable for those affected by it).

While judicial review provides an important check on the regulator’s decision and process, it can be argued to be insufficient because it does not provide for a check of the substance and reasoning of the decision itself.

One such example is in the Australian energy sector (see Box 3).

Box 3: Merits review in the Australian energy sector

Under the NEL, the right to appeal regulatory decisions made by the AER to the Australian Competition Tribunal (the Tribunal) has been a long-standing feature of the regulatory environment. The original objectives of the limited merits review regime were “to aim for the most optimal decisions possible where the benefits of delivering outcomes in the long-term interests of customers outweigh the cost of the review to stakeholders”. The Ministerial Council on Energy determined that the review scheme should: maximise accountability; maximise regulatory certainty; maximise the conditions for the decision-maker to make a correct initial decision; achieve the ‘best’ decision possible; ensure that all stakeholders’ interest are taken into account; minimise the risk of ‘gaming’; and minimise time delays and cost.

There have been a number of appeals since the inception of the NEM. Between 2008 and 2012 electricity and gas network businesses sought reviews of 22 AER determinations. The Tribunal’s decisions led to increases in network revenues of around \$3.3 billion, the vast majority of which related to elements of the WACC and the value of tax imputation credits (γ) in the building blocks model.

A review of the merits review arrangements was undertaken in 2012 by a review panel comprising Professor George Yarrow as Chair, Dr John Tamblyn and the Hon. Michael Egan. It found that:

We are convinced of the contribution that merits review can make to better regulatory decision making, and, more specifically, we consider it to be an important component of a system of checks and balances that supports the independence of delegated regulation. It is because the Australian Energy Regulator (AER) can exercise significant discretionary powers that merits review has such an important potential role to play.

However, the review found that while the original MCE policy intention was sound and remained relevant, its implementation had fallen short of expectations. In particular, the panel found that the general approach for reviewing decisions was unduly narrow and was relatively detached from the promotion of the NEO and NGL (i.e. the intention for regulatory decisions to be in the long-term interest of customers). The Panel recommended changes to the NEL and NGL and the establishment of a new review body that would be better able to:

- address issues on a sufficiently wide basis, up to and including the overall regulatory determinations themselves, capturing all relevant inter-relationships between the individual aspects of decisions
- explicitly take account of and promote the NEO and NGL, since these are the objectives against which the question of whether or not there exists a decision that is preferable to the decision of the primary decision-maker (which is a key feature of merits review) should be evaluated
- promote consumer and user access to the relevant decision-making processes, including the review process itself, and promote network service provider engagement with consumer representatives at all stages of regulatory decision-making
- not be more protracted or demanding of resources than is necessary to achieve the fundamental purposes of merits review.

The Standing Council on Energy and Resources (SCER) largely accepted the panel’s recommendations. While it retained the Tribunal as the review body and maintained the limited nature of merits review, it has implemented reforms to in order to:

- clearly link the intent of the original decision and review processes, to ensure a common focus on outcomes that are in the long term interests of consumers -

consistent with the National Electricity Objective (NEO) and the National Gas Objective (NGO)

- reform the manner in which the AER performs its economic regulatory functions or powers to provide greater transparency of its determination process
- raise the threshold for leave to apply for review of a decision by adding a requirement for the applicant to establish a prima facie case that a materially preferable decision exists, with regard to the NEO or the NGO
- require the Tribunal to routinely consult relevant users and consumers and to consider interlinked matters
- clarify the matters that may be raised by parties to a review, including allowing raising of inter-linked matters to the extent they are relevant to whether a materially preferable decision exists
- remove the risk of prohibitively high costs being awarded against users and consumers in a review
- prevent costs associated with reviews being passed through into regulated revenues
- require a review of the performance of the Tribunal under the reformed regime to commence in 2016 to assess the effectiveness of the above changes on the way limited merits reviews are performed.

Source: Standing Council on Energy and Resources (SCER), Regulation Impact Statement- Limited Merits Review of Decision-Making in the Electricity and Gas Regulatory Frameworks, Decision Paper, 6 June 2013.

While merits review can be an important means for ensuring accountability of regulatory decisions, it does have some potential disadvantages. These include:

- the costs and time involved in reviewing decisions
- the scope for parties to ‘game’ the process by using merits reviews (where each party bears its own costs) to delay the imposition of regulatory decisions (as a new decision cannot be backdated)
- potential for simply different (rather than better) outcomes, as different experts may come to different conclusions.

However, these disadvantages do not mean that there should be no merits review processes at all. Rather, it suggests that the precise nature and scope of merits review should be carefully considered.

The grounds for review/appeal

There are a number of common characteristics of what is deemed to be an effective appeals mechanism. The first of these is the scope of right of appeal. The OECD states that best practice should include the right to appeal the decisions of regulators on legal grounds, including on the grounds of procedural fairness and due process. This should also include the possibility to challenge in court the legality of any statutory provision, on which decisions of regulators are based, vis-à-vis higher hierarchical legal norms, including constitutional norms. (OECD, 2012).

Going beyond this, a merits review should carefully define the grounds for appeal of the decision itself. The scope of a merits review could range from a ‘de novo’ hearing where the case is entirely re-heard, new evidence can be introduced and there is no presumption that the decision being appealed is correct; to an appeal by way of a re-hearing, where no new evidence can be presented and there is a starting presumption that the original decision was correct. On balance, a re-hearing may best balance the need for accountability with the cost and delays associated with merits review.

Which parties are able to seek a review/appeal

A further question is who should be able to seek a review of a regulator’s decision. Some commentators have suggested that the ability to seek a review should be limited to those who formally participated in the regulatory decision making process. For example Brown et al. (2006) states:

That right, however, should belong only to a party who formally participated in the agency proceedings on the matter in question and who raised that issue in the regulatory proceeding, including any rehearing process. No interested party should be able to put forward new issues or new evidence on appeal that was not first raised in the proceedings at the regulatory agency (including any rehearing).

The scope of appeal may also be limited based on timeliness. Parties who believe they were adversely affected by an agency decision should have the right to make an appeal of that decision within a reasonable period after that decision has been made (for example, 30 days).

The nature of the appeal body and its processes

Another key question is the identity of the appeals body. The OECD (2012) suggests that:

- All appeals from a regulatory agency decision should be directed to a single, independent appellate forum, the decision of which would be final. The appellate forum should be either a specifically designated court or a specialized appellate tribunal with the ability and authority to review the decisions of one or more infrastructure regulatory agencies.
- The establishment of fixed time limits within which an authority should be expected to give notice of a decision. It is acknowledged that exceptions from standard timeframes are likely to be necessary to allow for special and complex matters. However, good practice is facilitated by identifying a narrow list of areas where exceptions may be applied and, even in such cases, applicants should expect to receive notice of the progress of their administrative matter. (OECD, 2012)
- The appellate forum’s decisions and the reasoning should be made public in order to increase transparency and to establish precedent.

In the Australian electricity sector, merits reviews are heard by the Australian Competition Tribunal.

In the case of the urban water industry, which is regulated at a State level, there may be a need for a State-based appeal body. Rather than maintain a full-time appeals board, it may make sense for the appeal body to be constituted from a panel of nominated experts only when an appeal is made.

4.5.3 Best practice for urban water in Australia

As noted above in section 4.4, it is proposed that best practice economic regulation of the urban water sector would involve economic regulators that are independent of government and are deterministic.

Assuming economic regulators are provided with such deterministic powers, best practice regulation for the urban water sector in Australia should also allow for:

- Independent merits review (based on a re-hearing) on clearly specified grounds should be available to both businesses and customers
- The appeal body should be independent from the regulator and government and be drawn from a panel of experts when required

4.5.4 Assessment against best practice

At present the review and appeals mechanisms applying to regulatory decisions in the urban water sector fall far short of best practice.

While judicial review of decisions by economic regulators is available under common law, as noted above, this is very limited and does not provide sufficient accountability for regulatory decisions.

Somewhat broader appeals mechanisms are available in some jurisdictions.

In Victoria under S. 55 of the ESC Act, a person who is aggrieved by a price determination made by the ESC may appeal on the grounds that there has been bias, or the determination is based wholly or partly on an error of fact in a material respect. The appeal must be heard by a panel of three members appointed by the Registrar, which may affirm, vary or set aside the determination. If the determination is set aside, the panel must remit it back to the ESC for amendment in accordance with its recommendations.

In the ACT, the Minister and/or the utility may apply for a review of the ICRC's price determination, heard by an industry panel of three members. In making its decision on the merits of the appeal, the panel must have regard to the price direction considerations but can only consider material that was before the ICRC at the time the original decision was made. The panel may confirm the ICRC's price direction or substitute a new price direction.

4.6 Congruence with broader government policy

4.6.1 The issue

This section discusses the main issues in relation to congruence between the regulatory framework and broader government policy.

4.6.2 Discussion

While economic regulation is primarily aimed at ensuring efficient outcomes and protecting consumers from misuse of market power, it also needs to be seen as part of a broader regulatory that addresses other areas where market forces may not result in optimal social outcomes. In particular, the water industry is characterised by the potential impacts on other parties and the environment from the extraction and use of water and the disposal of wastewater, which gives rise to the need for health and environmental regulation. In addition, governments may wish to intervene to ensure people have equitable access to what is an essential service. The arrangements for economic regulation therefore need to integrate effectively with this broader policy and regulatory framework.

While it is important that economic regulation integrate with the broader policy and regulatory framework, it is vital that it does not seek to take direct responsibility for broader policy or regulatory matters. This is consistent with regulatory objectives which are clearly focused on the long-term interests of customers and matters of economic efficiency. As noted by the ESC (2014):

Economic regulation works best when an independent economic regulator and a strong and active shareholder are functioning alongside each other to deliver efficiency gains. Gains are likely to be maximised when:

- regulated businesses are required by the regulator to engage with their customers to determine required services and service levels (and customers' willingness to pay for those services levels);
- government policy objectives are articulated clearly and in a way that allows outcomes to be reported, measured and verified;
- businesses (Boards and management) are responsible for developing and implementing plans for meeting customer and policy-maker expectations;
- the independent regulator approves prices that reflect justified expenditure in order to meet those service delivery requirements; and
- the shareholder (via the Board) provides strong incentives for business management to outperform the regulatory benchmarks used to approve prices.

What is required is effective integration between economic regulation and broader policy and regulatory framework. The OECD (2012) suggests that to reduce overlap and regulatory burden, all regulators should be explicitly empowered and required to cooperate with other bodies (non-government and

other levels of government) where this will assist in meeting their common objectives. Because broader government and regulatory obligations inevitably have implications for costs and service standards, it may be efficient for the economic regulator to take a co-ordinating role particularly in the context of regulatory price reviews (see further discussion in section 0).

Finally, best practice in economic regulation would require that the regulatory framework itself be subject to regular review to ensure that it remains appropriate in the light of evolving market conditions and policy developments. As noted by the UK Department for Business Innovation & Skills (2011):

While there are significant benefits to economic regulation being carried out independently of Government, it needs to form a coherent part of broader public policy or its predictability can become undermined. Regulated markets and technologies change and regulatory frameworks, as well as broader policy objectives, need to be kept up to date and reflect the priorities of the day. A regulatory framework that is clearly out of date is unlikely to lead to successful or predictable outcomes.... Government has a legitimate role into play, defining a strategic vision of the likely needs and priorities over the long term and providing a policy context for regulatory decisions in the medium and short term.

A balance needs to be struck between the principles of predictability, adaptability and coherence. In order to maximise the benefits from a stable regulatory system Government should offer a credible commitment to restrain itself, as strategic visions should not be changed too frequently and should be updated according to a pre-announced calendar.

4.6.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice regulation of the urban water sector would require that:

- All regulators should be explicitly empowered and required to cooperate with other bodies where this will assist in meeting their common objectives
- There should be regular reviews of the economic regulatory framework itself.

4.6.4 Assessment against best practice

In some states regulators have an explicit requirement in legislation to co-operate with other regulators. For example, section 16 of the *Essential Services Commission Act 2001* requires the ESC to:

... enter into Memoranda of Understanding (MOU) with a number of prescribed agencies. The legislation identifies that an MOU may include any matter that the Commission and prescribed body consider appropriate, but must include the matters set out in the regulations. In particular, the Commission Regulations 2001 require that an MOU must provide for the integration and coordination by the parties of their regulatory or other activities and must include the objectives of the MOU relating to regulated industries; the roles of the parties; how the parties will jointly consult and communicate on regulatory issues that affect them; and what formal processes will be followed in the relationship between the parties.

Reviews of the regulatory framework

Most states do not appear to have explicit requirements to review regulatory frameworks imbedded in legislation. There are several jurisdictions that require the review of the regulator's governing legislation. For example, section 53 of the *Essential Services Commission Act 2002* (South Australia) states:

- (1) The Minister is to review this Act to determine the effectiveness of the work of the Commission and the attainment of the objects of this Act.
- (2) The review is to be undertaken as soon as possible after the period of 3 years from the date of assent to this Act and a report on the outcome of the review is to be completed within 6 months after that period of 3 years.
- (3) The Minister must cause a copy of the report on the outcome of the review to be tabled in each House of Parliament within 12 sitting days after its completion.

While the requirement to review the regulators' empowering legislation may capture elements of a review of the regulatory framework for water, it will by its nature be broader in scope (most regulators have oversight over a number of sectors) and may not address the industry specific issues associated with water.

Where regulators undertake periodic price reviews they may also include partial or complete reviews of the associated regulatory framework. For example, in the 2013 Water Price Review for metropolitan Victorian water businesses the ESC considered and approved a proposal to change the form of price control for one of the Melbourne retail water businesses. However, relying on businesses or regulators to review the framework is ad hoc in nature and may not provide for satisfactory outcomes.

We also note that some jurisdictions have initiated comprehensive reviews of their regulatory frameworks without explicit legislative requirements to do so. Reviews of the regulatory frameworks in Victorian and SEQ respectively are currently being undertaken by the Office of Living Victoria and the QCA. We also note that the regulatory frameworks in South Australia and Tasmania are relatively new and are not yet at a stage where they require review.

5 Broad approaches and methodologies for regulation

5.1 Introduction

While sometimes specified in legislation or subordinate legislation, the economic regulator will typically have discretion over the broad methodologies it adopts. The following discussion articulates best practice for the broad methodologies for regulatory decisions by economic regulators of urban water in Australia:

5.2 The issue

A threshold issue is the broad approach that the economic regulator takes to the regulation of prices and service standards of the businesses that it regulates. The key issues include:

- Whether prices/revenue and service standards are set or approved directly by the regulator ('direct' regulation); or whether a more indirect approach (e.g. price monitoring) or commercial negotiation with mandatory arbitration is adopted.
- If prices or revenue are set or approved directly, the methodology by which maximum prices or revenue should be established (e.g. building blocks versus yardstick benchmarking).

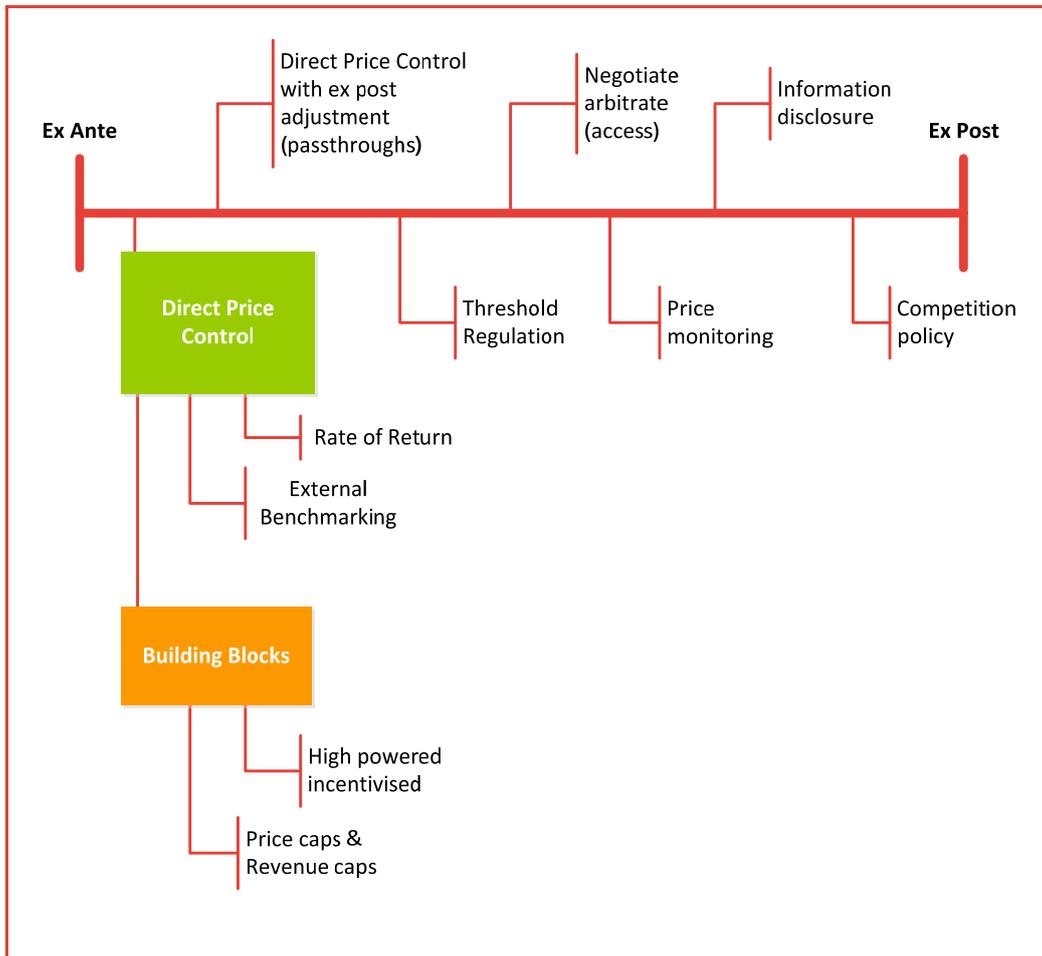
5.3 Alternative approaches and forms of regulation

There is a large range of potential regulatory approaches or models which could be adopted. The QCA (2014) characterises two broad approaches to regulation:

- Direct regulation: Direct regulation occurs where either an independent regulator sets prices (or allowable revenues) with legal effect or makes recommendations to Ministers who set prices.
- Indirect regulation: Indirect regulation occurs where the regulator or other agency observes and reports on pricing behaviour. Often this approach is supplemented by the threat of imposing direct regulation if needed.

Another form of regulation is that of commercial negotiation with mandatory arbitration. This approach is more commonly associated with determining the price of access to a monopoly network (e.g. rail, telecoms). Within each of these broad approaches to regulation, there is a range of potential forms of regulation. These can be seen as sitting on a spectrum from direct ex ante approaches to more indirect ex post approaches (see Figure 3).

Figure 3: Approaches to economic regulation



Source: Frontier Economics.

There are also many possible variants or hybrids of these approaches which have been applied in various sectors (see Table 9).

Table 9: Regulatory approaches

Approach	Description	Advantages	Disadvantages	Example
Direct regulation				
Cost of service or 'rate of return' regulation	Prices are set by the economic regulator to cover the regulated entity's costs, typically comprising a return on capital, a return of capital (depreciation) and operating costs. Reviews or triggers are used to ensure that the entity recovers costs actually incurred	Ensures regulated business has sufficient revenue to invest and provide services	Little incentive to reveal true cost of services or to pursue efficiencies	Regulated energy networks in certain US states
Profit sharing	The entity is permitted to retain only a proportion of the earnings it receives in excess of a defined level		Difficult to achieve and costly to administer	
CPI-X incentive regulation via a 'building blocks' approach	Prices are again set by the economic regulator to cover the regulated entity's efficient costs, comprising a return on capital, a return of capital (depreciation) and operating costs, but the risk of any over-runs or under-recovery lies with the business	Should provide confidence that level of prices reflects efficient costs of regulated business	May be information-intensive and costly Incentives for efficiency may be temporary	Most urban water businesses in Australia Energy industry in Australia UK water industry
Setting prices via an external benchmark	Prices are set with reference to an external benchmark – potentially with periodic price resets from a cost of service review at defined intervals or when pre-defined triggers are reached	Addresses to some extent the information asymmetry problem faced by regulators since the benchmark is set using information that is largely independent of the	Works poorly if businesses used in the benchmarking exercise are intrinsically different (i.e. comparisons may be meaningless) Revenue allowances may	Yardstick competition applied to energy networks in the Netherlands

Approach	Description	Advantages	Disadvantages	Example
		particular firm being regulated (e.g. the costs of other firms in the same industry)	be significantly different from firms' actual revenue requirements	
Indirect regulation				
Price monitoring	The economic regulator tracks prices, profits and/or service quality over time, often with threat of more direct intervention	Often perceived as non-intrusive and lower cost to administer than direct regulation Monitoring, in some cases, may be sufficient to deter businesses from excessive pricing Potentially good compromise if the case for direct regulation is not clear cut	Regulator highly dependent on information reported by businesses. Data may be inconsistent or unreliable, which undermines ability to conduct proper monitoring In practice the information reporting requirements on businesses may be significant	Airports, ports in Australia; airports in New Zealand
Performance monitoring	Regulator conducts ex post reviews of the performance of a firm or industry to check for evidence of excessive returns/pricing – usually in response to competition concerns. May be followed by some form of intervention (e.g. direct price controls, divestiture orders)	Potential for lower compliance costs	Result of ex post reviews usually turns on profitability assessments. Establishing excess pricing conclusively is often very difficult	Sector inquiries (e.g. banks, supermarkets) undertaken by the UK's Office of Fair Trading and Competition Commission (now, together, known as the Competition and Markets Authority)

Broad approaches and methodologies for regulation

Approach	Description	Advantages	Disadvantages	Example
Pricing principles	The economic regulator specifies pricing principles with which regulated businesses must comply	Allow flexibility for regulated business to set prices appropriate to different circumstances	Cannot alone ensure that prices reflect prudent and efficient costs	Applied to regulation of prices for recycled water in several Australian States
Price disclosure	Requirement for entities to transparently publish their schedule of prices	Very low compliance costs	Cannot alone ensure that prices reflect prudent and efficient costs	ACCC oversight of smaller Tier 1 bulk water operators in the Murray-Darling Basin
Negotiation and arbitration				
Commercial negotiate/arbitrate	Allows infrastructure owner and user/s to negotiate a commercial agreement, with binding arbitration	Potentially results in more efficient utilisation of existing infrastructure (i.e. reduces or eliminates need to replicate costly infrastructure)	Negotiating parties may have uneven bargaining positions Often complex considerations about cost allocation and hypothetical counterfactuals (e.g. utilisation of the infrastructure absent the arrangement)	Third party access (e.g. railways, telecoms infrastructure)
Regulatory negotiations	Regulator negotiates a settlement with business (e.g. following a monitoring exercise that has revealed problems)	Allows parties to negotiate directly on key issues of interest	Often not transparent processes. Difficult to scrutinise if the settlement is a reasonable one	Administrative settlements for energy networks in New Zealand in the late 2000s following breaches of the thresholds regime

Broad approaches and methodologies for regulation

Approaches to economic regulation are also often characterised as being ‘heavy-handed’ or ‘light-handed’. The Productivity Commission (2003) defined the extent to which economic regulatory intervention is heavy or light-handed by the substantiveness of the variables the economic regulator attempts to control, the extent to which the regulator attempts to control the relevant variables, and the compliance costs imposed on regulated businesses. The QCA (2014) states that:

Direct regulation typically focuses on the service standards, costs, revenues and often the proposed prices and their structure. Under direct regulation the Minister or independent regulator establishes the price or maximum allowable revenue (and is thus intrusive). To inform such decisions, direct regulation requires substantial information, external independent review (and therefore is considered intrusive), and is costly to administer or costly to comply with. Direct regulation is therefore generally considered to be heavy-handed.

Indirect regulation occurs where an agency of government observes and reports on pricing behaviour, but does not usually involve the direct regulation of prices. Details of the components of prices are therefore not typically required. Indirect regulation is therefore generally considered to be light-handed.

While the description of direct regulation as being more ‘heavy-handed’ than indirect regulation may be broadly apt, it should be recognised that some approaches to applying indirect regulation could in fact be quite heavy-handed or intrusive, while some forms of direct regulation may be far less intrusive than others.

It should also be recognised that ‘indirect’ or more ‘light-handed’ approaches to economic regulation often operate in practice as a hybrid form of regulation in that they often rely on the threat of more direct or intrusive intervention if the economic regulator determines this to be necessary.

Another way in which alternative regulatory regimes are distinguished and assessed is the extent to which they constitute ‘incentive regulation’. The aims of incentive regulation are to provide service providers with incentives to improve their operating and investment efficiency, service performance, and to ensure that consumers benefit from the gains.

Each of the above approaches has advantages and disadvantages and will be appropriate in different circumstances.

In general, direct regulation is seen as more appropriate where there is a strong prospect of the exercise of market power. Indirect regulation is typically seen as more appropriate where there is scope for competition to emerge or countervailing market power (e.g. from customers).

Ultimately, the choice between the alternative regulatory approaches should be based on which method is likely to best achieve the specified regulatory objectives given the particular industry and market conditions in question.

The urban water industry in Australia is characterised by (often vertically-integrated) natural monopoly networks providing services to a large diversified customer base.

