



Commission for Energy Regulation

An Coimisiún um Rialáil Fuinnimh

## **Economic regulatory framework for the public Irish water services sector**

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**Abstract:**

The Programme for Government (PfG) envisages a water reform programme, including the creation of Irish Water (or Uisce Éireann), a publically owned company that will take over responsibility for the provision of public water services from the 34 county and city councils.

Under Section 27 of the Water Services Act 2013 (the 'Act'), the remit of the Commission for Energy Regulation (CER) was expanded to include a function to prepare to become the independent economic regulator for the public water services sector. The Act also allows for the CER to advise the Minister for Environment, Community and Local Government (the 'Minister') on matters related to the economic regulation of the public water services sector in Ireland. Section 4 of the Act provides for the establishment of Irish Water (IW) as a subsidiary of Bord Gáis Éireann.

This paper describes proposals for an economic regulatory framework for the public water services sector. The paper will aid the CER to prepare for the introduction of charges for use of public water services and to advise the Minister on the options for an economic framework.

**Target Audience:**

This consultation paper is for the attention of members of the public, the water industry and all interested parties.

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# 1 Introduction

## 1.1 Purpose of this paper

Under Section 27 of the Water Services Act 2013 (the 'Act') the CER is empowered to 'do all such things as may be necessary or expedient for the purposes of the performance by it of water regulatory functions'. The definition of 'water regulatory functions' includes those 'relating to the fixing of charges in respect of the provision of (...) water services, the specification of minimum standards of service as respects the provision of such water services and the protection of the interests of persons to whom water services are provided'.

On 3 May 2013 the CER received a letter from the Department of the Environment Community and Local Government (DECLG). It requested advice from the CER on a proposed approach for the regulatory framework for the public Irish water services sector.<sup>1</sup> The letter stated that 'in line with Government objectives (the proposed approach) must be compatible with the overall objectives of the development of a publicly owned water utility with the capacity to move towards self-financing and to deliver gains in efficiency, effectiveness and customer service, and must be in line with Governmental approaches to better regulation'.<sup>2</sup>

The aim of this CER consultation process is to meet this request and formulate advice for submission to the Minister for the Environment (the 'Minister') on this matter, as provided for under Section 27 of the Act. This advice will help the Minister to develop policy around the broader subject of regulation of the provision of water services in Ireland.

This paper and the responses to it will inform the CER's thinking on the appropriate economic framework for the regulation of the provision of water services by Irish Water (IW). In addition, it will most likely be a key component in the process used to determine the allowable costs of IW that will be recoverable from water services customers.

This paper should be read in conjunction with the recently published CER/13/245 - '*The CER and Water Regulation in Ireland*'.

As noted above, the CER has been granted powers to prepare to become the independent economic regulator for the water services to be provided by Irish Water and to advise the Minister on matters related to the economic regulation of the public water sector in Ireland. The Government intends that the CER will be given a full suite of regulatory powers, in relation to the public water sector, including the authority to set water tariffs later in 2013.<sup>3</sup> This will require the passing of further legislation by the Oireachtas to cover this area. The legislation will also, *inter alia*, provide for an increased set of responsibilities for Irish Water. As a result, it is the Oireachtas that will, in

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<sup>1</sup> Water services relates to the provision of a water supply and a wastewater collection service, which includes the distribution, treatment and storage of water, etc.

<sup>2</sup> Please refer to the following link [here](#) on the Department of the Taoiseach website.

<sup>3</sup> Please refer to the following link [here](#) on the Oireachtas website.

due course, determine what further functions and duties are granted to the CER in the water services sector.

## **1.2 Summary**

The CER proposes to establish a framework, similar to that in place for the energy sector (where gas and electricity are subject to separate regulation), which employs a set of key principles – stability, predictability, sustainability and cost efficiency. There are numerous forms of revenue framework which could be implemented, but the one that the CER believes best meets the needs of stakeholders (including Government, Irish Water and water services customers) is the revenue cap (RPI-X) model.

The revenue cap (RPI-X) framework will be made up of separate building blocks that will allow the CER to estimate a level of revenue sufficient to finance an efficient, well-run utility. This revenue must also include an adequate return on the capital employed in the business so as to ensure continued efficient investment in the water services infrastructure. One of the main building blocks is the allowance for Operational Expenditure (Opex) – the day to day running expenditure of Irish Water. To derive an Opex allowance the CER intends to use a combination of three inputs (i) benchmarking against other comparable companies, (ii) the use of efficiency/productivity trends evident in the Irish economy and (iii) the advice of industry experts.

Another building block is the allowance for the Capital Expenditure (Capex) undertaken by Irish Water, an allowance which must promote a level of investment in the water services infrastructure that is correct, appropriate and fully justified. The CER expects that IW will need to invest in many areas of the water services infrastructure to improve quality standards, quality of service and compliance with EU water quality Directives and Regulations. The CER also expects that the process of identification and prioritisation of investment projects will be undertaken by Irish Water in a transparent and consultative manner, which acknowledges the views of all relevant stakeholders. IW should work side-by-side with the EPA in this process of identification and prioritisation, considering the EPA's important role in Ireland as supervisory authority for drinking water quality and licencing authority for waste water discharges.

A third important building block is the Regulatory Asset Base (RAB) of Irish Water. At any point in time, the RAB is a measure of the net value (Gross spend minus depreciation) of a utility's allowed assets used in the operation of its regulated activities. Only efficient capital spend on assets is allowed to accrue in the RAB as the CER reserves the right not to include capital spend on inefficient assets in the RAB.

For example, the CER currently regulates the monopoly distribution electricity network in Ireland. This network is owned and operated by ESB Networks. The distribution electricity network RAB contains assets used in the operation of the distribution electricity network, such as the overhead electricity lines, the substations that transform high voltages of electricity to low voltages (and

vice versa), the vehicles used by ESB Networks staff, etc. A net value in euros is attached to this RAB by the CER.

A similar RAB for the water services network would contain the pipes that transport water to and from homes, the treatment facilities for water coming from such homes, the pumping stations that convey waste water to treatment facilities etc.

It is important to note that the assets included in the RAB should only be those used to provide the regulated services. For example, the distribution electricity network RAB does not contain the ESB power stations that generate electricity. If this were the case, unregulated parts of the ESB business (such as ESB Power Generation) would effectively be subsidised by the regulated parts of the business (such as ESB Networks). The net effect of this would be an unwarranted increase in the bills of the ESB Networks customer.

The water sector is slightly different from the energy sector in this sense. The “power stations” of the sector, i.e. the reservoirs, lakes and rivers that are the main sources of water for our homes and businesses, would be included in the RAB. In other words, the water services sector in Ireland will be entirely vertically integrated.

The RAB construct allows the utility to receive a proper and fair return on the capital investments it has made in water services infrastructure. The RAB raises numerous issues which must be addressed by the regulator before the framework is complete. This paper addresses each of those questions in turn.

One such question is how to value assets added to/within the RAB. The CER proposes that only efficient spend on assets is added to the RAB and that those assets are valued through the Indexed Historic Cost methodology. The paper proposes that the Capital Asset Pricing Model is used in aiding the CER to derive a fair return on the IW RAB. Furthermore, the CER believes it appropriate to implement a straight-line approach for the depreciation of IW assets, a depreciation profile which will depend on the average lifetime of the asset in question.

The CER also proposes that specific performance based revenue-incentives will be implemented for IW. The intent of these incentives will be to improve the utility’s performance in the delivery of its responsibilities, particularly with regard to quality, efficiency and timeliness of service delivery to the water services customer. The paper suggests that a cash-flow approach is adopted to calculate the cash requirements of IW over the course of the revenue control and that a ‘k-factor’ methodology is applied to over or under recoveries from the pre-determined level of maximum allowed revenues.

Given the nature of reform in the water reform sector outlined in the DECLG Implementation Strategy the CER understands there will be a need for an (up to) 2-year interim revenue control, before moving to a series of six year price reviews. The CER further understands that during this interim period the treatment of Opex and Capex will be different to how they would be treated under any ‘permanent’ framework.

A central question when establishing a regulatory framework of this nature is to determine an opening asset value for the utility's RAB. This is one of the key questions that will need to be answered during this interim period. The CER has outlined three approaches in this paper. However we would like to seek the views of the public and stakeholders before offering advice in this area to the Minister, who will have responsibility for the final decision.

Finally, the CER has outlined areas where it believes that IW may require funding from the State, such as for the capital investment programme and its working capital requirements. There is an expectation that the Government will engage in a form of revenue subvention to support Irish Water, which will have the effect of reducing water charges faced by customers. The expectation is that this subvention will continue for a number of years, but decrease as reform of the water sector becomes firmly embedded and IW establishes a firm financial standing.

It should also be noted that the DECLG is engaged with a number of stakeholders in developing policies around a Free Water Allowance and Affordability measures.

### **1.3 Structure of this paper**

This paper is structured in the following manner:

- **Section 1** outlines the purpose of this consultation paper and provides a summary of the contents;
- **Section 2** of the paper will outline a general discussion and the characteristics of what is considered to be a proper regulatory framework;
- **Section 3** will firstly examine what type of regulation framework should be applied to the Irish water industry;
- **Section 4** will outline how the CER proposes to determine the allowed revenues of the water utility through a revenue control, including the appropriate approach to assessing operational expenditure, capital expenditure, valuing the assets of the IW RAB and the rate of return IW should receive on this RAB etc.;
- **Section 5** discusses the need to develop an 'interim' regulatory framework so as to allow for a more effective transition to a permanent economic regulatory model;
- **Section 6** will summarise the main points of this consultation paper and provide the next steps in this process;
- **Appendix A** discusses how efficiency gains made under a RPI-X approach should be shared with the customer; and

- **Appendix B** lists the questions posed by the CER in the various sections of the paper.

#### **1.4 Responding to this consultation paper**

The CER has outlined a number of questions in each of the sections below. It would be helpful, for the purposes of reviewing submissions, if respondents could format their responses to answer the questions posed. Additional commentary or supporting data from respondents is also welcome.

