



REVIEW OF WATER PRICING APPROACH

Consultation Paper

April 2015



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1 INTRODUCTION

The Essential Services Commission (the Commission) is the economic regulator of the Victorian water sector. Our main objective is to promote the long term interests of Victorian consumers. We regulate prices as well as standards and conditions of service and supply for water and sewerage services for the 19 state government-owned water corporations.

The framework for economic regulation of the water sector, including price regulation, is set out in a Water Industry Regulatory Order (the WIRO) which is made under the Water Industry Act 1994. The WIRO also refers to provisions in the Essential Services Commission Act 2001, which set out the overarching objectives of the Commission.

The Commission has conducted water price reviews for three regulatory pricing periods, completing the most recent in 2013. These all followed the specific pricing approach prescribed in the WIRO.

In 2014, the Victorian government reviewed and revised the WIRO, removing the prescriptive approach to water pricing. This allows the Commission significant discretion to decide on the manner, approach and methodology (the pricing approach) used to deliver efficient pricing and service outcomes for Victorian water and sewerage customers.

We will now undertake an 18-month review of our pricing approach for the Victorian water sector, in preparation for the 2018 water price review of 16 urban water businesses (and Southern Rural Water). This paper sets out the process we will follow in conducting this review, including the consultative approach we will take. Submissions responding to this paper are invited by mid June 2015 (noting we will also seek submissions during the subsequent stages of this project).

This review of the water pricing approach presents the most significant opportunity to improve the way water prices are determined since the establishment of the

Commission's water pricing function in 2004. Our consultative review process will allow extensive participation by customers and water businesses, and we will also draw on the expertise of world leading experts and their experience of international regulatory frameworks.

Our objective for this review is to identify the pricing approach that will produce the best outcomes for Victorian customers, namely, services delivered at the lowest price while meeting all quality and reliability standards. Our approach to pricing will involve establishing strong incentives for the water businesses to operate efficiently and innovatively, while providing for their long-term viability. Alternatively stated, our approach to pricing seeks to uphold the long-term viability of Victorian water businesses that operate efficiently and invest prudently. Victorian customers should expect no less.

This paper comprises the following sections:

- Chapter 2 describes the economic regulatory framework for the Victorian water sector, our current pricing approach, and approaches taken in other jurisdictions. A detailed description of the Commission's 2013 pricing approach is provided in Appendix A.
- Chapter 3 describes the key changes in the 2014 WIRO and the impact of these changes on how price reviews will be undertaken in the future.
- Chapter 4 outlines the scope of this review of pricing approaches, including the proposed evaluation process for considering various pricing approaches.
- Chapter 5 describes how to make submissions in response to this consultation paper.
- Chapter 6 provides the project timeline, to be delivered in five phases.

2 BACKGROUND

2.1 ECONOMIC REGULATION

The overarching objective of economic regulation of essential services industries is to promote effective competition where feasible and to implement cost-effective (and incentive-based) regulation where necessary.

This implies that:

- for the natural monopoly element of each service (eg gas and water pipes, and electricity wires) appropriate controls are imposed on price and service quality to prevent misuse of monopoly power and to provide incentives for efficient operation; and
- where efficient markets exist or can be created for elements of the service (eg gas exploration, production and retailing, electricity generation and retailing), regulation may be required to ensure competition operates effectively within a framework of rights, obligations and trading arrangements that produce outcomes which serve the long-term interests of consumers.

Long term efficiency requires sustained incentives for both the monopoly and competitive businesses to achieve greater cost and price efficiency. However, this must not be at the expense of service standards, reliability and security requirements that are in line with customer expectations. Where there is some potential for market failure in the contestable markets or misuse of market power in the monopoly markets, regulation may be needed to redress that potential.

2.2 THE VICTORIAN WATER REGULATORY FRAMEWORK

The economic regulatory framework for the Victorian water sector is derived from three main instruments:

- The *Essential Services Commission Act 2001 (Vic.)* (the ESC Act), which sets out the overall objectives of the Commission, and specific powers relating to price regulation and price determinations.
- The *Water Industry Act 1994 (Vic.)* (the WI Act), which sets out the regulatory powers and objectives of the Commission with regard to regulation of the Victorian water industry.
- The Water Industry Regulatory Order (WIRO), which is made under section 4(D)(1) of the Water Industry Act and which sets out specific details with regard to economic regulation of the water industry.

The Victorian government recently revised the WIRO, with a new version gazetted on 23 October 2014, introducing some significant changes to the regulatory requirements and allowing new approaches to the economic regulation of the water sector.

2.3 PRICE DETERMINATIONS

The ESC Act is quite broad in describing the Commission's price regulation powers and its approach to making price determinations. Specifically, section 33(2) states:

In making a price determination, the Commission must adopt an approach and methodology which the Commission considers will best meet the objectives specified in this Act and any relevant legislation.

Further, section 33(5) states:

A price determination by the Commission may regulate a prescribed price for prescribed goods and services in any manner the Commission considers appropriate.

However, this is qualified by section 33(1) which states that this is —

...subject to anything to the contrary in the empowering instrument specifying the prescribed prices or prescribed goods and services in respect of which the Commission is exercising its power of regulation

— in this case the Water Industry Act.

The WIRO, made under the WI Act, was previously far more prescriptive in its approach to pricing for the water industry, effectively mandating the use of the “building blocks” approach to determining revenue requirements and setting prices. It also required the Commission to be satisfied that proposed prices complied with a long list of regulatory principles, sometimes conflicting, but the WIRO provided no basis for how the Commission was to prioritise these principles.

2.4 BUILDING BLOCKS

The building blocks approach is currently the key technique used by economic regulators in the Australian water sector to establish efficient cost benchmarks. The building blocks approach establishes individual cost benchmarks for each regulated entity through determining the different elements (or ‘building blocks’) that make up each business’s revenue requirement for the forthcoming regulatory pricing period.

Determining prices using the building blocks approach involves the following steps:

1. Establishing an initial Regulated Asset Base (RAB) value at the commencement of price regulation. The RAB is then adjusted or “rolled-forward” to include any forecast capital expenditure, depreciation and disposals of capital assets for each regulatory period. At the end of the regulatory period, the rolled-forward RAB is updated to reflect actual prudent and efficient capital expenditure and disposals and depreciation incurred throughout the period.
2. Determining a return on capital (the weighted average cost of capital or WACC). Regulators typically use a benchmark WACC which is based on external benchmarks of the cost of debt and cost of equity.