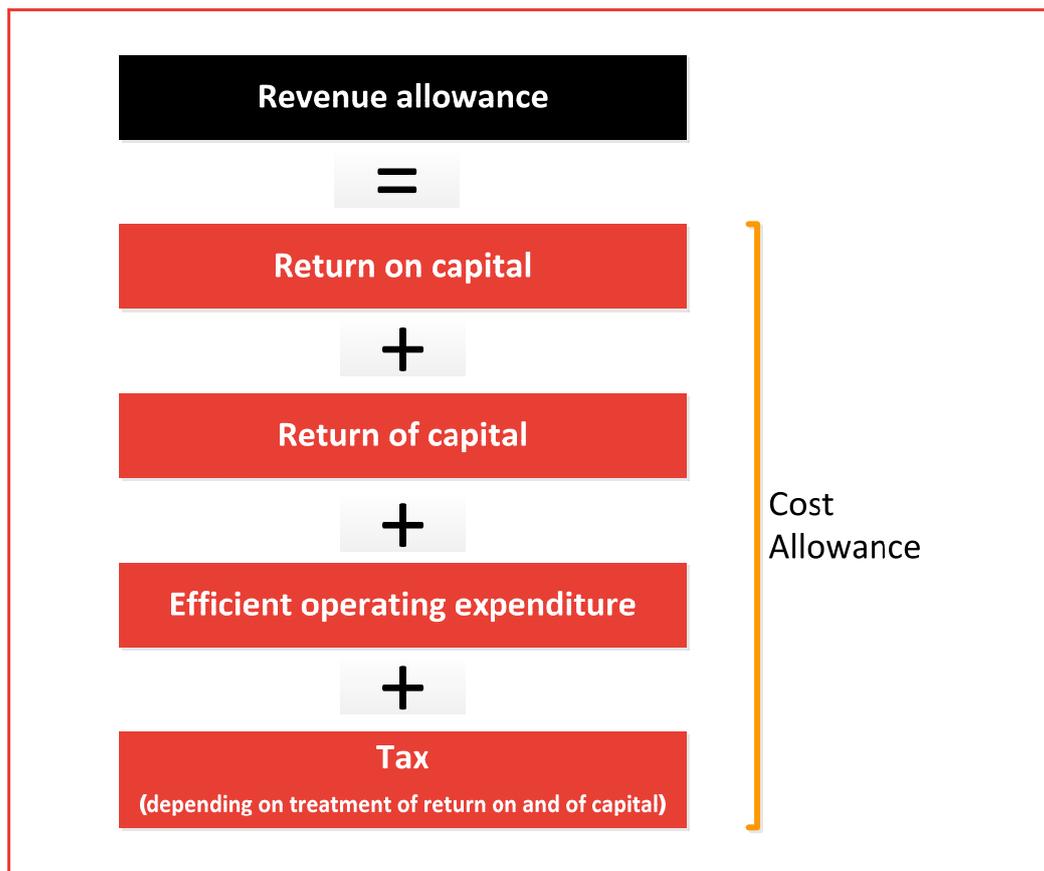
Some of the regulatory models outlined in Table 9 above have inherent limitations. For example, cost of service regulation fails to provide incentives to the regulated business to reduce costs while profit sharing is difficult to achieve and costly to administer. Others (e.g. negotiate/arbitrate) are more appropriate for situations of bilateral negotiation between counterparties of similar standing.

The following discussion focuses on the approaches which could be seen as feasible options for the urban water industry.

5.4 Building block incentive regulation

The most common approach to utility regulation in Australia (including the urban water sector) (and in other countries such as New Zealand and the UK) is the CPI-X building block approach.

Figure 4: Typical building block framework



Source: Frontier Economics.

Economic regulators come to judgements as to what is an efficient revenue requirement to deliver the nominated outputs, based on the regulated business's submission, engineering advice, public input via extensive consultation processes, and their own analysis.

In the case of revenue capped firms, the revenue requirement represents a maximal level of revenue that the business is permitted to earn in a given year. Typically, this revenue level is allowed to grow at the rate of general inflation, less some 'X' factor.

In the case of price-capped firms, maximum prices for individual services (or baskets of services) are set in such a way as to yield the allowed revenues, given a forecast of demand for the regulated services. Once again, capped prices are usually permitted to grow at the rate of general inflation minus an 'X' factor.

Generally prices or revenues are set for a fixed period and businesses are provided with an incentive to generate efficiencies through the regulatory period by being able to retain any cost savings over and above those assumed by the regulator (while absorbing any over-runs) for the duration of the period.

This approach seeks to ensure that there is a close relationship between the overall level of prices and the efficient costs of the regulated business, and is generally seen as providing strong incentives for long-term investment as once capital expenditures is deemed as prudent and efficient, it is automatically permitted to earn a regulated rate of return.

However, a number of concerns have been raised about the application of this approach in a number of utility industries. In particular, since regulators using an incentive-based system seek to base allowances on efficient, rather than actual, costs, this requires a judgement to be made about the efficiency of expenditure levels. These assessments are typically forward-looking, consistent with the ex ante nature of this form of regulation. As a result, the building blocks approach is typically very information and effort-intensive for both regulated businesses and regulators. As a result, a frequent criticism of this approach is that it overly intrusive and/or undermining of management autonomy. There are also concerns that the building block approach can effectively become rate of return regulation if the regulated business cannot retain benefits of efficiencies for very long before they are passed on to customer in the next price reset (e.g. if regulatory periods are too short and/or there is no ability for the business to carry forward a share of efficiencies into the next period).

It is certainly true that the CPI-X building block incentive regulation has in some cases become very complex as regulatory regimes have matured, and as regulators have sought more and more detail in seeking to overcome information asymmetries between themselves and the businesses they regulate. For example, the approximate cost of one complete cycle of revenue determinations in the electricity industry in Australia using the current building blocks method is

estimated to be \$327m (which excludes the cost of any merit reviews) AEMC (2011). This has led to calls for more light-handed approaches, including a shift to setting prices via external productivity benchmarks (see below) rather than detailed analysis of firm-specific costs.

While the costs of compliance costs are an important factor in assessing regulatory approaches, it is also important to keep these in perspective. For example, for large businesses with significant revenues, compliance costs may be relatively low relative to the benefits that independent regulation brings. Indeed, if a total welfare perspective is taken, it may be argued that the compliance costs are greatly outweighed by the potential benefits to the large number of consumers of essential services. Moreover, much of the information required by economic regulators is likely to be information that a well-managed business should maintain in any event (e.g. robust business cases to justify major investments).

Nevertheless, opportunities for improving the cost-effectiveness of regulation should be actively considered and pursued where appropriate, whether this involves refinements to the way in which the building block model is applied, streamlining of existing regulatory processes, or the adoption of entirely different approaches. Experience from other sectors provides useful insights as to how building block incentive regulation, as it is applied to urban water companies in Australia, may be improved. Options for such improvements include:

- Strengthening the incentive properties of the regulatory regime (particularly in ways that reduces informational burden)
- Allowing for a simplified approach to the building blocks formulation
- Methodological changes to improve the approach
- Staggered price reviews.

5.4.1 Strengthening the incentive properties and reducing the burden of the regulatory framework

OfGem, the economic regulator of the gas and electricity sectors in the UK undertook a major review (RPI-X@20 Review) of its regulatory framework between 2008 and 2010. This review, which gave rise to the RIIO (**R**egulation = **I**ncentives + **I**nnovation + **O**utputs), represented a major shift in regulatory thinking in the UK. Among other things, RIIO seeks to provide much stronger incentives for efficiency and better performance through a number of mechanisms involving rewards and penalties to regulated businesses (see Box 4). For example, it increased the length of the regulatory period from five years to eight years to provide stronger incentives for regulated businesses to pursue efficiency improvements by being able to retain them for a longer period of time.

Box 4: OfGem reform of regulatory framework

Between 2008 and 2010 Ofgem undertook a comprehensive review (RPI-X@20) of how it regulates energy networks. It focused on whether, 20 years after privatisation, the RPI-X model remained fit for purpose. The outcome was the RIIO model. While the RIIO model retained many of the core elements of RPI-X (e.g. the basic building blocks approach used to determine revenue allowances) there were material changes to ways that regulatory outputs are specified and incentives applied.

Ofgem found that the old RPI-X framework had led to businesses being too focused on five year price cycles and on engaging with the regulator rather than their customers. It also observed that there was limited consideration of innovation and 'how best to deliver' the outcomes that customers really valued, with the businesses having a potential bias for capex solutions rather than perhaps more efficient opex/non-network solutions. Ofgem also recognised that, going forward, regulated networks would have to deliver a large amount of investment in network infrastructure, to help meet challenging environmental targets set by the government.

Ofgem concluded that it needed to put customers at the heart of the regulatory process and put more emphasis on efficient delivery of outputs. The way it did this was by introducing some new initiatives and by strengthening the incentive power of the regime. The key changes introduced by Ofgem through RIIO included:

- Placing the onus on businesses to engage with customers to identify the outputs (e.g. reliability) they really value. This involves testing options for the delivery of those outputs and the value-for-money of those options (recognising that more output often requires more investment, which ultimately adds to customers' bills).
- Requiring businesses to develop business plans based on the outcomes of their engagement with customers, and using these business plans to set targets for the businesses over the regulatory period and to evaluate performance against those targets. This contrasts with previous approaches, which were for the regulator to specify targets.
- Introducing real financial rewards to incentivise businesses to engage effectively with customers, and to develop the best targets and business plans. Simultaneously, Ofgem introduced penalties for low quality business plans. These rewards and penalties are implemented through its 'twin-tracking' mechanism, whereby businesses with particularly good business plans are 'fast-tracked' through the regulatory process (i.e. their business plans receive relatively less scrutiny from Ofgem and their regulatory settlement are finalised more quickly), and businesses with lower quality business plans are 'slow-tracked'. Twin tracking is an example of how Ofgem strengthened the incentive properties of the regulatory framework through RIIO.
- The strengthening of 'menu regulation'. Menu regulation allows businesses to choose between alternative 'packages' of allowed expenditures and incentive sharing rates, within a building blocks framework, in order to promote truthful revelation by the businesses their view of achievable minimum costs. Menu regulation was developed as a way of overcoming the generally strong information asymmetries between regulators and regulated businesses.
- Extending the length of the price control period from five years to eight to allow businesses longer planning horizons and more time to deliver outputs against targets.
- Introducing a package of 'uncertainty mechanisms' (e.g. certain triggers and re-openers, and the indexation of debt costs) to help mitigate the additional risks that the businesses would be exposed to through the lengthening of the regulatory period and the greater incentive power under RIIO.
- Assessing the efficiency of expenditure in terms of total expenditure ("totex") rather than capex and opex separately. This was an attempt to 'rebalance' incentives between different types of costs so that the companies would not systematically favour capex over opex.

According to the RIIO Handbook, a well-justified business plan would involve:

- a focus on outputs with evidence of effective stakeholder engagement
- consideration of longer-term delivery and value for money
- transparent link between outputs and delivery costs
- a well-evidenced case for the proposals and an open-minded consideration of available options.

A plan that is well-justified can achieve 'fast track' status. The benefits to the company of submitting a well-justified plan are as follows:

- it is more likely that the determination will reflect the plan;
- the price control determination may be agreed earlier in the process and the proposals subject to less detailed scrutiny; and
- there is a financial incentive for submitting a well-justified plan.

Assessment

The implementation of the RIIO has largely been successful. Companies have engaged with the objectives of the business plan process and endeavoured to achieve 'fast track' status. At the same time the core principles of incentive regulation have been retained and the confidence of the investor community has not, to date, been affected.

An ongoing challenge for OfGem will be to ensure that the decisions regarding 'fast track' status are perceived to be robust and credible. If companies believe that the decisions are not based on objective criteria but instead result from some form of competition between the companies then the expected benefits from RIIO may not be forthcoming.

Source: Frontier Economics

Other regulators, such as OfWat, have since adapted their own schemes based on insights from the RIIO framework. For example, OfWat has also introduced in the current review include a shift towards a risk-based review, where the extent of regulatory scrutiny varies according to the assessed quality of the companies' business plan submissions (see Box 5).

Box 5: OfWat application of risk-based review to price control

In its price control methodology for the 2014 price control (PR14) OfWat emphasised the importance of proportionate regulation. To achieve this it introduced the risk-based review of business plans (RBR). The objective of the RBR was to encourage companies to submit high quality business plans and also to ensure that the efforts of the regulator were directed at the companies with lower quality plans.

RBR process

Water companies submitted their business plans to Ofwat in December 2013. Between then and March 2014 Ofwat undertook the risk-based review of plans. The RBR focussed on four areas:

- Outcomes / outputs — the company's key proposed deliverables for consumers, including current and future customers and the environment, and the incentives associated with delivering them (see below for more detail).
- Cost assessment — the costs, for both wholesale and retail businesses, associated with delivering the company's proposed outcomes.
- Risk and reward — how the company's proposals balance risk and the rewards for bearing those risks between consumers, including current and future customers and the

environment, and the company and its investors.

- **Affordability and financeability** — the impact of the company's proposals on customers' bills, and its ability to finance its functions (financeability).

Depending on the assessment in these categories company plans would be graded into one of three categories:

- **Enhanced** — this is equivalent to OfGem's fast-track status – this would indicate a high quality business plan. The company would be eligible for an early determination and a financial reward.
- **Standard** — these companies would follow the normal timetable and degree of regulatory scrutiny.
- **Resubmission** — these companies' plans were lacking in some important regards and the company would be required to resubmit the plan and be subject to additional regulatory scrutiny.

Outcome and assessment

In practice OfWat has had to adapt the process as it has gone through the price control. For example, in January 2014 it announced that none of the plans had satisfied the criteria for risk and reward and specifically that the cost of capital estimates were too high. As a result OfWat removed this from the RBR and imposed its own cost of capital assessment on the companies.

In March OfWat announced that two companies, South West Water and Affinity Water, had pre-qualified for enhanced status. These companies were then confirmed in this status following a period of clarification and revisions to their plans. They received their draft determinations on 4th April 2014. The financial rewards consist of additional income and sharing of cost savings through the cost menu.

OfWat also announced that no companies were in the resubmission category but that some of the standard companies would have a chance to receive an early determination in June 2014 rather than August 2014.

It is too early to evaluate the impact of the RBR process. OfWat has indicated that the overall quality of the business plans was high, indicating that the process had been successful in encouraging high quality plans. At the same time the fact that OfWat has had to amend the process on an ongoing basis suggests that more advance planning would have been appropriate. Ultimately the credibility of the process will depend on the performance of the enhanced companies for customers and on value of the rewards (process and financial) to the companies.

Source: Frontier Economics

Another way of improving the incentive properties is to adopt 'menu regulation'. The objective of menu regulation is to address directly the asymmetry of information between regulators and regulated businesses, by incentivising the businesses to reveal information truthfully (see Box 6). This, at least in principle, reduces greatly the need for the regulator to impose prescriptive and detailed information disclosure requirements on businesses as a means of overcoming the information asymmetry. This, in turn, provides the possibility of making the regulatory regime less costly. Since menu regulation works by incentivising businesses to reveal accurate information (e.g. forecasts of future expenditure requirements), in practice it does result in the businesses having to invest more in information management and forecasting. However, the point is that menu regulation incentivises such behaviour through financial rewards, so businesses are typically compensated for making such investments.

Box 6: Menu regulation

Menu regulation was developed in Great Britain (and presently used by OfGem and OfWat) as a way of addressing the asymmetry of information that usually exists between regulators and regulated businesses. Even with comprehensive regulatory reporting requirements, it is generally true that regulated businesses know more about their future costs and the scope for achieving efficiencies than do regulators. This puts regulators at an informational disadvantage when developing their own forecasts of future expenditure, for the purposes of setting cost allowances within a building blocks framework. As a result, cost allowances based on such forecasts could be well above or well below the efficient level. If, on the other hand, regulators rely on cost forecasts provided by businesses when setting prices, the business would have an incentive to inflate their forecasts above efficient levels in order to secure higher revenue allowances, and regulators would find it difficult to detect any such gaming.

Menu regulation aims to circumvent this problem by incentivising businesses (through financial rewards and penalties) to forecast costs accurately and then reveal those forecasts truthfully to the regulator. This is done by offering the businesses a menu of payoffs, where the payoffs depend on: (a) the costs that businesses forecast they will achieve over the regulatory period; and (b) actual cost outturns. The menu that OfGem used the first time it employed menu regulation is reproduced below.

DNO:PB Power Ratio	100	105	110	115	120	125	130	135	140
Efficiency Incentive	40%	38%	35%	33%	30%	28%	25%	23%	20%
Additional income	2.5	2.1	1.6	1.1	0.6	-0.1	-0.8	-1.6	-2.4
as pre-tax rate of return	0.200%	0.168%	0.130%	0.090%	0.046%	-0.004%	-0.062%	-0.124%	-0.192%
Rewards & Penalties									
Allowed expenditure	105	106.25	107.5	108.75	110	111.25	112.5	113.75	115
Actual Exp									
70	16.5	15.7	14.8	13.7	12.6	11.3	9.9	8.3	6.6
80	12.5	11.9	11.3	10.5	9.6	8.5	7.4	6.0	4.6
90	8.5	8.2	7.8	7.2	6.6	5.8	4.9	3.8	2.6
100	4.5	4.4	4.3	4.0	3.6	3.0	2.4	1.5	0.6
105	2.5	2.6	2.5	2.3	2.1	1.7	1.1	0.4	-0.4
110	0.5	0.7	0.8	0.7	0.6	0.3	-0.1	-0.7	-1.4
115	-1.5	-1.2	-1.0	-0.9	-0.9	-1.1	-1.4	-1.8	-2.4
120	-3.5	-3.1	-2.7	-2.5	-2.4	-2.5	-2.6	-3.0	-3.4
125	-5.5	-4.9	-4.5	-4.2	-3.9	-3.8	-3.9	-4.1	-4.4
130	-7.5	-6.8	-6.2	-5.8	-5.4	-5.2	-5.1	-5.2	-5.4
135	-9.5	-8.7	-8.0	-7.4	-6.9	-6.6	-6.4	-6.3	-6.4
140	-11.5	-10.6	-9.7	-9.0	-8.4	-8.0	-7.6	-7.5	-7.4

The menu of payoffs is calibrated in such a way that the businesses are:

- always best off forecasting (and revealing) the level of expenditure they expect to achieve over the upcoming regulatory period (this is denoted by the payoffs highlighted in blue)
- generally better off if they beat that original forecast, i.e. if outturns < forecast (which corresponds to a position above any of the shaded cells)
- generally worse off if they fail to beat the original forecast, i.e. if outturns > forecast (which corresponds to a position below any of the shaded cells).

A key scheme parameter is the 'efficiency incentive rate', which determines the proportion of any cost savings that the firm is allowed to keep. The more ambitiously the firm forecasts (i.e. the lower it predicts its costs to be), the higher the efficiency incentive rate, meaning the greater the proportion of savings the firm would be permitted to retain.

The intended effect of menu regulation is to incentivise regulated firms to forecast accurately and then to strive for efficiencies against those forecasts. This potentially reduces the cost and effort that regulators need to invest in assessing the expenditure forecasts of regulated businesses. A comparison of the accuracy of forecasts produced by firms regulated by Ofgem, before and after the introduction of menu regulation, suggests that revealed forecasts have become more accurate since the introduction of menu regulation.

Source: Frontier Economics

5.4.2 Allowing for a simplified approach to the building blocks formulation

One potential way of streamlining the current building block approach would be to reduce the regulatory burden by standardising some of the elements. One example of such an approach is the default versus customised price/quality path regimes for electricity distribution businesses (EDBs), administered by the New Zealand Commerce Commission (the Commission).

Default versus customised price-quality path regulation was developed in response to apparent limitations of the previous regulatory framework, which essentially used a benchmarking approach. The Commerce Commission was tasked with regulating a large number of networks (29, currently) with limited resources. Under these circumstances, the Commission needed a relatively low-cost way of regulating these businesses. The initial regulatory framework adopted was a so-called ‘thresholds’ regime, which set a benchmark price threshold that the EDBs would not be permitted to exceed. However, after a number of years, it became evident that this benchmarking approach had some major weaknesses.

Arguably, the thresholds established by the Commission may have suitable if applied to a fairly homogenous group of networks. However, the EDBs in New Zealand are very diverse in terms of size, customer mix, geography and other technical considerations. This meant that thresholds that failed to take into account the individual circumstances of different businesses were very blunt instruments for regulating a diverse set of electricity networks. One piece of evidence that the thresholds were not working well was the large number of breaches of the thresholds.

Further evidence of the ineffectiveness of the regime was the fact that even when breaches occurred, direct action was rarely taken by the Commission. The Commission would undertake a post-breach investigation, but the Commission never initiated formal price controls.

Therefore, policymakers considered that the thresholds regime needed to be reformed. In particular, it was necessary to design a framework capable of regulating a fairly large number of businesses, in a low-cost way, whilst making provision for accommodation of the individual circumstances of EDBs where warranted. The result of these reforms was default versus customised price/quality path regulation. Under this scheme, all non-exempt EDBs would be subject to a default price-quality path (DPP). However, an EDB may apply to be regulated under a customised price-quality path (CPP) if it feels that its particular circumstances justify individualised treatment.

Default versus customised price-quality path regulation is still in its initial stages, so the merits and drawbacks of this system of regulation are yet to be identified fully. Whilst the principles underpinning the framework seem sound, the potential problems with the approach may lie in its practical implementation. For

example, the Commission is still working through, with the businesses, the best way of standardising certain aspects of the default price-quality path (DPP), e.g. the approach to forecasting expenditure using relatively low cost approaches. This remains a fairly contentious topic.

In addition, whilst the framework allows for customised price-quality considerations, this route is generally viewed as a costly and risky process from the EDBs' perspective as it entails detailed scrutiny of their expenditure requirements by the Commission. From a regulatory design perspective, it makes sense for the customised price-quality path (CPP) process to be more costly than the DPP process. If this were not the case, a large number of EDBs would simply opt for a CPP over the DPP, thus defeating the purpose of having a two-route approach. However, if the CPP is perceived as too costly, or too risky, EDBs may be deterred from applying for a CPP even if their DPP results in unsatisfactory regulatory outcomes. This could be an inefficient economic outcome.

Finally, the choice between a DPP and a CPP is intrinsically asymmetric. Because the DPP utilises relatively low-cost rules (e.g. industry-wide rather than firm-specific considerations) to set allowances, some EDBs may receive higher revenues than they actually require in order to recover their costs, and other EDBs may receive lower revenues than necessary. Since EDBs have the option of applying for a CPP (i.e. they cannot be compelled to do so), profit-maximising firms would opt for a CPP only if doing so would likely result in higher revenue allowances. No commercially rational business would apply for a CPP if doing so would make it worse off than it would be under the DPP route.

Box 7: Regulation of electricity distribution networks in New Zealand: default and customised price-quality paths

There are presently 29 electricity distribution businesses (EDBs) in New Zealand. These EDBs are regulated by Part 4 of the Commerce Amendment Act 2008 by a single regulator, the Commerce Commission. The current regulatory arrangements came into force on 1 April 2009. 17 of the 29 EDBs are subject to a default/customised price-quality path regulation (the remaining 12 EDBs are exempt as they are deemed to be 'customer owned'). All EDBs are subject to information disclosure (i.e. regulatory reporting) requirements.

Regulation of EDBs prior to 2009 — Electricity Thresholds Regime

Prior to 2009, faced with the task of regulating a relatively large number of networks, the EDBs were subject to a 'thresholds regime', under which the Commission would periodically set price and quality thresholds:

- The price thresholds were set using a CPI-X approach (i.e. prices were allowed to grow at the rate of general inflation, less some X efficiency factor). The X factors were assigned to EDBs on the basis of industry-wide productivity found using total factor productivity analysis, as well as on the relative efficiency and relative profitability of the businesses. No building blocks approach was used to set the thresholds (the Commission referred to its approach as an "index based approach" to regulation).
- Quality thresholds were set on the basis of average reliability measures (i.e. System Average Interruption Frequency Index and System Average Interruption Duration Index).

The immediate consequence of a threshold breach was only the prospect of an inquiry, rather than any penalty or enforcement action. The Commission could negotiate with EDBs to adjust prices and service standards in line with the thresholds. Between 2003 and 2007 there were reportedly 127 breaches, but the Commission never imposed formal price controls in response to any of these breaches. This was seen as a serious weakness of the regime. Another major limitation of the thresholds regime was that it offered no way of taking account of firm-specific circumstances, since the thresholds were set on the basis of industry-wide factors.

Default/customised price-quality regulation

The passing of the Commerce Amendment Act saw the introduction of a dual route system of regulation known as default/customised price-quality regulation. This new regime sought to balance the requirements of having to still regulate a large number of EDBs against the desirability to take better account of firm-specific circumstances. The purpose of default/customised price quality regulation is “to provide a relatively low-cost way of setting price-quality paths for suppliers of regulated goods or services, while allowing the opportunity for individual regulated suppliers to have alternative price-quality paths that better meet their particular circumstances.” EDBs may incur penalties for breaches of price-quality paths as set out in Part 6 of the Act.

Default price-quality paths (DPPs)

The key features of the DPP regime are the following:

- DPPs are determined using a building blocks framework.
- Many of the steps associated with determining the building blocks (i.e. asset valuation, cost allocation, regulatory tax treatment, estimation of the cost of capital, regulatory rules and processes) are specified in advance through ‘Input Methodologies’ (IMs). The IMs are very detailed guidelines that set out the approach the Commission will follow on each of these key elements. They may each be subject to a single merits appeal, and must be revised at least every seven years.
- Allowances of opex and capex are determined using relatively low-cost, top-down forecasting approaches that reflect industry-wide factors rather than detailed, firm-specific considerations. This obviates the need for the Commission to undertake detailed, bottom-up (i.e. engineering based) expenditure assessments (as happens in Great Britain and Australia). The precise methodologies for the setting of DPP cost allowances are still being developed and refined by the Commission.

Customised price-quality paths (CPPs)

If an EDB feels that its requirements would not be met adequately under a DPP, it may apply for a CPP. Following the 2011 Canterbury earthquake, Orion Networks applied for, and secured, a CPP.

A CPP has the same essential components as a DPP (e.g. the price path is determined via a building blocks approach). However, a CPP differs from a DPP because the Commission can consider the specific circumstances of an EDB to set a path that better suits its needs. This may involve doing more detailed assessments of the EDBs’ cost requirements, for instance.

The rules and processes for CPP proposals, including the requirements for a proposal and the criteria the Commission must follow when evaluating a proposal, are set out in IMs. Once a CPP expires, an EDB will transition back onto the DPP, although it still retains the option of making another CPP proposal at a later date.

The move from the thresholds regime to a building blocks framework introduced more transparency and structure to the regulatory process. However, the period of transition away from the thresholds regime towards the current system (e.g. the establishment of the IMs) required a significant amount of intense work by the Commission and EDBs. A number of issues still remain unresolved.

Source: Frontier Economics

5.4.3 Methodological changes to improve the approach

There are several methodological issues in the application of the building blocks approach which warrant attention. These include:

- weighted average cost of capital (WACC)
- the use of totex rather than capex and opex
- approaches to scrutinising capex
- approaches to assessing scope for productivity gains
- a ‘financeability’ test
- a focus on material issues.

Each of these methodological issues is discussed below.