Please note that all responses will be considered non-confidential by the CER and will be published on the CER website. Stakeholders who wish to see their responses remain confidential (in part or in full) should state so clearly in their submission and the reasons for this.

Responses to this paper should be submitted by close of business Friday 29 November 2013 and addressed to the following in the CER:

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## 2 Principles of a Regulatory Framework

Section 27 of the Water Services Act enables the CER to prepare to become the independent economic regulator for the public water services sector. When, as envisaged, the CER is given full independent regulatory powers of the water sector, part of its responsibilities will involve regulating the level of revenue IW will be able to recover from the water customer (both domestic and non-domestic) to cover its costs.

The CER will need to develop a framework within which IW's costs will be examined and approved. This framework must, among other things, ensure that only reasonable and appropriate costs incurred by IW are charged to customers. These IW costs will be made up of operational costs and costs related to capital expenditure (depreciation and return on investment). In addition IW, as the single water utility in Ireland, must have a strong incentive under the framework to improve service and reduce costs from the outset of regulation.

### 2.1 CER's experience in the electricity and gas sectors

The CER has set up similar regulatory frameworks for the electricity and natural gas sectors in Ireland. These frameworks are broadly based on the utility regulatory framework established in countries such as Great Britain and Australia and represent best international practice. The CER believes that the frameworks in the natural gas and electricity sectors have delivered on their objectives, e.g. operating costs have decreased in real terms, performance has improved (as measured by published regulatory Key Performance Indicators)<sup>4</sup>, efficient capital investment has been made to improve and extend the networks – customer welfare has increased.

However, there will be a number of expected differences between regulation of the Irish energy sector and Irish water services sector. For example, it is expected that future water services legislation will provide the Minister with more extensive powers to give directions to the CER in relation to its water regulatory functions, than in respect of its energy functions. The Minister will also have the ability to set the level of Exchequer subvention for Irish Water.

In addition, in the water sector there is difficulty in 'moving' capacity – simply put water, unlike say electricity, is heavy and costly to transport. Water infrastructure (water reservoirs, water treatment facilities, water networks etc.) require long lead times for their delivery. Once provided for, this infrastructure essentially fixes the geographical extent of where the water services will be available.

Nevertheless, the business of delivering water services is similar to the electricity and natural gas network businesses. All have a network infrastructure comprising long-life assets and all require on-going investment (financed through the raising of third party debt) to ensure that they are maintained and extended. The CER therefore believes that a regulatory

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<sup>4</sup> For example, please refer to the following link [here](#) on the CER website.

framework, similar to that already in place for the electricity and natural gas networks, would be appropriate for the water services sector.

## **2.2 Objectives of regulatory framework**

The regulatory framework for IW will enable the determination of an appropriate level of allowed revenues that the utility can recover over a set period. The CER's objectives, when this framework is established, are to ensure that:

- The interests of final customers are protected, in the short and long term. This means containing water tariffs to the maximum extent possible, incentivising IW to deliver good customer service, delivering efficient network investment and meeting relevant environmental and public health standards;
- The framework is consistent with the relevant legislation that enables it;
- The condition and performance of the public water services infrastructure is improved and sustained;
- IW is able to attract, at an efficient price, the capital investment to support the necessary level of upgrading, renewal and extension of the water services infrastructure (both water services and wastewater services). In doing so, the CER wishes to ensure that IW's investment plans provide value for money for customers in terms of the benefits they add;
- Appropriate incentives are provided for IW to improve its efficiency (e.g. reducing leakage rates on the network, improving treatment of wastewater, enabling environmental requirements to be met), and that resulting savings are passed through to customers. The CER will set targets that are challenging but achievable; and
- The day-to-day intervention by the CER into the business of IW is kept to a minimum.

## **2.3 The key principles**

The CER will follow a number of set principles in guiding the development and operation of the water services regulatory framework. It is important to note that these principles reflect the Government Policy Statement on Economic Regulation published on 22 July 2013.<sup>5</sup> The statement details a strategic framework for economic regulation which incorporates principles such as predictability and transparency.

The principles that the CER will follow are:

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<sup>5</sup> Please refer to the following link [here](#) on the Department of the Taoiseach website.

(1) **Stability** – the framework must provide a solid platform for IW to carry out its activities. Frequent complaints and unwarranted interventions by the CER into the revenue controls etc., would lead to the new regime being continually adjusted. Frequent intervention by the CER would increase uncertainty for the utility and the public, which in turn could discourage vital investment in, and long-term planning of, the water services infrastructure.

This is not to say that the regulatory framework should be fixed and unable to adapt to a changing regulatory or policy environment. It is accepted that reform of the Irish water sector is at a formative stage and the framework must be flexible to accommodate future changes. However, modifications to the regulatory framework must be strategic in nature, carefully planned, flagged to participants in advance (with adequate consultation allowed), avoid retrospective action (where possible) and ultimately lead to furthering the interests of the water services customer.

The electricity and gas RABs are one element of the stable regulatory framework established by the CER for the energy sector. As noted above the RAB is a measure of the net value of a utility's assets used in the operation of its regulated activities. The electricity and gas sectors have seen significant investment since the introduction of regulation (in 1999 and 2002 respectively). This investment has been required to meet demographic and economic changes, as well as new domestic and European policy requirements, such as the EU's 2020 Renewables target. To carry out this investment the utilities must attract private investment at a low cost to meet the cost of capital targets set out by the CER. The capital should also, where market conditions allow, be provided on a long-term basis, considering the nature of these assets (i.e. electricity lines and gas pipes have economic lives over forty years or more).

The RAB is a transparent and stable mechanism that reduces risk for the private investor, utility and indeed the final customer. It is discussed further later in this paper. For the private investor, the RAB is a mechanism for preserving the capital invested in the utility's assets. For the utility, the RAB promotes stability by ensuring that efficient investment undertaken by it will be properly remunerated. For the final customer, the RAB is a stable mechanism for attracting investment in the networks so as to increase customer quality of service (e.g. reduced outages of electricity).

(2) **Predictable** – the framework should provide stakeholders with a picture as to how it will develop in the short and long-term. Predictability is connected with the principle of stability, as both facilitate efficient investment at least cost to the water services customer. An unpredictable regulatory framework will likely raise the cost of capital faced by the utility, which will ultimately be to the detriment of customers in the form of higher water charges. An example of an unpredictable framework would be for the CER to reduce the value of the RAB in an unwarranted fashion.

Rational and objectively reasoned arguments will help all stakeholders predict decisions around the regulatory framework. Sudden, unanticipated or poorly

justified changes in the construct of the regulatory framework by the CER are likely to erode the confidence of private investors and increase the cost of capital for the water utility. The net result being again higher prices for water customers.

The CER has developed a predictable regulatory framework for the electricity and gas sectors in Ireland. As noted above, RABs have been created for the monopoly utilities. In addition to the RAB model, the CER has adopted the same approach, used by our international regulatory peers, to determine the maximum allowable costs of the monopoly utilities. In the electricity and gas revenue controls the CER has adopted: (i) a 5 year multi-annual revenue review, (ii) the Capital Asset Pricing Model (CAPM) to aid in the determination of the cost of capital and (iii) the RPI-X approach. This consistent approach has helped promote predictability in the energy regulatory frameworks, which in turn has helped the monopoly utilities source the cheapest available debt finance, undertake long term capital investment programmes and manage operational costs.

(3) **Sustainable** – the framework must be sustainable for customers and stakeholders in both the short and long term. The CER needs to create a regulatory framework within which the water utility receives a reasonable assurance of a revenue stream in future years that will cover its costs, including an appropriate rate of return on investments made and the recovery of capital invested. This is in return for providing monopoly services to an acceptable quality. The water utility must be able to finance its operations, and any necessary capital expenditure, so that it can continue to operate to the benefit of present and future water services customers. In essence, a more financially sustainable framework should result in a more environmentally sustainable system, through improved quality standards and service provision.

The framework must maintain the interests of the water services customer. This means taking account of the trajectory of prices, customer bills, the interests of vulnerable customers, the need to improve quality of service and supply etc. Focusing on short-term gains or looking for quick 'regulatory wins' that would adversely affect stakeholders in the long-term should be avoided.

One example of a quick regulatory win would be delaying required capital expenditure in the water services infrastructure solely on the basis of trying to depress prices below their efficient level. Lower bills may be of benefit to water customers in the short-term. However their long-term interests, with respect to quality of water supply and service and health standards, will be detrimentally affected if pipes/pumping stations etc. are not fixed, maintained or upgraded as necessary.

(4) **Cost efficiency** – the regulatory framework must drive the water utility to constantly look, year-to-year, for economic efficiencies to the benefit of customers. Essentially the utility must provide more for less – it must constantly look to provide greater service and quality to its customers at a lower cost. However, the necessity for cost efficiencies must be balanced

with the other principles outlined above – stability, predictability and sustainability.

For example, it would not make sense for the regulator to determine that an overly ambitious level of operational efficiency is imposed on the utility in its first year of regulation, which in essence is unachievable for the utility. Such a decision would not provide a stable platform for the utility to invest capital in the short to medium term because of the heavy focus on its operational costs. It would be far more appropriate to put the utility on an efficiency glidepath, which gives the utility time to reduce its operational costs and improve its operational efficiencies over a consecutive numbers of years. Imposing such a change in just one year would be considered unfair by both the utility and its financiers. This perceived unfairness would weaken trust in the regulatory framework, which would inevitably increase the cost of capital of the utility.

The regulatory framework must strike the correct balance between what is achievable by the utility in its efficiency drive and incentivising it to achieve that level of efficiency. This is generally done in a regulatory framework through the glidepath RPI-X formula, which is discussed later in the paper. The CER has driven and continues to drive year-on-year efficiencies in the electricity and gas sectors through its various revenue controls, as detailed in CER papers such as CER/10/206. All of these revenue control papers can be found on the CER website ([www.cer.ie](http://www.cer.ie)).