3. Allowing for the return of capital (regulatory depreciation) to recover the capital that has been invested in assets (over the useful lives of those assets).
4. Allowing operating expenditure forecasts, to recover non-capital costs.
5. Reflecting tax obligations.
6. Developing demand forecasts for each year of the regulatory period.

The total revenue requirement for the business is determined by adding items 2, 3, 4 and 5. In short, prices are determined by dividing the total revenue requirement by the forecast demand.

Because costs may vary from year to year during the regulatory period, regulators typically seek (or may be required) to produce price paths that smooth out any annual variability in underlying costs. As a result, in any given year of the regulatory period, prices (and revenue) may not perfectly match the costs anticipated by the building block approach. Over the entire regulatory period, however, expected revenues will fully compensate the business for its anticipated efficient costs.

In order to avoid erratic price movement during a regulatory period, the regulator must determine two key price path elements:

- the annual rate at which prices will change — this is often expressed as “CPI-X”, where CPI reflects the actual inflation rate and the X-factor reflects the annual rate of price change that the regulator determines through the review process, and
- the initial price change at the commencement of the new regulatory period (known as the P_0 or “P-nought” adjustment).

Regulators assess the efficiency of proposed operating and capital expenditure. A variety of assessment tools and techniques are used to determine efficient expenditure, including partial or total benchmarks, productivity improvement hurdles, unit rates for material inputs (e.g. labour and material construction costs, energy price indices), and engineering and risk assessments.

If the business manages to out-perform the cost benchmarks used to set the building blocks and X-factor (while maintaining service standards), it keeps some or all of the efficiency gains for the remainder of the pricing period. If the business has cost over-runs, then it must absorb the increases in costs (rather than passing them through to

customers). This approach is meant to emulate what might happen in a competitive market where a business cannot simply raise its prices to recover its cost blow-outs, for risk of losing custom to its competitors.

In Victoria, the water businesses have been required to submit to the Commission their proposed requirements for each of the different components in the building block approach as well as their preferred price path (comprising P_0 adjustment and X-factor). The Commission has then assessed these proposals against the objectives and principles in the relevant legislative instruments.

Appendix A describes in more detail the pricing approach used in the three price reviews so far undertaken in the Victorian water industry, with specific reference to the most recent 2013 price review.

2.5 APPROACHES IN OTHER JURISDICTIONS

There are many pricing approaches available to economic regulators. Regulators modify the underlying form of regulation to suit factors such as whether the subject of regulation is prices, access arrangements or negotiate-arbitrate frameworks. A given regulator may adopt different approaches to match the particular circumstances of each regulated sector and its regulatory framework. For example, while the Commission currently adopts a building block approach in water, it has moved to a price monitoring framework for regulated ports, where there are stronger countervailing forces. Further, while the building block approach is the basis for many pricing frameworks, the manner in which it is used by each regulator can vary considerably.

Table 2.1 below summarises the approaches used for network infrastructure services in selected regulatory jurisdictions. In some jurisdictions, different pricing approaches are used for different network assets depending on the degree of competition.

TABLE 2.1 PRICING APPROACHES FOR NETWORK INFRASTRUCTURE — SELECTED JURISDICTIONS AND REGIMES

| Industry sector | Building block | Price monitoring | Total factor productivity | Rate of return |
|-----------------|---|-----------------------|-------------------------------|-------------------|
| Urban water | Vic., NSW (metro), Tas., ACT, SA, England and Wales | Qld (South East only) | | |
| Rural water | Cwlth, Vic | | | |
| Electricity | National, WA(access), NT | | USA (some states), Canada, NZ | USA (most states) |
| Gas | National, WA(access) | Tas. | USA, Canada, NZ | |
| Ports | Qld | NSW, Qld, SA, Vic. | | |
| Rail | Qld, Cwlth, SA, WA, NSW, Vic. | | USA | |
| Airports | | Cwlth, NZ | | |

Note: Appendix B defines a range of pricing approaches available to regulators.

3 CHANGES IN THE 2014 WIRO

The new 2014 WIRO contains several significant changes that will affect how future water price reviews are undertaken. The main changes are that the WIRO now:

- provides greater scope for different pricing approaches (beyond the current building block approach);
- formalises the role of the Commission’s guidance paper on how a price review is to be conducted; and
- clarifies the Commission’s objectives in regulating prices and making a price determination.

This chapter examines each of these main changes and discusses the impact of these changes on how price reviews will be conducted in the future.

3.1 PRICING APPROACH

In a new section titled “Approach, methodology and manner of regulation”, clause 12 of the WIRO states:

(a) In making a price determination the Commission must adopt an approach and methodology that is consistent with section 33(2) of the ESC Act and this Order.

(b) A price determination may determine the maximum prices that a regulated entity may charge for prescribed services, or the manner in which the regulated entity’s prices are to be calculated, determined or otherwise regulated, in a manner consistent with section 33(5) of the ESC Act and this Order.

The WIRO no longer mandates the Commission to adopt a building block approach to determine a water business's revenue allowance and maximum prices. Rather, the WIRO now allows the flexibility provided under the ESC Act for the Commission to adopt different pricing approaches where it considers they better meet the objectives in the legislation.

For example, we could use a different pricing approach for different sectors, different businesses or even different parts of one business. Any pricing approach the Commission adopts must be consistent with its overarching objective to promote the long term interests of Victorian consumers, and must be consistent with the WIRO.

The WIRO now requires the Commission to set out, in its guidance to regulated businesses, the approach and methodology we propose to adopt to assess a water business's price submission. This review is an opportunity for water businesses to provide input into the approach the Commission will adopt in our guidance for the 2018 price reviews.

3.2 GUIDANCE PAPER

For previous water price reviews, the Commission issued guidance on its own accord to the water businesses well in advance of price reviews, to provide certainty about how the review would be conducted, and what the Commission expected to see in the pricing submissions. The 2014 WIRO formalises the requirement for the Commission to provide guidance, following consultation, including with the regulated water businesses, and specifies the matters the guidance must set out. The Commission may develop common guidance across all or some regulated entities, as well as specific guidance tailored to a particular regulated entity's circumstances.

Clause 13 of the WIRO sets out the specific matters to be covered in the guidance, including, among other things:

- the manner in which the Commission proposes to regulate prices
- the approach and methodology the Commission proposes to adopt to assess a price submission and make a price determination
- the nature and scope of matters to be addressed in a price submission

- the Commission’s expectations regarding customer consultation and information to be provided by the water business, and
- the timing and processes the Commission proposes to follow during the price review and key dates.

Clause 11(c) of the WIRO also states that when making a price determination, the Commission must have regard to the matters specified in its guidance. Further, clause 14(b) states that the Commission may specify prices if it considers a water business’s price submission does not comply with the guidance.