WACC

WACC, within a building blocks framework, represents the rate of return that a regulated business is permitted to earn on its asset base. The allowed revenues within a building blocks model are typically highly sensitive to WACC, because the return of capital is derived by multiplying the WACC by the firm’s capital base, which is typically very large. Hence, even relatively modest changes in the WACC assumption can result in large differences to allowed revenues.

This means that if the WACC is volatile over time, the revenue allowance and prices to customers will also be volatile. Excessive variability in allowed rates of return can also be problematic for regulated businesses, which often have to make long-term planning decisions, including investments in typically very long-lived assets. Arguably, the permitting of significant volatility in the returns of regulated, natural monopoly businesses is at odds with the commonly understood characteristics of those businesses. Most regulated monopolies operate in stable, mature industries, provide essential services, and are not engaged in risky operational activities (e.g. significant R&D). Firms with these characteristics should, in general, earn very stable (not volatile) returns over time, and any sensible system of regulation should reflect this.

This issue of volatility in WACC became particularly apparent during the global financial crisis, when increased market uncertainty led to significant variability in estimates of some of the individual WACC parameters derived by Australian regulators. However, the general issue of instability in allowed revenues, due to variability in WACC estimates, can arise at any time, particularly since there is a generally a fairly long period of time (e.g. five years) between regulatory resets, over which time market parameters may evolve significantly.

Several WSAA members have contended that the approach by Australian economic regulators to determining the WACC in recent price reviews for urban

water businesses had resulted in variable rates of return and the potential for volatile prices. One business observed:

The Weighted Average Cost of Capital (WACC) is an input into the pricing model with significant influence on final prices. The WACC has moved materially during the current assessment process between Water Plans, draft and final determinations. The prospect of having prices fixed for five years after the volatility of the last 12 months, is leading some businesses to explore complex treasury management techniques such as interest rate swaps, to manage the risk of interest rate movements. Whilst this is an appropriate and prudent response, there is a cost and increased governance burden which could be avoided if a less rigid regulatory approach allowed for interest rate adjustments.

Similarly, Hunter Water, in a submission to this review, stated that:

Hunter Water's recent 2013 price determination has resulted in a sub-optimal outcome, in particular the WACC outcome of 4.6% real post-tax. The WACC calculation methodology adopted by the economic regulator was flawed. The past two price determinations for Hunter Water have been 12 months after that of Sydney Water and in both instances the WACC for Hunter Water has been 100 basis points lower than that of Sydney Water. It is inconsistent that two entities in the same industry and regulated by the same regulator sharing three years of a four year price path could have WACCs that are 1% different. The lower WACC over what will be 8 years in total is the primary driver behind Hunter Water having its credit rating downgraded.

IPART have since amended some inputs to the WACC methodology. If Hunter Water pricing were to be determined now under this revised approach, the WACC would be 90 basis points higher than that adopted in the 2013 determination. The WACC has resulted in a loss of revenue for Hunter Water of over \$110m over the current price path. No option exists to amend the inequity other than a request for the price path to be reopened.

The interests of creating a stable environment for planning future investments and price stability augur for an approach for determining WACC which does not lead to undue volatility.

One way in which this may be done would be to adopt the approach followed by economic regulators in the UK. There, regulators have given greater weight should to long-run evidence than to short-term movements in market parameters over time. When regulators have revised parameter values, they have done so gradually over time. This avoids imposing price shocks on customers from period to period, and helps businesses plan with confidence over long horizons. Furthermore, such an approach has given external investors confidence that regulated sectors are relatively safe, which encourages commitment to fund necessary investments as they arise. Finally, it ensures against the absurd regulatory outcomes, where regulated two businesses undertaking ostensibly very similar activities are allowed significantly different rates of return, simply due to the timing of their respective regulatory reset.

Another way to promote stability of returns that regulated businesses are allowed to earn over time would be for regulators to undertake 'sense checks' of the

WACC values they determine. WACC cannot be observed directly, so must be estimated, often with great uncertainty and imprecision. Given this inherent uncertainty, basic sense checks, such as examining for consistency with other, recent regulatory decisions, and using a wide set of models, data and evidence, are sensible. In 2012, the AEMC promulgated a rule change that required the AER to consider a wider set of models, data and evidence than the AER had used in past WACC determinations.

Totex

It has been suggested that the building blocks model has the potential to introduce a bias towards capital expenditure solutions because a return can be earned on capital investment but not on operating solutions. In the UK, OfWat and OfGem have adopted the totex approach. Under this approach:

- expenditure allowances are assessed on a totex basis (as opposed to opex and capex separately)
- the incentive rates on opex and capex have been harmonised (to minimise any skew in preferences towards capex solutions over potentially more efficient opex solutions) and
- a (significant) proportion of totex is capitalised in the RAB (and is therefore remunerated as “slow money”), whilst the residual proportion of totex is paid as immediate cash (i.e. “fast money”). This is an explicit attempt to avoid distortions in preferences for one type of expenditure over another, arising from the way the businesses are allowed to recover these expenditures.

The principles underlying the totex concept appear sound. However, arguably, such an approach would only be warranted if there is convincing evidence of skew in preferences towards capex. In addition, the soundness of the totex approach depends on how it is applied in practice. Its application in the U.K. is still in its early stages and it may therefore be too early to conclude that it will achieve its intended objective.

Approaches to scrutinising capex

While the regulatory review process operates differently across the various jurisdictions the fundamental approach to assessing capital expenditure is similar. This applies whether the regulatory framework is based on price monitoring and guidance (as currently proposed in Queensland and similar to the system in Western Australia) or price setting (such as the current framework in New South Wales and Victoria). This fundamental approach involves a review of the prudence and the efficiency of historical and proposed capital expenditure.

The assessment of prudence requires the reviewer to investigate the reasoning behind the levels of expenditure proposed and to determine whether the reasoning is appropriate. That is, whether the expenditure is consistent with and

clearly linked to the water business' obligations, be these legislative in nature, driven by a corporate vision or mission statement, or by direct or indirect customer action or advocacy.

The efficiency test for expenditure is generally made when the following can be demonstrated:

- The proposed works are deemed to be the most appropriate solution after having due regard for alternative options, which may include other capital or operating options or non-expenditure options such as water conservation, demand management or adjustments to service levels.
- The cost estimates for the proposed works have been benchmarked against market rates using unit rate databases with appropriate consideration of issues affecting costs such as market indices and escalation factors.

Demonstrating that capital or operating expenditure proposed is efficient may involve the provision of supporting documents including feasibility studies, cost benefit studies or options analysis studies where multiple options are considered which detail the options considered, the conditions under which options were assessed, and reasoning for the choice of the optimal solution.

Some concerns have been raised about the approach taken by economic regulators to scrutinising proposed capital expenditures. One water business commented that:

The price review process can set up an adversarial relationship between the regulator and the entity. The regulator's consultant is placed in a difficult position and suffers from information asymmetry compared to that of the business. The consultant must make recommendations based on a few weeks review of a business that is otherwise completely unknown to them.

This approach does not typically drive efficiencies. It may be that external scrutiny of expenditure proposals that occurs at a price review will lead to ideas for achieving the target outcomes more efficiently but this is generally not the case. Efficiency gains generally occur during the years of the regulatory control period, incentivised by a regulatory framework that inherently rewards lower-than-forecast expenditure.

There is merit in actively considering ways of reducing the need for the regulator to commission such detailed reviews of proposed capital expenditure. More far-reaching changes to the regulatory approach (e.g. more high-powered incentives, twin tracking and menu regulation) were discussed above. Alternatively, more emphasis could be placed assessing the processes that businesses have in place for approving investment decisions (e.g. evidence of sound business cases, evidence of engagement with customers to identify the outcomes they really value, and independent external scrutiny and audit).

Another issue relates to ex post reviews of capex undertaken in previous regulatory periods. For example, ESCOSA is proposing to undertake a review of SA Water's actual capital expenditure incurred during the first regulatory period,

with a view to only incorporating those capital expenditures which are determined by ESCOSA to be prudent and efficient in SA Water's starting RAB values for the second regulatory period. ESCOSA (2013) stated that:

Ex-post reviews of capital expenditure are commonplace in other Australian jurisdictions, and in the UK, and provide an additional level of comfort to consumers that they are funding only prudent and efficient investment.

The Commission considers that such a review is particularly relevant to Government-owned enterprises, where the incentives towards profit maximisation may be weaker than for privately-owned entities, and where there is potential for non-commercial objectives to be given higher priority.

While a number of other regulators reserve the right to conduct ex post reviews of capital expenditure, these are generally not exercised in recognition of the potential impact of such reviews on the incentives for investment and regulatory risk. Such reviews may be problematic if they assess decisions made in the past with the benefit of hindsight or updated information not available at the time the original decision was made.

Approaches to assessing scope for productivity gains

Identifying ways to pursue efficiency and continuous improvement rather than the CPI-X approach is another potential area for consideration.

One water business suggested that rather than reviewing expenditure forecasts on a “zero basis”, the concept of “revealed efficient costs” as used by the AER should be adopted, so that regulated business would need to justify changes to current operating expenditure, rather than total expenditure.

Such approaches could represent improvements but depend on how they are implemented in practice. They may be more applicable in more mature regulatory regimes. In mature regulatory regimes the regulator has, by definition, overseen historical expenditure in relation to efficiency. As a result there is likely to be more confidence that current operating expenditures (the base) are efficient.

Financeability test

In theory, the building block approach should ensure that a regulated business has an opportunity to earn sufficient revenue to ensure the business is financially sustainable. However, in practice, the process of setting revenue allowances is fraught with complexity and uncertainty. For instance:

- there is scope for significant estimation error in WACC, an input to the building blocks calculation to which the revenue allowance is typically very sensitive.
- The ex ante nature of building block type regulation means that regulators must consider not just a business's costs today, but its expenditure

Broad approaches and methodologies for regulation

requirements several years into the future. This can involve significant forecasting uncertainty.

- As discussed earlier, regulators face an informational disadvantage relative to the firms they regulate. This could lead to the regulator being unwittingly over-generous to the businesses in some cases. However, it could also result in the regulator setting allowances that are unrealistically low. Because of the asymmetry of information between the businesses and the regulator, it is very difficult for the regulator to discern if attempts by businesses to persuade the regulator set higher allowances are justified, or merely gaming to secure inefficiently high revenues. Under these circumstances, regulators may be inclined to view sceptically claims by businesses about proposed allowances being too low, even if those claims are in fact valid.
- A typical building block assessment of allowed revenues requires the regulator to make individual judgments in many discrete areas. This gives rise to the distinct possibility that these many and various decisions, when added together, result in an overall package that does not make sense in terms of ensuring the financial viability of the business.

The consequences associated with regulators setting revenue allowances too low can be very serious. Over the short term, the business may have to defer or forego efficient investments in order to manage its cash flow requirements. However, if allowances remain persistently low, any financial cushion the business may have to weather short-term hardship may be eroded. Sustained financial strain could cause the creditworthiness of the business to deteriorate, making it more difficult or costly for the business to raise funds from investors. In the extreme, the business could become insolvent altogether. If that were to happen, the impact on customers could be severe, since regulated monopolies often provide essential services that large sections of the economy rely on.³

In the UK, economic regulators take the financeability of regulated businesses very seriously. In fact, most of the regulators have legal duties to ensure that the businesses they regulate remain financeable, as summarised below in Table 10.

Table 10: UK regulators' statutory duties with regard to financing

Regulator	Financing duty
Ofwat	"to secure that companies .. are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of their functions"

³ Failures in such essential industries may also have ramifications for taxpayers if the government feels it necessary to step in and provide aid to a failing business, to avert harm to consumers.

Ofgem	<p>Electricity</p> <p>“to have regard to the need to secure that licence holders are able to finance the activities which are the subject of obligations on them”</p> <p>Gas</p> <p>“to secure that such persons are able to finance the provision of gas supply services”</p>
Ofcom	<p>Royal Mail</p> <p>“Ofcom must have regard to a) the need for the universal postal service to be financially sustainable”</p>
Office of Rail Regulation	<p>“not render it unduly difficult for persons who are holders of network licences to finance any activities or proposed activities”</p>

Source: Frontier Economics

In response to these obligations, UK regulators have developed tests, which assess whether their proposed revenue allowances would likely give rise to financeability tests. Box 8 below describes how OfWat conducts financeability assessments.

Box 8: OfWat application of financeability tests

This case study considers the role and importance of financeability assessments in OfWat’s determinations.

Role of financeability tests

A reasonable definition is that a regulated utility is financeable if it is able to secure financing for investment on reasonable terms. This ties in with the definitions of financeability employed by OfGem and OfWat:

- OfGem states that financeability is: “the ability to secure financing in a timely way and at reasonable cost” in order to deliver regulatory obligations
- OfWat states that “Price limits must secure that efficient companies can be financeable, such that a company’s revenues, profits and cash flows are sufficient to allow it to raise finance on reasonable terms”.

The application of the financeability assessment is also closely linked to the financing duty that is enshrined in the legislation for the water industry. The financing duty for the water sector is set out in Section 2(2A)(c) of the Water Industry Act. It states that OfWat has a duty “to secure that companies .. are able (in particular, by securing reasonable returns on their capital) to finance the proper carrying out of their functions”

Consistent with this statutory duty, the primary method used to ensure that utilities are financeable is to set prices so that investments can earn the cost of capital. This is the position that the Competition Commission adopted in its report on Bristol Water :

“We considered that the duty that falls directly on us under section 2(2A)(c) to secure that companies can finance the proper carrying out of their functions is fulfilled by ensuring that the opex and capex projections and the cost of debt and equity (and therefore the WACC) are

reasonable. If these are reasonable (and Bristol Water has reasonable options which enable it to raise finance while complying with its licence conditions), then Bristol Water should be able to finance its functions.” [para 10.8]

Therefore the main approach that regulators adopt to ensure that the utility is financeable is to set the rate of return on the RAB equal to the cost of capital.

OfWat, like other UK regulators, supports this approach by undertaking an additional financeability assessment. A financeability assessment is a modelling exercise undertaken by the regulator as part of the price setting process. Using a spreadsheet model of the regulatory price control it calculates a number of financial metrics (based on those used by credit rating agencies) that aim to capture whether the utility is financeable.

The additional financeability assessment has two possible roles.

- First, it could serve as a cross-check of the calculations in the WACC and RAB based approach.
- Second, it tests whether the utility may not be financeable even when the cost of capital and other parameters have been set correctly. Such cases can result from factors arising from regulatory and policy structure (e.g. setting real returns on an indexed asset base) or from previous company decisions (e.g. choice of gearing level).

OfWat approach to financeability assessments

OfWat’s approach to the application of financeability tests has the following features.

- The target financial metrics are based on those commonly used by the credit rating agencies. Probably the most important of these are cash interest cover ratios and cash interest cover ratios adjusted for capital maintenance expenditure.
- OfWat’s approach seeks to focus on the financeability of an efficient operator by adjusting the gearing level to a notional level. At PR14 it has determined a notional gearing level of 62.5%. It can also make adjustments to the debt structure, for example to include a proportion of index-linked debt.
- OfWat’s preferred approach is for any financeability concerns to be addressed adjustment to the pay-as-you-go ratio (PAYG). This ratio determines the amount of cashflow generated by price limits to cover operating expenditure and capital maintenance. A higher PAYG ratios increases cashflow but reduces the RAB in future periods.
- If the PAYG adjustment is not sufficient then OfWat considers that equity injections should be use to deal with any financeability concerns. Overall OfWat does not consider that, over the long-term, customers should bear the cost of resolving financeability issues.

Assessment

The financeability approach adopted by OfWat at PR14 is similar to that adopted by other UK regulators. It does though raise a couple of questions.

- PAYG adjustments. Credit rating agencies have expressed concern as to whether these adjustments are effective, given that they are effectively increasing cashflow in the short-term at the expense of future RAB.
- Assumptions about equity injections. Assuming new equity is provided requires consideration of likely costs of issuing new equity and how they should be recovered. This has not yet been addressed.

Source: Frontier Economics

At their most fundamental level, financeability tests are simply a reasonableness check on the regulatory determination. They loosely mimic the sorts of assessments that credit rating agencies would undertake when evaluating the creditworthiness of a business. The tests check, under different scenarios that

could arise, the impact of the proposed revenue allowances on key financial metrics. Evidence of persistently weak metrics under plausible scenarios would indicate that the revenue allowance needs to be revisited.

Such tests are sensible given the uncertainty and risk of error that a regulator faces when developing revenue allowances. Indeed, it may be argued that, even in the absence of legal obligations to secure the financeability of controlled businesses, it is consistent regulatory best practice to at least perform such sense checks.

In Australia, both the ESC and IPART recently undertook reviews on the manner in which regulatory processes and frameworks make allowances for financeability issues. Both of these reviews tended to focus on short-term financial variability impacts.

In a paper commissioned by the ESC, NERA noted that the building block applied by the ESC does not guarantee the short-term financeability of a regulated business. NERA noted that financeability constraints may arise due to:

- the deferment of revenue — a consequence of regulatory approach to RAB is that building block revenues provide for only a real return on assets. However, a business is generally required to pay a nominal return on debt. So, although the building block approach ensures that an appropriate return on debt and equity is provided in the long run, in the short run, the cash returns to equity may be below the target return to equity, which may give rise to short term financeability constraints.
- the use of benchmarks costs rather than actual costs — the regulatory WACC is set on the basis of an estimate of the cost of debt prevailing immediately prior to the start of the regulatory control period. However, in practice, most regulated businesses raise debt periodically and so their actual debt costs reflect a historic trailing average debt yield, rather than the prevailing costs of debt at the time regulated prices are determined. It follows that when the debt yields prevailing prior to a regulatory determination are substantially lower than the trailing average debt yield, a regulatory determination may also result in financeability constraints
- the existence of incentive arrangements — which may have a negative effect on a regulated business' cashflow. The inclusion of incentive mechanisms that reward (or penalise) a regulated water service provider for outperforming (underperforming) a specified efficiency benchmark may also affect its financeability. For example, the operating expenditure incentive mechanism allows a business that efficiently lowers its operating costs below forecast to retain the benefit of that cost saving for a period of six years. Alternatively where costs rise above forecast, the service provider bears that cost for six years. To give effect to these incentive mechanisms necessitates that, in some circumstance, the revenue allowance of a regulated service provider over a

regulated period may be less than its forecast costs. Again, this can give rise to short term financeability issues. (NERA, 2013)

IPART also note that another reason that financeability issues may arise is due to a mismatch between the term of financing and assets lives (IPART, 2012a), particularly if there is a single dominant asset (such as a desalination plant) or wave of capital expenditure. For example, where the asset lives are significantly greater than the terms of finance, regulatory depreciation may be insufficient on a per annum basis for the businesses to retire its debt.

A number of regulators now supplement the building blocks methodology with a ‘financeability test’, designed as a ‘sense check’ to ensure that the prices arising from the regulatory process will in fact ensure that the regulated entity is financially viable.

Financeability tests are not a panacea against poor regulatory decisions. These tests usually require judgements to be made by the regulator, and there is often room for differing interpretations of the results of the tests. The tests tend to focus on debt capital (i.e. the expected creditworthiness of the business, its ability to service existing debt, or capacity to raise new debt) and almost universally ignore the impact on equity capital. Hence, it has sometimes been tempting for regulators to assume away financeability problems by arguing that shareholders should plug any financial gaps (e.g. by accepting lower dividends, or injecting more equity capital). However, clearly, such solutions are short-term ones at best.

Notwithstanding these shortcomings, financeability tests are useful in identifying manifestly bad regulatory errors that could place the regulated business under severe financial strain. Since customers (and taxpayers) may ultimately bear the costs of any such financial distress, we consider that financeability tests should be undertaken as a matter of course.

Focus on material issues

Another way in which the regulatory burden of current approaches could be reduced is by focusing resources on the issue which matter the most. One water business commented that:

One of the primary aspects that could be improved is the consideration of the materiality of outcomes from analysis is not always well-judged (i.e. significant analysis on elements of the review that provide immaterial outcomes)... A consideration of the value of the analysis prior to undertaking the analysis may assist the regulator in focusing on material issues throughout the review (i.e. bang for buck in terms of analysis/review).

5.4.4 Staggered price reviews

Where a regulator has jurisdiction over a large number of businesses, another potential way of reducing the regulatory burden and improving the efficiency and

effectiveness of the approach is to stagger the price reviews so that not all of the businesses are being reviewed at the same time.

This is the approach taken by the AER which regulates a large number of energy businesses and IPART when it regulates water businesses. However, as alluded to above, if price controls are staggered, it is essential that the regulator perform checks for consistency between decisions.

For the urban water sector in Australia, this option might be most applicable to the ESC, which currently regulates 19 water businesses. The ESC has recently indicated a willingness to explore such options.

5.5 External benchmarking

A frequently cited potential alternative to building blocks incentive regulation is to determine the prices that regulated businesses are allowed to charge using external productivity benchmarks, rather than an assessment of efficient firm-specific costs. The idea behind the benchmarking approach would be to allow regulated prices to grow at the rate of general inflation (e.g. using the CPI) minus an X factor. Superficially, this resembles a building blocks approach. However, under a benchmarking approach, the X factor would be determined using an estimate of the annual rate of productivity improvement over time, rather than the rate at which prices (or revenues) would need to grow in order to recover the expected growth in efficient costs over time.

There has been strong advocacy for the use of Total Factor Productivity (TFP) measures for determining the X factor in setting prices, although other quantitative techniques such as Data Envelopment Analysis (DEA) and stochastic frontier analysis (SFA) have also been suggested.

TFP is a measure of the change in the outputs from production (of an individual business, industry or economy as a whole), that cannot be explained by conventional inputs to production (e.g. labour and capital). This residual quantity can be interpreted as an estimate of efficiency. Therefore, TFP provides a way of comparing how productively businesses use their resources. An industry TFP growth index measures the rate at which the productivity of a group of businesses changes over time.

It is important to note that benchmarking techniques, such as TFP, DEA and SFA can and are used by regulators within a building block framework. Within an incentive-based building block framework, regulators often attempt to take account of efficiency improvements when setting revenue allowances, and

benchmarking techniques are used to estimate the expected rate of efficiency gains.⁴

However, under a **pure** benchmarking approach the regulator links annual changes in prices explicitly to estimates of the changes in industry-wide productivity rather than an assessment of business-specific costs. In doing so, a pure benchmarking methodology divorces the process of setting regulated prices from the costs of individual firms. Such an approach could be characterised as an attempt to expose regulated service providers to pressures more akin to a competitive market, where a failure to keep up with industry productivity growth would reduce profits.

Potential advantages of such an approach include:

- stronger performance incentives
- lower regulatory administrative costs
- redressing the information asymmetry issues faced by regulators by relying less on business-specific information when determining regulated prices
- more inbuilt incentives to undertake demand management compared to the building block approach because it includes an incentive to utilise assets well.

A recent investigation into the potential use of a pure benchmarking methodology as an alternative to the current building block approach was undertaken by the AEMC (see Box 9). It found that it could lead to increased productivity and lower prices for consumers in the long term. However, as noted by the AEMC, a number of conditions need to be satisfied for a benchmarking methodology to work properly and promote efficient regulatory decisions. Key requirements include the availability of robust data from a sufficient number of comparator businesses, the comparability of businesses within the industry, and the ability to control properly for intrinsic differences between firms that do not influence their relative efficiency to one another. The PC (2013) concluded that:

Benchmarking is not yet sufficiently reliable and robust to directly set regulated revenue allowances. A particular concern is that it is difficult to distinguish between inefficiency and errors arising from model misspecification, poor data, different regulatory settings and varying operational environments.

Such difficulties are less severe if the purpose of benchmarking is to identify broad efficiency concerns about network businesses. However, in setting regulatory allowances, badly configured benchmarks could lead to under-remuneration of businesses, with risk for efficient investment and business solvency.

⁴ For instance, recent guidelines published by the AER, which uses a building block approach to setting revenue allowances for regulated energy networks, proposed the use of benchmarking techniques (e.g. TFP, DEA and other econometric techniques) for the purposes of assessing businesses' expenditure forecasts. See AER (2013), Expenditure Forecast Assessment Guideline for Electricity Distribution, November.

However, the AEMC did recommend establishing a better, more consistent dataset to facilitate greater use of benchmarking in future determinations.

Box 9: AEMC Review of pure benchmarking approaches to setting regulated prices directly

The AEMC found that while TFP benchmarking could lead to increased productivity and lower prices for consumers in the long term, a number of conditions need to be satisfied for a TFP methodology to work properly and promote efficient regulatory decisions. These include:

- the creation of a consistent and robust database which can support an appropriately specified TFP calculation.
- that TFP indexes can be calculated that accurately represent individual service provider, overall industry and service provider group productivity. This requires availability of consistent data for the variables required to satisfy the principles for calculating TFP
- groups of service providers facing reasonably comparable productivity growth potential can be formed and there are a sufficient number of service providers in each group so that no single service provider or collective of related providers with common ownership can influence the group outcome unduly.
- historic TFP growth rates are a good predictor of likely future TFP growth potential for that group of service providers. This requires conditions facing service providers to be relatively stable over time.
- a number of service providers submitted that they are likely to face a number of potentially large changes that will make future conditions less stable than historically. Examples quoted included climate change initiatives, the development of smart grids and likely increases in required replacement investment or the so-called 'wall of wire' effects.

The AEMC concluded that it appears unlikely that it would be appropriate to implement a TFP methodology for the electricity and gas transmission sectors because of the small number of service providers, the lumpiness of capital expenditure and difficulties in measuring outputs. For example, the ability of the TFP growth index to be a good estimate of future productivity growth for the service providers within the industry group would be met in a steady and mature market. However, there is some doubt that the condition can be met in the foreseeable future as there are a range of external factors that may impact on what service providers are required to deliver. Applying a full TFP-based methodology in the electricity transmission sector may not be effective because of the difficulty in measuring outputs related to system security and reliability, the lumpiness of capital expenditure and given the small number of service providers.

Source: AEMC

There are examples of regulators that have used pure benchmarking approaches in place of an incentive-based building block methodology for setting regulated prices. For instance, the electricity thresholds regime administered by the New Zealand Commerce Commission was a pure benchmarking approach, based on TFP analysis, that was used to determine price thresholds for electricity distribution networks. This thresholds regime was abandoned in New Zealand in favour of a building block approach.