## **2.4 Conclusion**

With the passing of the Water Services Act 2013 the CER will begin preparing the development of a regulatory framework to examine and approve the costs of IW. The framework must provide a strong incentive for IW, as the water utility to improve service and reduce costs from the outset of regulation.

The CER has set up similar regulatory frameworks for the electricity and gas sectors in Ireland. This framework employs a set of principles – stability, predictability, sustainability and cost efficiency. The CER considers it appropriate to apply a similar regulatory framework and similar set of principles to the water regulatory framework.

### **Questions for respondents:**

Q1. Do you agree with the proposed principles of the regulatory framework? If not, then please explain why.

Q2. Are there any further/alternative principles of a proper regulatory framework that the CER needs to consider / or principles that need to be removed from the above list? If so, please provide an explanation for inclusion/exclusion.

### **3 Proposed form of the Regulatory Framework**

The public water services infrastructure is considered to be a 'natural monopoly' in that it would be considered wasteful and inefficient to have duplicate sets of the infrastructure. For example, it does not make economic sense to have two separate pipes owned by two different companies capable of providing water to the same household on the same street. Neither does it make sense for two separate pipes owned by two different companies capable of bringing untreated water from the same household to the local wastewater facility.

Unregulated monopolies may be inefficient and impose prices that are too high on consumers. As a result, regulation is required to uphold the interests of customers and eliminate excess profits earned by the monopoly company, while simultaneously providing it with incentives to deliver efficiencies in the service it provides. There are a number of approaches to the regulatory framework that reflect a different balancing of the trade-off between eliminating excess profits and providing incentives to achieve efficiencies. It is worth discussing the various options and the following sections outline the common revenue frameworks in use.

#### **3.1 Rate-of-return regulation**

Rate-of-return regulation is the preferred approach of regulators in the US, Canada and Japan. It aims to eliminate excess profits by equating revenue earned by the regulated business with its actual costs. The regulated business is allowed to charge tariffs that will cover its operating costs and give it a reasonable rate of return on the value of the capital employed in the business.

When costs rise above the set tariffs, the business (or customers, when costs fall) makes an application to the regulator for a new set of tariffs. Generally tariffs are changed when circumstances change – the price change date is not pre-determined by the regulator. Rate of return regulation thus eliminates all prospects of long-term excess profit/losses. This has the advantage of keeping the cost of capital low, as the regulated company is susceptible to less risk considering the short timeframes associated with tariff changes. However, rate-of-return regulation does not give the business a strong incentive to reduce costs because it knows it will be subject to a tariff change in the short-term.

Under certain conditions, rate-of-return regulation can also encourage unnecessary and inefficient investment, since the business is generally assured of being able to recover the costs of that investment and earn a given rate-of-return from customers.

In an attempt to encourage efficiency, some regulators employing rate-of-return regulation have adopted the practice of prudential reviews. These are designed to assess if past investment was necessary. If the regulator decides that such investment is not 'used and useful', it is not added to the RAB of the regulated company. While this approach looks attractive in principle, it could

result in the regulator controlling individual investment and operating decisions of the utility. This would be inconsistent with a desire to adopt a regulatory framework that uses incentives to encourage efficiency, without getting involved in the day-to-day decision making of the utility.

The CER believes that rate of return regulation provides little or no incentive for the regulated company to become more efficient. The introduction of prudential reviews seems to undermine the core strength of rate of return regulation - the guaranteed return on capital investment. In addition, these reviews do not drive operational efficiencies, but rather lead to a greater regulatory burden and increased level of uncertainty for the utility. Therefore the CER concludes that rate-of-return regulation would not be in the best interests of the Irish water customer.

### **3.2 Incentive Regulation - Yardstick**

This type of regulation uses a set of comparisons (such as statistical data) to set the revenue that can be earned by a regulated company. It aims to bring the regulated company's costs in line with what is deemed to be most 'efficient' set of costs through a process of benchmarking with other companies who are producing an identical product or service.

For example, say in Area Z a company which sells apples has a monopoly. The regulator will undertake a review of costs of companies which sell apples in other areas, such as Areas B,C,D and E. A determination of the most efficient set of costs, based on available data from the companies selling apples in Areas B,C,D and E will be evaluated by the regulator. The regulator will allow the apple company in Area Z to only recover this set of efficient costs.

Competition is the ideal form of yardstick regulation in that competition imposes on firms, who operate in the same industry, a strong incentive for efficiency. That is because the success or failure of a company in a competitive market will depend on its performance relative to the performance of other companies in that market. However, as noted above, competition is not feasible or efficient in a natural monopoly.

The yardstick competition concept can also be applied to firms that are producing heterogeneous (different) products or services, but only if these products or services differ in observable characteristics. To correct for the differences the regulator can use a statistical device which adjusts certain inputs to determine the efficient set of costs. Taking the example above, regulation may be required for a company which sells oranges in Area Z. The regulator may use the same data from the apples companies of areas B,C,D and E in the knowledge that the orange company in Area Z has the same or similar cost inputs and cost drivers. The regulator could then allow an adjusted cost level based on the fact that the company in Area Z sells oranges, as opposed to apples.

In setting the original price cap for the England and Wales Water and Sewerage Companies (10 WASCs) and Water Only Companies (12 WOCs),

Ofwat placed a considerable emphasis on the methods of yardstick regulation. This raises the obvious question, since yardstick regulation was used in the water sector of England and Wales should it be applied to the water services sector in Ireland?

The CER does not consider it appropriate to rely on yardstick regulation, primarily on the basis that there will be only one water utility operating in Ireland (as opposed to the 22 noted above in England and Wales at the outset of regulation). In addition, the group water schemes in Ireland could not be used for the purposes of yardstick regulation considering they are not of comparable size. In that sense there are no other companies, operating in the same industry (i.e. providing a water and wastewater service) to allow for a complete reliance on yardstick regulation for the purposes of setting the efficient level of revenues for IW. However, benchmarking of other international water service companies will be a useful tool when examining costs and one which the CER will most likely use.

### **3.3 Incentive regulation – Banded rate of return and Profit sharing**

Under banded rate of return regulation the regulated company is allowed to keep all of the revenues it generates, provided these revenues constitute a return on capital that is sufficiently close to a pre-determined target rate of return. If actual revenues exceed the maximum allowed regulatory level, the difference between the two is returned to customers. If actual revenues fall short of the minimum level of acceptable revenues, the regulated company's tariff is increased sufficiently to ensure that projected earnings fall within the band of allowed revenues.

Most banded rate of return schemes define the minimum level of acceptable revenues that the regulated company can tolerate (floor), and often also the maximum allowed regulatory level (ceiling) that the regulated company is allowed to earn with a particular price. Within that maximum and minimum is generally called the 'dead-band'. Floors and ceilings ensure that the regulated company does not profit (or be unfairly penalised) from poor estimates by the regulator of the potential for cost savings.

For example, the regulator may set a regulated company's target rate of return at 8% with a band of +/- 2%. The regulated company retains all of the revenues it earns as long as they constitute a rate of return on capital between 6% and 10%. The regulated company is not permitted to retain any revenues in excess of 10%, and it is protected against revenues falling below 6%. If these bands are breached, the price that the utility is allowed charge for its service will change. In the US, many regulatory schemes in the telecommunications sector are based on banded rates of return.

Profit sharing (or sliding scale) regulation allows for the explicit sharing of profits between the regulated company and its customers above a pre-determined threshold, irrespective of whether these profits constitute a particular return on capital. For example a regulated company may keep all of the profits it generates in delivering a service, as long as average profit per unit delivered does not exceed a certain threshold, say €1. Once average

profit per unit exceeds the €1 per unit threshold, the regulated firm is required to share with its customers half of the incremental profits that it generates.

The CER considers that banded rate-of-return regulation and profit sharing are an improvement over rate-of-return regulation, since both provide the regulated company with some incentive to cut costs, as opposed to a near guarantee of cost recovery. In particular the banded rate-of-return model allows the regulated company to lower costs and increase returns without triggering a review.

However, both banded rate of return and profit sharing still provide only a limited incentive on the regulated company to become more efficient. This is because there is no incentive for the utility to push beyond the pre-determined bands of efficiency. Take the example above where the regulator has set a regulated company's target rate of return at 8% with a band of +/- 2% (i.e. 6% and 10%). The utility will be incentivised to reduce its costs so as to ensure a rate of return of 9.99%. However, even if it could, the utility will (most likely) not look to reduce its costs to a point where its rate of return equates to 10%. This is because it knows such an outcome would mean the regulator imposing a price reduction so as to keep the rate of return of the utility within the pre-defined bands.

Therefore the CER believes that both are inappropriate models to use.

### **3.4 Incentive regulation – Price or Revenue Cap**

Price or revenue cap regulation involve a one-off setting of tariffs linked to an indexing mechanism (such as inflation), beyond which all efficiently incurred gains are retained by the regulated company for a set period. Essentially prices, or revenue, are set by the regulator without restriction or reliance on measures of profitability within the utility.

#### ***Price cap***

Price cap regulation is intended to mimic the desirable incentives for cost minimisation found in competitive markets, where prices are generally set without reference to the costs of individual producers but by reference, in principle, to conditions in the market as a whole.

Regulated companies can increase their earnings by improving efficiency, where costs are less than the revenue earned from units sold subject to the price cap set by the regulator. Therefore the regulated business has a strong incentive to reduce costs, but the regulator must define comprehensive output standards (to remove incentives to cut quality) and may have to tolerate higher-than-expected profits of the regulated business. As a result the regulated business bears certain risks; including shifting demand for the unit of produce/service it sells. The key feature of a price cap is that the price level set by the regulator is not responsive to anything (e.g. such a drop in demand for the product or service, or profits levels that are above or below that expected by the regulator).

Price cap regulation can take two forms – permanent and interval. Permanent price cap regulation is not a credible or sustainable mechanism, since prices will sooner or later diverge from costs (in one or other direction). Therefore, the cap itself would need to move to reflect these changing circumstances.