The initial stage of the review will focus on the first two dot points above to decide on our pricing approach (see chapter 4 for more details).

3.3 OBJECTIVES OF PRICE REGULATION

The 2014 WIRO has removed the previous requirement for the Commission to be satisfied that proposed prices complied with an extensive list of often competing ‘regulatory principles’. This significantly simplifies the objectives for the Commission’s regulation of the Victorian water industry, and the WIRO now provides a clearer link back to the objectives in the ESC Act and the WI Acts, which together create the regulatory pricing framework.

Clause 8 of the WIRO simply states that the objectives of regulation of the water industry are those set out in:

- section 8 of the ESC Act, and
- section 4C of the WI Act.

In addition, clause 8 of the WIRO requires the Commission to:

- have regard to the matters in section 8A of the ESC Act, and
- have regard to and place particular emphasis on
 - the promotion of efficient use of prescribed services by customers;
 - the promotion of efficiency in regulated entities as well as efficiency in, and the financial viability of, the regulated water industry; and

- the provision to regulated entities of incentives to pursue efficiency improvements.

When making a price determination, the Commission is required by clause 11 of the WIRO to have regard to a list of matters including:

- the objectives of the Acts,
- the matters specified in the Commission’s guidance,
- the principle that prices should be easily understood by customers and provide signals about the efficient costs of providing services, and
- that prices should take into account the interests of customers of the regulated entity, including low income and vulnerable customers.

Table 3.1 lists the specific objectives and the various matters the Commission must have regard to when making a price determination.

TABLE 3.1 MATTERS THAT WATER BUSINESSES AND THE COMMISSION MUST HAVE REGARD TO

| Economic efficiency and viability matters | Industry/business specific matters | Customer matters |
|--|--|--|
| <ul style="list-style-type: none"> • promotion of efficient use of prescribed services by customers [cl 8(b)(i), WIRO] • promotion of efficiency in regulated entities as well as efficiency in, and the financial viability of, the regulated water industry [cl 8(b)(ii), WIRO] • provision to regulated entities of incentives to pursue efficiency improvements [cl 8(b)(iii), WIRO] • efficiency in the industry and incentives for long term investment [s 8A(1)(a), ESC Act] • efficient costs of producing or supplying regulated goods or services and of complying with relevant legislation and relevant health, safety, environmental and social legislation applying to the regulated industry [s 33(3)(b), ESC Act] • financial viability of the industry [s 8A(b), ESC Act] | <ul style="list-style-type: none"> • particular circumstances of the regulated industry and the prescribed goods and services for which the determination is being made [s 33(3)(a), ESC Act] • return on assets in the regulated industry [s 33(3)(c), ESC Act] • ensure that regulatory decision making and regulatory processes have regard to any differences between the operating environments of regulated entities [s 4C(b), WIA] | <ul style="list-style-type: none"> • in performing its functions and exercising its powers, the objective of the Commission is to promote the long term interests of Victorian consumers [s 8(1), ESC Act] without derogating from that objective. The Commission must in seeking to achieve the objective have regard to the price, quality and reliability of essential services [s 8(2), ESC Act] • enable customers or potential customers of the regulated entity to easily understand the prices charged by the regulated entity for prescribed services or the manner in which such prices are calculated, determined or otherwise regulated [cl 11(d)(i), WIRO] • provide signals about the efficient costs of providing prescribed services to customers (either collectively or to an individual customer or class of customers) while avoiding price shocks where possible [cl 11(d)(ii), WIRO] • take into account the interests of customers of the regulated entity, including low income and vulnerable customers [cl 11(d)(iii), WIRO] |

TABLE 3.1 (CONT)

| Benchmarking | Health, safety and social obligations | Other |
|--|---|---|
| <ul style="list-style-type: none"> any relevant interstate and international benchmarks for prices, costs and return on assets in comparable industries [s 33(3)(d), ESC Act] | <ul style="list-style-type: none"> the relevant health, safety, environmental and social legislation applying to the industry [s 8A(1)(d), ESC Act] to ensure that regulatory decision making has regard to the health, safety, environmental sustainability (including water conservation) and social obligations of regulated entities [s 4C(c), WIA Act] | <ul style="list-style-type: none"> the degree of, and scope for, competition within the industry, including countervailing market power and information asymmetries [s 8A(1)(c), ESC Act] consistency in regulation between States and on a national basis [s 8A(1)(f), ESC Act] the benefits and costs of regulation (including externalities and the gains from competition and efficiency) for— <ul style="list-style-type: none"> (i) consumers and users of products or services (including low income and vulnerable consumers) (ii) regulated entities [s 8A(1)(e), ESC Act] wherever possible, to ensure that the costs of regulation do not exceed the benefits [s 4C(a), WIA Act] |

3.4 PRICE REVIEW PROCESS

The WIRO requires that the Commission’s guidance set out the timing and processes the Commission proposes to follow in making a price determination. The key processes required under the WIRO are set out in figure 3.1 below.

FIGURE 3.1 KEY STEPS IN THE REGULATORY PROCESS



When making a price determination, clause 14 of the WIRO allows the Commission to approve the maximum prices (or the manner in which maximum prices are to be determined) as proposed by the water business, or to specify the maximum prices. The Commission may specify prices if:

- the price submission does not, in the Commission’s opinion, comply with the Commission’s guidance or have adequate regard for the matters specified in clause 11 of the WIRO (as set out in table 3.1 above), or
- a business fails to submit its price submission to the Commission within the specified time period.

4 THE REVIEW OF WATER PRICING APPROACH

The next major price review for most Victorian water businesses¹ will set prices from July 2018, providing sufficient time to conduct a full review of the Commission's pricing approach over the next 18 or so months. The outcomes of this review will establish the pricing approach to form the basis for the guidance for the 2018 price review, due to be released in October 2016.

4.1 SCOPE OF THE REVIEW

There are several areas of price regulation we will review over a number of phases following the changes to the WIRO. The first and most significant step is to identify the most appropriate pricing approach to deliver the best outcomes and value for money to Victorian water and sewerage services customers.

Once the pricing approach has been decided, ideally by May 2016, the review will turn to a range of other matters, including:

- how the Commission will assess pricing submissions and make a price determination, including information requirements
- the length of the regulatory period, and

¹ A price review cycle has commenced for both Melbourne Water and Goulburn-Murray Water, for prices to apply from July 2016. These reviews will be conducted using the same pricing approach to the Commission's previous price reviews, as there is insufficient time available to conduct a proper consultative pricing approach review before these price submissions are due. However, other changed requirements in the WIRO will apply, including the requirement to consult on the guidance for developing the price submission. These consultations are underway and may be found on the Commission's website at www.esc.vic.gov.au.