The review that led to the replacement of the thresholds regime by the current building block approach was led by the Ministry of Economic Development

(MED).⁵ In its review, MED expressed the following reservations about a pure benchmarking approach, which underpinned the old thresholds regime:⁶

Comparative benchmarking may, however, be problematic as companies are often very different from each other and their capital expenditure profiles differ too. For example, in a sector characterised by very lumpy investment, if one company is just starting a major capital investment cycle, its prices may need to rise so that it can earn a return on the new investment. Applying sector-wide regulatory parameters to this company could discourage it from carrying out essential capital expenditure and/or put it at risk of making non-commercial returns. If another company in the sector has no requirement for significant capital expenditure, its prices may be able to fall. Applying industry parameters to this company may result in it earning a substantial margin above its industry costs.

Indeed, the existing legislative provisions in New Zealand prohibit comparative benchmarking as the primary means for setting regulated prices. Section 53P(10) of the Commerce Amendment Act 2008 states that:

The Commission may not, for the purposes of this section [i.e. resetting starting prices, rates of change, and quality standards], use comparative benchmarking on efficiency in order to set starting prices, rates of change, quality standards, or incentives to improve quality of supply.

Yardstick competition (see Box 10), another form of pure benchmarking, has been used by the Dutch energy regulator — the Authority for Consumers and Markets (ACM), and its predecessors — for many years. Norway uses a hybrid approach, where regulated companies' cost allowances are a weighted average of their own costs and benchmarked costs.

Box 10: Yardstick competition

Under yardstick competition, the regulator sets prices for all networks according to average industry costs. Companies that can beat the industry average cost will achieve higher returns, while less efficient companies achieve lower returns. Prices can then be re-set periodically to reflect the new industry average, as revealed by the incentive to beat the previous average. This yardstick approach effectively introduces a degree of competition between monopoly networks.

The central benefit of this approach is that each regulated business' allowances are set independently of any information that it can influence, and this means the regulator does not need to reach a tailored view of the appropriate cost forecast for each network. This may be particularly advantageous if the regulator faces a significant asymmetry of information, relative to the businesses it regulates, about the efficient costs of those businesses because it reduces:

- significantly the need for the regulator to engage in costly information gathering about the business; and
- the scope for businesses to game the regulator by exploiting the information advantage they enjoy.

⁵ MED has now been subsumed within the Ministry of Business, Innovation and Employment.

⁶ MED (2007), Review of Regulatory Control Provisions under the Commerce Act 1986: Discussion Document, April, p.48.

Further, once the methodology for determining industry performance is well-established, it requires relatively little modification by the regulator, so is fairly low cost. It is likely that this type of regime works more effectively in jurisdictions where there are many similar firms, since the intrinsic differences between them are likely to be less stark.

However, there are clearly also drawbacks. Not least of these is that substantial effort is required to assess the “starting point” of each of the networks, and to implement a price path that gives the companies an opportunity to converge towards the efficiency frontier before the yardstick competition is fully implemented. The techniques used for benchmarking analyses can be highly contentious, and the results of such exercises can be very sensitive to the quality of the data available and the precise specification of the models used.

The approach also assumes that the future is like the past, i.e. that there are no required step-changes in costs. This means that companies can be left with periods during which the price control is not sufficient to allow them to finance their activities, although this risk may be mitigated to some extent by modifying the duration of the price control (i.e. if prices can be re-set frequently).

Source: Frontier Economics

In summary, ‘pure’ external yardstick approaches are likely to be most appropriate when a range of suitable comparators is available and the industry is in a ‘steady state’. Even so, there is likely to be a need to re-link regulated prices/revenues to costs periodically to avoid either political concerns about excessive profits or businesses encountering financial difficulty.

In considering the scope for application of a pure benchmarking approach to the urban water industry in Australia, it would appear that, as for the electricity industry, there is not a sufficiently robust dataset that could be used for this purpose. In addition, the urban water systems in each State have their own idiosyncrasies (particularly in relation to bulk supply sources), which implies it would be difficult to compile a set of appropriate comparators, or to control properly for firm-specific differences. The industry is subject to inherent uncertainties and has not reached – and may never reach – a steady state. The scope for lumpy investment programs for compliance or supply capacity also means that application of this approach would entail significant risk of regulated prices diverging significantly from the regulated entity’s efficient costs.

5.6 Price/performance monitoring

Another alternative to direct price regulation is to monitor prices and performance standards, typically with an implicit or explicit threat to impose more direct regulation should evidence emerge of unsatisfactory outcomes. This option is often applied to newly competitive industries, to industries where there is some countervailing market power, or to industries where there a clear cut case for direct regulation has not yet been established.

Advocates of price monitoring, such as the Productivity Commission (2011), suggest that:

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Light-handed regulatory alternatives such as price monitoring typically impose fewer costs than price setting (not just in terms of compliance costs, but monitoring should be less likely to discourage investment). Whilst there might be significant informational requirements, these are likely to be less (if only because the level of cost allocation required is lower) and price monitoring does not restrict the pricing decisions of utilities in the same way as price setting, and can therefore be seen as less intrusive.

Price monitoring is likely to be more appropriate than price setting where the scope for abuse of market power is fairly limited, but where some concerns still remain about potential monopoly pricing.

However, other commentators suggest that in practice price monitoring has not been effective (see Box 11).

Box 11: Experience with price monitoring – Airports

Price monitoring has been undertaken for Australian airports since 2002. The Productivity Commission's (PC's) 2002 review of price regulation of airport services, found that some of the major airports—Brisbane, Melbourne, Perth and Sydney—possess substantial market power. However, it declined to recommend a formal price regulation system, instead preferring a system of price monitoring.

In adopting the PC's recommendation, the Government was seeking to enhance market transparency and market competitiveness, as well as to inform the Government about whether further regulation could be required.

The monitoring regime established by the ACCC measures both financial and quality of service performance. This has provided a partial indication of problems with the ability of airports to charge excessively, although the ACCC does not consider it is able to evaluate whether excessive economic returns have been earned.

There is considerable disagreement between various parties about the effectiveness of the monitoring regime. Perhaps not surprising, the airports generally believe it has been effective, while the airlines disagree. However, there is also considerable disagreement between the PC, which has reviewed the operation of the airports regulatory system in 2006 and 2011, and the ACCC.

In its 2011 submission to the PC inquiry into airports, the ACCC concluded that:

In sum, the ACCC considers that the benefits of continued monitoring are unlikely to outweigh the costs. Although monitoring has played a role in problem identification, it is ineffective as a tool to address the problems it identifies. In recognition of the costs it imposes, there is little justification for its continuation. Indeed a continuation of monitoring might represent an unnecessary regulatory burden on airport businesses. The ACCC would also conclude, on the basis of its monitoring experience, that there is little justification for a return to price controls.

The PC (2011) has taken a very different view about the outcomes of price monitoring. It found that under the light-handed monitoring regime that replaced price cap regulation:

- there has been a marked increase in aeronautical investment and airports have not experienced the bottlenecks that have beset other infrastructure areas
- aeronautical charges do not point to the inappropriate exercise of market power
- service quality outcomes overall are 'satisfactory' to 'good', although airlines have, on occasion rated two airports as 'poor'
- Australian airports' aeronautical charges, revenues, costs, profits and investment look

reasonable compared with (the mostly non-commercial) overseas airports.

The PC also noted that there were several avenues open to further testing allegations of market power by the airports, including formal price investigations that could be undertaken on ministerial direction, applications for access under Part IIIA, or use of Part IV powers under the *Competition and Consumer Act 2010*.

The ACCC's view is that there is a role for Part IIIA and the 'negotiate-arbitrate' system for airports, and it recommended this to the PC. However, the PC remains of the view that the existing monitoring system can be enhanced, through the adoption of a 'show cause' system whereby the ACCC can ask airports to show cause why it should not recommend to the Minister that a pricing inquiry be undertaken. Further changes were also recommended to improve the quality of the monitoring (e.g. extending the monitoring to include car parking services).

Our view is that the airports price monitoring provides good examples of what we see as the two key difficulties of price monitoring: (a) how to monitor for abuse of market power and (b) how to provide an appropriate "threshold" for the imposition of more intrusive price controls.

On the first issue, in infrastructure-intensive industries like airports, the accounting treatment of capital expenditures can have a significant impact on reported profits. If monitoring is to be effective, it must either provide for a detailed, prescriptive set of regulatory accounts, or rely on 'higher level' measures of profit for comparison (such as EBITDA) which are not so amenable to accounting distortions but which only provide a basis for further investigation.

On the second issue, there is a difficult balance that must be struck between encouraging commercial negotiation and protecting purchasers from exploitation of market power, which can only occur if purchasers can be given a reasonable bargaining position.

Source: Frontier Economics, Productivity Commission (2011, Economic Regulation of Airport Services, Inquiry Report no. 57, Canberra), and ACCC submissions to the PC Inquiry.

Industries subject to more light-handed forms of regulation tend to be those where competition has emerged or is emerging (e.g. telecommunications, energy retailing), and/or where customers have a degree of countervailing power, for example through being relatively small in number and well resourced, being highly motivated because the service represents a significant input cost, or having an alternative supply option.

For this report, a key question is whether price monitoring might be a suitable form of regulation for the urban water industry. This issue was addressed by the Productivity Commission in its report on Urban Water, where it concluded that, subject to the implementation of institutional and governance reforms, and based on its assessment that the scope for potential misuse of market power in the urban water sector is limited, there is a strong case for price or revenue monitoring to be adopted as a more light-handed regulatory approach than direct price setting.

A form of annual price and performance monitoring has been in operation in south east Queensland (SEQ) for the last three to four years, as an 'interim' approach pending the development of a longer-term regulatory framework. In practice, however, it is widely seen as having been quite 'heavy-handed', as it has involved the same methodology as a full building block assessment, but has been

undertaken each year rather than every three to five years as under a typical price review process.

Threshold regulation

One form of light-handed regulation or price monitoring is known as ‘threshold’ regulation. This involves the economic regulator setting an explicit price/service threshold which is not binding on the regulated entity, but where a firm sets prices above the threshold (or service levels drop below the specified level), they are subject to regulatory review and potentially to full price control.

There are several examples of threshold regulation in other sectors. In New Zealand the Commerce Commission used to regulate electricity businesses using a ‘thresholds’ regime, whereby maximum price thresholds were established, and any breaches of these thresholds were subsequently investigated. In some cases, the Commission negotiated ‘administrative settlements’ to resolve breaches. These settlements typically involved negotiated price reductions.⁷

As part of OfGem’s recent review it engaged LECG to undertake a study on alternative forms of regulation. LECG (2009) concluded that:

A threshold regime will provide some level of protection to consumers by providing an explicit threat of regulation should prices exceed a pre-determined level. However, the pre-determined level, which might be based on current prices plus a general productivity saving factor, is unlikely to be as close to cost as an ex ante price control. This is in part because threshold regulation is inherently asymmetric. That is, if the threshold price is set below cost, the firm can choose to breach the threshold and trigger a favourable reset. However, if the threshold price is above cost then the firm can price at or just below the threshold and earn excessive profits.

The regulator can mitigate this problem by resetting the threshold periodically or by modifying the methodology, but such measures add complexity and bring the regime closer to an ex ante form of control, thereby reducing any advantage in terms of lower regulatory burden.

LECG also noted that threshold regimes in other jurisdictions have been subject to continuous change and do not appear to be durable over time. It also found that, in practice, threshold regulation results in the lengthy and resource intensive investigation of breaches, so that they may offer little advantage in terms of regulatory burden.

A ‘performance monitoring’ approach involving pre-defined thresholds has recently been recommended by the QCA for application to the SEQ retail/distribution businesses as the long-term regulatory approach. The Ministers required that the form of prices oversight should minimise the administrative

⁷ An example of such a settlement was the settlement involving Transpower, the national grid operator, in May 2008. In 2010, Transpower’s administrative settlement was superseded by the current price-quality path regime.

burden on the entities and facilitate a move to a more light-handed framework over time.

The QCA found in its Position Paper (QCA 2014) that overall a *prima facie* case for setting prices directly for at least Unitywater and QUU was not evident, and instead recommended a more 'light-handed' performance monitoring approach (see Box 12). The QCA suggested that the main advantages of indirect regulation are reduced regulatory intrusion, lower costs of regulation and compliance and greater flexibility for the regulated entity to adapt its pricing to changing circumstances. The QCA's Final Report is due in September 2014.

Box 12 Proposed 'light-handed' approach to regulating SEQ water distribution utilities

Overall approach

The recommended form of regulation is annual performance monitoring. It is recommended that the QCA monitor and report upon the entities' performance against a range of measures including prices, revenues, certain costs (where necessary to justify breaches of the CPI-X rule), recommended procedures and policies (including strategic investment and customer engagement practices), service quality standards and the application of appropriate pricing principles. Public reporting by the entities and transparent review by the QCA is considered a key ingredient in promoting continued performance improvement. It is recommended entities report annually on their performance for the previous year (ex post approach). Information returns would be due on 31 October. A Final Report would be due from the QCA by 31 March the following year.

Incentives for performance

To promote incentives and manage risks, monitoring prices against CPI-X is recommended. As a starting point, a prudent and efficient cost base needs to be established and annual efficiency targets set (by reference to CPI-X). The value of X will be established in consultation with the entities. Where prices exceed CPI-X, entities will be required to justify the differences. Differences due to the following are recommended to be accepted as pass-throughs:

- (a) changes in uncontrollable costs such as changes to Government legislation and bulk water charges or where there are market-driven changes in WACC
- (b) over or under recovery of certain prudent and efficient costs from and including 2013-14
- (c) an adjustment previously substantiated by the entity.

A sustained breach of the CPI-X price cap would be a key element for invoking a more detailed cost of service review and potentially price determination.

Information requirements for monitoring prices and costs

The QCA proposes to annually assess prices (and their components) against CPI-X targets. Entities will be required to submit an annual information return identifying increases in prices and price components (as well as changes in other non-financial measures).

If price increases (or the components of prices) exceed CPI-X, further information will be required depending on the reason for the difference. For example, if the increase was due to a tariff restructure, the QCA will require information on the nature of the impact on total revenues.

Where prices or revenues have increased by more than CPI-X and cannot be justified on the basis of cost pass-throughs (see above), the QCA will require entities to provide broad data to estimate the Maximum Allowed Revenue (MAR).

Service quality performance reporting

As part of a light handed framework, service quality performance reporting is necessary to complement the oversight of prices. The reporting framework should incorporate indicators that are relevant and meaningful to stakeholders, allow comparisons, are cost effective to collect and are measurable.

It is recommended that entities report against 38 indicators in categories of baseline, water and sewerage reliability and service, water quality, water consumption recycling and reuse, customer responsiveness and service, and the environment.

Transition to performance monitoring

The outcome of the 2013–15 price monitoring review will inform the QCA on the readiness of the entities to be transitioned to long term performance monitoring. It is recommended that transition paths be tailored for entities according to their readiness for performance monitoring.

Key criteria are: the absence of public interest or equity issues warranting attention; clear definition of regulated services; evidence that market power is not being exercised (including that initial cost base is prudent and efficient; absence of imminent material changes in circumstances or major infrastructure costs; and demonstrated capacity to provide the required information accurately and on time, based on prior regulatory processes.

Each entity should meet each of these criteria before transition to the long-term light-handed framework can occur. Performance in terms of customer engagement, strategic planning for long term investment, service quality and pricing principles will also be relevant.

Source: QCA (2014) Position Paper. Long Term Regulatory Framework for SEQ Water Entities

One water business observed in its submission to this review that:

The current and previous form of regulation was quite prescriptive and intensive for price monitoring. The proposed long-term regulatory framework is intended to be a more light-handed form of regulation, however this is not yet in place and therefore cannot be judged yet...

One thing that has become apparent in SEQ is if there is sufficient tension between customers wanting lower prices (with pressure through media) and shareholders wanting appropriate dividends, this could allow for a reduction in the regulatory burden as the outcome would be similar to economic regulation.

In summary, while the urban water industry would seem to have stronger natural monopoly characteristics than those industries which to date have been subject to price monitoring, it represents a potentially feasible option for regulation in situations where there is confidence that there is limited scope for the exercise of monopoly power (e.g. where the regulated business has a good track record and where more intensive economic regulation has been in place for some time, and where there are strong governance arrangements in place to protect against under-pricing).

5.7 Overall assessment

Assessment of alternative broad regulatory approaches and experience in their application in a number of settings suggests that there is no ‘silver bullet’ to achieve the underlying objectives of economic regulation while simultaneously minimising compliance and other costs. There are likely to be trade-offs between

the alternatives so that the best approach will depend on views on these trade-offs and the particular circumstances applying in specific jurisdictions.

More specifically, different approaches to economic regulation may differ in the extent to which they prevent excessive pricing due to monopoly power; encourage efficient and timely investment and innovation; incentivise operating efficiencies; minimise the regulatory burden; and provide a predictable and stable regulatory framework. In addition, the impacts of these approaches will vary depending on precisely how they are applied in practice.

As a generalisation, ex ante direct price control approaches with a direct link to costs (e.g. the building block model) are generally seen as providing greater constraint on the ability of the regulated business to earn monopoly returns, but are often seen as imposing a significant regulatory burden. They are also sometimes seen as providing muted incentives for efficiency improvements. However, the evolution of these regimes in a number of sectors suggests that there is scope to improve their cost-effectiveness and their incentive properties through careful design of the arrangements.

Setting prices instead by reference to external benchmarks is seen by some as providing greater incentives for efficiency and lowering compliance costs relative to a building blocks approach, but successfully applying this approach in practice may be problematic, particularly where a robust database is not available and where there is scope for costs and prices to diverge significantly, giving rise to concerns about monopoly pricing or financial viability and incentives for investment.

More indirect or 'light-handed' approaches have a mixed track record. In broad terms they are typically seen as less effective in ensuring that the regulated business is not charging excessive prices through the exercise of market power, and therefore more suited when the scope for market power is constrained through potential for competition or through countervailing power. While they are often seen as less resource-intensive this is not necessarily the case in practice, particularly if they rely on the threat of more direct price regulation.

While there may be some situations in the urban water sector in Australia where the conditions may allow for more 'light-handed' approaches (e.g. price monitoring), the industry is still largely characterised by entrenched natural monopolies providing services to numerous, generally small customers with limited ability or motivation to engage directly on water pricing issues. These conditions are generally seen as justifying direct ex ante price regulation.

5.8 Best practice for urban water in Australia

Based on the discussion above, it is clear that no single approach to regulation can be clearly identified as representing 'best practice' for application to the urban water sector in Australia. Rather, best practice would require that:

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- The framework within which the economic regulator operates should not preclude the adoption of alternative approaches to regulation which are most likely to achieve the regulatory objectives and be consistent with the principles of good regulation (see section 3.1)
- Economic regulators periodically seek feedback on and review their broad approaches to regulation with a view to identifying ways to improving it, and in particular to minimise the level of prescription wherever possible and to minimise the regulatory burden by ensuring benefits of regulation outweigh the costs
- Economic regulators should apply a financeability test as a sense check on proposed prices as a matter of course.

5.9 Assessment against best practice

As noted in the discussion above, the approach adopted to economic regulation by most economic regulators of the urban water sector in Australia is the CPI-X building block approach. Even where economic regulators do not have deterministic powers, such as the QCA's regulation of bulk water prices of the Gladstone Area Water Board (GAWB), this is also based on a detailed building blocks model.

The regulators have generally adopted this approach on the basis that it is or was the only feasible approach to exercising their responsibilities under their governing legislation. There appear to be some aspects of the legislative arrangements which limit the discretion of economic regulators to adopt alternative approaches (e.g. the explicit requirement for regulators to consider the regulated entity's costs, and to take into account returns on assets etc) which might be seen as dictating a building block approach be adopted. The ESC has observed, for example, that the WIRO regulatory principles limit its flexibility to pursue alternatives to the building block approach used to determine prices. In Tasmania, however, OTTER is specifically required to adopt an approach and methodology that the Regulator considers will best meet the objectives of the *Water and Sewerage Industry Act 2008*.

While the submissions from businesses to this review also generally recognised that there were significant benefits associated with economic regulation, they also noted that there were opportunities for the current frameworks to be improved and for regulatory burden to be reduced. Among these submissions a number also drew attention to an apparent lack of cost consideration by regulators, one stating:

... there has been a tendency by regulators in the past to increase regulatory requirements without acknowledging the associated costs. However, there is now greater awareness of the need to ensure that regulatory impacts are costed and weighted against expected benefits or outcomes.

This provides an opportunity to revisit some of the long standing regulatory requirements and whether these deliver value to customers It would also be timely to undertake an industry wide review of the costs of economic regulation to guide regulators and organisations in determining 'reasonable costs' against target outcomes.

It appears that most regulators in Australia do not undertake periodic comprehensive 'stand-back' reviews of the sort recently undertaken by economic regulators in the UK, including OfGem and OfWat. Ofwat and Ofgem both recently undertook major reviews of their regulatory frameworks and approaches. These reviews were undertaken on the basis that they UK regulatory arrangements had been in place for over 20 years and needed to be reviewed to ensure their adequacy and relevance to current industry sectors. While the reviews were aimed at a number of issues they did consider the cost of regulation and regulatory burden. The reviews introduced a number of material changes to the UK economic regulatory frameworks which included longer regulatory period with a focus on outputs and incentives rather than costs. (Ofgem, 2010)(Ofgem, 2008)(Ofwat, 2010). These reviews were comprehensive and considered the whole regulatory framework and how it delivered against its objectives and the requirements of government and consumers.

It is noted that the Queensland Government is currently undertaking a review of the regulatory framework for the SEQ water retail/distribution businesses that explicitly focused on reducing the regulatory costs of water businesses. It is clear that in its proposed approach, and consistent with its terms of reference, the QCA has placed considerable emphasis on reducing the regulatory burden by seeking to implement a more 'light-handed' approach. Another exception is Victoria where the Office of Living Victoria is currently reviewing the regulatory framework as part of the 'Fairer Water Bills' policy of the Victorian government. The ESC has noted that it had already begun considering the use of alternative pricing models to the current building block model when this review was announced.

To date regulators do not appear to have contemplated significant augmentation of the building block approach (using mechanisms such as 'menu regulation' or fast-tracking). However, the ESC has stated that it has given some consideration to formalising a 'pre-assessment' approach along the lines of that adopted by OfGem and OfWat and to staggering the price review schedule.

Some regulators have however reconsidered at least parts of their current approaches. For example, IPART has recently re-considered its approach to WACC (and in particular whether its approach to WACC was robust to uncertain/unusual market conditions). Sydney Water, in its submission to this review, considered that the outcomes of IPART'S review of this issue, while not ideal, represented a significant step in the right direction:

IPART's move to provide estimates of the regulatory WACC on a six-monthly basis increases transparency. This approach ensures there is less uncertainty associated

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with the prevailing WACC in any pricing determination, and provides the business with greater ability to hedge against any risks.

A central outcome of this WACC review is that the debate around the value of many of the key parameters and methods used to estimate the WACC has now been settled. This should result in there being less contention about the WACC in 2016 Price Determination.

IPART and the ESC have considered the use of financeability tests as part of their approach. Other economic regulators in the Australian water sector do not appear to undertake such financeability tests explicitly and in this regard fall short of best practice.

6 Regulatory decision-making processes

6.1 Introduction

This section will discuss the main issues faced by regulators and businesses in relation to the price review process and other decision making processes.

- price review and other decision-making processes
- setting service standards
- stakeholder engagement
- interaction between regulators.

6.2 Price review and other decision-making processes

6.2.1 The issue

The manner in which regulators undertake price reviews and regulatory decision making processes has a direct bearing on the validity of the regulatory outcomes. Where regulators and governments engage in 'black box' decision making the associated lack of consultation, transparency and accountability increases the regulatory risk faced by business and customers.

One of the most commonly noted aspects of economic regulation is asymmetry of information. Regulated businesses have much better information about themselves and the sectors they operate in than the regulator. The literature generally refers to this informational asymmetry in the sense that it provides regulated businesses with an advantage over the regulator. However, the other aspect of information asymmetry is that the regulator may not have access to all the information they need in order to make an appropriate decision. It is incumbent on the regulator to ensure that its actions and decisions do not lead to adverse outcomes either for customers or for businesses by eroding their financial sustainability. (Lewis & Sappington, 1988) (Brocas, Chan, & Perrigne, 2006). For this reason regulators need to make sure that they adopt open and transparent regulatory processes.

6.2.2 Discussion

The manner in which regulators make decisions and undertake price reviews is a central aspect of regulatory best practice. While the process itself may vary across jurisdictions in recognition of the different regulatory approaches adopted in each jurisdiction, all of the criteria for best practice, from cost-effectiveness through to coherence, are relevant.

- Efficiency and cost-effectiveness — regulators and government should develop price review processes and regulatory decision making processes that have a clear regard for the costs that they impose both on the taxpayer and on businesses. The generally accepted principle is that the costs associated with regulation should be outweighed by the benefits. One of the ways in which regulators and governments can seek to address costs is through the frequency of the reviews they undertake.

While the costs of regulation are relatively easy to observe (such as the regulators staffing and material costs along with those costs borne by business that are solely attributable to regulation), the benefits are often difficult to measure. However, processes should be developed with an explicit recognition that they seek to minimise the cost burden that they impose on businesses and ultimately customers. In addition regulators should regularly report on the direct costs associated with regulation.

- Consistency and predictability — the regulatory review process should be consistent and predictable. In order for businesses to develop the necessary skills and abilities for dealing effectively with a regulatory regime there needs to be some form of consistency in the regime over time. If government and the regulator adopt a price review or decision making process that is characterised as being in a continual state of change then it may become difficult for businesses and customers to know how to best contribute.
- Transparency — related to predictability and accountability is a general requirement for regulatory processes and decision making to be transparent. The process should from start to finish be developed so as to maximise the degree of transparency associated with the regulators decisions. Businesses' proposals should be made publicly available, so that customers and other stakeholders can understand the tradeoffs that the businesses are proposing to make between price and service standards and the levels of investment the businesses are intending to undertake and the identification of the costs drivers behind any price changes being proposed.

It is also important to ensure that the regulator is effective in publicising the issues it believes are important to the review process and make known or open to discussion the possible approaches it is considering adopting to address these issues. Overall the regulator should make clear and public the reasoning behind its decision and what it believes the resulting outcomes or consequences of its decisions are. This process typically involves the release by the regulator of Issues Papers, Summaries of businesses' proposals, technical papers, subject-specific papers, the draft decision and the final decision.