Price capping with periodic reviews is a form of incentive regulation with profit sharing. It is also known as 'RPI-X' regulation. Under this form of regulation, the regulated business is required to keep the increase in its prices to less than (or equal to) the increase in a specified general price index (e.g. the Harmonised Index of Consumer Prices in Ireland) - less X percent. If X is positive, this means that prices will fall by X percent in real terms. The level of the cap on prices reflects the anticipated levels of future operating costs and investment that might be incurred by the business and are set to provide a reasonable rate of return on assets, consistent with efficient performance. The price cap is therefore set at a cost-reflective level.

The distinguishing feature of this form of regulation is that the price cap applies for a pre-determined period. As a result, the regulated business keeps all the profits associated with unanticipated cost reductions in the period between regulatory reviews. However, customers benefit in the subsequent regulatory period when the regulator (i) reduces prices to capture those cost savings and (ii) removes any 'windfall' gains made by the regulated company that were not driven by efficiencies.

The shorter the interval between reviews, the more there is a tendency for price cap regulation to approximate rate-of-return regulation, with frequent assessments of the RAB and the appropriate rate of return on investment. The longer the interval between reviews the greater the incentive on the regulated company to reduce costs because it knows it can keep profits for a greater length of time. Four to five-year interval periods has generally been chosen by regulators in Ireland and the UK.

### ***Revenue cap***

Revenue-cap regulation is largely similar to price cap regulation – under price cap the maximum price is set whereas under revenue cap the regulator sets the maximum allowed revenue that the utility can recover from the customer. Like price-cap, revenue-cap regulation can operate for a pre-determined period. Under revenue cap the regulated business keeps all the profits associated with efficiency savings in the period between regulatory reviews; customers benefit in the subsequent regulatory period under revenue-cap when the regulator (i) reduces revenues to capture those cost savings and (ii) removes any 'windfall' gains made by the regulated company that were not driven by efficiencies.

Price cap regulation is considered to be more appropriate in businesses where there is a significant link between costs incurred and units sold – like airport operation, where costs are dependent on the number of airport customers (e.g. more airport customers passing through the airport means that more security staff/customer care staff etc. are required). Alternatively, revenue cap regulation is considered to be more appropriate for businesses

where there is a large element of fixed costs, e.g. electricity and gas network businesses.

For example, the electricity network in Ireland is comprised mainly of fixed costs (e.g. wires, pylons, substations etc.). A small increase or decrease in the demand for electricity will have little or no effect on these costs incurred by the business in that it has already invested in these wires, pylons and substations. These sunk investments still need to be recovered from the energy customer over the lifetime of the asset.

A large portion of the costs incurred by the water services system are fixed costs, arising from expenditure on infrastructure assets and fixed operating cost, e.g. the water network and wastewater treatment plants have large sunk capital costs and a large portion of the operating costs are fixed, such as labour costs. Similar to the example of the energy network businesses given above, small changes in demand for water services will not significantly affect these costs. The 'marginal cost', i.e. the extra cost to the water utility to deliver one extra unit of supply or treatment, is quite low. Revenue-cap regulation is considered by the CER to be the most appropriate methodology as this more closely reflects the characteristics of the water services sector.

Interval revenue cap regulation (and the RPI-X mechanism within it) provides incentives to deliver efficiency savings on the part of the regulated business, while providing an assurance to customers that the benefits of these efficiency gains will be reflected in lower prices in the longer term.

The CER has operated revenue cap (RPI-X) regulation in the energy networks sector since 1999. Through its revenue controls the CER has determined, through a process of review and yardstick benchmarking with international utilities, the maximum allowed revenues that the regulated electricity and gas network utilities can earn. Prices charged by the regulated network utilities to their customers are set at a level to collect the allowed revenues as determined by the CER. The question is whether this form is appropriate for the Irish water sector.

### **3.5 The CER's position**

The CER believes that the regulatory framework for the water sector should meet the four principles detailed above – stability, predictability, sustainability and cost efficiency. By meeting these principles the framework will, among other things, enable the water utility to attract capital from the international markets and its shareholder by ensuring that it will earn an adequate rate of return. It will also encourage efficiency in operations and capital investment, while minimising the extent of regulatory intervention in the day-to-day decision-making of the water utility.

The CER believes that a revenue cap (RPI-X) regulatory framework for the regulation of the Irish water services sector will facilitate these principles in the most efficient manner. This is justified on the grounds that:

- rate of return regulation, even if combined with prudential reviews of the type now commonly seen in the US, would not offer the same combination of incentives to efficiency and protection against over or inefficient investment;
- yardstick regulation would not be an effective tool for setting the efficient level of costs for the water utility largely because there will be no other companies in Ireland, including the group water schemes, to effectively yardstick the company against; and
- other forms of incentive regulation (such as profit-sharing or banded rates of return) would pose problems in the definition and measurement of profits/losses. Preventing this would require detailed monitoring, discussion and analysis of the annual costs and profits of the water utility and impose a heavy administrative burden on both the CER and IW.

If applied correctly, revenue cap (RPI-X) regulation can provide the water utility with strong incentives to efficiency and an assurance to water services customers that the benefits of those efficiency gains will be shared with them. It is also the case that a number of the CER's international regulatory peers in countries such as the UK, Denmark, Australia etc., use this approach in their regulatory frameworks.

Finally, since 1999 the CER has operated a revenue cap (RPI-X) regulatory framework in the energy networks sector (electricity and gas) and found it to be an effective instrument in meeting the interests of the electricity and gas customer.

**Questions for respondents:**

Q3. Do you agree with the CER's assessment of each of the proposed regulatory frameworks? If not, then please explain why.

Q4. Are there any advantages or disadvantages to any of the proposed frameworks that the CER has not considered? Please detail.

Q5. Do you agree with the CER's assessment that a revenue cap (RPI-X) framework should be put in place for the Irish water services sector? If not, then please explain why.

## 4 The Determination of Allowed Revenues

In the previous section the CER has proposed to adopt a revenue cap (RPI-X) framework for the Irish water services sector.

If this framework is ultimately adopted by the CER the setting of such a revenue cap requires the CER to determine the level of revenue that would be sufficient to finance an efficient, well-run business. This allowed revenue must also include an adequate return on the capital employed in the business so as to allow continued efficient investment.

The setting of an efficient level of revenues requires a consideration by the CER of the likely level of operating costs and capital expenditure that an efficient business requires over the duration of a revenue control period. To date the CER has, for the most part, operated a five-year revenue control period for the electricity and gas network utilities. It is considered that this length of revenue control correctly balances the need to incentivise efficiency gains in the utility, but limits customer exposure to forecasting errors that may result in excess profits for the utility. The CER proposes to adopt a steady state revenue control period of 6 years in length for the water services sector, in order to align with the River Basin Management Plans cycle.<sup>6</sup> This would allow the various parties involved to synchronise and co-ordinate the requirements of the forthcoming water Capex Programme.

It should be noted that a one-year interim revenue control for the electricity network utilities was implemented in 2000 (known as PR0). With the CER being established as the economic regulator in mid-1999 this decision was made so as to allow the CER to engage in a full scale review of appropriate costs for the first five-year revenue control. This first five-year revenue control (known as PR1) ran from 2001 to 2005. The issue of a shorter 'interim' revenue control is discussed later in the paper.

This section will discuss a number of detailed issues. These include:

- the treatment of operational expenditure;
- the treatment of capital expenditure;
- the appropriate approach to setting the opening asset value of the IW RAB;
- the appropriate approach to valuation of assets being added to/within the IW RAB;
- the appropriate capitalisation policy for adding assets to the IW RAB;
- the estimation of a reasonable rate of return on assets in the IW RAB;
- the treatment of depreciation for assets in the IW RAB;
- the use of specific revenue-based incentives;
- how maximum allowable revenues are calculated; and
- the form of the revenue control formula.

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<sup>6</sup> Please refer to the following link [here](#) for supporting documentation on the River Basin Management Plans.

#### **4.1 The treatment of Operational Expenditure (Opex)**

A central objective of the regulatory framework is to provide the water utility with an incentive to operate its business efficiently so as to provide value to the customer. One way of doing this is to base the allowance for future opex on a level considered equivalent to efficient costs when setting future revenue requirements. This provides the water services customer with greater value than using the utility's actual or forecast level of opex - which may include inefficient expenditure. An independent, objective, thorough and focused view of opex by the regulator is central to the performance of any revenue control.

Opex is the day to day costs incurred by the business. Opex can be broken down into two categories: controllable and non-controllable. Controllable opex comprises such categories as staff costs, contractor fees, consultant fees, consumable materials etc. Uncontrollable opex can include regulatory costs or the rates payable by the utility to the city or county councils.

Within determining allowable revenue a number of questions arise. What level of opex could an efficient utility achieve? At what speed could that efficient level of opex be achieved by the utility (i.e. the 'glidepath' down to the efficient level)? Should that glidepath down be constant or staggered? What level of risk will the utility be put at for failing to meet these efficiency targets? There are a number of ways in which these questions could be resolved.

The first is to perform comparisons with other water utilities and to set a target for the business to achieve the same costs as the average or most efficient comparator water utility. Using benchmarking to set allowable revenues can give the business a powerful incentive to become more efficient. Benchmarking can also help identify the speed at which the utility should be incentivised to reach greater efficiencies. This will be important in the context of IW - a new water utility operating in Ireland.

Determining benchmarks of the type required for setting IW's opex is not without its problems. In many other countries, there are a number of water utilities (i.e. there are approx. 20 in Great Britain) against which to compare. Benchmarking in Great Britain is therefore somewhat easier than in Ireland, where there will be only one water utility.

The CER faces the same issue on the gas and electricity network businesses. We have generally used benchmarking data from other countries to cross check the costs of Irish utilities. While it is difficult to make appropriate allowances in any such exercise for all the relevant factors that may lead to differences in costs (e.g., size of network, age of network, weather, different cost allocation methodologies, different legal and/or regulatory frameworks), benchmarking is still a useful tool. Care needs to be taken to ensure that the inputs used result in a like for like comparison and appropriate interpretation of the results is needed to ensure that the correct conclusions are drawn by the regulator.