- preparing the guidance for the 2018 water price review enshrining the outcomes from this review.

A more detailed project timeline is provided in chapter 6 of this paper.

4.1.1 PRICING APPROACH

With the mandated requirement to use the building block approach now removed from the WIRO, the Commission will explore and evaluate other pricing approaches for the Victorian water industry. We will be guided by the requirements set out in the ESC Act and the WIRO. We are very open to consider any alternative approaches suggested by stakeholders and expert advisors, to see how they compare with the current approach. We are interested in ideas to improve the pricing approach to achieve better outcomes and value for money for Victorian water and sewerage customers.

Over the course of this review, we expect to give consideration to questions such as:

- Does one pricing approach fit all water industry sectors, or could we have different approaches across sectors? What might they be?
- Could different business components within a water business be considered separately, for example, separating infrastructure management from customer facing business units?
- To what extent could we tailor our pricing approach to suit individual business needs and circumstances, so that the regulatory requirements and assessment processes reflect the extent of change proposed in a price submission?

To help inform this part of the review, the Commission will engage a number of Australian and internationally recognised economic regulatory experts to prepare a series of papers or ‘thought pieces’.

4.1.2 EVALUATION PROCESS

In considering the various proposals and approaches put forward during this review, the Commission will need to evaluate each approach against the requirements set out in the WIRO and the Acts. Whilst there are many individual requirements specified (table 3.1), they can be distilled down to the following key criteria:

- incentives for efficient investment to deliver quality and reliable services to customers
- incentives for the regulated entity to reduce or minimise costs while delivering services to a standard expected by customers (and other regulators)
- regulatory burden for both the regulated entity and the Commission
- financial viability of the water industry
- complexity and transparency
- predictability and certainty, and
- ease of understanding for customers.

The first two criteria above are central in delivering value for customers while ensuring service standards meet expectations both now and into the future. Minimising regulatory burden for both the regulated entity and the regulator is also a key element of any pricing approach, as is having regard to the financial viability of the regulated water sector as a whole. Complexity and transparency refer to the general ease of understanding of the pricing approach by the regulated entity and other stakeholders, as well as the ability for stakeholders to reasonably participate in the process. The predictability and certainty of the pricing approach and pricing outcomes, how sensitive it might be to external influences, and the extent of regulatory risk due to uncertain outcomes, need to be considered. Finally, the ease with which customers can understand the process and the pricing and service outcomes it delivers.

We are interested in stakeholder views of any other key criteria that should be included when comparing and evaluating different approaches.

4.1.3 OTHER REQUIREMENTS AND GUIDANCE

Once the pricing approach is selected, other requirements and details will need to be considered, including how the Commission proposes to assess a price submission and make a price determination. We expect some consideration of this will be required in the pricing approach evaluation, but the details will come once the final approach has been decided, including the information required to be included in a price submission.

This review will also need to consider different approaches for water businesses and the Commission to engage customers and other stakeholders throughout the price review process. This will include the development of the Commission's guidance paper, the water businesses' preparation of their price submissions, and engagement throughout the assessment and price decision process.

The final phase of this review will effectively be the development and consultation on the guidance paper for the 2018 water price review, as required under the 2014 WIRO. We aim to release the guidance in October 2016, with pricing submissions from water businesses expected in mid-2017.

4.2 OUTSIDE THE SCOPE OF THIS REVIEW

While the new WIRO does allow for wholesale change to the pricing regulation approach, the Commission considers there are a few significant components that do not need to be reviewed or changed at this time.

New customer contributions (NCCs). The current NCC framework was established during the last price review in 2013, and the amended WIRO does not precipitate a change to this current approach.

Recycled water (large scale). Large scale supply of fit-for-purpose recycled water is usually managed through direct commercial negotiations between the water business and the prospective customer(s). The Commission considers this negotiated outcome approach is best for such custom schemes, maintaining a light-handed regulatory approach here. Broader reticulated class A recycle water supply schemes will continue to be addressed through scheduled tariffs and pricing.

Industrial trade waste management. Establishing discharge conditions for large industrial trade waste customers will often require extensive commercial negotiations and arrangements, particularly in regional areas, with customer-specific discharge acceptance criteria and fee structures, and sometimes involving significant capital contributions towards infrastructure costs. The Commission considers this form of negotiated outcome, guided by the requirements set out in the Commission’s Trade Waste Customer Service Code, will ensure a satisfactory outcome under a light-handed regulatory approach. For smaller trade waste customers, or for larger sewerage catchments where loads are readily accommodated (eg metropolitan Melbourne), standard trade waste discharge criteria and tariff structures apply, in accordance with the requirements of the trade waste code.

Infrastructure services covered under the ACCC’s Water Charge

(Infrastructure) Rules (WCIR). The WCIR applies to rural water drawn from the Murray-Darling system, namely Goulburn-Murray Water and Lower Murray Water’s rural component. The WCIR prescribes the use of the building block approach for establishing prices, so any change in pricing approach arising from this review will not apply to those services and water businesses covered by the WCIR.

5 WHAT WE ARE SEEKING IN THIS CONSULTATION

At this early stage of the review, we will focus primarily on the pricing approach. Later, once the preferred pricing approach for the next price review has been selected, we can look at the specific details.

BOX 5.1 SUBMISSIONS

Submissions in response to this paper could address:

- Ideas to strengthen the pricing approach to achieve better outcomes and value for money for Victorian water and sewerage customers. Insights from interstate or overseas experience should be provided where available.
- What are the advantages and disadvantages of continuing with the current building block approach compared with other approaches? Provide reasoning and examples where possible to support your views.
- What alternative pricing approaches should be considered for the Victorian water sector? Please describe the key features and provide some supportive explanation to demonstrate how these would better meet the stated objectives than the current approach. Where possible, provide examples of where this approach has been used successfully.
- Are there any other key criteria in addition to those listed in section 4.1.2 we should include when evaluating the various proposed approaches?

We also welcome any other relevant comments that stakeholders wish to provide at this time to inform our pricing framework review.

5.1 HOW TO RESPOND TO THIS PAPER

Submissions in response to this consultation paper are invited by **Friday 12 June 2015**

We would prefer to receive written submissions by email to: **water@esc.vic.gov.au**

You can also send submissions by mail to:

Water Team – Pricing Framework Review
Essential Services Commission
Level 37, 2 Lonsdale Street
Melbourne VIC 3000

The Commission's normal practice is to publish submissions on our website. If you do not wish us to disclose information publicly, please provide a confidential version and a version that is suitable for publication.