- Adaptability, flexibility — regulatory regimes are applied to businesses and sectors that are subject to change over time. It is important that the processes adopted by the regulator or government do not impede change, especially where such changes provide benefits for customers (for example,

technological change or increased efficiencies in service provision). It is also important to note that demand and water use changes overtime as does environmental standards and other regulatory obligations. The regulatory process needs to be able to accommodate such change in order to ensure that businesses are providing services at the most efficient cost that they can.

- Independence — ideally, the regulatory process should make allowance for independence, not just in decision making but also independence in the assessment of proposals. For example, many regulators engage independent third parties to review businesses proposed expenditure and demand forecasts. The reasoning behind independent third party reviews is that the regulator can weigh the merits of both the businesses proposal and the advice of an independent third party in making its decision. Were the regulator to undertake the review it would most likely be committed to the findings and less likely to be critical of the third party advice.

The following discussion outlines the generic regulatory process adopted by the Essential Services Commission (Vic) when undertaking regulatory price reviews of water businesses. We have used the ESC as an example of a mature regulatory process that generally meets the criteria outlined above (see Box 13). The ESC price review process allows businesses a year to develop their proposals, the regulator five to four months to assess the proposals prior to release of a draft decision and three months for businesses and other stakeholders to respond to the Commission's draft decision prior to the release of a final decision.

Box 13: ESC's Price review process

The process undertaken by the ESC is described as a number of steps. These steps set out how the regulator provides guidance to the businesses it regulates, seeks to consult with customers and assesses the proposals submitted by businesses:

1. Initiate review process — Regulator releases guidance paper outlining how they intend the review to proceed and how they have interpreted the requirements of legislation.
 - The primary purpose of this Guidance Paper is to set out the regulators expectations for the information that should be provided in the businesses proposal or application.
 - The Guidance Paper should also discuss a range of regulatory issues that businesses may need to demonstrate they have considered in the development of their proposals.
 - The Guidance Paper outlines the regulators approach to assessing proposals and should provide the business with an indication of the specific topics that should be addressed in proposals.
 - The Guidance Paper should also confirm the timing associated with key milestones in the regulatory decision making process
2. Businesses develop their proposals based on consultation with customers, shareholders and other regulators. Businesses submit and consult on draft proposals.
3. Regulator releases a supplementary guidance paper. The paper provides further guidance to address issues that become evident through consultation on the draft proposals.
4. Businesses submit a final proposal.

5. Regulator releases a summary paper
 - This paper provides an overview of the key aspects of the businesses' proposals and some of the issues likely to be relevant in to the regulators assessment process. This paper does not cover all aspects of the businesses' proposals nor identifies all relevant issues that will be considered. Rather, it is intended to assist customers to understand the broad nature of the proposals and to facilitate public comment and debate.
 - Invite submissions to the summary paper.
6. Regulator hosts a number of public forums. These forums provide the regulator with an opportunity to deliver its summaries of the businesses proposals along with providing businesses with an opportunity to consult customers on their proposals.
7. Regulator engages third parties (consultants) to undertake independent assessments of businesses proposed expenditure and demand forecasts.
8. Regulator releases a draft decision on prices.
 - The draft decision should provide the regulators preliminary views on the maximum prices or revenue requirement to apply over the regulatory period
 - The draft decision takes into account the consultant's assessment of expenditure and demand, the regulators assessment of the businesses proposals, issues raised in the consultation process, and comments on the proposals from customers, their representatives and interest groups.
 - The draft decision forms the basis for further consultation before the regulator makes it final decision.
9. Businesses and customers respond to the regulators draft decision.
10. Regulator releases final decision — legally determines or approves prices for the regulatory period
 - The final decision includes details of all changes made to the draft decision in the final decision
 - The final decision also clearly outlines the rationale for the decision to either approve or determine final prices.

Source: ESC

6.2.3 Best practice for urban water in Australia

- The regulatory process should show consideration for cost-effectiveness, including cost reporting by the regulator.
- The economic regulator should adopt an approve/reject framework
- The level of consultation undertaken during the review process should be adequate and inclusive
- The economic regulator should undertake a transparent process including clear specification of the rationale underlying any regulatory decisions
- Economic regulators should propose and consult on draft decisions.

6.2.4 Assessment against best practice

Review process

The ESC recently undertook a comparison study of regulatory approaches in the water sector. The results of the study in relation to method and process of price reviews is outlined in Table 11. The results of the ESC study show that regulators generally follow the same process but do differ in their initial discussions regarding the approach to be adopted over the course of the price review and in the release of summaries of the businesses proposals. Another difference highlighted by the ESC study but not evident in the table is that the regulatory framework for both the ESC and ICRC require businesses to submit draft proposals. Deloitte (2014) noted:

A key difference with the Water Plan process is that under the Statement of Obligations there is also a draft business proposal process which the Victorian water businesses publish on their website for consultation purposes with their customers/stakeholders. There is, however, negligible work undertaken by the ESC at this stage.

Table 11: Price review processes

Regulator	Approach discussion	Issues paper	Guidance paper	Business proposals	Summary of proposals	Draft decision	Final decision
ACCC		✓	✓	✓	✓	✓	✓
AER			✓	✓		✓	✓
ERA		✓				✓	✓
ESC	✓	✓	✓	✓	✓	✓	✓
ESCOSA	✓	✓	✓	✓		✓	✓
IPART		✓	✓	✓		✓	✓
ICRC	✓	✓	✓	✓		✓	✓
QCA			✓	✓		✓	✓

Source: (ESC, 2014)

Note: The table is based on the following price reviews (or equivalent) ACCC — Australian Competition and Consumer Commission; State Water 2014, AER — Australian Energy Regulator; Aurora 2012, ERA — Economic Regulation Authority; Water Corporation 2012, ESC — Essential Services Commission; Victorian Water Businesses 2013, ESCOSA — Essential Services Commission of South Australia; SA Water 2013, IPART — Independent Pricing and Regulatory Tribunal; Sydney Water 2012, ICRC — Independent Competition and Regulatory Commission; ACTEW Water 2013, QCA — Queensland Competition Authority; QUU and Unitywater 2013. ✓ indicates that the regulator undertook the function and that it made public supporting documentation.

In relation to consultation and the general approach to the price review process those Australian jurisdictions that have deterministic economic regulation generally follow set procedures that allow for consultation on draft decisions and facilitate consultation throughout the review. For example, the approach adopted by IPART in its recent review of Sydney Water Corporation, called for multiple rounds of public submissions and also issued a draft decision (see Box 14).

Box 14: IPART review process for Sydney Water

In conducting its review, IPART:

- released an Issues Paper in June 2011 to assist in identifying and understanding the key issues for review
- Invited Sydney Water to make a submission to the review detailing its pricing proposal, and requiring it to provide extensive financial and performance data on the future capital and operating expenditure necessary to maintain service levels and respond to regulatory demands
- invited other interested parties to make submissions on the Issues Paper and Sydney Water's submission
- held a public hearing on 22 November 2011 to discuss a wide range of issues raised by Sydney Water and other stakeholders
- engaged an independent consultant, W.S. Atkins International Ltd in association with Cardno (Atkins Cardno), to review Sydney Water's capital expenditure, asset planning and operating expenditure proposals
- engaged an independent consultant, Deloitte Touche Tohmatsu Ltd (Deloitte), to review Sydney Water's proposals for Trade Waste charge
- conducted public workshops to consider the method for forecasting water sales and Trade Waste charges
- released a draft report and draft determination and invited stakeholders to make submissions in response to the drafts

Source: (IPART, 2012c)

In its comparison study the ESC also considered the level of public consultation that occurred through the process of a price decision (see Table 12). The three major forms of consultation undertaken include public forums or meetings, written submissions and customer reference groups or committees.

The ESC study shows that regulators differ materially in the type and level of public consultation that they undertake during price reviews. All regulators invited submissions. Only three regulators established customer reference groups while five regulators held public forums.

Table 12: Price reviews: mode of public consultation

Regulator	Issues paper	Guidance paper	Consultant reviews	Draft decision	Final decision	Other
ACCC	R,S			R,S		F
AER	S			F,S		F,S
ERA	S			S		
ESC				R,F,S	R	R,F,S
ESCOSA	R,S	R,S	R,S	R,S	R,S	S
IPART	F,S		F,S	F,S		F,S
ICRC	F,S	S		F,S	S	F,S
QCA	S	S	S	S		F,S

Source: (ESC, 2014)

Note: The table is based on the following price reviews (or equivalent) ACCC — Australian Competition and Consumer Commission; State Water 2014, AER — Australian Energy Regulator; Aurora 2012, ERA — Economic Regulation Authority; Water Corporation 2012, ESC — Essential Services Commission; Victorian Water Businesses 2013, ESCOSA — Essential Services Commission of South Australia; SA Water 2013, IPART — Independent Pricing and Regulatory Tribunal; Sydney Water 2012, ICRC — Independent Competition and Regulatory Commission; ACTEW Water 2013, QCA — Queensland Competition Authority; QUU and Unitywater 2013. **R** indicates customer reference groups. **F** indicates the regulator held public forums. **S** indicates the regulator invited public submissions. The column other captures consultation that may have occurred that wasn't associated with a particular process but was broader in nature.

In submissions to this review, water businesses noted a number of improvements that would add value to the current review processes utilised by regulators. These include:

- the need for regulators to deliver timely final decisions
- the need to step price reviews so that wholesale or bulk water prices are determined before the review or retail water prices
- the regulator to make a distinction in the timing of its decision so that issues where there is consensus between the business, customers and the regulator are dealt with in a timely manner
- the adoption of more collaborative approaches to the assessment of expenditures
- the need for the economic regulation regime to be able to better handle investment analyses which incorporate broader community benefits and costs

Regulatory decision-making processes

as, to date, the focus has been narrowly on the financial costs and benefits to individual water corporations.

While some of these suggestions may be problematic, for example the proposal to increase collaboration between the regulator and the businesses could potentially undermine the independence of the regulator, there may be merit in pursuing a number of them.

Approve/reject framework

Victoria appears to be the only jurisdiction in Australia that has explicitly adopted an approve/reject framework. NSW, SA, ACT and Tasmania do not appear to have an approve/reject frameworks.

As noted above the effectiveness of an approve reject framework is largely dependent on the quality of the underlying objectives or regulatory principles that the proposed prices and expenditure are assessed against. The degree to which the current objectives meet best practice is discussed in section 4.2.4.

6.3 Setting service standards

6.3.1 The issue

In most industries, the level of service provided to customers reflects what customers want and are willing to pay for. If it doesn't, customers will turn to other providers that do provide the price/service offerings customers want.

In monopoly industries, the level of services and associated prices is not driven by competitive pressures in the market. Rather, standards are set through various regulatory and policy processes. Typically, this entails minimum standards being set with which businesses have to comply. Some of these minimum standards will reflect those seen as necessary to protect public health or the environment. Others will reflect standards of service (e.g. frequency of supply interruptions) based on historical levels of service or what is seen as a minimum acceptable standard by regulators and/or politicians and embodied in licence conditions.

6.3.2 Discussion

Optimising the trade-offs between cost and service standards is a key challenge in regulation of the prices and service standards in regulated utility industries. For example, the Productivity Commission (2013) found that:

Reliability is critical to electrical networks, but some consumers are forced to pay for higher reliability than they value. Reliability decisions should be based on trading off the costs of achieving them against what customers are willing to pay, rather than by prescriptive (sometimes politically influenced) standards.

Optimising such trade-offs is also critical in the urban water industry. For example, ‘drought proofing’ our cities through more and more water supply infrastructure is likely to be prohibitively costly. This highlights the need for the costs of meeting higher service standards to be balanced with their benefits as perceived by urban water customers and the broader community.

There are a number of aspects of service standards where there may be a trade-off with cost and/or when customers may have preferences for different levels of service including:

- Customer service standards (distribution/retail) such as frequency and duration of planned and unplanned water supply interruptions; sewer blockages and spills; water quality and pressure; customer query/complaint response times.
- Level of security of supply: the level of security of supply may be a major driver of the level of investment in an urban water system and thus the costs to be recovered from customers.
- Level of environmental impact/sustainability: water customers and the broader community may attach significant value to protecting the environment.
- Choice of supply options: customers may have preferences for particular types of supply options (e.g. recycled water sources versus dams or desalination plants).

As noted in the Frontier Economics (2013) report commissioned by National Water Commission, compliance with environmental and other standards is a key driver of future capital expenditure in the urban water industry in Australia. This suggests that ensuring that key standards - such as the level of security of supply and environmental standards – are themselves subject to rigorous cost-benefit or willingness to pay assessments that includes effective engagement with customers – is essential for ensuring that the long-term interests of customers are protected. As IPART (2010) have noted:

Governments or government-appointed authorities are charged with setting and ensuring compliance with health, environmental and service standards for water and sewerage services. These standards should be subject to cost-benefit analysis. It is inefficient to raise such standards beyond the point where the costs to the community of increasing standards exceeds the value which consumer place on the higher standards....

Increasingly stringent requirements are being placed on urban water utilities’ discharges to inland waterways. These requirements should be subject to transparent and rigorous cost-benefits analysis and the should be consideration of whether the same environmental outcome could not be achieved at a lower cost...Where the cost of more stringent requirements exceeds the benefits to society they should not be undertaken. It is critical that such analysis is undertaken early in the planning process rather than only as part of the legislative environmental impact assessment.

Regulatory decision-making processes

6.3.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice economic regulation of urban water requires:

- Service standards should be clearly specified/well defined, measurable, and meaningful
- Changes in customer service standards overseen by economic regulators should be subject to willingness to pay assessments
- Regulators or agencies making decisions on standards to apply to water and related services should fully comply with RIS requirements.

6.3.4 Assessment against best practice

In Australia, economic regulators such as IPART and the ESC require clear evidence that regulated water businesses have consulted with customers before they will approve ‘discretionary’ spending that goes beyond meeting the minimum obligations.

However, some businesses contended that some licence conditions had bypassed sound cost-benefit analysis.

A number of reports however have also suggested that standards set by technical regulators have not always been subject to rigorous scrutiny (e.g. via a RIS process). For example, IPART (2010) have suggested that:

New and revised standards set by other agencies can be major cost drivers for the water industry. These standards often are not subject to a cost-benefit analysis but can impose significant additional costs on the industry. Similarly, new Operating Licence conditions can impose significant cost burdens on water utilities (e.g. priority sewerage programs). Mechanisms need to be developed that will see drinking water, environmental, and dam safety requirements evaluated by means of open and transparent processes in a cost benefit framework

6.4 Stakeholder engagement

6.4.1 The issue

Regulatory decisions typically will affect a number of parties including the provider of the regulated services, users of those services, investors and, in some cases, the broader community. This section identifies best practice in relation to stakeholder engagement in the context of decision-making processes undertaken by economic regulators.

6.4.2 Discussion

The OECD (2012) suggests that effective engagement with regulated parties and other stakeholders helps to enhance public and stakeholder confidence in the regulator, its decisions and its actions. It proposes that:

- Regulators should undertake regular and purposeful engagement with regulated entities and other stakeholders focused on improving the operation and outcomes of the regulatory scheme.
- Procedures and mechanisms for engagement should be institutionalised as consistent transparent practices.
- Engagement processes used should protect against potential conflicts of interests of participants and guard against the risk that the regulator may be seen to be captured by special interests.

A particular issue in the economic regulation of utility industries such as urban water, electricity and gas is the size and diversity of the customer base and therefore how to consult with those users in a meaningful and cost-effective way. Economic regulators typically oversee price review processes that seek customers' views through public processes such as making water businesses' proposed water plans available for public comment via written submissions and public hearings, and through various other forums. In addition, water businesses typically undertake their own engagement with customers, although the extent of this varies. As noted by Cambridge Economic Policy Associates (CEPA) (2011) in a recent study in Australia on customer engagement:

Part of the price setting process is the calculation of the cost of the services to be made available to customers. Regulators need some way of knowing that these services are a reflection of what customers want. Regulators would expect companies to take steps to determine what customers want and for this to be part of their business decisions. Customer engagement is therefore important for both regulated companies and regulators.

The CEPA study identified and assessed a number of forms of customer engagement, namely:

- public consultation: in which a general request is made to consumers and their representatives through generally accessible media, such as websites, to garner views
- consumer panels/consultative groups: in which a selected group of consumers/consumer representatives are used to represent the views of consumers in general
- consumer surveys/willingness to pay studies in which structured surveys are used to determine consumer priorities and willingness to pay for services

- constructive engagement: in which consumers (or their representatives) negotiate some, or all, aspects of the price determination with the regulated utility. (Cambridge Economic Policy Associates, 2011)

While it is clearly important that engagement with customers is undertaken to inform choices on service standards and associated costs, another issue is the relative roles of different parties in undertaking this engagement, particularly in the context of regulatory price reviews. As observed by the Frontier Economics (2013) report for NWC:

While economic regulators clearly need to satisfy themselves that the proposed service levels and prices for regulated water businesses reflect what customers want and are prepared to pay for, one potential concern is that the consultation processes undertaken by economic regulators may dilute the primary responsibility of utilities to communicate with their own customers. A view expressed by some involved in regulatory processes for U.K. water businesses is that the businesses even came to look upon the regulator (OfWat) as their principal customer.

One approach would be for regulators to detail or prescribe the extent and nature of customer engagement it would expect regulated businesses to undertake and demonstrate evidence of in their pricing proposals. One example of a regulator imposing requirements on regulated businesses to consult with customers is the approach adopted by OfWat in the U.K. where companies are expected to engage with a wide range of stakeholders in developing outcomes, measures of success and incentives (see Box 15).

Box 15: OfWat approach to stakeholder engagement at PR14

OfWat identified that stakeholder engagement should be central to water companies business plans at the PR14 price control. In particular, OfWat wanted companies to propose outcomes and incentives that were based around their own customers' priorities. This was part of an overall methodology, alongside the risk-based review, to result in more proportionate regulation. This followed an independent review of water regulation in 2011 (the Gray Review). The review highlighted that both companies and Ofwat need to change their approach to business plans and the price control. The review said that Ofwat:

- "...needs to reduce the burden of regulation on the companies to encourage them to be more flexible and innovative in their approach."
- "...goes too far into the detail of company business plans and that, as a result, the companies are very Ofwat focused and very cautious and conservative in their approach. Rectifying this will require a substantial change of approach by both Ofwat and the companies it regulates."
- "...should take steps to return ownership of business plans to the companies."
- In the light of this review Ofwat encouraged companies to undertake more extensive stakeholder engagement.

Stakeholder engagement process at PR14

The main features of the stakeholder engagement process at PR14 were as follows:

- Customer consultation. In previous price controls companies had undertaken quantitative market research to establish willingness-to-pay estimates as part of the CBA process. In this review the customer consultation process went much further and supplemented market research surveys with qualitative engagement such as on-line customer panels,

focus groups, and town hall meetings. Customers were asked about their priorities for service levels, pricing and environmental improvements.

- Customer Challenge Groups (CCG). OfWat required each company to set up a Customer Challenge Group to provide input and challenge to the business plan. The CCG generally comprises representatives of consumer bodies, local government, environmental and quality regulators and large business customers. It is co-ordinated by an independent paid chair. The CCG produces an independent report on the business plan outlining the process for engagement and main findings of the group.
- Board assurance. OfWat wanted each company's Board to take ownership of, and be accountable for, the business plan. It required that the whole company Board provided assurance that the plan is a high-quality plan. In addition, each company Board needed to explain the governance processes of the Board and demonstrate how it has provided strategic leadership, a transparent process, and compliance with the relevant licence conditions and the 'UK Corporate Governance Code'.

Assessment

The indications are that the stakeholder engagement process has been more effective at PR14. There has been a greater focus on, and a greater variety of, engagement with customers. The effectiveness of the CCG process is less clear. There appear to have been good interaction between CCGs and companies. However it is less clear the role they have played in influencing OfWat's decisions or the weight that OfWat has attached to their views. This could have implications for their role going forward.

Source: Frontier Economics.

It may be that regulators can play less active roles in customer engagement as the economic regulation framework matures.

6.4.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice in relation to stakeholder engagement in regulatory processes would involve:

- Procedures and mechanisms for engagement with regulated entities and other stakeholders should be institutionalised as consistent transparent practices
- Economic regulators should clearly articulate their expectations for water businesses' consultation in developing their pricing submissions.

6.4.4 Assessment against best practice

Water businesses consulted for this review generally felt that current regulatory processes did provide for an appropriate level of customer engagement.

In recent years economic regulators have placed increasing emphasis on the importance of businesses engaging with customers in developing their regulatory proposals. For example, in its *Draft Framework and Approach for the second SA Water price determination*, ESCOSA (2013) stated that:

The Commission expects SA Water to undertake adequate consumer consultation in the development of its RBP [Regulatory Business Proposal]. Accordingly, the RBP should include information on how customers have been consulted and evidence of customers' responses to SA Water's proposals.

Regulatory decision-making processes

The Commission is not prescriptive as to how SA Water should consult. The Commission will assess all RBP proposals on the basis of whether or not the demonstrated benefits to customers exceed the costs. It is up to SA Water to demonstrate the customer benefits associated with its proposals....

While SA Water may consult on any aspects of its RBP that it sees as appropriate, at a minimum, the Commission expects SA Water to consult with its customers on significant expenditure proposals that rely on customer benefits to justify them and customer service standards. This is consistent with the requirements imposed under other regulatory regimes. For example, the Essential Services Commission of Victoria required each regulated water business to set out how it used the results of surveys on customers' preferences in cost-benefit analysis of major projects.

Similarly, OTTER has outlined its expectations in its Price and Service Plan Guideline (see Box 16).

Box 16: Consultation expectations: OTTER (2013)

In preparing a proposed price and service plan, the Economic Regulator expects a regulated entity to consult with stakeholders on:

- The timing of regulatory compliance implementation
- Establishing different services and different classes of customers
- Proposed different services and different classes of customers
- Proposed differential service standards and the methodology for determining appropriate service standards
- The transition towards improving customer service standards
- The nature, timing and extent of price reforms
- Proposals to improve product quality (for example, moving from untreated to treated water supply)
- Any proposals to introduce or replace reticulated water and/or sewerage services.

The Economic Regulator requires the regulated entity to adopt accepted industry practices when undertaking consultation with stakeholders on its proposed price and service plan. The proposed price and service plan should also specify issues consulted on, the consultation methods used and how consultation outcomes are reflected in the proposed price and service plan.

The regulated entity's proposed price and service plan (and any supporting consultation information) must be written in plain English so that it is easily understood by a wide range of stakeholders.

Source: OTTER (2013)

6.5 Interaction between regulators

6.5.1 The issue

Another key aspect of regulatory decision-making processes is how economic regulators interact with other regulators.

6.5.2 Discussion

While economic regulators should have clearly-defined functions inevitably in undertaking their role there will be a need to co-ordinate effectively with other regulators who have regulatory functions in the same industry. In the urban water sector, for example, other regulators are typically responsible for other matters including protection of the environment, public health, and safety.

As noted in section 4.6, it has been suggested by the OECD that to reduce overlap and regulatory burden, all regulators should be explicitly empowered and required to cooperate with other bodies (non-government and other levels of government) where this will assist in meeting their common objectives. It further suggested that in doing so, in the interests of transparency, instruments for coordination between entities, such as memoranda of understanding, formal agreements or contracts for service provision, should be published on regulators' websites, subject to the appropriate removal of information (for example, that which is commercial-in-confidence).

Regulation of matters including protection of the environment, public health, and safety will inevitably have implications for the costs incurred by urban water businesses and thus regulated prices. These issues are likely to come to a head at price reviews. One business commented in its submission to this review:

With a five-year regulatory period, and a lead time of around two years to prepare a Water Plan, the requirements and expectations of regulators and stakeholders need to be clear if the process is to be effective. Where these requirements are not made clear, it is difficult for the economic regulator to assess the appropriateness and efficiency of the water businesses' proposals. Moreover, businesses are constrained in their ability to respond to changes in obligations and expectations during a regulatory period if prices and/or revenue are fixed.

This highlights the merits of seeking to ensure that the timing of changes in standards set by technical regulators are aligned to regulatory price cycles and for centralised governance over the whole regulatory framework (e.g. licensing reviews and price reviews).

6.5.3 Best practice for urban water in Australia

Drawing on the discussion above, best practice regulation requires:

Regulatory decision-making processes

- Formalised and transparent procedures for consultation between economic regulators and regulators responsible for other matters including protection of the environment, public health, and safety
- Recognition from other regulators of the regulatory cycle (regulatory periods and price reviews).

6.5.4 Assessment against best practice

A number of economic regulators have established formal and transparent procedures for consultation with other regulators. For example, the ESC has formal MOUs with the Environmental Protection Authority, the Department of Health Services and the Victorian Ombudsman. However, there appears to be significant scope for improving the interaction between regulators in the context of price review processes. One water business stated in its submission to this review that:

While the process has improved at each price review, the interaction with the two quality regulators – drinking water quality (Department of Health) and environmental (Environment Protection Authority) – could be improved. Each regulator puts out a paper on its expectations at the commencement of a price review, which is a good starting point. However, it is the interaction with the regulators after that point is where difficulties arise. The problems faced in the last price review were:

- Department of Health indicated that it would be changing drinking water quality standards in 2015, in the middle of the price review period. As a consequence, there were difficulties in forecasting extra costs for this activity. It would be beneficial if the timing of standard changes is aligned with the Water Plan period.
- The quality regulators standards are always taken (and interpreted) as being absolute and it is up to the business if it wants to take the risk of not complying even if the benefit is a lower price to customers. It will be helpful if the quality regulators were prepared to enter discussion on these matters.

The Essential Services Commission has Memoranda of Understanding with quality regulators and others in relation to roles of the parties and how they will consult with each other. This does clarify boundary issues.

Another matter is that the quality of benefit-cost evaluations in the Regulatory Impact Statements for new standards is often poor. In particular, the costs (which are often borne by water utilities) are substantially underestimated.

In its submission to this review, Sydney Water noted similar issues:

Sydney Water's Operating Licence is reviewed by IPART every five years, our Environmental Protection Licences (EPLs) also every five years, but our pricing review cycle varies. In recent years pricing determinations last four years. Therefore there is a changing cycle of how the respective reviews fall. This can create challenges, as changes to licences form a key input into the costs and pricing for the pricing reviews. The environmental regulator (EPA) has to take into account different things under their Act. Cost is not as explicit a consideration, though there is reference to measures needing to be achievable in practical terms and this has been

interpreted by the EPA as creating a cost-effectiveness requirement. Unlike the Operating Licence, which is reset every five years in the review process, the EPLs are granted in perpetuity and change quite routinely. The EPA is obliged to review the licences every five years, but they can be varied at any time either by the EPA or the licensee seeking a variation. Variations in the EPLs happen quite frequently and depending on the circumstances, public consultation may not be required.