An alternative to benchmarking would be for the CER to project future opex using objective and stable measures of efficiency trends. These could be

industry specific or economy wide measures of annual gains in labour or capital productivity. This has the potential advantage of being less contentious than attempting to use suitably adjusted information on comparators' efficiency levels. However, this may be more appropriate to be applied to a company or sector that operated in a mature environment where costs are stable and predictable.

The regulator can also use industry experts to advise it on the relevant allowances within controllable and uncontrollable allowances. These experts generally draw on their experience and knowledge of working in the relevant industry in helping to advise the regulator of allowable costs. The experts engage in detailed investigations of all opex allowances, cost allocation between controllable and uncontrollable allowances, cost effectiveness of these allowances etc. This would be with a view to assessing their plausibility and their objective merit (i.e. should they be allowed and if so, at what level).

If the regulated company has been through a revenue control period the experts will generally review and audit its outturn operational expenditure for that revenue control. This could involve looking at the particular organisational/wage structure of the company and comparing it against other companies operating in similar industries. It could also involve a review of the maintenance policy of the company and seeing how it compares against other similar companies, e.g. the company reviews wear and tear on certain assets every 3 years, whereas other companies carry out a review on the same assets every 5 years. This exercise ultimately leads to a report from the experts on the recommended level of opex and identifying key areas where efficiency savings can be made by the utility.

In practice the CER uses a combination of all three methods - benchmarking, the use of efficiency/productivity trends and the use of industry experts. Using these methods gives the regulator a good understanding of the utilities business, where it sits relative to the rest of the economy and where it sits relative to its peer utilities in other countries. Based on this the regulator can make a robust determination of controllable opex.

Uncontrollable opex is by definition not directly controllable by the utility and therefore once the utility can demonstrate that it cannot avoid incurring the cost it is included in the allowable revenue. Local taxes, environmental or resource costs may fall under this category. An example of this type of cost is the "Waste Water Discharge Authorisation" licence fees levied by the EPA for each waste water treatment plant.

The CER proposes to apply the process outlined above to determine allowable opex for the water utility.

#### **4.2 Determining a capital expenditure allowance (Capex)**

The regulatory framework needs to create an environment that fosters a level of investment in the water services infrastructure that is correct (effectively targeted), appropriate (at adequate levels) and fully justified (not just for the sake of it). The CER will require Irish Water to put in place effective short and

long-term planning of investment in this infrastructure. The CER anticipates that IW will have a long-term (in the order of 25 years) investment strategy in place to guide its capital expenditure plans for the water services sector. It should be noted that IW's long-term investment strategy will be a public document and will be subject to public consultation.

Based on this strategy IW will develop a multi-annual investment plan. The CER expect that IW will have a number of areas that will require investment arising from requirements in EU Directives and increases in demand due to demographic or economic developments, such as:

- Renewal, refurbishment, repair and maintenance of the distribution/collection network and treatment plants;
- Upgrading treatment plants to meet national and EU standards;
- Metering and billing systems;
- Information technology, such as asset management systems, work management systems and its GIS;
- Expansion of SCADA and telemetry, for remote monitoring and control; and
- Other items such as buildings, vehicles, tools, computers etc.

IW will have a finite budget to spend on its capital investment plans. To help IW to determine its capital investment priorities the CER expects that IW will consult with customers and stakeholders to understand their requirements. In particular, the CER expects that IW will engage with:

- Government Departments - for example to ensure that IW takes into account Government's spatial strategy and economic development strategies;
- Environmental Protection Agency (EPA) - to ensure that IW understands the EPA's priorities in terms of meeting drink water and waste water standards, ensuring risks to breaching standards are minimised. IW must also work with the EPA to ensure that the Water Framework Directive objectives are achieved;
- Regional and Local Authorities – to ensure that IW understands and takes into account regional and local development plans and River Basin Management Plans;
- Industrial Development Authority/Enterprise Ireland – to ensure that IW understands the development agencies plans and strategies;
- Other statutory bodies – such as the Office of Public Works, Inland Fisheries, the National Consumer Agency, Waterways Ireland etc.;

- Large customers – to ensure that IW understands their needs and requirements;
- Representative Bodies – such as environmental groups, recreational water users, anglers, business representative groups etc.; and
- Domestic Customers – engaging with customers through representative groups and carrying out surveys to understand the domestic customers' expectations and requirements.

The CER expects that IW will engage with customers and stakeholders in an open and transparent manner. The output from this engagement process will be used to inform IW on the priorities of its capital programme. This capital programme will be a significant element of IW's submission to the CER.

It is proposed that, like opex, the CER and its technical experts will engage in a review of the required capex. The CER expects to consult and engage with the EPA during this review to ensure that the CER understands the EPA's priorities and objectives and where appropriate that IW have reflected these in their regulatory submission. The CER's objective of the review will be to ensure that the capex is necessary, consistent with the legal obligations placed on IW under relevant water legislation, consistent with stakeholder and customer expectations and represents value for money for the water services customer. An important principle of this review is that inclusion of a project in the IW capital investment plan does not automatically confer approval; an individual project must be subject to detailed appraisal on its own terms.

We expect that IW will be able to demonstrate that:

- Their capital investment plan is consistent with their long-term investment strategy;
- A thorough consultation process has been undertaken with customers and stakeholders, the outcome of which is reflected in the capital programme;
- IW has a robust procurement process in place to ensure that all capital works are efficiently procured and deliver value for money to the customer;
- The projects proposed in the capital programme represent the best value solution and a comprehensive review of alternatives, both alternative capex or opex, supports this conclusion;
- The estimated costs are realistic and achievable and IW's proposed costing structures are benchmarked with other utilities or industries with similar activities;
- The benefits of the capital programme and a method of demonstrating to customers the benefits realised as projects are delivered; and

- The measures undertaken by IW to ensure that the capital programme is being delivered efficiently and the reporting arrangements that IW anticipates will be required to demonstrate this.

The CER believes that the process outlined above will help deliver efficient investment in the water services sector.

### **4.3 Opening Asset Value of the IW RAB**

As highlighted in Section 1 the RAB is an important concept in the construction of an effective regulatory framework. A key question when discussing the RAB is its opening asset value (“Opening RAB”). As this involves the transfer of the water infrastructure assets from the State to the semi-state company, the overall approach is ultimately a decision for Government.

This decision must be taken in the context of (a) various assets and liabilities being transferred to IW from Local Authorities, (b) what effect it will have on the charges faced by the water services customer, (c) the equity investment in IW planned by the Government and (d) the ability of the water utility to raise debt to fund future investments in the water services infrastructure.

IW has commenced investing in billing and metering systems as well as setting up its organisation, the costs of which, up to 1 January 2014, will be included in the Opening RAB. Also it is expected that certain liabilities will transfer with the water assets from the local authorities to Irish Water and it would be expected that the value of the Opening RAB will be increased by an amount equivalent to these liabilities.

The question then becomes what additional value, if any, to place on the water infrastructure assets currently owned by the State and which will be transferred to IW.

This is an important and complex issue. The RAB is a significant element of the regulatory framework, providing certainty and predictability to IW and its investors. The CER believes that once the Opening RAB is set it cannot be changed without undermining the credibility of the regulatory framework, creating uncertainty, raising the cost of finance and ultimately customer charges. There is a significant premium on getting this number right.

When setting the opening regulatory asset value for the gas and electricity network businesses in Ireland, the CER used indexed net book value. This opening value was consistent with the network charges that were in place at the time and was at a sufficient level to allow the network companies to raise capital to invest. Looking at publications from the DECLG and the annual reports of the 34 Local Authorities it appears that a significant amount of capital expenditure has been made in the water services infrastructure over the years.

For example, between 2000 and 2010 alone over €5 billion has been invested in water services infrastructure.<sup>7</sup> The long economic life of most water infrastructure means including all water assets put in place over the last 50 to 100 years. This figure has been calculated to be €11 billion (although it is unclear whether this is a gross or net book value figure). Charges based on an €11 billion RAB value (which would include both a depreciation charge and a rate of return on this level of invested capital) would likely be seen as excessive, particularly in light of the fact that no domestic water services charges exist. Therefore the CER believes that establishing the opening asset value based solely calculated from historic capex is not a viable option.<sup>8</sup>

At a minimum the Opening RAB will have to be sufficiently large to allow IW to finance (a) the liabilities transferring from the Local Authorities and (b) capital expenditure incurred by IW on metering and establishment costs.

The Opening RAB, the way in which it is funded (which will be a mix of debt and equity) and the extent that the Opening IW RAB impacts on future allowable revenue will influence the IW's funding mix (retained earnings, debt and equity) in the medium term. It will also influence the timing of IW being in a position to access third party debt. To secure debt at affordable rates IW will have to achieve an investment grade rating; usually the target range is BBB+ to A- for a utility. To ensure that an appropriate credit rating is achieved, IW will have to meet certain financial ratios.

From an accounting perspective IW will need to include a value for the opening assets and liabilities in its financial statements (which are expected to be prepared under IFRS). IW may or may not have completed its due diligence on the assets/liabilities transferring from the Local Authorities by 1 January 2014 and may become aware of further information regarding these assets/liabilities in 2014 that would alter the initial view of the Opening RAB. It may be the case that the Opening RAB is finalised after 1 January 2014, in line with IW's due diligence timeline.

This is a matter that will need to be dealt with in the coming months, and is likely to require decisions by Government and/or Ministerial Direction to the CER (to the extent that this is provided for in future legislation). Section 5 of the paper deals with this issue in further detail, where the CER outlines three initial options for consideration.

#### **4.4 Adding assets to the RAB**

The CER is proposing, in due course, to introduce revenue controls of 6 years in length for the water utility. It is important to establish the principle of how capex in the previous revenue control is treated at price review so that assets constructed through capex can be added to the RAB.

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<sup>7</sup> Please refer to page 30 of the DECLG document entitled, 'Water Sector Reform Implementation Strategy - October 2012', which can be found [here](#).