Telephone enquiries regarding this consultation paper may be made to (03) 9032 1300 and directed to:

- Marcus Crudden, Director Water
- Dean Wickenton, Senior Regulatory Manager Water
- Chris Hutchins, Project Manager Water

6 PROJECT TIMELINE

This major review of the Commission's water pricing approach will comprise five key phases over 18 months until October 2016, concluding with the release of the guidance paper for the 2018 water price review. To complement this consultation paper calling for stakeholder submissions, we will engage a number of economic regulation experts to prepare a series of papers or 'thought pieces' to help inform this review. These papers will be published on our website and, along with submissions received, will form the basis for a series of stakeholder consultation sessions in the form of seminars and workshops.

The expected timeline for the review is:

Phase 1: Project initiation April 2015

- Release Consultation Paper mid- April.
- Commission external expert 'thought pieces', exploring various pricing approaches and their application to the Victorian water sector.

Phase 2: Pricing approach review April to November 2015

- Focus on pricing approach – receive and evaluate various discussions and proposals through submissions (by 12 June 2015).
- Receive and release the 'thought piece' papers.
- Workshops and seminars to explore the various proposals and options, extensive stakeholder consultation and engagement.

Phase 3: Evaluate and select approach December 2015 to May 2016

- Commission evaluates pricing approaches, proposes final pricing approach for consultation.
- Commission confirms the pricing approach for the 2018 price review.

Phase 4: Other requirements & guidance June 2016 to September 2016

- Establish information requirements, financial models, and price review processes.
- Develop and consult on the Guidance Paper for the 2018 price review.

Phase 5: Guidance October 2016

- Release Guidance Paper for 2018 price review.

APPENDIX A — THE APPROACH USED IN OUR 2013 PRICE REVIEW

TABLE A THE 2013 REGULATORY REGIME USED BY THE ESSENTIAL SERVICES COMMISSION (VICTORIA) – WATER AND SEWERAGE SERVICES

| Element | Existing approach |
|--|--|
| Context, including industry and regulatory structure | <p>The Victorian Essential Services Commission (ESC) regulates the prices and service standards of businesses that supply water, sewerage and related services to residential, industrial and commercial, customers. This includes Melbourne Water which supplies bulk water and sewerage services and the metropolitan retailers. The ESC's general regulatory powers are set out in:</p> <ul style="list-style-type: none"> • the <i>Essential Services Commission Act 2001</i> (Vic) • Part 1A of the <i>Water Industry Act 1994</i> (Vic) • the Water Industry Regulatory Order (WIRO) made under s. 4D of the <i>Water Industry Act</i>. <p>The <i>Essential Services Commission Act</i> and relevant water and wastewater industry legislation set out the ESC's broad objectives, functions and powers in regulating the water and wastewater industry. Under the Act the Commission is required to perform its regulatory and advisory functions in a manner that provides incentives for dynamic, productive and allocative efficiency and promotes the long term interests of Victorian consumers.</p> <p>In addition to the objectives set out in the <i>Essential Services Commission Act</i>, the Act requires the ESC to have regard to the following:</p> <ul style="list-style-type: none"> • efficiency in the industry and incentives for long term investment • the financial viability of the industry • the degree of, and scope for, competition within the industry, including countervailing market power and information asymmetries • the relevant health, safety, environmental and social legislation applying to the industry • the benefits and costs of regulation. <p>The legislative framework provides the ESC with powers and functions to:</p> <ul style="list-style-type: none"> • make price determinations (s. 33 of the <i>Essential Services Commission Act</i>) • regulate standards and conditions of service (s. 4E of the <i>Water Industry Act</i>) • develop Codes in relation to its functions and powers (s. 4F of the <i>Water Industry Act</i>) • require regulated businesses to provide information (s. 4G of the <i>Water Industry Act</i>). <p>More detailed requirements of the framework are set out in the WIRO made under s. 4D of the <i>Water Industry Act</i>, including:</p> <ul style="list-style-type: none"> • the water services that are subject to price and service regulation by the ESC • the approach to be taken by the ESC in approving or specifying prices and setting quality standards for water services and in monitoring the performance of businesses • procedural requirements and regulatory principles to be adhered to by the ESC in assessing pricing proposals submitted by regulated businesses. <p>The ACCC's approval of the ESC's application for accreditation means the ESC regulates G-MW and LMW</p> |

| Element | Existing approach |
|-----------------------|---|
| | <p>rural infrastructure according to the principles in Appendix B of the ACCC's Final Decision, with guidance from the ACCC's <i>Pricing principles for price approvals and determinations</i> made under the <i>Water Charge (Infrastructure) Rules 2010</i>. The principles in Appendix B state that tariff structures should:</p> <ul style="list-style-type: none"> • promote the economically efficient use of water infrastructure assets • ensure sufficient revenue streams to allow efficient delivery of the required services • give effect to the principles of user pays in respect of water storage and delivery in irrigation systems • achieve pricing transparency • facilitate efficient water use and trade in water entitlements. |
| Overall regime | |
| Regime | <p>CPI-X Price-cap</p> <p>Prices are allowed to be adjusted each year in accordance with the Consumer Price Index.</p> <p>CPI is measured as:</p> <p style="padding-left: 40px;">All Groups Index for the Eight Capital Cities as published by the Australian Bureau of Statistics for the March quarter immediately preceding the start of the relevant regulatory year</p> <p style="padding-left: 40px;"><i>divided by</i></p> <p style="padding-left: 40px;">The Consumer Price Index: All Groups Index for the Eight Capital Cities as published by the Australian Bureau of Statistics for the March quarter immediately preceding the March quarter referred to above.</p> <p>Productivity improvements for the 2013 price review: The Commission considered that a 1 per cent per annum growth adjusted productivity improvement provided a reasonable baseline for business as usual expenditure over the period. The Commission proposed to take 2011-12 (the last year of actual expenditure) as the base year. It sought to understand the drivers of any changes from this base year and assess whether the proposed expenditure was reasonable and reflected productivity improvements.</p> |
| Description | <p>The Commission approved various forms of price control in June 2013.</p> <p>For most urban businesses, we approved price caps with an option for the business to shift to a tariff basket at the time of annual price reviews, subject to consultation with customers prior to their applications as specified in their determinations. The Commission approved revenue caps for rural businesses and Yarra Valley Water.</p> <p>The Commission approved rebalancing constraints, limiting annual price changes, for businesses operating under a revenue cap or tariff basket.</p> <p>Approved residential urban water tariffs typically comprise a fixed service charge and either a single volumetric charge or three tier inclining block. Non-residential water tariffs comprise a fixed charge and a single variable charge.</p> <p>For metropolitan Melbourne sewerage services, the Commission approved a two part tariff comprising fixed and variable charges. For other urban businesses, we approved a fixed charge only.</p> |
| Reporting | <p>The WIRO provides an explicit function for the Commission to monitor, audit and report publicly on the performance of the regulated water industry. The Commission developed a Performance Reporting Framework in consultation with the businesses and other stakeholders, detailing the performance indicators that the water businesses are required to report on. In its annual performance report, the Commission reports on the performance of urban water businesses and Melbourne Water. The Commission undertakes an annual audit of performance data as part of the performance report.</p> <p>The performance indicators have been grouped into eight sections:</p> <ul style="list-style-type: none"> • Baseline explanatory data • Drinking water quality • Water and sewerage network reliability • Customer responsiveness and service |