7 Instruments of regulation

7.1 Introduction

This encompasses the way in which the economic regulator gives effect to its regulatory decisions including the broad approach to regulation (direct price control, pricing principles etc), the form of price control (e.g. price caps versus revenue caps), incentive mechanisms for efficiency, compliance monitoring and enforcement etc. Again, the economic regulator will typically have considerable discretion over the approaches to regulation that it adopts.

The following discussion articulates best practice for following elements of the form and instruments of regulation adopted by economic regulators of urban water in Australia:

- Form of price control
- Operating licences
- Incentive and risk-sharing mechanisms
- Compliance monitoring and enforcement.

7.2 Form of price control

7.2.1 The issue

For the purposes of this report the term ‘price control’ is defined to refer primarily to ex ante forms of price control. The form of price control refers to the high level structure adopted by businesses and regulators for the annual setting of prices for the duration of the regulatory period. The form of price control does not refer to the overall method or regulatory approach adopted (see section 5).

Price control mechanisms are often expressed by regulators in mathematical terms. The mechanisms themselves generally define in detail how prices are set annually based on such things as revenue requirement, inflation, demand etc. Price controls often:

- outline the form of control (are prices capped or set or is a default tariff used)
- define how under or over recovery of revenue is treated
- update prices for inflation
- place constraints on price changes (such as tariff rebalancing).

There are various forms of price control that can be adopted by regulators. These controls work by capping prices, revenues or earnings. Most of the forms

considered here share a common theme in that they are all based on allowing businesses to recover the efficient costs incurred in providing regulated services.

In this section we first describe the typical forms and other specific elements associated with the application of price controls. We then consider their strengths and weaknesses giving special consideration to their ability to adapt to changing industry circumstances and identify elements of best practice.

7.2.2 Discussion

The key features of the various forms of ex ante price control — price caps, and revenue caps — are described in this section. At a high level these controls are all based on allowing the regulated firm to recover revenue equal to the efficient costs incurred in providing the service. The key difference between these controls relates to their target as shown in Table 13 below. Price caps target prices, revenue caps target revenue and rate of return mechanism target the rate of return.

Table 13: Common forms of price control

Price control	Characteristics
Price Caps	Price caps typically cap the price of services over a regulatory period by allowing annual adjustments of CPI plus or minus a pre approved price movement. Under a price cap approach businesses retain any unanticipated increase or decrease in revenue resulting from forecast demand either exceeding or falling short of that used by the regulator to set or approve price movements.
Tariff Baskets	Tariff Baskets are a derivation of price caps. They typically allow businesses to rebalance prices during a regulatory period subject to a constraint. For example, prices for service x may increase but businesses also have to adopt a corresponding decrease in another service to offset the revenue impact of increasing prices in x. Tariff baskets allow prices to be rebalanced within in a regulatory period in a manner that is intended to be revenue neutral.
Revenue Caps	Revenue caps typically cap the revenue that businesses can earn. These forms of price control adjust prices over a regulatory period to account for any over or under recovery of actual revenue relative to the revenue requirement approved by the regulator.
Hybrid approaches	Regulators may design hybrid forms of price control in order to address specific circumstances. For example, a regulator or businesses may adopt a price caps form of price control accompanied by a limited tariff basket that only applies to a subset of regulated prices.

Source: (Frontier Economics, 2010).

7.2.3 Discussion

Price caps

Price cap regulation is one of the most common regulatory forms of price control. During the regulatory period the regulated price is typically adjusted for the previous year's price inflation and the published x factor or prescribed price movement in each year. In most cases the regulated business delivers more than one product or service. There are a number of ways in which the price cap can be applied to a multiple product business. For example, the x factor or prescribed price movement could apply to each product individually or it could be applied at an average level across the products.

Some of the benefits of price caps relative to other forms of price control include:

- provide incentives for businesses to meet and expand demand since the marginal revenue received as demand increases is not capped — as long as the marginal cost of supply is lower than the marginal revenue associated with increased service provision, businesses have incentives to meet consumer demands.
- provide good incentives for cost reduction and maximising efficiency gains — the more successful businesses are in reducing their costs, the greater the profits they'll receive
- However there is less agreement concerning the issue of incentives to invest and innovate over time. Some argue that price caps provide strong incentives to innovate (Costello 1996) whereas others suggest that they may discourage investment (particularly in areas of usage efficiency) if this subsequently results in lower throughput (Carter 2001).
- Benefit consumers in that price caps provide for lower price volatility than under other forms of price control
- the simplicity and transparency of price caps may also benefit consumers in their decision-making processes as this facilitates predictability in terms of the prices for the duration of the price control.

Some of the disadvantages of price caps include:

- lack of flexibility may limit businesses' incentives or ability to introduce new pricing structures or invest in innovative billing processes
- price caps may result in revenue instability if demand is volatile. As a result, the increased level of risk borne by firms may lead to a higher cost of capital than would prevail under a revenue cap (Alexander & Shugart 1999).

- create incentives for revenue gaming, in particular they incentivise businesses to forecast lower than expected demand in order to earn higher profits by achieving a higher than optimal price cap (Alexander & Shugart 1999).

Tariff baskets

Tariff basket controls are generally used to control the prices of multiproduct businesses. Weights are used which may be set in relation to different factors such as quantities of the products being regulated or the revenues involved in a nominated base year. The weights may also involve a lag so that the weights reflect quantities or revenues in previous years (DotEcon, 2007).

Since tariff baskets are essentially a derivation of price cap forms of control a lot of the benefits and disadvantages are similar. The main distinction is that the benefits of tariff baskets include:

- businesses have some flexibility in the prices as individual tariffs can be adjusted as long as the limit on the basket is not exceeded — the control allows flexibility for a business to change prices to be more reflective of costs subject to compliance with the overall control.

Revenue caps

Revenue caps generally adopted where there is significant uncertainty regarding the demand for services and/or where there are significant fixed costs. In these circumstances a price cap form of control could result in significant revenue volatility for the business. Under a revenue cap, the regulated price adjusts in response to a change in demand. This places the risk of any deviation from the demand forecast on customers. As observed by the QCA (2012):

As the majority of regulated firms have high fixed costs that are invariant to the level of output, this feature potentially exposes them to material demand (i.e. volume risk). Such risk can be reduced by non-regulatory mechanisms such as, for example, take-or-pay contracts. However, material demand risk raises the possibility of using a mechanism between pure cost-of-service regulation and a pure price cap, namely a revenue cap.

Conversely if the costs of providing the service are largely variable costs then the revenue cap may lead to higher risk to the firm. Under the price control the revenue requirement is fixed by the regulator, if demand increases and costs are variable it follows that the underlying cost is increased. However the revenue cap will act to ensure that prices are adjusted (in this case lowered) so that the increased demand will not result in more revenue than approved by the regulator.

The performance of revenue caps depends on the nature of the correction mechanisms employed for over- or under- recovery by the business during the regulatory period. Some controls may allow for symmetric correction that allow for correction given both types of shock — negative and positive revenue

shocks. Asymmetric corrections might also apply — that allow corrections only in one direction.

Some of the benefits of revenue caps relative to other forms of price control include:

- revenue caps reduce risk of revenue volatility
- revenue caps provide stronger incentives for businesses to promote customer demand reductions since this will not lead to a reduction in revenue. This can be a benefit in the context of attempts to encourage water conservation.
- revenue cap reduces incentives for businesses to understate projected volumes during the regulatory review.
- a revenue cap may incentivise water businesses to encourage conservative water usage.
- allow businesses a greater degree of flexibility in setting the relative levels and structure of individual tariffs than is afforded by pure price caps (IPART 1999; Littlechild 1986).

Some of the disadvantages of revenue caps include:

- a revenue cap may increase the volatility of prices faced by customers. This volatility may discourage complementary investment by customers
- revenue caps may also reduce the transparency of the regulated price by creating a gap between the published price limits and the actual prices adopted during the regulatory period
- revenue caps may also provide incentives to minimise output. — if a business is guaranteed as much revenue by producing at a low level and selling at a higher price as from producing at a higher volume and selling at a lower price (i.e. if demand is inelastic), it will prefer the former option if costs fall as output falls (Crew & Kleindorfer 1996).
- revenue caps can provide incentives for revenue gaming, specifically incentivising businesses to forecast higher than expected demand (Alexander & Shugart 1999).

7.2.4 Best practice for urban water in Australia

Each of the various forms of price control have advantages and disadvantages that regulators and businesses must consider in determining what constitutes the most appropriate form of price control.

Price caps are most suitable where businesses face relatively stable demand for their services and a material proportion of their cost base is variable in nature.

In some circumstance revenue caps may be the most appropriate form of price control — particularly where businesses have a largely fixed cost base and are

subject to significantly volatile demand for their services. Under these circumstances (highly relevant to urban water in Australia) a revenue cap will allow businesses to address issues of revenue risk.

From a best practice perspective it is important that the regulator and the regulatory framework are flexible enough to facilitate the adoption of the form of price control most suitable to an individual businesses circumstance. In addition the regulatory arrangements should also allow for appropriate changes in the form of price control over time to allow for changes in the circumstances of individual businesses.

Best practice would also require for transparency reasons that whatever form of price control is adopted is well defined.

In summary, best practice economic regulation for urban water requires that:

- Appropriate and well-defined forms of price control are applied to meet the relevant circumstances (with a strong case for revenue caps where there is significant uncertainty over demand).

7.2.5 Assessment against best practice

The majority of water businesses in Australia under deterministic economic regulatory regimes are subject to price cap forms of price control (Victoria, NSW, ACT and Tasmania).

In South Australia, ESCOSA's first price determination has focused on revenue. However, it is worth noting that the review was only partial in scope and did not include pricing related matters. ESCOSA has stated that prices and tariff structures will come under the purview of the second price determination and the determination will consider which form of price control is appropriate. (ESCOSA, 2013)

While price caps appear to be the default form of price regulation for water businesses there are examples where regulators have approved revenue caps for individual businesses. Most notably in Victoria the ESC has approved revenue caps for the rural water businesses that it regulates and for Yarra Valley Water. In its water plan submission to the ESC, Yarra Valley Water stated:

There are drawbacks to this mechanism [price caps]. For example, an increase in water usage above the forecast would lead to greater revenue than we need to cover the cost of providing our services. On the other hand, a fall in water usage leads to a drop in our revenue and we may not be able to cover our costs.

An alternative arrangement is a mechanism called a 'revenue cap'. This mechanism adjusts prices for water and sewerage services on an annual basis due to changes in actual water usage. ... we believe a 'revenue cap' form of price control is the most appropriate mechanism for managing the uncertainty associated with demand, as it ensures the water utility has sufficient revenue to cover its costs but also safeguards against the water utility making excess revenue. Our customer research showed consistent high levels of support for a revenue cap. (Yarra Valley Water, 2012)

In the case of NSW it is not clear from the legislation that IPART has an ability to adopt any form of price control other than price caps. Section 13A of the IPART Act 1992 clearly emphasises the direct setting of prices.

13A Determination of pricing

- (1) In making a determination of the pricing for a government monopoly service, the Tribunal is limited to either of the following approaches:
 - (a) the first approach, which involves either:
 - (i) fixing the maximum price for the government monopoly service, or
 - (ii) setting the methodology for fixing the maximum price for the government monopoly service, or
 - (b) the second approach, which involves both:
 - (i) fixing the maximum price for a part or parts of the government monopoly service, and
 - (ii) setting the methodology for fixing the maximum price for any other part or parts of the government monopoly service.
- (2) The Tribunal may not choose to make a determination that involves setting the methodology for fixing a maximum price, unless the Tribunal is of the opinion that it is impractical to make a determination directly fixing the maximum price.

Section 14 of the IPART Act also clearly limits the regulator to price caps as a form of price control

- 1) A determination of the Tribunal of the maximum price for a government monopoly service may fix that price in any manner the Tribunal considers appropriate, including the following:
 - (a) by fixing an average price for a number of categories of the service,
 - (b) by fixing a percentage increase or decrease in existing prices,
 - (c) by fixing an average percentage increase or decrease in existing prices for a number of categories of the service,
 - (d) by fixing a specified price for each category of the service (if any other manner is not considered appropriate).

Thus in NSW it is not clear that the regulator has an ability to consider other forms of price control even if they are warranted.

7.3 Regulation of tariff structure

7.3.1 The issue

Regulators are typically obliged by legislation to consider not only the level of prices but also how prices are structured. This issue is generally referred to as tariff structure or design.

There are a number of commonly cited rationales for the intervention of regulators in the design of tariff structures. In relation to bulk services regulators are typically concerned about:

- The unbundling of charges for vertically integrated businesses — Separating out businesses' costs between different segments of their business (such as separating bulk and transmission from retail) could be necessary given the potential of a third party access regimes.
- Cost-reflectivity (including location-based cost signals).
- Managing uncertain variable bulk water costs due to desalination orders or participation in bulk water markets.

In relation to retail services regulators are typically concerned about:

- the balance between volumetric and fixed charges
- cost-reflectivity (including location based costs)
- protection of vulnerable customers (e.g. concessions)
- facilitating innovation in tariffs and allowing for customer choice.

In addition to bulk and retail tariffs there is a growing appreciation amongst regulators that their frameworks need to account for new services and innovations — such as recycled water, greywater and stormwater. The 2010 National Water Initiative Pricing Principles for recycled water and stormwater and a report published by the National Water Commission on recycled water and stormwater pricing principles provide some guidance (Centre for International Economics, 2010).

Box 17: Pricing principles for recycled water and stormwater reuse

- Principle 1: Flexible regulation — Light handed and flexible regulation (including use of pricing principles) is preferable, as it is generally more cost-efficient than formal regulation. However, formal regulation (e.g. establishing maximum prices and revenue caps to address problems arising from market power) should be employed where it will improve economic efficiency.
- Principle 2: Cost allocation — When allocating costs, a beneficiary pays approach — typically including direct user pay contributions — should be the starting point, with specific cost share across beneficiaries based on the scheme's drivers (and other characteristics of the recycled water/stormwater reuse scheme).
- Principle 3: Water usage charge — Prices to contain a water usage (i.e. volumetric) charge.
- Principle 4: Substitutes — Regard to the price of substitutes (potable water and raw water) may be necessary when setting the upper bound of a price band.
- Principle 5: Differential pricing — Pricing structures should be able to reflect differentiation in the quality or reliability of water supply.
- Principle 6: Integrated water resource planning — Where appropriate, pricing should reflect the role of recycled water as part of an integrated water resource planning system.
- Principle 7: Cost recovery — Prices should recover efficient, full direct costs — with system-wide incremental costs (adjusted for avoided costs and externalities) as the lower limit, and the lesser of standalone costs and willingness to pay as the upper limit. Any full cost recovery gap should be recovered with reference to all beneficiaries of the avoided costs and externalities. Subsidies and Community Service Obligation payments should be reviewed periodically and, where appropriate, reduced over time.
- Principle 8: Transparency — Prices should be transparent, understandable to users and published to assist efficient choices.
- Principle 9: Gradual approach — Prices should be appropriate for adopting a strategy of 'gradualism' to allow consumer education and time for the community to adapt

Source: (Centre for International Economics, 2010)

Notes: These principles adopt the definition of direct costs that has been employed by NSW IPART. That is, direct costs include any joint/common costs that a scheme imposes, as well as separable capital, operating and administrative costs. This definition of direct costs does not include externalities and avoided costs.

7.3.2 Discussion

A key issue raised by water businesses is the level of prescription some regulators exercise in regard to tariff structure and design.

Some regulators explicitly note that businesses are better placed to design tariffs to meet their customers' requirements. For example the ESC (2011) state:

We also note our general philosophy is that water businesses are best placed to design tariffs and tariff structures which meet customer needs, and manage risk and

business outcomes. As such, we note that proposed Water Plans may include alternative tariff structures as part of a business's tariff strategy. We will look closely at the objectives and analysis supporting alternative structures, particularly where customers have no choice. We will need to be satisfied of the robustness of this analysis against the pricing principles.

Consistent with its acknowledgement that businesses are better placed to manage tariff related issues the ESC has adopted a pricing principles based approach to the regulation of tariffs (see Box 18).

Box 18: ESC tariff structure principles

The tariff structure principles outlined by the ESC in its Tariff issues paper for the 2013 price review included:

- Tariff structures should be simple, understandable and cost reflective.
- Bulk Water Charges Structure — A two part charge comprising a fixed charge and a volumetric component is preferred to recover a bulk supplier's revenue requirement from its customers for each bulk water service.
- Retailer Water Tariffs Structure — A two part tariff comprising a fixed charge and a volumetric component is preferred to recover a water business's revenue requirement from each tariff class. If a business proposes an alternative tariff structure it should set out the objectives of this tariff structure and provide supporting analysis showing how these objectives are being met.
- Sewerage Charges — The tariff structure should reflect the cost structure - and may comprise a one or two part tariff (all fixed, all volumetric or a fixed charge and a volumetric component).
- Trade Waste Charges — The tariff structure should be load-based where measurement is feasible and where the benefits outweigh the costs.

Source: (ESC, 2011)

The level of prescription also has a direct impact on the ability of water businesses to pursue or facilitate greater customer choice — the more prescriptive the regulator is on the design of tariffs, the less capacity or freedom businesses will have to develop and experiment with alternative structures.

[Customer choice] represents a major change in the current industry paradigm from one of water authorities as stewards of the resource supplying a uniform product to users as permitted by water availability to one of focusing more on meeting water users' needs as customers. (Frontier Economics, 2008, p. 52)

7.3.3 Best practice for urban water in Australia

Best practice economic regulation requires that:

- Economic regulators should take a light-handed approach that allows businesses the flexibility to design tariff structures that meet the needs of their customers.

7.3.4 Assessment against best practice

In contrast to the ESC's light-handed approach the NSW regulator IPART takes a much more prescriptive approach. For IPART the 1993 inquiry into water and related service set the framework for regulation of tariff structure. The Tribunal proposed to: set an overall cap on prices, outline pricing principles, indicate priorities for price reform and set a time period for pricing reform. (Government Pricing Tribunal, 1993)

Since then IPART's approach has evolved into a much more prescriptive approach. For example in its recent review of price structures for metropolitan water utilities IPART (2012b) undertook detailed analysis of the cost-reflectivity of individual tariffs, with a particular focus on identifying any cross subsidies between different user groups.

We considered whether the charges applicable to certain groups reflect the costs incurred in serving those groups, or whether some customer groups are cross-subsidising others. Our goal was to clearly define a common basis for reforming the structure of prices across all 4 utilities to further improve the cost reflectivity of their prices, and to increase equity between customer groups.

One of the reasons IPART may have taken a more prescriptive approach is that it appears to have been given a mandate to undertake an agenda of tariff structure reform.

IPART commenced regulating Sydney Water and Hunter Water in 1993 and Gosford and Wyong Council's in 1994. There had been significant price reform in the Hunter but charges based on property value predominated in the other 3 utilities. Whilst the 1993 Inquiry into Water and Related Services set the general direction for price reform the fact that the utilities were at different stages of reform and IPART's practice of undertaking pricing reviews for the 4 utilities as separate and discrete projects has meant that price structures have not been systematically and collectively examined.

IPART have continued this reform agenda through its 2012 review of price tariff structures and the subsequent implementation of the review in individual price reviews.

Box 19: IPART's principles for price structure for metropolitan water utilities

General principles

- Changes to the structure of water and sewerage prices are to be phased in over a transition period where necessary to minimise customer impacts.
- The total revenue collected from residential customers is to reflect the costs incurred in serving those customers. The total revenue collected from non-residential customers is to reflect the costs incurred in serving those customers.
- Customers imposing similar costs on the system should pay similar charges.

Residential and non-residential water usage charges

- The water usage charge is to be a standard variable charge for all customers – residential and non-residential – and be set with reference to the utility's long run marginal cost of

supply.

Residential water and sewerage service charges

- The residential water service charge is to be a standard annual charge for all residential dwellings unless there is evidence that there are material differences in the costs of servicing different residential property types.
- The residential sewerage service charge is to be a standard annual charge for all residential dwellings unless there is evidence that there are material differences in the costs of servicing different residential property types.

Non-residential water service charges and sewerage usage and service charges

- The non-residential sewerage usage charge is to be a standard variable charge for all customers set with reference to, but not necessarily equal to the utility's short run marginal cost of transporting, treating and disposing of domestic-strength effluent.
- The total sewerage revenue (usage and service charges) collected from non-residential customers is to reflect the costs incurred in servicing those customers.
- The total water revenue (usage and service charges) collected from non-residential customers is to reflect the costs incurred in servicing those customers.

Source: (IPART, 2012b)

In comparison to the pricing principles of the ESC, IPART's principles are much more prescriptive and dictate the actual structure of tariff structures for both water and sewerage services for both residential and non-residential customers. In addition the IPART principles do not explicitly provide businesses with an opportunity to propose alternative structures that are not compliant with the principles if they believe they are more effective in meeting their customer's needs.

The IPART principles have also led to more prescriptive outcomes. IPART (2012c) stated in its last price review of Sydney Water:

we recently completed a review of price structures for the metropolitan water utilities we regulate. We have decided to restructure Sydney Water's prices to remove cross-subsidies and improve cost reflectivity for all customer groups..

In South Australia, ESCOSA is currently undertaking a review of SA Water's tariff structures within the confines of policy defined in terms of reference set by the SA Government.

7.4 Incentive and risk-sharing mechanisms

7.4.1 The issue

Regulatory frameworks across the Australian jurisdictions are typically characterised as incentive based frameworks. The broad approaches to regulation are discussed in section 5 and the different forms of price control adopted by regulators are discussed in section 7.2. This section is concerned specifically with the incentive mechanisms that regulators and businesses may adopt under the regulatory frameworks within which they operate.

Instruments of regulation

These incentive mechanisms are intended to either enhance the incentives of the overall framework or alternatively address specific problems that have been associated with incentive based approaches to regulation. Incentive mechanisms are generally targeted at promoting improvements in operating efficiency and or promoting improvements in the level of service.

In addition to incentives regulators and businesses have also adopted mechanisms that are targeted at either sharing or mitigating the risks associated with regulation. The risk is that regulators make a decision which impacts negatively on the financial viability of a business. The potential for such risk is greatest when pricing or revenue decisions are made based on information that is unreliable or subject to material degrees of uncertainty.

This section examines best practice in relation to incentive and risk sharing mechanisms, drawing on experience in other sectors as appropriate.

7.4.2 Incentive mechanisms

Efficiency incentive mechanism

Regulators and businesses have recognised that under the basic incentive-based approaches (such as price and revenue caps) the incentives for businesses to reduce costs will vary over the regulatory period. Cost reductions achieved in the first year of a multi-year regulatory period that can be maintained throughout the duration of the regulatory period will yield a greater return than cost reductions achieved during the last year of the regulatory period that may be retained for only one year as they are rolled into prices in subsequent price reviews. The regulated business may therefore have a greater incentive to achieve efficiency gains in earlier rather than later years of the regulatory period.

Regulators have developed a number of different mechanisms aimed at addressing this problem of diminishing incentives over the course of the regulatory period. These mechanisms are generally referred to as efficiency carryover mechanisms (ECMs).

An ECM aims to provide a continuous incentive for a regulated business to seek efficiencies over the whole of the regulatory period. It creates a situation in which the regulated business has a constant incentive to achieve efficiency gains throughout the regulatory period, as any efficiency gains are maintained by the business for a predetermined length of time.

ECMs have been developed by a number of regulators such as the ESC, QCA and ACCC and AER. Current examples include:

- AER — Efficiency Benefit Sharing Scheme (EBSS) — The EBSS works by allowing network businesses to retain underspends for a total of six years, regardless of the year in which they underspend. Consumers then benefit

from lower forecast opex in future regulatory periods, which leads to lower prices in the future.

- **AER — Capital Expenditure Sharing Scheme (CESS) —** The CESS provides a network business with the same reward for an efficiency saving and same penalty for an efficiency loss regardless of which year they make the saving or loss in. When the CESS is implemented, a business will retain 30 per cent of an underspend or overspend, while consumers will receive 70 per cent of the benefit. In addition, if a business' capex exceeds the forecast, the AER will examine their spending. If AER determines that all or some of the overspending was inefficient, the business may not be allowed to add the excess spending to its RAB, so that consumers will not fund that expenditure. This is referred to as an ex-post review.
- **QCA — Glide path mechanism 2004 —**The QCA glide-path mechanism includes a rolling efficiency carryover mechanism, whereby any efficiency gains are retained by the business for a set period of time before being allocated to consumers. This allocation can be a one-off price reduction or phased in over time.

Incentives for service quality

A service incentive scheme aims to create a link between service quality and revenue and thereby provide the business with an incentive to improve service levels. Current examples of service incentive schemes include:

- **AER — Service Target Performance Incentive Scheme (STPIS) —** the scheme allows a business to receive a revenue increment or decrement for a given level of performance against parameters and values set out by the scheme. The adjustments to a business's revenue occur through the use of an s-factor and financial incentive adjustment to the maximum allowed revenue. An S factor is a factor included in the annual price adjustment — the annual price adjustment factor of $(1 + \text{CPI} - X)$ is expanded to include an adjustment for service levels, and thus becomes $(1 + \text{CPI} - X + S)$.
- **ESCOSA — South Australian Service Incentive Scheme —** the scheme provides a financial incentive to ETSA Utilities to improve its reliability and customer service performance. The total financial incentive for ETSA Utilities from the SI scheme was capped for both the reliability component and for the customer service component).
- **GSL schemes —** schemes which require the making of payments to customers who have received service that is worse than a pre determined guaranteed level. In general, a GSL event should be objectively definable, easily understandable by customers and businesses, and able to be reported and audited. It should not create an unnecessary administrative burden.

- **OfWat — Outcome Delivery Incentive Scheme** — OfWat has encouraged businesses to develop quality targets and incentive schemes that would reflect their own customers' needs and objectives. The details of the OfWat scheme are outlined in Box 20.

Box 20: OfWat introduction of Outcome Delivery Incentives

As part of the PR14 methodology, OfWat introduced the concept of outcomes and outcome delivery incentives (ODIs). This was part of an overall objective to make the companies focus more on customer priorities and also to take greater ownership of the business plans. In addition, there was a view that regulation had previously focussed too much on inputs (e.g. labour and materials) or outputs (e.g. new reservoirs or treatment works) and not enough on outcomes (e.g. reliable water supplies).