<sup>8</sup> Further to this point - it is not proposed that IW will pay €11 billion to the Local Authorities for these assets.

To achieve this objective, at the time of a revenue control review, the framework must allow the utility to include efficient capital investment made during the revenue control period into the RAB. This can be achieved by including in the closing asset value of the previous period, the forecast level of new investment in the current control period to calculate the opening asset base of the forthcoming control period.

However, differences between forecast and actual investment during the course of the current control period may arise and this has certainly been the experience of the CER to date in the energy sector.<sup>9</sup> Forecast expenditure will rarely exactly mirror actual expenditure. Differences can result from:

- price differences, which may be due to unanticipated movements in the price index used in forecasting investment or efficiency gains (i.e. the regulated company purchasing input materials more cheaply than the price index would imply);
- volume variations, to the extent that, say, demand has not grown as anticipated, such that investment has been higher or lower than forecast;
- variations in the quality of service, e.g. actual investment may be lower than forecast, but at the expense of a deterioration in the quality of service; and
- efficiency gains, from a lower volume of investment to achieve the same quality and output as forecast.

The CER proposes to seek to distinguish between the different causes of a variance between forecast and actual capital investment, during the revenue control review process. In the enduring model, this will be with the aim of rewarding efficiencies and of penalising poor performance by disallowing investments which are not efficient. As highlighted above investment by the utility (and the respective plans) will need to be justified to the CER to be included in the RAB.

#### **4.5 Valuation of assets added to/in the RAB**

The approach to valuing assets added to (and within) the RAB is a crucial decision within the revenue control process. As noted above the RAB plays a key role in establishing the value of each business and hence its ability to cover capital expenditure and provide an adequate return on capital employed.

Specifically, the evolving value of the RAB should be such that it is capable of providing sufficient revenue when applying the cost of capital to it, to ensure that the company is able to fund new investments in the water services infrastructure. The correct valuation for assets being added to/within the RAB

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<sup>9</sup> For example please refer to the PR3 Transmission Revenue control decision paper (CER/10/206).

is key to the regulated business, its customers and those providing funding for investment.

There are numerous methods for valuing the assets being added to/within the RAB. These are now set out:

- Historic cost (HC): assets are valued at their original purchase price;
- Indexed Historic Cost (IHC): similar to HC, assets are valued at their original purchase price with an indexation factor (usually inflation) applied (e.g. an asset purchased in 1980 is inflated up to 2013 prices by applying the indexation factor of every year from 1980 up to 2013). Applying an indexation factor counters the erosion of the value of the asset over a period of time;
- Replacement cost: the value of an asset is calculated as the cost of replacing it with another asset today that will provide the same services and capacity (this replacement asset does not necessarily have to be the same). This methodology is also known as the Modern Equivalent Asset Value (MEAV) approach;
- Replacement cost less stranded assets: As per replacement cost above, but excluding those assets that are not utilised in the current system by the utility;
- Optimised replacement cost: estimates the cost a new entrant would incur in building an optimal system (i.e. the 'perfect' system) to supply the same service (in this case the water and wastewater services in Ireland);
- Deprival value: assets are valued as the minimum loss the regulated company would incur if it were deprived of the asset. This can be either the replacement cost or, where assets could not be replaced, their economic value; and
- Optimised deprival value (ODV): this is a variant of the deprival approach. It differs by taking into account the most efficient method of providing the asset's services if the asset is to be replaced.

The table below outlines the advantages and disadvantages of each approach.

Table 1: Approaches to valuation of the assets in the RAB

Approach	Advantages	Disadvantages
<p>Historic Cost</p>	<p>This is generally considered the simplest approach to valuing the RAB. It requires no adjustment to the calculation of the RAB, other than for new capital expenditure and depreciation of the assets.</p> <p>Administratively inexpensive for the regulator as it does not require detailed review of asset values – the HC will be known from the outset.</p>	<p>HC does not reflect the current economic value of assets, as inflation has eroded their original purchase value. This would lead to an undervalued RAB and is therefore likely to reduce the regulated company's incentive to invest.</p> <p>In addition, HC may not provide sufficient cashflow to the regulated business because of the undervaluation to fund efficient network investment.</p>
<p>Indexed Historic Cost</p>	<p>IHC, like HC, is a relatively easy and transparent method to value the assets of the RAB.</p> <p>Also, IHC is administratively inexpensive for the regulator. The HC of the assets and applicable inflation factors will be known from the outset.</p>	<p>Simple indexation means that some assets may be overvalued and some undervalued relative to their true economic value.</p> <p>There may be argument between the regulator and regulated business over which inflation factor to use, i.e. general country-wide inflation or 'industry' specific.</p>

<p>Replacement Cost (MEAV approach)</p>	<p>Assets of the RAB are valued at today's price which could provide an incentive to the regulated company to invest efficiently.</p> <p>It facilitates technological change/improvement by allowing the regulator to reduce the value of existing assets if new, alternative and cheaper assets become available.</p>	<p>Valuing the assets will be administratively and operationally burdensome for the regulator and regulated business. Both parties will use engineers, accountants etc. to value the assets of the RAB. The final views of both parties could differ.</p> <p>There is a risk of deterring new investment if some existing assets are set to zero by the regulator, or even below a level which the regulated business considers appropriate.</p>
<p>Replacement Cost less stranded assets</p>	<p>As above.</p> <p>Any assets that are considered stranded – that is, where there is an unambiguous case that they are not required, not used and therefore inefficiently incurred – should, in principle, be removed from the RAB as they do not form part of the operational base of the water services infrastructure.</p>	<p>Identification of stranded assets by the regulator is somewhat judgmental. The regulator would need to demonstrate that a specific asset should not have been built based on reasonable assumptions, which would certainly be open to argument by the regulated company. In essence, the regulator would have to step into the shoes of the investment decision-maker.</p> <p>Excluding stranded assets from the RAB may deter investment, i.e. the network owner may not invest in some cases if there is a risk that the asset may become stranded, e.g. through expected demand in an area of the country not appearing.</p>

Optimised replacement cost	This method provides an incentive to the regulated business to undertake optimum investment decisions.	It is relatively complex to implement, and requires considerable input from the regulator and regulated business in terms of manpower and financial costs, i.e. deciding on what exactly is the 'optimal' network). Valuations and decisions are certain to be different between the two parties.
Deprival Value	This method provides the most accurate economic valuation of the network. Valuing the asset below the deprival level means that the regulated company would be 'better off' not providing the product/service produced by that asset.	Like the replacement cost calculation this form of valuation could be quite subjective in nature. It would also be highly complex to apply as it requires detailed modelling of the system to determine asset values and whether the regulated company could provide the same level of service if 'deprived' of certain assets in that system.
Optimised deprival value	This method, like optimised replacement costs, will tend to discourage inefficient investment, because there is a risk that the regulator will revalue inefficient investments down to their optimised replacement costs.	Again, like optimised replacement costs estimation of ODV's will require significant input from both the regulator and regulated company and could be overly burdensome to implement.

The value of assets in the RAB of a regulated company is fundamental to the calculation of both the return on and recovery of a regulated company's investments. The CER recognises that there is no single approach to valuing assets that is appropriate in all circumstances – this is evident from the table above. Simply put, you can make a case for implementing any of the approaches, depending on what you consider the most important factors for consideration.

The CER is proposing to use the **indexed historic cost (IHC)** approach to valuing the new assets of the IW RAB (i.e. post calculation of the IW Opening

RAB). The indexation factor proposed is general inflation, as opposed to any 'industry specific' factor. It is worth returning to the principles set out in section two of this paper to justify this proposal.

IHC is considered a stable and transparent method to value assets added to the Opening IW RAB. Both the regulator and regulated company can agree the historic cost (i.e. the purchase cost) of the assets relatively easily. Using general inflation as the indexation factor promotes transparency in the process. The stability of the methodology stems from the fact that once you set the valuation of the Opening IW RAB all stakeholders can see its progression during the revenue control and indeed from revenue control to revenue control. This also provides the methodology with a strong element of predictability, in that the regulated company will know that under IHC if it makes an efficient investment it will be remunerated in a predictable and steady fashion through the revenue controls.

The disadvantage with the other methodologies is the subjective or arbitrary decision that the regulator would have to make in order to determine the RAB value. This in effect would mean the regulator re-setting the opening RAB value at every price review. If this subjectivity is apparent between revenue controls (e.g. through the regulator re-setting the RAB value based on optimal investment decisions), it would undermine the stability of the regulatory framework particularly for long-life assets like water infrastructure. This will have the effect of increasing uncertainty and ultimately increasing the costs faced by the water customer.

It is on this basis that the CER proposes to use the IHC approach when valuing the assets adding to the Opening IW RAB.

#### **4.6 Approach to Grants or Capitals Contributions**

The CER proposes that customer capital contributions and/or Government grants (but not Government equity) for the build of assets are subtracted from gross capital expenditure figures in the relevant year. The alternative approach would be set capital grants/contribution against annual revenue requirements. The CER believes setting capital grants/contributions against the cost of assets that they are intended to pay for is the most appropriate treatment and lowers the amount of capital required by IW, an important consideration in the initial years of regulation.

#### **4.7 Rate of Return on the IW RAB**

The allowed revenue of a regulated network company such as IW, for any given period, includes the cost of financing capital investments made by the company. This cost of capital allowed by a regulator in setting the revenue control should reflect the opportunity cost of the funds invested in assets, (i.e. the risk adjusted costs faced by an investor for providing capital to IW when it could have provided the same level of capital to another water utility in say the UK, Europe, US etc.). It can also be thought of as the discount rate which an investor would use in evaluating the income stream to be expected from investing in a regulated network company like IW.

Generally speaking, the more risky the company, the higher the rate of return required, since suppliers of funds will require a higher return to compensate them for bearing greater risk of default. Higher rates of return mean higher bills for customers. Therefore maintaining an expected allowed return on capital in line with the required rate of return is the primary determinant of the regulated company's financial viability.