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| | <ul style="list-style-type: none"> • Environmental issues • Usage, price trends and payment management • Drainage and waterways services • Environmental - comprises efficiency measures, greenhouse gas emissions and status of Environmental Management Plans. <p>The Commission also reports on the progress of the delivery of the businesses' major projects. For the purpose of the price review, the Commission required the businesses to submit draft and final water plans.</p> <p>Businesses were required to submit detailed financial template as part of their price submission. The Commission has established a Regulatory Accounting Code for Victorian Water Businesses that requires each water business to maintain accounting records and to prepare accounts for regulatory purposes according to specified principles.</p> <p>Water Businesses must make available to the Commission all information reasonably requested by the Commission from time to time for the purpose of enabling it to confirm that the business is complying with the Determination.</p> |
| Appeals | Under the Essential Services Commission Act (s 55), the water businesses may appeal requests for information, disclosure of information, or a determination made by the Commission. An appeal must be heard by an appeal panel consisting of three members as appointed by the Registrar (which is appointed by the regulations) (s 56). |
| Role of Ombudsman | <p>The Energy and Water Ombudsman (Victoria):</p> <ul style="list-style-type: none"> • provides independent advice, information and referral regarding energy and water services; • receives, investigates and facilitates the resolution of complaints involving consumers and energy and water service companies in Victoria; • identifies, and where appropriate redresses, systemic issues and refers these to energy and water companies and regulators; and • works with customer groups, industry and regulators to drive on-going customer service improvement and to prevent complaints. |
| Incentives | |
| Degree of sharing | Benefits from efficiency improvements in operating expenditure are shared with customers at the beginning of the next regulatory control period through lower prices or improved services (see below). The Commission has left open whether an efficiency carry over mechanism could apply at the end of the period. |
| Overall incentives | Where a business' actual opex during the regulatory period exceeds the benchmarks used to set prices because of inefficiency or additional expenditure on other activities, the business is required to manage this rather than increase prices to customers. When a business identifies additional ways to improve the efficiency of its operations during the regulatory period, which reduces its opex, it allows the business scope to either improve services to its customers or to reduce prices below the maximum prices approved by the Commission. |
| Service performance | <p>In the 2013 Review, the Commission decided that the targets for the core service standards should be based on the average for the previous five years – unless otherwise justified.</p> <p>The Commission publishes an annual performance report of the urban water businesses, allowing 'competition by comparison' across the businesses.</p> <p>It monitors performance across a range of operational, and customer service measures including: number of unplanned interruptions, response time to interruptions, restoration times, frequency and duration of outage, flowrates, unaccounted for water, sewer blockages and spills, time to repair blockages and spills, and telephone call answering times.</p> <p>Compliance with service standards set by other regulators, such as water quality and environmental discharges, are also monitored.</p> <p>Approved service standards are built into the businesses' Customer Charters.</p> <p>The Commission can address poor performance/non-compliance with the Customer Charters through legal injunction.</p> <p>All metropolitan businesses have Guaranteed Service Levels (GSL) schemes in place. Under their GSL schemes, businesses provide payments to customers who receive a level of service that is significantly worse than the average level of performance expected by most customers.</p> |

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| Capital expenditure (capex) | <p>The Commission considers the prudence and efficiency of capital investment prior to rolling into the regulatory asset base at the end of a period.</p> <p>The Commission engages consultants to assess the efficiency and timing of proposed capex. Businesses provide a 10 year forecast of their capital expenditure program.</p> <p>Within this forecast the businesses are asked to identify their 10 largest projects over the regulatory period. The expenditure consultants undertook a risk based approach to determining the level of the review and how deeply each project is examined.</p> <p>The Commission's annual performance reports include a section covering the delivery of major projects proposed in the Water Plans and included in each business's price determination.</p> |
| Dealing with uncertainty | <p>The Commission approved a hybrid form of price control that combines individual price caps with scope for businesses to apply during the period to adjust their tariff strategies or prices where they have consulted with customers and met other requirements set out by the Commission.</p> <p>There may, however, be circumstances that are beyond the scope of the water business to manage within the prices approved at the start of a regulatory period. In circumstances where fluctuations and financial impacts of an event are large, such that businesses are unable to manage those risks without jeopardising their service delivery obligations, the Commission approves an uncertain and unforeseen events mechanism. This mechanism sets out a process for applying for a re-opening of the Commission's price determination, either during or at the end of the regulatory period, to account for events that were uncertain or unforeseen at the time of the price review process.</p> <p>The Commission approved an uncertain and unforeseen events mechanism that sets out a process for a water business or the Commission to reopen price determinations to account for events that were uncertain or unforeseen at the time of the price review.</p> <p>The Commission accepted the metropolitan retailers' proposals to pass through desalination water order and security cost changes through adjustment factors for changes in fixed and variable bulk water costs provided they did not over- or under-recover funds for desalination purposes. The adjustment factors allow customers to readily understand the prices that will apply if desalinated water is ordered.</p> |
| Pass-through | <p>The re-opening mechanism provides for matters such as a change in:</p> <ul style="list-style-type: none"> • the Water Industry Act, the Water Act 1989 (Vic), the Safe Drinking Water Act 2003 (Vic), and the Environment Protection Act 1970 (Vic) or regulations made under any of them • any licence issued pursuant to any of the Acts • 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. <p>A water business 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 by the business and/or increased or decreased revenue received by the business as a result of events which were uncertain or unforeseen at the time the Determination was made (an uncertain events application).</p> <p>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 a Determination, provided that the Commission is satisfied that such action takes into account the interests of customers.</p> |
| Processes for setting prices | |
| Building blocks approach | <p>The businesses' revenue requirements comprise their forecast opex, a return on assets (existing and new assets), regulatory depreciation (return of assets) and taxes.</p> <p>Under the 'building block' approach adopted by the Commission, prices reflect the revenues required to recover the efficient cost of delivering services over the regulatory period, taking into account forecast levels of demand. The Commission must be satisfied that the prices it approves will provide each business with sufficient revenue over the regulatory period to meet its obligations and deliver the level of service required by customers. It must also ensure that prices do not reflect monopoly rents or inefficient expenditure.</p> <p>The Commission used the 'building block' approach to estimate the revenue that the businesses will require to deliver proposed service standards and outcomes over the third regulatory period. Under this approach, the revenue requirement reflects operating expenditure and a return on the regulatory asset value updated</p> |