Process for developing outcomes

The steps involved in developing outcomes were as follows:

- Companies develop a set of outcomes and ODIs that are specific to them.
- Customer engagement to identify outcomes and measures. The outcomes are the broad areas of service that customers care about (e.g. safe drinking water). The measures are the specific ways in which each will be assessed (e.g. % compliance with quality standards). An outcome could have more than one measure. Measures should relate to the customer experience and not just to the activities of the company. As a result the company is being asked to take risk over exogenous factors such as extreme weather events.
- Determine the performance commitment. The committed performance level for each measure is the target that the company is building into the plan. In most cases it should reflect the optimal point based on CBA and customer willingness-to-pay. In some cases it could reflect a lower level if the company is working towards the right level of a number of periods.
- Choose the right incentive for each measure. Incentives can be reputational or financial. Financial incentives can be penalty only or penalty and reward. OfWat expect most incentives to be financial and with a broad balance between penalty and reward. Where the company is exposed to exogenous risks it may wish to limit the financial exposure in order to manage its overall risk profile and financing needs.
- Companies must propose the process for monitoring performance and assessing the incentives. In many cases the Customer Challenge Group will be involved in this on an ongoing basis.

Assessment

The process for developing outcomes and measures appears to have worked well. There was a high degree of similarity in the outcomes proposed by companies, which is probably not surprising.

OfWat was not satisfied with the number and scale of financial incentives proposed and has asked companies to consider additional incentives in their revised plans. It is not clear whether OfWat will impose ODIs on companies in the determination if they are still not satisfied.

7.4.3 Risk-sharing mechanisms

Most Australian jurisdictions have adopted an ex-ante approach to regulation. Typically the regulator will either approve or determine pricing and/or revenue outcomes for a business to apply over a period of time (generally 3 to 5 years).

These decisions are forward looking in nature and rely heavily on the ability of both businesses and regulators to forecast costs and demand over the regulatory period.

The forward looking nature of the regulatory frameworks and their reliance on the ability of businesses and regulators to accurately forecast the future exposes businesses to regulatory risk. Regulatory risk is the risk that the regulator will make a decision that impacts adversely on the business. A regulator's decision is most likely to impact a business adversely when it is based on incomplete or incorrect information.

Common examples of regulatory risk include:

- The risk that forecast demand will exceed actual demand for businesses under price caps — where this occurs prices will be set during a review based on forecasts at a level lower than that needed to achieve full cost recovery.
- The risk that forecast costs differ from actual costs — for example, actual operating costs may escalate on an annual basis at a rate much higher than that assumed in the forecasts of operating cost. If businesses cannot achieve offsetting efficiencies they will by definition not earn enough revenue to achieve full cost recovery.

Regulators are generally mindful of these risks and should seek to engineer the regulatory framework so that it minimises the exposure businesses (and their customers) have to regulatory risk. They can do this by developing appropriate forms of price control and ensuring tariff structures are cost-reflective (see section 7.2). There are also specific mechanisms that regulators can adopt to mitigate regulatory risk.

One risk that regulators need to address is the cost impact of unanticipated exogenous events. There are several adjustment or risk-allocation mechanisms that can be used to deal with the cost impacts of exogenous events. For example, a regulator could:

- provide an allowance to the business to purchase insurance against the cost impacts of exogenous events
- provide the business with an allowance for self-insurance
- adjust a business's revenue allowance when an exogenous event occurs through either re-opening or pass-through mechanisms.

Ideally a regulator will use a combination of these measures to ensure that appropriate allowance is made for the risk posed by exogenous events.

Re-opening mechanisms

Re-opening mechanisms are generally imbedded in price decisions by regulators and outline the circumstances under which businesses can apply for a re-opening of a regulatory decision during a regulatory period.

Re-opening mechanisms are intended to allow for unanticipated events that impact materially on the financial viability of businesses. Typical examples include unanticipated damage to infrastructure due to flooding, earthquakes and cyclones.

The power to re-open a decision should ideally rest with both the regulator and businesses and should be symmetric in nature —that is, allow for re-opening to address both unanticipated costs and unanticipated benefits.

The very nature of the mechanism (allowing for unanticipated events) implies that regulators should not seek to be overly prescriptive in the determination or definition of events that qualify for re-opening. Essentially any exogenous event that materially threatens the financial viability of a business should be considered.

However, there is a trade-off between the costs of regulation and accounting for regulatory risk. It would not be efficient to allow for re-opening of a determination where the costs of re-opening outweigh the associated benefits. In addition, the legitimacy of the price review process itself may be undermined if businesses were to continually seek re-opening for minor or insignificant issues.

In order to address this trade-off, regulators typically define the circumstances under which businesses can seek a re-opening. These include:

- the business needs to be materially adversely affected by the event
- the event should be beyond the control of the business
- the event could not have been contemplated at the time the price review was undertaken
- the business is not capable of managing the event within the constraints of its current pricing and revenue allowances.

A variation of a broad-based re-opening mechanism is where regulators pre-identify specific events as the basis for a re-opening. Such events relate to instances where there is uncertainty about specific projects or expenditures. Regulators may identify these projects in price reviews and make explicit allowance for a re-opening to occur in the event that the project is completed or expenditure is incurred within the regulatory period. Examples of this approach include the identification of the Melbourne-Geelong pipeline as a re-opening event in the 2008 price determination for Barwon Water.

Pass-through mechanisms

Pass-through mechanisms are generally defined as part of the form of price control. These mechanisms are intended to allow changes in certain pre-identified costs to be reflected either in prices or revenue while avoiding the need to re-open a price determination and undertake a relatively costly price review process. The regulator will generally prescribe the criteria and manner for an adjustment to revenue or prices. Pass-through mechanisms can be implemented without recourse to re-opening, as long as the pass-through mechanism is objective and self-executing.

Examples of pass-through mechanisms are the current arrangements in Victoria for the adjustment of prices to reflect changes in the bulk water orders associated with the Wonthaggi Desalination Plant and the pass-through arrangements put in place by IPART for extra costs incurred by Sydney Water due to changes in bulk water orders from the Sydney Desalination Plant.

As with re-opening mechanisms, a pass-through mechanism generally identifies a number of different events and costs that can be considered. Both the National Electricity Rules and the National Gas Rules have provisions under which regulated firms can apply for a cost pass-through. The AEMC recently ruled on the events that electricity distribution and transmission service providers can consider (AEMC, 2012). These include a regulatory change event, a service standard event, a tax change event, a retailer insolvency event, an insurance event, and a nominated event for a regulatory control period.

7.4.4 Best practice for urban water in Australia

Best practice economic regulation for urban water requires:

- Clearly specified incentive mechanisms that allow businesses to capture the gains of late-term investments in productivity
- Clearly specified incentive mechanisms based on observable/measurable outcomes that provide for increased service standards
- Clearly specified and appropriately defined re-opening mechanisms for unanticipated events
- Appropriate pass-through mechanisms for known but uncertain expenditures.

7.4.5 Assessment against best practice

Efficiency incentive mechanisms

One of the key themes identified in water the businesses' submissions to this study is the apparent lack of incentive mechanisms in the regulatory frameworks under which they operate. One stated:

Instruments of regulation

The ... regulatory model needs to be updated to include a form of efficiency incentive to ensure that businesses retain the benefits of efficiency improvements for the full 5 year period regardless of when they occur.

Another business commented in its submission to this review:

There is currently a lack of real incentives for Government owned water businesses in the governance and regulatory framework. Often the financial incentives set by the regulator are not as strong as the privatised utilities. In general the incentive regimes for Government owned water businesses need to be different or at least stronger to those of profit maximising privately owned businesses. Greater reporting of the performance against water plan benchmarks would provide a stronger signal that business should aim to at least meet the KPI's and financial returns assumed in a pricing determination.

A key deficiency is the lack of a shareholder who drives efficiencies out of these businesses. Often this is left to the economic regulator to do, which creates tensions about the role of the regulator.

In Queensland, under the proposed threshold regulation model the need for incentive mechanism is less pressing as it may be possible for businesses to retain efficiency gains into perpetuity or until a threshold is breached.

In summary, despite the use of incentive mechanisms in the electricity sector, incentive mechanisms such as efficiency carryover mechanisms do not appear to have been implemented in the water sector in any of the Australian jurisdictions.

Incentives for service quality

Some economic regulators of urban water in Australia have implemented service quality mechanisms. Currently the most common incentive mechanisms for service quality are GSL schemes. Such schemes are in operation for Hunter Water, Victorian water businesses and TasWater. ESCOSA has indicated that a GSL scheme will be considered during SA Water's second price determination. The QCA has also stated that:

SEQ entities may consider implementing GSL schemes from 2015. Entities should consult with customers to identify the indicators that are easily definable and reliable. Rebates should be a meaningful amount to provide an incentive to improve services (QCA, 2014, p. 119).

Re-opening mechanisms

The most explicit arrangements for the re-opening of determinations are in Victoria under the ESC's framework. (see Box 21). The ESC allows an uncertain and unforeseen events mechanism to apply to Victorian water service providers, whereby either a water service provider or the ESC can re-open a determination to account for events that were uncertain or unforeseen at the time prices were set (e.g. unwarranted differences between actual and forecast demand). For example, the ESC used the re-opening provisions for Coliban Water in a previous regulatory period to address an unexpected fall in demand.

Box 21: Generic ESC allowance for uncertain or unforeseen events

General principle

- Water businesses may apply to the Commission for the amendment of a Determination and/or the adjustment of the scheduled prices to reflect increased or decreased costs incurred and/or increased or decreased revenue received as a result of events which were uncertain or unforeseen at the time this Determination was made (an uncertain events application).
- Whether or not a water business makes an application they must promptly notify the Commission upon becoming aware of an event which could form part or all of the basis of an application.

The Commission may take action in respect of an uncertain events application where the Commission is satisfied that such action is necessary or desirable to take account of events that were uncertain or unforeseen at the time of making this Determination provided that the Commission is satisfied that such action takes into account the interests of customers. Generally, the matters taken into account will include positive and negative influences on revenue and expenditure. The Commission may limit an adjustment to only some events or a single event.

Examples of uncertain and unforeseen events

The matters that may, at the discretion of the Commission, be taken into account by the Commission include:

- actual licence fees or contributions payable by water businesses during a particular regulatory year during the regulatory period under the Safe Drinking Water Act 2003 (Vic), the Environment Protection Act 1970 (Vic) and the WI Act which differ from the forecast licence fees or contributions set out for that regulatory year;
- changes in the timing or scope of expenditure by water businesses on major capital projects;
- instances where the Commission is satisfied that there is a material difference between the forecast demand levels and actual demand levels in one or more regulatory years during the regulatory period; and
- a change in or to any of the following:
 - relevant legislation (listed in determinations)
 - any licence issued pursuant to any of the relevant legislation
 - a relevant tax
 - the Statement of Obligations, or
 - the introduction or cessation of a statutory carbon price or tax or a national emissions trading scheme or other scheme relating to the reduction of greenhouse gas emissions.

Exclusions

In considering an uncertain events application, the Commission will not take into account matters that:

- are or should be within the water business's control
- were or should have been known by the water business at the time the Determination was made
- could reasonably have been foreseen by the water business
- should be or should have been planned for or managed by the water business
- reflect inefficient expenditure by the water business.

Source: ESC (2013) Price review 2013

In Queensland under the threshold regulatory framework proposed for SEQ there is no need for re-opening provisions as any breach of threshold may trigger a price review⁸. In the ACT the pass-through arrangements combined with the biennial re-calibrations also reduces the need to allow for re-openings. While the ACT does not have explicit re-opening clauses in its determination, it does formalise two separate re-calibrations of the regulator's decision over the course of the regulatory period. To the extent that the re-calibration every second year allow for revenue and price adjustments, their biennial nature reduces the need to allow for re-opening. In SA the re-opening conditions will be determined by ESCOSA during the second determination.

Pass-through mechanisms

Pass-through mechanisms have been implemented or are under consideration in a number of jurisdictions. Both NSW and Victoria have implemented explicit pass-through mechanisms for to account for variations in bulk water costs associated with desalination plants.

In Queensland the proposed threshold regulatory framework is intended to include pass-through arrangements. In South Australia, ESCOSA has indicated that pass-through arrangements will be determined during the second price review for SA Water. The ICRC has included pass-through arrangements in its determination for ActewAGL.

Box 22: Qld and ACT pass-through arrangements

Pass through arrangements proposed by QCA as Draft recommendation 3.18

Differences due to the following will be accepted as pass-throughs:

- uncontrollable costs (such as those following on from Government legislation and bulk water charges or where there are market-driven changes in WACC)
- where they represent the difference between actual and efficient costs from a previous period (over or under recovery from and including 2013-14) or
- where they have been substantiated by an entity prior to the reporting period.

Pass through arrangements determined by ICRC

The Commission will include the following pass-through events in the price for regulated services outlined in clauses 6.1 and 6.2. A pass-through event is one of the following:

- a change in the water abstraction charge (clause 8.2)
- a change in the utilities network facilities tax (clause 8.3)
- a change in the Commonwealth subvention payment.

Source: (QCA, 2014), (ICRC, 2013).

⁸ Unless prices have already been set through a triggered price review

7.5 Operating licences

7.5.1 The issue

Under a licensing regime, a person or entity is legally prohibited from undertaking an activity unless they hold a licence which explicitly authorises them to do so. Licensing is a common form of regulation in a number of professions and occupations (e.g. the legal profession, builders) and has also been applied to certain business activities, notably including the electricity and gas industries.

Typically an applicant must meet certain entry standards or technical abilities before being granted a licence by the relevant regulatory body. Licences typically specify a number of conditions with which the holder must comply. Breaches of licence conditions generally invoke penalties and ultimately withdrawal of the licence which would bar the person or entity from undertaking the activity.

Licensing is a strong form of regulation as it effectively constitutes a barrier to entry to an industry or profession.

In the water sector, where services are predominantly provided by government-owned monopoly suppliers, withdrawal of a licence is not a realistic prospect. Licensing can play a key role however, in clearly specifying a water business's obligations and in monitoring and enforcement of these obligations.

7.5.2 Discussion

The key benefits from a licensing approach to regulation include:

- prior approval enables exclusion of unsatisfactory applicants where activities entail a high risk of major and/or irreversible impacts
- enabling identification of sources of potential adverse impacts in advance
- possibly enabling greater scope to manage risks where there is limited knowledge about the potential for or risk of adverse impacts
- providing an ongoing monitoring and enforcement mechanism
- flexibility as licence conditions can be varied.

In the water sector there is generally a strong case in principle for licensing of at least some of the potential activities undertaken by both existing and new water and sewerage suppliers. This is because, for a number of water and related activities, risks to customer protection, public health and the environment are relatively high and the consequences of not meeting appropriate standards can be severe.

While licensing may be appropriate for some activities, particularly those with high risks, this does not necessarily mean that all water and sewerage activities necessarily need to be licensed. In particular, activities that entail low risks of

adverse outcomes in terms of consumer protection, public health, and/or the environment would not seem to warrant licensing.

The COAG national occupational licensing principles (COAG, 2009) state that:

- the system should operate in a transparent, accountable, efficient, effective and fair manner
- regulatory intervention in the form of licensing should only be contemplated where risks arising from market failure or risks to public health and safety warrant corrective action and, of all feasible options, licensing provides the greatest net public benefit
- licensing arrangements should not duplicate legislative protections contained under other laws in particular competition law, consumer protection law or occupational health and safety law
- licensing arrangements should only include those requirements needed to address identified consumer protection risks arising from market failure or public and worker health and safety risks without imposing unnecessary costs on consumers and business or substantially lessening competition
- licensing eligibility requirements should be expressed in objective not subjective terms
- licensing arrangements should be subject to an initial review five years after commencement and subsequently at a frequency no less than every 10 years.

It is also important that a licensing regime for new service providers provides for competitive neutrality with existing businesses for 'like' activities.

Customer protection codes and service codes

The development of customer protection frameworks is a common element of all comprehensive regulatory frameworks in utility industries. Customer protection frameworks have been implemented across jurisdictions and across sectors. Service codes and service charters are a central component of customer protection frameworks and are typically a central obligation placed on licence holders. They typically cover:

- Detailed information about billing and payment arrangements, such as providing standard form contracts for different customer groups along with outlining minimum levels of information provided to customers.
- The manner in which water businesses treat customers experiencing difficulty paying their water and sewerage bills. These clauses of a service code are generally referred to as hardship clauses and outline the process and manner in which water businesses address customers experiencing financial difficulty.
- Approaches to dealing with customer complaints, such as procedures for the escalation of complaints.

In general service codes address:

- billing — how bills are to be calculated, the information to be included on bills, how and when bills are to be sent to customers, processes for dealing with overcharging or undercharging of customers
- payment of bills — billing frequency, payment due dates, how payments may be made, concessions that apply to certain customers, arrangements for customers with payment difficulties, arrangements for dishonoured cheques or non-payment
- restriction for non-payment — circumstances under which water businesses may restrict water services, the minimum flow rate during restrictions, restoration of supply
- complaint handling/resolution of customer disputes — processes for dealing with customer complaints, recording of complaints, the role of an industry ombudsman or some other impartial third party in dealing with disputes
- information privacy — circumstances under which customer information may be used or disclosed
- reliability and quality of supply — response times to attend and repair bursts or leaks, the acceptable number and duration of interruptions to customers' supply, the minimum time for informing customers of planned interruptions, minimum flow rates, processes for rectifying substandard supplies and remedying sewage spills.⁹
- customer charters — requirements for water businesses to prepare customer charters consistent with the customer service code, the process for retailers to vary their charter arrangements, the role of the Commission in approving variations.
- customer consultation — role of customer committees, processes for consulting with and informing customers of customer service arrangements and variation to charters.
- amendment of customer service codes — the consultation process that the regulator would undertake.

⁹ External factors influence the reliability of a distribution system (for example, network type and age, soil conditions, topography), so reliability obligations and threshold performance targets are often tailored to meet specific supply arrangements. Appropriate reliability arrangements would need to consider issues such as historical performance levels, the costs associated with improvements, customer service expectations and willingness to pay for improvements.

Licensing for new entrants

The licensing of new entrants (predominately privately owned service providers) and the promotion of competition raises a number of specific issues which the licensing regime should address.

The principle of competitive neutrality would suggest that private sector business should be subject to the same conditions and obligations as public sector businesses if undertaking the same or similar activities.

However, there are several reasons why the conditions and obligations placed on existing government-owned water businesses may not necessarily provide a template for conditions that should be imposed on new water and sewerage licensees.

- in many cases, new suppliers may not undertake the same activities as the existing licensees and hence are not likely to present the same risks of market failure. For similar reasons, it would not be appropriate to place broad responsibilities for community-wide planning and/or education onto new water and sewerage service providers (as opposed to providing information that may be necessary to incorporate into broader planning).
- many of the statutory obligations of existing water businesses relate more to governance arrangements that arise due to their government ownership, rather than to regulatory obligations per se.

A range of licence conditions should apply to new licensees, covering matters such as:

- financial capacity
- operational and technical requirements
- access to sufficient water resources
- customer protection
- information provision and reporting
- compliance with requirements of other regulators.

7.5.3 Best practice for urban water in Australia

Best practice economic regulation of urban water requires a licensing system which:

- Clearly specifies the obligations and performance targets imposed on the business, adopts a risk-based approach, and is subject to periodic review.

7.5.4 Assessment against best practice

Most Australian regulators have an administrative role in the granting, monitoring and revoking of operating licences for water businesses. The two exceptions are the ESC in Victoria and the QCA in Queensland. In Victoria licensing is administered by the government and in Queensland the QCA does not appear to have a licensing role under the proposed future framework for regulation.

The licensing frameworks of the different jurisdictions generally clearly specify the obligations and performance targets imposed on businesses. They are also typically subject to periodic review and annual reporting arrangements.

In water businesses' submissions to this project it was noted that for the NSW licensing regime, while the objectives outlined in the licences were clear, their focus on protecting levels of service can inhibit innovation and change.

Operating Licence sets the performance targets regarding the quality of services and infrastructure provided to customers, and covers matters such as customer rights, response times to breaks and leaks, reporting on network and customer performance. ... the Operating Licence reporting requirements for asset management are overly prescriptive. This creates the risk of a compliance mindset rather than a service culture. The regulation instruments need to be focused on promoting better outcomes for customers, community and the environment rather than seeking to protect these things. To achieve this change, a move to less prescriptive regulation is required, with more regulation based on establishing robust frameworks that provide businesses with the necessary flexibility and right incentives to achieve efficiencies.

In similar terms the NSW Commission of Audit (2012) stated:

The two main drivers of expenditure in the urban water utilities are the standards set for service delivery, and the cost and effectiveness of implementation. Standards are set by regulators but they are also influenced by government policy which is reflected in the Operating Licence for the utilities. An Operating Licence spells out requirements for service delivery for each utility. For Sydney Water and Hunter Water the level of detail in their Operating Licence has increased over time as requirements have been added and very few removed. The Operating Licences are now extraordinarily prescriptive. For Sydney Water the Operating Licence runs over 90 pages plus a similar number of pages that set out reporting requirements...

These requirements have assisted in making the relevant cities water efficient. But they have also contributed to increased utility costs. The targets set in the licences have not paid sufficient attention to benefit/cost trade-offs. There has on occasion been a lack of information to do this analysis, but this is no longer the case.

The Commission recommended that IPART review the Operating Licences of the water utilities with the aim of producing a more simplified, less cumbersome licence that maintains water quality and appropriate delivery standards.

No jurisdiction has a framework explicitly based on risk. However a number of jurisdictions have adopted approaches that differentiate between licensed activities based either on scale or ownership.

For example ESCOSA has taken an approach of developing separate arrangements for licence holders whose commercial activity is of a different scale (ESCOSA, 2013) (ESCOSA, 2012). ESCOSA have made a distinction in the licensing framework between major, intermediate and minor service providers. It has flagged that when imposing licence conditions, it will have regard to the scale and nature of the operations of the applicant and will be available to consult with applicants in respect of this during the application process.

In NSW IPART administers two separate licensing frameworks — operating licences for government owned utilities and operating licences for privately owned water utilities under the Water Industry Competition Act.

Customer protection codes and service codes

Most jurisdictions maintain a customer code or industry code that sets out the minimum standards for a water business supplying water, reticulated non-potable water, recycled water and sewerage services to customers. The minimum standards relate to billing, complaints handling and restriction practices, the quality and reliability of supply, provision of information to consumers and other matters.

The exception is NSW where a customer contract is used to enforce minimum service standards. The contract is attached to each operating licence. The contract provides the terms under which the business provides water supply, recycled water supply, wastewater, trade wastewater and stormwater drainage services. The contract also sets out the rights and obligations including customer's rights in any dispute with the water business. This contract is a legally enforceable document and is a requirement of the Act.

Licensing for new entrants

Currently only NSW has a functioning third party access regime and consequently only NSW has established a formal licensing framework for new entrants (under the WICA).

In NSW a licence granted under WICA allows the holder to undertake one of two activities:

- Network operator's licence: to construct, maintain and operate specified infrastructure for specified purposes.
- Retail supplier's licence: to supply water or provide sewerage services to specified persons or class of persons.

In defining its licensing regime the NSW Government adopted a site-specific based approach, although a recent review of the regulatory arrangements under the WICA has proposed to entity-based licensing (NSW Metropolitan Water Directorate 2014). A licence must specify the activities that it authorises the licensee to carry out and the area within which it authorises those activities to be carried out. Specific conditions also apply depending on the nature of the activity (e.g. retailing, water versus sewerage infrastructure). On the face of it the NSW regime appears to be very straightforward, entailing only two types of licence. However, these licences may have widely differing conditions depending on the specific activity being undertaken.

In practice IPART has indicated that it has established procedural arrangements that ensure applicants avoid duplication in the licensing process. IPART do so by recognising the common elements of an application and previous applications where the applicant is undertaking the activity across multiple sites. For example, IPART may recognise an applicant's successful previous application in demonstrating financial capacity.

The licensing framework under WICA is currently under review by the NSW Government. It has proposed several refinements to the licensing arrangements including:

- separating entity licensing and scheme approval so that entities are licensed as opposed to schemes
- introducing a risk-based approach whereby 'utility like' services and high-risk schemes will need approval by IPART (rather than councils)
- removing the requirement for new entrants to obtain sufficient water from sources other than from a public water utility
- reducing regulatory gaps for metropolitan-council led schemes
- strengthening customer protections including through improved retailer of last resort arrangements and a new operator of last resort framework.

7.6 Compliance monitoring and enforcement

7.6.1 The issue

In the context of economic regulation compliance monitoring and enforcement generally takes the form of annual reporting requirements through regulatory accounts. The main rationale for regulatory accounts is that they provide the regulator both with an ability to assess the regulated entity's level of compliance and to obtain data on the actual costs and levels of service provision. Regulatory accounting arrangements generally provide for:

- a comparison of actual expenditure and revenue of the water business during the current regulatory period against forecast expenditure and revenue
- information to enable the forecast of prudent and efficient expenditure during the subsequent regulatory period
- regulators to monitor and assess compliance with regulation (ESC, 2009).

Associated with regulatory accounts is the requirement in some regulatory frameworks for annual performance reporting. Annual performance reports are public reports intended to provide consumers and other stakeholders with information on the operation of businesses. Such reports generally include a number of operational performance indicators or metrics.

In relation to enforcement the options for regulators range from the issuance of enforcement notices through to levying court penalties and ultimately the removal of licences to operate (as noted above, this is not applicable to government-owned water businesses). These enforcement powers are granted to regulators through legislation.

7.6.2 Discussion

This describes the attributes of regulation that need to be considered in order to ensure compliance monitoring and enforcement aligns with best practice.

Compliance monitoring

The Productivity Commission audit framework (2014) identifies a number of indicators of what constitutes good practice for compliance monitoring (see Box 24). These indicators relate to three main issues:

- the need for clear and effective communication
- the adoption of arrangements that are risk based and proportionate
- the need to seek continual improvement.

Box 23: Compliance monitoring and enforcement, good practice indicators

Clear and effective communication

- The principles of risk assessment models are readily available and easy to understand.
- Clearly specifies 'deemed to comply' solutions for businesses that do not have the capacity to develop alternative solutions.
- The regulator notifies businesses in advance of an inspection, where appropriate, and provides information to help businesses to meet their obligations.
- The regulator provides advice and feedback to inspected businesses.