The nature of the regulatory framework, the regulatory process and regulatory risk in particular, is an important factor in determining the required rate of return for IW. Therefore a transparent methodology for estimating this figure needs to be established by the CER. To be clear, the more stable, predictable and sustainable the regulatory framework is the lower the required rate of return for IW, which means lower bills for water customers.

#### **4.8 Methodology for establishing the required rate of return**

Since most businesses are financed with a combination of debt and equity, the relevant measure of the cost of capital is the weighted average of the cost of debt and the cost of equity, where the weights reflect the company's long-term target level of gearing (i.e. the ratio between the level of equity and debt invested in the company). This is known as the Weighted Average Costs of Capital or WACC. When applied to the RAB of a utility it can be used to derive a return on capital employed. Considering that the CER proposes to inflate the IW RAB to account for inflation (i.e. a RAB in real prices), the WACC also needs to be calculated in real terms.

Calculating the WACC requires a number of inputs. These inputs are now discussed.

##### ***The cost of debt***

The cost of debt to a regulated business can generally be thought of as the sum of the real pre-tax return required by investors in risk free investments, (such as Government bonds) plus a margin over the risk free rate at which debt can be obtained by the company in question.

Debt repayments made by a company to its investor(s) are generally fixed, in that a company will have to pay back a pre-agreed set amount of money to the investor(s) at pre-agreed intervals. This is in contrast to the variable nature of returns on equity.

'Risk' can be defined, in this context, as the risk of non-payment of the debt from the company to the investor(s). One potential measure of the risk of non-payment is the rating on the company's debt, provided by credit ratings agencies. Therefore, one way to calculate a company's debt premium is to consider the rating(s) of its debt and then take market data on spreads on bonds with this same rating. For companies which do not have listed bonds, (as will be the case for IW in its initial years of establishment), and which are not rated, the regulator can make a reasonable assumption about the rating that they might have were they to be rated, based on other similar companies, such as other water utilities.

The CER proposes to use this process of comparison when estimating a cost of debt for IW.

### ***The cost of equity***

The cost of equity can be described as the rate of return that an investor expects to earn when investing in shares of a company. This return is made up of the dividends paid on the shares invested and any increase, or decrease, in the market value of the shares invested. As IW is, and is expected to continue to be, a publicly owned regulated company that does not issue to third parties (quoted or non-quoted) shares, the CER needs to establish a method for estimating its cost of equity. This will enable the full calculation of the required rate of return. There are a number of methods to do this. They are:

- (1) Measuring comparative returns in 'equal risk' industries, nationally or internationally. However, there are a number of subjective considerations that need to be taken into account with this methodology, such as equating the 'risks' of IW (a new publicly owned water utility operating in Ireland) with another company. Another difficulty in using the comparative returns approach is allowing for differences in the cost of capital as a result of different risk factors, such as the regulatory environment.

Nevertheless, longer-term trends in the returns to industry generally, at the national or international level, may be useful as an indication of the magnitude of the real cost of capital (i.e. a benchmark for the regulator), even if the adjustment for the specific industry risk factors is more judgmental. The level of subjectivity implicit in this model means that the CER does not propose to use it.

- (2) The Dividend Growth Model uses expectations for future dividends deriving from equity placed in a company to calculate the cost of equity. The method is popular among regulators in the US. However, the projection of dividend returns is highly sensitive to assumptions made by the regulator around growth rates and the required return. It is also not practical for valuing companies that don't have a publicly issued share value, such as IW. Therefore, the CER does not propose to use this model.
- (3) The Capital Asset Pricing Model (CAPM) provides that the cost of equity should give shareholders a risk premium above the risk-free return according to a company's systematic risk, i.e. the inherent risk of a company operating in a market. This premium (known as the 'Beta') depends upon whether the return to that company is more or less risky than the market return of a similar company operating in a similar industry.

The CAPM is a forward-looking model, that is, it is intended to model future rather than historic returns of a company. It is by no means a perfect model - approaches to estimating key parameters of the

methodology can be contentious and historic values of key parameters may not reflect future values.

However, the CAPM is used by the CER in deriving the required rate of return for the Irish energy network companies and is used by regulators internationally in countries such as the UK and Australia. It is also well understood by investors globally, investors who IW will ultimately look to source funds from at some point. This understanding of the CAPM should, in turn, promote predictability in the regulatory framework. This, as noted above, is expected to have positive effects on customer bills and welfare. It is on this basis that the CER proposes to use this model for determining the cost of equity.

### ***Gearing of the regulated company***

In calculating a WACC estimate, it is necessary to make an assumption about the gearing level of the company, i.e. the ratio of debt to equity in the company. This will allow the regulator to know the weight that should be placed respectively on the cost of equity and the cost of debt.

The logic of the revenue cap RPI-X framework is that, in principle, the CER should be aiming to identify the WACC of the regulated company itself. In other words, the CER should be concerned with allowing an effective return on the assets in the RAB, rather than the returns to individual stakeholders in the regulated company. The CER should not be concerned with the allocation of the allowed return between equity holders (i.e. the Government) and debt investors. The CER is not in general concerned with the structure of the company's balance sheet, other than ensuring that IW is not highly geared, which could lead to financial distress and inability to make the required level of investment. Nevertheless, the key issue for the regulator to consider is whether the actual or optimal level of gearing should be used in the WACC calculation.

It is the CER's objective to allow the regulated business to recover from customers only the required cost of finance that is based on an assumed target or 'optimal' level of gearing. Generally, regulators (including the CER for the energy networks) have tended to use an optimal or target approach. The justification being that if the actual gearing of the regulated company is non-optimal which results in its cost of capital being raised, that extra cost should not be passed on to customers through higher bills.

Therefore the CER is proposing to assume an target/optimal level of gearing in the WACC calculation, as opposed to the actual gearing of the utility.

### ***The treatment of tax***

There are two approaches to incorporating tax requirements into the allowed WACC of the regulated company. The regulator can either allow a pre-tax WACC or a post-tax WACC. A pre-tax approach allows the regulated company to earn a return out of which to settle tax expenses. In a post-tax approach taxes are modelled separately from the return (WACC) as a cost item in the allowed revenues of the regulated company. A post-tax WACC

allowance would require detailed analysis by the CER of the specific tax requirements of the utility, which may shift from year to year.

Therefore, the CER is proposing to use the pre-tax WACC approach because it is a transparent and stable approach – the Irish corporation tax rate of 12.5% is known from the outset of the regulatory framework.

#### **4.9 The treatment of depreciation**

An allowance for depreciation within allowable revenues recognises the need on the part of the regulated business to recover the expenses incurred in the purchase of the asset over its economic life. This depreciation charge, made in the allowed revenues, is derived from a depreciation methodology applied to the assets in the RAB of the regulated company.

An objective of depreciation within the regulatory framework is that it be set to ensure that the assets are not stranded in future reviews. In the interests of regulatory certainty, the depreciation methodology applied to assets in the RAB should not be varied ex-post. This would undermine incentives and create uncertainty about the recoverability of future investments.

There are a number of depreciation methodologies that could be applied to assets contained in the IW RAB. However this paper will focus on the discussion between what is called ‘accounting’ depreciation and ‘economic’ depreciation. It should be noted that in a regulated monopoly the selection of a depreciation methodology does not affect the recoverability of the capital invested, only the rate at which the capital is recovered.

What this means is that the rate of depreciation does not affect the distribution of income between customers and the owners of the regulated company, only its distribution between present and future customers (i.e. how much of the asset is paid for by the water customer of 2016 versus how much is paid for by the customer of 2026).

##### ***Accounting Depreciation***

Accounting depreciation is the simplest form of calculating the appropriate depreciation charge to be included in the allowed revenues of the regulated company. Accounting depreciation can generally be broken down into ‘straight-line’ depreciation or ‘accelerated’ depreciation.

Straight-line depreciation involves decreasing the value of assets by an equal amount over the lifetime of that asset. The amount that the asset’s value is reduced by is constant and is calculated by dividing the gross asset cost by its asset life. For example, say a regulated company purchased an asset for €1000 and the asset was expected to last 5 years. Under the straight-line approach the depreciation charge per year would be €200 ( $€1000/5$ ) and the Net Book Value (CAV) of the asset would decrease by €200 a year until the value of the asset reaches zero (i.e. after year 5).

Straight-line depreciation is considered most appropriate where the function of the assets remains generally constant over the lifetime of the assets (e.g.

cables delivering electricity to a house, pipelines transporting gas around the country, a pipeline transporting water from a lake to a treatment facility).

Accelerated depreciation allows for greater depreciation charges in the earlier years of the life of an asset (as opposed to equal amounts under straight-line). It can be employed by a regulator where the asset is expected to provide more value (or productivity) to the customer in the early years of its life. This could mean that it's more appropriate to apply a depreciation charge that accurately represents the profile of this productivity.

There are a number of ways to employ accelerated depreciation. One is to shorten the accounting life of the asset, even though its economic life stays the same. For example, take the scenario above where the regulated company purchased an asset for €1000 which is expected to last 5 years. This would normally lead to a depreciation charge under its economic life of €200. Under this form of accelerated depreciation the regulator may allow the asset to be depreciated over 2 years, which results in a depreciation charge of €500 in Year 1 and Year 2 with no charge thereafter.

Another method of accelerated depreciation is to calculate the depreciation charge by applying a fixed percentage value to the remaining Net Book Value of the asset in any given year – this is also called the declining balance method. For example, take the scenario above where the regulated company purchased an asset for €1000 and the accelerated depreciation value is 50%. The depreciation charge in year 1 is €500 (50% of €1000) and Closing Asset Value (CAV)/ Net Book value is €500 (€1000 - €500), the depreciation charge in year 2 is €250 (50% of €500) and the CAV after Year 2 is €250 (€500 - €250) etc., where the CAV of the assets gets ever closer to (but never reaching) zero.

The table below details the depreciation charge and the CAV for these three forms of accounting depreciation.