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| | <p>each year to reflect any additional capital expenditure, net of asset disposals and regulatory depreciation. The Commission approved price increases that are larger in the first year and taper off over the period. Prices were set to recover the revenue required to deliver services, taking into account expected demand for water and sewerage services.</p> <p>The prices (and the associated price paths) proposed by each business should be set so as to recover the total revenue requirement over the regulatory period. In any individual year, however, the businesses are not required to set prices in accordance with the revenue requirement for that year. In order to smooth out price changes, the businesses may decide to recover more or less than their revenue requirement in any particular year provided that, over the full regulatory period, the total amount of revenue recovered from customers is sufficient only to meet its total revenue requirement for the period.</p> <p>Demand forecasts play an important role in determining the prices needed to raise the revenue required by businesses to deliver services over the regulatory period. Changes in customer numbers and consumption levels are determinants of the capacity of the water and sewerage infrastructure to provide services and of the need for expenditure on renewal and augmentation. The water businesses' demand forecasts represent a critical element of their service and expenditure proposals for the regulatory period.</p> <p>In reviewing the businesses' proposed forecasts, the Commission considered whether they:</p> <ul style="list-style-type: none"> • had been developed using appropriate forecasting methodologies or approaches • reflected reasonable assumptions about the key drivers of demand, including the impact of supply restrictions • used the best available information, including historical data that can support trends in demand, and • took account of current demand, climatic and economic conditions. <p>The key demand parameters influencing prices and revenue are the total volume of water sold and the number of water and sewerage connections (which are primarily influenced by growth in new connections).</p> |
| Customer involvement | <p>Consultation with customers and other stakeholders formed an important part of the price review process. The Commission and water businesses undertook an extensive consultation process during this price review, including:</p> <ul style="list-style-type: none"> • the water businesses released and consulted on a draft Water Plan as well as their final Water Plans – including public meetings, market research and meeting with consultative committees • the Commission released an issues papers in late 2011, open for public comment • the Commission conducted seminars for key stakeholders on major issues • the Commission released a draft decision requesting public submission • the Commission established the Customer Reference Panel to discuss key issues • the Commission held 14 public forums across Victoria on the draft decision and 5 public forums on the final decision • the Commission and water businesses conducted public meetings to obtain feedback from stakeholders, and • the Commission and water businesses met with a number of community organisations and customer groups during the review process to obtain further information and feedback. <p>Businesses undertook extensive customer and stakeholder consultation prior to submitting a Water Plan to the Commission.</p> <p>Consultation with customers is also required if a water business seeks to adjust prices under the uncertain and unforeseen events mechanism (see above).</p> |
| Operating expenditure (opex) | <p>The Commission's approach to assessing proposed opex over the regulatory period used 2011-12, the last year of actual audited data, as a baseline against which proposed expenditure was evaluated. In assessing the prudence and efficiency of the businesses' operating expenditure forecasts, the Commission considered whether:</p> <ul style="list-style-type: none"> • operating expenditure forecasts clearly reflect obligations imposed by the Minister, other regulators such as the EPA and DHS, or improvements demanded by customers • the potential for efficiency improvements or if efficiency targets have been built into the businesses' proposals • increases or decreases in operating expenditure forecasts are consistent with the timing of major capital projects, and • the trends in forecast operating expenditure differ from trends in historical expenditure, and |

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| | <p>whether any differences can be readily explained (through, for example, changes in service levels).</p> <p>Water Plans were required to outline forecast opex clearly for each year of the regulatory period, the key drivers of expenditure, justification for forecast expenditure levels and evidence of productivity improvements (including targets). The plans were also required to outline the relationship between expenditure and the delivery of obligations and service outcomes over the period.</p> <p>The Commission engaged consultants to provide an independent assessment of the businesses' proposed operating expenditure. These assessments included detailed reviews of the assumptions around major cost drivers such as labour, energy, chemicals and operating costs associated with new projects.</p> |
| Capital expenditure (capex) | <p>In assessing proposed capex, the Commission considered whether:</p> <ul style="list-style-type: none"> • the capital expenditure associated with new obligations clearly reflects additional obligations that are required by the Minister, other regulators such as the EPA, DHS or by customers • the proposed trends in capital expenditure are related to trends in historical expenditure, such that the reasons underpinning any difference in the expected level from those trends can be identified, together with any other relevant factors • there is evidence of, and consistency with, well developed asset management planning and processes that demonstrate that forecasts have been determined over a planning horizon that extends beyond the five year regulatory period • the proposed program of expenditure is deliverable over the five year regulatory period. <p>The Commission expected any proposed significant increase in capital expenditure to be substantiated by supporting information on the following cost drivers:</p> <ul style="list-style-type: none"> • for new obligations, evidence of more stringent standards established by regulatory agencies or evidence of significant customer demand for enhanced service levels • for existing infrastructure, evidence that the water or sewerage networks need to be renewed so that businesses can continue to deliver services that meet customers' expectations • for growth-related capital expenditure, evidence of significant growth in the number of new connections or in the demand for water, sewerage or other prescribed services • for corporate and retail expenditure, evidence that existing assets are rundown or unable to assist businesses in meeting the needs of customers. <p>Water Plans are required to include a table which identifies:</p> <ul style="list-style-type: none"> • the top ten projects/programs to be delivered over the regulatory period • the drivers of each project/program • the outcomes that will be delivered from each project • the expected delivery date for the project/program • the cost of the project/program for each year of the period. <p>The Commission engaged consultants to provide an independent assessment of the businesses' proposed capital expenditure and the timing and delivery of all major projects.</p> |
| Treatment of uncertain cost items and use of indices other than general inflation | <p>The Commission considered it reasonable to assume that, on average, water sector construction costs will increase at the same rate as the CPI, that is, there will be no real increase in prices. While there is arguably a case that increases in construction costs will be lower than CPI, at least during the early phases of the global economic downturn, adopting a CPI-based nominal escalation factor provides a reasonable average outlook over the whole regulatory period.</p> |
| Regulatory depreciation | <p>The Commission considered that the straight-line depreciation approach on an inflation indexed asset base was the most appropriate, although other approaches were considered due to rapid growth in businesses' asset bases over a short period. Depreciation is based on a weighted average of the businesses' assets.</p> <p>The Commission considered it reasonable for businesses to receive regulatory depreciation on new assets once they came into service, and that businesses should only receive a sufficient return on the asset while under construction to ensure that working capital is available to finance the asset.</p> |
| Return on investment | <p>The WIRO allows businesses to recover a rate of return on existing assets and on new capital expenditure. To estimate an efficient rate of return, the Commission uses a weighted average cost of capital (WACC), which reflects the cost of the two alternative sources of finance — debt and equity.</p> <p>The WACC is expressed in real post-tax terms. The WACC is applied at a common rate to each business's forecast RAB for each year of the next regulatory period to calculate an allowance for return on assets.</p> <p>The return on assets component of a water business' revenue requirement for any particular year is</p> |