Risk based and proportionate

- Subject to achieving the regulatory objectives, the regulator's processes
 - allow businesses flexibility in how they meet their compliance obligations

- encourage self-regulation
- utilise joint or coordinated inspections with other regulators.
- In conducting monitoring and compliance activities:
 - inspections are targeted on high risk areas of operation
 - low risk (low-impact/low-likelihood) businesses are not typically inspected
 - some inspections occur on a random or routine basis to test the risk based approach
 - compliance history is taken into account, with compliant businesses visited less frequently.
- Inspectors are adequately trained

Continuous improvement

- The regulator seeks regular feedback on its inspection and monitoring regime to inform continuous improvement in its compliance and inspection strategies.
- The regulator engages with business on options to reduce costs such as 'deemed to comply' and industry self-regulation.
- The regulator provides training to regulatory staff in applying its risk based approach to monitoring and inspections.

Source: (Productivity Commission, 2014)

One of the principal issues with monitoring frameworks is the associated reporting burden that they impose on businesses. This level of burden is directly related to the scope of information and the level of disaggregation associated with reporting requirements. The more onerous the reporting requirements the more costly it is for businesses to comply with the requirements.

Other factors that impact on the burden associated with monitoring include the frequency of reporting and the synergies between regulatory accounts and reporting requirements and other existing statutory accounting and reporting requirements — the more synergies there are between the two (including not just the content of reporting but also its timing) the less costly it is for businesses to comply.

The level of prescription associated with reporting requirements is also an important consideration — the benefits of greater prescription (greater certainty and consistency across businesses) need to be weighed against the costs (greater complexity and less flexibility for businesses).

Another issue associated with monitoring is the review of information for quality and assurance. Generally regulatory arrangements allow businesses to have their regulatory accounts audited by accredited third parties before they are submitted. The alternative is that the regulator under takes a review of the information itself.

Risk based approaches

The Productivity Commission (2014) in its audit framework for regulation state that:

the most important high level principle to minimise the cost of monitoring and compliance while achieving the objectives of the regulation is for the regulator to

apply a *risk-based and proportionate* approach. 'Light-handed' approaches, including allowing businesses flexibility in how they meet their compliance obligations, should be taken where possible. The requirements must be communicated clearly and risk assessment processes and inspection methodologies must be transparent and accountable.

Identifying the nature and level of risk associated with particular activities and with individual businesses can be a complex task, and the right approach will vary across regulators and businesses. Box 24 outlines some of the basic characteristics of a risk-based approach.

Box 24: Risk based approaches for regulators

The aim of risk-based approaches for regulators is to reduce the cost, to the regulator and to the businesses they regulate, of ensuring compliance (to the point where the compliance costs are commensurate with the benefits of the risks being mitigated). The main elements of a risk-based approach for regulators are:

- adopting an 'expert' rather than 'legal' model of regulation where appropriate — this means relying on judgment about what is harmful (through a structured approach to risk assessment) more than rules about what is legal
- focusing on identifying and reducing 'bads' (risks/harms) rather than on defining and promoting 'goods' — although not at the cost of poor communication to business of what is required to comply with regulation
- using a broad range of tools and selecting those most suited to the task — this could include 'hard' tools (such as fines and cease and desist orders) but used with discretion rather than widely applied, as well as 'soft' tools such as educative approaches, and 'deemed to comply' guidelines
- taking an outcomes focused rather than a program focused approach — this means focusing on non-compliant businesses and activities, on the areas of non-compliance within programs that impose the greatest harm and pose the greatest risk, and seeking the least cost solutions to specific problems (such as taking a case management approach, and an escalation model of enforcement)
- matching the regulatory structure to the types of risks being addressed (structural versatility) — for example, 'light-handed' or 'self-regulation' approaches, where the regulator monitors behaviour and imposes controls only for breaches of good behaviour, can work well where the businesses are happy to disclose and imposition of controls is a credible threat
- developing partnerships with industry, community groups, and other regulators based around common risk mitigation objectives — other bodies may provide much more cost effective ways to manage risk where it is in their interests to do so. Industry self-regulation may be effective in some cases, community organisations can provide low cost monitoring of compliance and the threat of consumer sanctions may be sufficient discipline to ensure compliance
- understanding the types of risk that pose special challenges and need special approaches and attention. These include:
 - high level harms — low probability catastrophes
 - slow acting harms — where the effects are cumulative
 - invisible harms — unreported and/or unreportable
- subordination of risk by businesses — where they can pass risk onto others (who may or may not be aware of the risks), or the pay-off to the business of ignoring or even assuming the regulated risk is 'worth the risk'.

Source: (Productivity Commission, 2014)

Enforcement

The Energy Market Reform Working Group (2013) set out a comprehensive set of objectives in its recent review of enforcement in the energy sector. These objectives provide a strong foundation for any critical review of enforcement powers. They suggest that enforcement action should:

- contribute to the general statutory objectives
- be based on a consistent and fair regime across industry participants and across different parts of the sector — wholesale markets, network regulation and retail markets
- be accountable, so that industry participants know the basis upon which enforcement actions are taken
- be proportionate to the nature and materiality of the breach
- be transparent in that industry participants know what is required by way of compliance to avoid enforcement action
- target conduct most likely to cause harm to consumers or to the integrity of the regulatory framework.

These objectives have been further refined by NERA & Allens (2013) who identified what constitutes best practice in contemporary regulation. This study found that the overwhelming theme of best practice is an emphasis on consistency, transparency and proportionality. The key themes derived from this review are outlined in Box 25.

Box 25: Key themes of enforcement best practice

- **Simplicity:** The legal structure of the rules of regulation must be easily understandable.
- **Consistency:** The implementation of the rules must be done in a predictable, consistent and non-discriminatory manner, in order to create a stable regulatory environment and foster business confidence.
- **Layered approach:** A layered approach to enforcement via an 'enforcement pyramid' model is best, so that regulators use coercive sanctions only when less interventionist measures have failed to produce compliance. This theory is premised on an ongoing cooperative relationship between the regulator and the regulated, and on proportionality of responses.
- **Flexibility:** As part of the enforcement pyramid, a range of enforcement options should be available to the regulator.
- **Prevention:** Prevention is better than a cure. Waiting for harm to occur and responding to it through criminal or administrative sanctions is undesirable because the unwanted harm has occurred and injury suffered or damage incurred.
- **Cost-effective:** The system should be cost-effective and economically rational for regulated entities to comply.
- **Transparency:** The development and enforcement of regulation should be transparent to the community and the business sector. Transparency promotes learning and information sharing, and encourages integrity of the process.
- **Safeguards:** Appropriate safeguards (such as appeal rights) should be in place to limit the potential for regulatory over-reach and the imposition of unnecessary costs on firms and

consumers.

- **Accountability:** Regulation should be evaluated on a regular basis to ensure that it is meeting its specified objectives. The results of such evaluation should be available to the public.
- **Uniformity:** Enforcement regimes across Australia should be as consistent as possible, to reduce regulatory red-tape and minimise the number of different regulatory regimes and investigatory powers that businesses are subjected to. Nonetheless, it must be recognised that one size does not fit all.

Source: (NERA & Allens, 2013, pp. 24, 25)

7.6.3 Best practice for urban water in Australia

Monitoring frameworks should:

- Seek to limit the burden on businesses by being consistent with existing reporting requirements, adopting a risk based approach, and allowing for some degree of self review and audit.
- Be subject to periodic review to ensure suitability to changes in circumstance and to try and minimise burdens on businesses

Enforcement frameworks should:

- Be simple and easily understood and enforced consistently in a predictable and non-discriminatory manner through decision making processes and decisions which are transparent to the both businesses and customers
- Be proportional — use a risk-based approach as far as possible.

7.6.4 Assessment against best practice

Monitoring frameworks

The monitoring frameworks adopted by economic regulators in the urban water sector vary in their comprehensiveness and approach.

In NSW IPART has established a comprehensive monitoring framework. IPART monitors businesses' performance and prices through: annual audits of operating licence compliance, annual performance reports and annual reports on compliance with legislation. The NSW framework is fairly representative of the frameworks adopted in the other jurisdictions.

In Victoria the ESC takes an explicit risk-based approach to monitoring compliance (see Box 26). The risk based approach is set out in the ESC's guidance to businesses in undertaking compliance audits.

Box 26: ESC risk-based approach to compliance monitoring

In assessing the risk associated with any obligation or matter, the Commission will consider the likelihood of non compliance (or, in the case of information, the likelihood of its being defective, unreliable, lacking in quality or not conforming with relevant specifications) and the consequence of non compliance (or the information being defective).

In assessing the likelihood of non compliance (or the likelihood of information being defective), the Commission will consider the following factors:

- any previous audit results or evidence of non compliance
- the likely or known extent of information defects
- any issues identified as part of its own regulatory and/or consultation processes and
- any complaints made or issues raised by other stakeholders — for example customers, or the Energy and Water Ombudsman (Victoria).

In assessing the consequences of non compliance or of information being defective, the Commission will consider the following factors:

- the consequences for achieving the Commission's objectives and functions under the Essential Services Commission Act and Water Industry Act
- danger to public health, safety or the environment
- the impact or cost to customers or the general public
- damage to property
- loss or a reduction in the quality, reliability and security of water as an essential service
- effective commercial and regulatory decision making (for example, by basing future regulatory decisions on unreliable performance data or by customers/businesses making invalid comparisons about the businesses' performance).

In deciding the scope of the audit the Commission will give greater priority to auditing high risk obligations and matters identified using the risk assessment process above. It may also audit medium and low risk obligations and matters but will consider whether a less intensive or less frequent audit requirement may be appropriate

Source: (ESC, 2005, pp. 3,4)

In Queensland there is some uncertainty as to what framework will be adopted for SEQ, although the position paper on the future regulatory framework for the retail/distribution businesses clearly outlines a role for the regulatory in monitoring compliance with service standard targets (QCA, 2014, p. viii).

In the Northern Territory it is not clear what role the economic regulator has in compliance or performance monitoring. However, Power and Water Corporation does have minimum standards that it must meet under its licence.

Enforcement frameworks

The economic regulators in some jurisdictions have developed detailed documents or guidelines aimed at informing businesses of how they intend to undertake both their enforcement roles and any related enforcement actions. A good example is provided by ESCOSA (SA) which has developed a detailed enforcement policy document (ESCOSA, 2013).

Similarly in NSW IPART enforces the *Energy and Water Licence Compliance Policy* (IPART, 2013). IPART's enforcement responsibilities and approach are clearly set out in this document. The types of action IPART may take under its compliance monitoring and reporting powers include:

- verifying resolution of contraventions through increasing the frequency of compliance reporting and/or audits

Instruments of regulation

- seeking an undertaking from the licensee
- requiring development and implementation of a remediation plan to address contraventions.

In WA the economic regulator has an advisory role and as such its enforcement responsibilities are limited to reporting non-compliance to the relevant Minister with breaches classed as minor, moderate and major.

8 Recommendations

This report has demonstrated that the current arrangements for economic regulation of the urban water industry have some significant shortcomings when compared to best practice.

Addressing these gaps will require actions from government, economic regulators, and water businesses.

8.1 Actions for Governments

As discussed in section 4, key aspects of the regulatory framework within which economic regulators of the urban water industry operate are, appropriately, established in legislative instruments.

Moving towards best practice will require legislative changes in some jurisdictions to:

- provide economic regulators with deterministic powers to regulate prices and service standards in those jurisdictions where this is not already the case (WA and NT)
- clarify regulatory objectives and provide greater guidance on trade-offs
- explicitly require regulators to co-operate with other regulatory bodies
- provide for an ‘approve-reject’ approach to price reviews
- provide for a limited merits review

A number of these proposed reforms have already been previously suggested, but not yet acted upon. For example, the NSW Commission of Audit (2012) recommended that

... the Department of Premier and Cabinet, Treasury and IPART examine the IPART Act with the intention of improving IPART’s regulation by making its objectives clear. As the water industry becomes more competitive with more private sector involvement it is also timely to consider the introduction of an Appeal or Review mechanism.

Actions by State Governments are also required to ensure cost-benefit analysis and rigorous RISs are undertaken in regard to standards set by other regulators.

8.2 Actions for economic regulators

While the regulatory approaches and processes adopted by economic regulators of the urban water industry will be somewhat determined by the legislative framework set for them, there is a range of actions which economic regulators could take that would improve economic regulation of the sector and should more effectively achieve the underlying objectives. These include:

Recommendations for action by economic regulators include:

- Undertake periodic ‘step back’ reviews of their broad approaches and methodologies for economic regulation with a view to adopting approaches which would reduce prescription and regulatory burden
- Undertake financeability tests as a matter of course
- Consider potential adjustments to methodologies adopted in applying the building blocks model, including:
 - setting a WACC based on a longer-term view
 - using totex rather than capex and opex
 - alternative approaches to scrutinising capex and opex
 - greater focus on material issues
- Adopt appropriate forms of price control that suit the particular circumstances, with a strong case for a revenue cap where is significant demand risk
- Seek to include more incentive and risk sharing mechanisms in their regulatory controls such as:
 - longer regulatory periods
 - efficiency carryover mechanisms
 - service efficiency mechanisms
- Adopt propose/respond models to reduce uncertainty for regulated business.

8.3 Actions for urban water businesses

Finally, there are also some actions which urban water businesses themselves could take to improve economic regulation of the sector. These include:

- Improving customer engagement processes as part of regulatory reviews
- Improving the quality of their regulatory submissions so as to reduce the need for regulators to have to undertake detailed scrutiny
- Ensuring that each business institutes internal reporting and accounting processes which integrate into regulatory process requirements.

References

- ACT Auditor-General's Office (2014). *Performance audit report : the water and sewerage pricing process, Independent Competition and Regulatory Commission and ACTEW Corporation Limited*. <
<http://www.audit.act.gov.au/auditreports/reports2014/Report%20No%202%20of%202014%20The%20Water%20and%20Sewerage%20Pricing%20Process.pdf>>
- AEMC (2011). *Review into the use of total factor productivity for the determination of prices and revenues, Final Report, 30 June 2011*, Sydney, AEMC.
- AEMC (2012). *Cost pass through amendments, information sheet*. Sydney, AEMC.
- AER (2013), *Expenditure Forecast Assessment Guideline for Electricity Distribution*, <
<https://www.aer.gov.au/sites/default/files/Expenditure%20Forecast%20Assessment%20Guideline%20-%20Distribution%20-%20FINAL.pdf>>.
- AER (2014). Stage 2 Framework and approach - Ausgrid, Endeavour Energy and Essential Energy. Melbourne: Australian Competition and Consumer Commission.
- Alexander I & Shugart C 1999, *Risk volatility and smoothing: regulatory options for controlling prices*, [The Authors] <
http://regulationbodyofknowledge.org/wp-content/uploads/2013/03/Alexander_Risk_Volatility_and.pdf>
- Biggar, D (2009). 'Is Protecting Sunk Investments by Consumers a Key Rationale for Natural Monopoly Regulation?', *Review of network economics*, vol. 8, no. 2, p. 128-152.
- Brocas, I, Chan, K., & Perrigne, I. (2006). Regulation under Asymmetric Information in Water Utilities. *American Economic Review*, Vol 96 , 62-66.
- Brown. A, Stern, J, Tenebaum, B & Gencer, D S. J. (2006). *Handbook for Evaluating Infrastructure Regulatory Systems*. Washington DC: Bank, The World.
- Business Council of Australia. (2013). *Improving Australia's Regulatory System*. Melbourne: Business Council of Australia.
- Cambridge Economic Policy Associates. (2011). *Regulated Monopoly Service Providers and Customer Views, Preferences and Willingness to Pay*. Sydney: IPART.
- Carter, S (2001), 'Breaking the consumption habit: ratemaking for efficient resource decisions', *Electricity journal*, vol. 14, no. 10, pp. 66-74.
- Centre for International Economics. (2010, October). Pricing principles for recycled water and stormwater reuse. *Waterlines Report Series No 31* . Canberra, ACT, Australia: National Water Commission.
- COAG (1994) *Water reform framework*, <
<http://www.environment.gov.au/system/files/resources/6caa5879-8ebc-46ab->>

8f97-4219b8ffdd98/files/policyframework.pdf>

COAG. (2009). *Intergovernmental Agreement for a National Licensing System for Specified Occupations*. COAG.

Costello, KW (1996) Revenue Caps or Price Caps? Robust Competition Later Means Healthy Choices New [sic], *Fortnightly magazine*, <<http://www.fortnightly.com/fortnightly/1996/05/revenue-caps-or-price-caps-robust-competition-later-means-healthy-choices-new>> <subscriber access needed>

CUAC. (2014). *Submission to OLV Water Bill, Exposure Draft*. Melbourne.

Deloitte (2014). *Comparison of water regulatory approaches - final report [for] Essential Services Commission*, <<http://www.esc.vic.gov.au/getattachment/23de52c9-fe84-481a-ae3-87017dc1f7d3/Comparison-of-water-regulatory-approaches-prepared.pdf>>

DotEcon. (2007). *Forms of price control for the water industry*. London: OFWAT.

Energy Market Reform Working Group (2013, April). Review of enforcement regimes under National Electricity Laws : discussion paper, <<http://www.scer.gov.au/files/2013/05/Final-Discussion-Paper-Enforcement-Review-May-2013.pdf>>

ERA (2006), *Best practice utility licensing: draft for consultation (24 October 2006)*, <<http://www.era.wa.gov.au/library/Best%20Practice%20Utility%20Licensing%20Final.pdf>>

ESC(2005). *Approving, Conducting and Reporting Audits Victorian Water Businesses. Guideline*, Melbourne, Victoria, Australia: ESC.

ESC(2009). *Water Industry Regulatory Accounting Code*. Melbourne: Essential Services Commission .

ESC(2011). *Tariff Issues Paper. 2013 Water Price Review* . Melbourne, Victoria, Australia: ESC.

ESC (2013). *Price review 2013: Greater metropolitan water businesses: final decision*, Melbourne, ESC.

ESC. (2013). *Assessing the financeability of Victorian water businesses, Consultation Paper*. Melbourne: ESC.

ESC (2014). *Information paper for the Independent review of the economic regulatory framework, ESC submission no. 1*, <<http://www.esc.vic.gov.au/getattachment/7fc59140-2761-483f-8acd-fab53e1cf202/Information-Paper-for-the-Independent-Review-of-th.pdf>>

ESCOSA (2008). *Applicability of incentive based regulation to SA Water : report*, ESCOSA, Adelaide.

- ESCOSA (2012). *Licensing Arrangements for the Water Industry. Water Advisory Bulletin* . Adelaide, South Australia, Australia: ESCOSA.
- ESCOSA (2013, June). *Economic regulation of minor and intermediate retailers of water and sewerage services . Final Decision*. Adelaide, South Australia, Australia: ESCOSA.
- ESCOSA (2013, September). *Enforcement Policy version 2.5*. Adelaide, South Australia, Australia: ESCOSA.
- ESCOSA (2013, November). *Second SA Water Price Determination, Draft Framework and Approach*. ESCOSA, Adelaide.
- Frontier Economics (2008, July). *Approaches to urban water pricing . Waterlines Occasional Paper No.7* . Canberra, ACT, Australia: National Water Commission.
- Frontier Economics (2010). *Future price limits - form of control and regulated/unregulated business*. London: Report prepared for OFWAT.
- Frontier Economics (2013). *Review of urban water customer choice options, policy drivers and regulatory instruments: a report prepared for the National Water Commission*, <http://www.frontier-economics.com/_library/publications/frontier%20australia%20report%20-%20urban%20water%20customer%20choice%20stc.pdf>
- Government Pricing Tribunal (1993, October). *Inquiry into water and related services*. Sydney, NSW, Australia: Government of New South Wales.
- ICRC (2013). *Price Direction, Regulated Water and Sewerage Services. 1 July 2013 to 30 June 2019*. Canberra, ACT: Independent Competition and Regulatory Commission.
- IPART (1999). *Pricing of water, sewerage and stormwater services, Sydney Water Corporation, Hunter Water Corporation, Gosford City Council, Wuyong Shire Council, Sydney Catchment Authority: issues paper*, IPART, Sydney.
- IPART (2010). *Submission to Inquiry by Productivity Commission to Australia's urban water sector*. IPART, Sydney.
- IPART (2011). *Submission into Inquiry by Productivity Commission to Australia's urban water sector: submission in response to the draft report*, <http://www.pc.gov.au/__data/assets/pdf_file/0018/109242/subdr118.pdf>
- IPART (2012a). *Financeability test in price regulation, Discussion Paper*. Sydney: IPART.
- IPART (2012b). *Review of price structures for metropolitan water utilities . Water - Final Report* . Sydney, NSW, Australia: IPART.
- IPART. (2012c). *Review of Prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services - from 1 July 2012 to 30 June 2016. Water - Final Report* . IPART, Sydney.
- IPART (2013). *Energy and Water Compliance Policy*. Sydney, NSW, Australia: IPART.

Krieger, S (2010). 'Should the Law Have a Greater Role in Economic Regulation of Infrastructure Services?', paper presented at IPART Conference – Encouraging Efficiency and Competition in the Provision of Infrastructure Services, Sydney, 7 May, <http://www.ipart.nsw.gov.au/Home/Quicklinks/Speeches/Speech_-_IPART_Conference_-_7_May_2010_-_Sibylle_Krieger>

LECG (2009). *The case for ex post regulation of energy networks: final*, LECG, London.

Lewis, TR, & Sappington, D (1988). 'Regulating a Monopolist with Unknown Demand', *American Economic Review*, vol. 78, No. 5 (Dec., 1988), pp. 986-998.

Littlechild, S (1986). *Economic regulation of privatised water authorities: a report submitted to the Dept. of the Environment*, HMSO, London.

National Water Commission (2011). *Urban water in Australia: future directions*, NWC, Canberra.

NERA (2013). *Assessing the financeability of regulated water service providers*. Melbourne: Essential Services Commission.

NERA & Allens (2013, November), *Review of enforcement regimes under the National Electricity Laws: a report prepared for the Standing Council on Energy and Resources*, <<http://www.scer.gov.au/files/2013/12/Review-of-Enforcement-Regimes-under-the-National-Energy-Laws-Final-Report.pdf>>

NSW Commission of Audit (2012). *Final report – government expenditure*, <http://www.treasury.nsw.gov.au/__data/assets/pdf_file/0020/22583/Commission_of_Audit_Final_Report.pdf>

NZ MED (2007), *Review of Regulatory Control Provisions under the Commerce Act 1986: discussion document*, Ministry of Economic Development, Wellington, N.Z.

NSW Metropolitan Water Directorate (2014), *Urban Water Regulation Review Position Paper: Joint review of the Water Industry Competition Act 2006 and regulatory arrangements for water recycling under the Local Government Act 1993*, NSW Department of Finance & Services, NSW

NZ Productivity Commission (2013). *Regulatory institutions and practices: issues paper*, The Commission, Wellington.

OECD (2012). *Recommendation of the Council on Regulatory Policy and Governance*. OECD, Paris.

OECD (2013). *Principles for the governance of regulators: public consultation draft*, <<http://www.oecd.org/gov/regulatory-policy/Governance%20of%20Regulators%20FN%202.docx>>

Ofgem (2008). Is RPI-X still fit for purpose after 20 years. *Beesley Lecture - London 2 October*. London: Office of Gas and Electricity Markets.

- Ofgem. (2010). *Regulating energy networks for the future: RPI-X@20 recommendations*. London: Office of Gas and Electricity Markets.
- Ofwat. (2010, July). *Beyond Limits. How should prices for monopoly water and sewerage services be controlled?* Birmingham: Ofwat.
- OFWAT. (2010). *The form of price control for monopoly water and sewerage services in England and Wales - a discussion paper*. Birmingham: OFWAT.
- OTTER (2013). *Tasmanian water and sewerage industry: 2014-14 price determination investigation: price and service plan guidelines*, <
[http://www.energyregulator.tas.gov.au/domino/otter.nsf/LookupFiles/13-3765_Final_Price_and_ServicePlan_Guideline_Water_&_Sewerage_November13.pdf/\\$file/13-3765_Final_Price_and_ServicePlan_Guideline_Water_&_Sewerage_November13.pdf](http://www.energyregulator.tas.gov.au/domino/otter.nsf/LookupFiles/13-3765_Final_Price_and_ServicePlan_Guideline_Water_&_Sewerage_November13.pdf/$file/13-3765_Final_Price_and_ServicePlan_Guideline_Water_&_Sewerage_November13.pdf)>
- Productivity Commission (2003). *Review of the gas access regime*, The Commission, Canberra.
- Productivity Commission. (2011). *Australia's Urban Water Sector*, 2 vols. The Commission, Canberra:
- Productivity Commission (2013) *Electricity Networks Regulatory frameworks*, 2 vols., Canberra: The Commission, Canberra.
- Productivity Commission (2014). *Regulator Audit Framework*. The Commission, Canberra..
- Productivity Commission (2014). *Public Infrastructure, Draft Inquiry Report*. The Commission, Canberra.
- QCA (2012). *Risk and the form of regulation: discussion paper*, QCA, Brisbane
- QCA (2014, February). *Position Paper. Long term regulatory framework for SEQ water entities*. QCA, Brisbane.
- Queensland Commission of Audit 2013, *Final report*, vol. 2, <http://www.commissionofaudit.qld.gov.au/reports/final-report.php>
- Standing Council on Energy and Resources (2013). *Regulation impact statement : limited merits review of decision-making in the electricity and gas regulatory frameworks: decision paper*. < <http://www.scer.gov.au/files/2013/09/LMR-Decision-RIS-June-2013.pdf>>
- Taylor, A., & Ballance, T. (2000). *The principles of best practice economic regulation*. Stone and Webster Consultants.
- UK Dept. for Business Innovation & Skills (2011). *Principles for economic regulation*, BIS, London.
- UK House of Lords, Select Committee on Regulators (2007). *UK economic regulators*, 2 vols, The Stationary Office, London.

WSAA (2013a). *Vision & outcomes to 2030 : customer driven, enriching life*, WSAA, Melbourne.

WSAA. (2013b). *Financial stock take of urban water utilities*, WSAA, Melbourne.

Yarra Valley Water. (2012, October). Yarra Valley Future Water. *Water Plan 2013/14 to 2017/18*. Melbourne, Victoria, Australia: Yarra Valley Water.

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