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| | <p>calculated as the product of the average regulatory asset base for that year and the approved WACC. As a post-tax WACC is adopted, benchmark assumptions about the businesses' tax liabilities also need to be incorporated into their revenue requirements.</p> <p>The Commission calculated a feasible range for the WACC by adopting probable ranges for the real risk-free rate and the debt margin, which are the market based WACC parameters, and point estimates for the non-market parameters. From the feasible range, the Commission adopted a WACC towards the midpoint of the range.</p> <p>The Commission also had regard to the fact that the businesses often obtain credit at fixed rates and have borrowed at rates that are higher than present levels. Adopting a WACC within the feasible range ensured that the businesses will be able to cover their actual costs of existing debt and the likely cost of future borrowings.</p> <p>The standard practice among Australian regulators is to adopt benchmark assumptions about efficient financing arrangements, instead of using the businesses' actual gearing levels. This provides incentives for businesses to develop efficient financing solutions. The Commission adopted a financing structure of 60 per cent debt to regulatory assets.</p> |
| Tax | <p>As state-owned corporations, the water businesses are subject to a tax equivalence regime that reflects the corporate tax regimes faced by private sector firms.</p> <p>Using benchmarks reduces the difficulty associated with estimating explicit taxation liabilities for each business, provides incentives for the businesses to adopt efficient financing and taxation practices, is less reliant on information held by individual businesses, and is internally consistent with WACC assumptions. The benchmark taxation liability is calculated by converting revenues and expenses into nominal terms using an inflation forecast and calculating the total taxable income and the nominal tax liability. This is then converted into a real benchmark taxation liability and included in the revenue requirement. Although government owned, water businesses are treated as if franking credits apply (on the basis of competitive neutrality).</p> |
| New customer contribution (NCC) | <p>The Commission assessed the metropolitan water businesses' Standard NCC proposals against the WIRO principle:</p> <p><i>provide appropriate incentives and signals to customers or potential customers about: the costs associated with servicing a new development in a particular location</i></p> <p>To be satisfied that the principle was met, the Commission required Standard NCC proposals to:</p> <ul style="list-style-type: none"> • be calculated in accordance with the core pricing principles, and • reflect the costs of servicing development in a particular location. <p>The Commission's analysis showed that all businesses' proposed Standard NCC were calculated in accordance with the core pricing principles.</p> <p>All Standard NCC were lower or at the level of the Minister for Water's caps of \$4,000 for Standard NCC in Greenfield areas or \$2,000 for Standard NCC in brownfield areas – charges are on a per lot basis. Generally the businesses proposed location specific NCC. Western Water proposed a uniform greenfield and brownfield NCC across its jurisdiction. This was because all its location-specific NCC were initially calculated to be greater than the Minister's caps.</p> <p>On this basis, the Commission approved the Standard NCC proposed by the metropolitan water businesses. These charges will apply over the third regulatory period.</p> |

APPENDIX B — SUMMARY OF SELECTED PRICING APPROACHES

Building block

This approach establishes individual cost benchmarks for the regulated entity through determining the 'building blocks' that make up a revenue requirement for the forthcoming regulatory period. The building blocks are forward looking estimates of efficient operating expenditure, regulatory depreciation (return of capital) and a return on capital. A Regulatory Asset Base (RAB) from which regulatory depreciation and the return on capital are calculated is also established. A market-based Weighted Average Cost of Capital (WACC) is applied to determine the return on capital.

Rate of return

This approach refers to arrangements that aim to ensure the regulated business does not earn more (or less) than the cost of providing services, plus a regulated rate of return. The components used to derive the revenue requirement under rate of return regulation are similar to those under the building block approach, with the use of a 'rate base' rather than a RAB reflecting the value of invested capital.

Total factor productivity (TFP)

This approach uses an index of productivity growth (defined as the ratio of a measure of output to a measure of input use) to establish prices. TFP can be used to measure changes in productivity for a single business, or to compare absolute levels of productivity across an industry. TFP can be used as a stand-alone measure to define an efficient price path (i.e. the X-factor) from some base level of prices, or as a

complementary mechanism to assess efficiency of operating and/or capital expenditure under an alternative model such as the building blocks approach

Indexes

Index-based approaches adopt an external measure of productivity, costs or prices, which is then used to determine a price path. For example, a price-based index can refer to the movement in annual prices of comparable goods or entities (% change) or the absolute level of prices (for example \$ per megalitre). Like TFP, index-based price models can be used as a stand-alone approach to setting prices (or X-factors), or to measure some component of efficient costs under a different overarching model.

Yardstick

Yardstick pricing approaches (also referred to as yardstick competition or benchmark regulation) involve the use of cost and efficiency benchmarks from comparable companies to set prices. Yardstick regulation is similar to TFP, however rather than a single, all-encompassing measure of productivity, a broader range of data and ratios are applied (partial productivity measures). As with TFP and index-based approaches, yardsticks can be used as a stand-alone method to set price paths (or X-factors), or can be used to complement efficiency assessments under another model.

Price monitoring

Price monitoring typically involves a regulator providing an oversight role and publicly reporting on whether or not it considers that prices or changes in price represent an abuse of monopoly power. Note that this approach differs from the other models considered in that it does not generally involve the determination of an efficient price path, although it may rely on some approximation of an X-factor in order to inform considerations of efficiency.