Under the fixed percentage form of accelerated depreciation the Net Book Value of the asset does not reach zero for a considerably longer time than the other two approaches. Assuming that the asset is retired from use at the end of Year 5, the undepreciated cost of €31.25 will be written off the books of the regulated business at the time of disposal. If the asset is used beyond the estimated life of five years, depreciation will be continued at the 50% per cent rate on this undepreciated cost and a depreciable charge will accrue. As noted above when the declining-balance method is used, the depreciable charge accruing will never cease (i.e. the CAV of the asset will never get to zero), as long as the asset continues in use.

Table 2: Depreciation approaches to asset of value €1000

After Year	Dep. Charge Straight Line	CAV Straight Line	Dep. Charge Accelerated	CAV Accelerated	Dep. Charge Accelerated Dec. Bal.	CAV Accelerated Dec. Bal.
1	200	800	500	500	500.00	500.00
2	200	600	500	0	250.00	250.00
3	200	400	0	0	125.00	125.00
4	200	200	0	0	62.50	62.50
5	200	0	0	0	31.25	31.25

### ***Economic Depreciation***

Economic depreciation can be considered as the decline in the market value of an asset over time. If the price of an asset is stable economic depreciation will generally result in a higher allocation of costs during periods where the asset is subject to full utilisation, than during periods when it is not. Therefore, to calculate the depreciation charge under this approach the regulator must take a forward-looking view on the future utilisation of the asset, which includes its output, the operational costs associated with its usage and the revenues earned from its usage.

In the calculation by the regulator the economic life is defined as the period over which the asset has a positive economic value. This value is eroded over time due to its usage and technical progress and eventually reaches an economic value of zero due to obsolescence, wear and tear, demand growth etc.

Economic depreciation requires the regulator to make assumptions and quantify the value of future revenues and costs associated with the asset. These estimates can be subject to forecasting error and revision which make them difficult to calculate. The administrative task associated with deriving these estimates may be overly burdensome for the regulator. Essentially, every asset or class of asset in the RAB has its own unique economic value and therefore every asset requires its own unique economic depreciation calculation. In addition, economic depreciation may yield the same results (in terms of deriving a depreciation charge that reflects the asset's economic life) as say straight-line depreciation.

### ***Use of straight line depreciation***

Based on the above discussion the CER is proposing to apply a straight-line depreciation methodology to assets in the IW RAB. Firstly, it is uncomplicated, transparent and a methodology which is simple to apply to assets included in the IW RAB. It is considered that this methodology largely fits the key principles of the regulatory framework identified in section two.

Economic depreciation, although more reflective of the actual economic value of the assets in the IW RAB, is far more difficult to implement, administratively burdensome and subject to change. It would mean that the CER would have to derive an economic value for every asset included in the IW RAB (e.g. a pumping station built in Roscommon would have a different economic value to a pumping station built in Cork). Such an approach would not promote a stable or predictable regulatory framework.

Secondly, due to the nature of the design life of water services infrastructure assets and the consistent usage of these network assets, a straight-line method would be a reasonable representation of depreciation for them. As a result the CER considers that the benefits of straight-line, in terms of transparency and ease of understanding, outweigh the positives of accelerated depreciation.

Finally, the CER needs to consider the interests of both the present and future customer. A fair balance needs to be struck between these two sets of customers who currently, and will in due course, use the IW water services infrastructure.

The function of the assets in the IW RAB will remain generally constant over the lifetime of the assets (acknowledging the effects of wear and tear), i.e. the pipe built in 2016 connecting the lake to the water treatment facility will perform this function in 2016 and presumably in 2026. Therefore, the CER considers that fairness is promoted across both the present customer and future customer for the service provided by IW water services infrastructure by implementing a straight-line methodology to the calculation of depreciation.

### **Asset lives**

The IW RAB will consist of numerous types of assets such as pumping stations, distribution pipes, treatment works, IT, buildings etc. These assets will have different expectations around the length of time that they provide an economic value to the water customer. This length of time can be referred to as its 'asset life'.

For example, a water distribution pipe would be expected to have an economic life up to 100 years. A computer hardware/software can become obsolete quite quickly in the face of IT developments and may only have an asset life of 5 years.

Regulators generally categorise assets in the RAB in terms of their assets lives. There is no uniform approach to this determination, some regulators may apply an asset life of 5 years to the computer assets, and others may apply 7. This paper does not propose to define the asset lives of the various water services infrastructure assets – that will be consulted upon with stakeholders at a later date. The purpose here is to identify the principle upon which this determination will be made – the use of asset categories within the IW RAB and the application of average lifetimes to the assets contained in those categories.

### **4.10 The use of revenue-based incentives**

The use of an RPI-X framework will provide the utility with an incentive to pursue efficiency gains in the operation of its business. Separate to this framework the CER may also pursue a specific performance, based revenue-incentive mechanism in relation to certain activities under the control of the utility.

Performance based revenue-incentives are a key component of revenue control regulation. They complement and enhance the requirement for a regulated business to efficiently manage costs by ensuring that the business also has an incentive to improve its performance in the delivery of its responsibilities, particularly with regard to quality, efficiency and timeliness of service delivery to the customer. Nevertheless, the success of an incentive regime is contingent on the correct balance being struck between risk and reward for the utility. There is no point in a regulator setting an incentive which is either overly rewarding to the utility (which exposes the customer to unnecessary costs) or overly punitive (which threatens the financial viability of the utility). Incentives with fixed boundaries for risk and reward (i.e. a cap and collar approach) protects against such outcomes.

Incentives around performance can take many forms. For example, the CER may look to reduce leakage rates to a specific level or target the number of water meters installations per quarter. If the utility reaches the specific targets, or reaches above a certain threshold set by the CER, it will receive additional revenue in the following year's allowed revenue. Alternatively, if the utility fails to meet these targets, or falls below a certain threshold set by the CER, penalties (i.e. a reduction in the following allowed annual revenue) may occur.

The CER has to date (in the energy sector) placed performance based revenue-incentives on the energy companies. The CER considers that a similar approach is applicable to the water services sector.

This paper does not propose to define the specific performance based revenue-incentives or their parameters for IW – again that will be consulted upon with stakeholders at a later date. The purpose here is to identify the principle upon which these incentives will be constructed - to improve IW's performance in the delivery of its responsibilities, particularly with regard to quality, efficiency and timeliness of service delivery to the water customer. They will be developed by the CER to complement the RPI-X framework.

#### **4.11 The calculation of maximum allowable revenues**

There are a number of ways in which to calculate the maximum revenues allowable at the start of the revenue control for the forthcoming period - the accruals approach and the cash-flow approach being the main two:

- (1) The accruals approach calculates the maximum allowable revenues over the control period as the sum of opex, the depreciation charge on the assets contained in the RAB and the return on capital employed in the business.
- (2) The cash-flow approach calculates the cash requirements for the utility over course of the revenue control period. This cash requirement essentially becomes the maximum allowable revenues that the utility can recover through charging.

It is calculated in two stages. The first stage is to derive the net present value (NPV) of the utility's cash requirements for its opex and capex over the revenue control, using the allowed WACC as the discounting factor. The second stage is to calculate the change in the NPV of the RAB over the course of the revenue control. This is the cash requirement to fund investment in the RAB over the period. It is calculated by subtracting the discounted value (again using the allowed WACC as the discounting factor) of the closing asset value of the RAB at the end the revenue control from the opening asset value of the RAB at the start of the revenue control.

Both are added together to get the total cash requirement of the utility in NPV terms.

The cash-flow approach has become the standard approach for regulators, largely because it provides the most accurate measure of the amount of cash required to allow the utility to finance its activities over the course of a revenue control. The CER has used this approach in the energy sector to date and proposes to use it for determining the maximum allowable revenues within a revenue control for the water services sector.

The final step for the regulator in applying a revenue cap (RPI-X) framework is the choice of a formula to determine how the utility's tariffs can be adjusted from year-to-year within the revenue control. The chosen formula must allow for the NPV of the utility's revenue control's cash requirements (derived under the cash-flow approach above) to equal the NPV of the maximum annual revenues.

#### **4.12 The form of the tariff adjustment**

There are two main approaches to the tariff adjustment calculation; the tariff basket approach and the revenue-yield approach.

- (1) The tariff basket approach works by limiting the weighted average of a utility's tariffs to the percentage increase in the revenue control index (RPI) less X (which is determined by the CER). This has the advantage of being simple: the utility only has to demonstrate that its proposed tariff increases are below the limit set by the formula.

The main drawback is that the utility's tariff structure may become too rigid, which in turn could harm customers. For example, this type of formula does not easily accommodate the introduction of new tariffs. A water utility would not be able to introduce new, more innovative tariff structures, which could benefit a particular category of customers without negotiating changes to the formula with the regulator.

The CER would also need to set the weights of the tariffs in the formula. If the utility believes that the weights are 'right' and irrevocably fixed, it will have an incentive to choose an efficient set of relative tariffs structure. However, if the weights are out of line with the particular service provided by the utility then the utility may have an incentive to

concentrate price increases on particular tariff types. The CER does not consider this to be in the interests of the water customer as a whole.

- (2) The revenue-yield approach works by limiting the maximum revenue a utility can earn from tariffs in a particular year of a revenue control. There are two stages to the revenue-yield approach.

The first stage is the profiling of maximum annual revenues by the regulator at the start of the revenue control. Maximum annual revenues, at this stage, is simply the product of the demand for the services and the average unit price of that service, as per the below formula.

$$MAR_t = Demand_r \times AUP_r$$

Where:

$MAR_t$  = The maximum annual revenue in Year t of the revenue control;

$Demand_r$  = The demand for the service in Year t of the revenue control; and

$AUP_r$  = The average unit price of the service in Year t of the revenue control.

Forecasting of demand for the service will rarely equate exactly to actual demand, especially over the entire length of the revenue control (e.g. 5 years plus). If the regulator ignores year-on-year changes in demand for the service the utility may under- or over-recover on the maximum allowed revenues set by the regulator at the start of a revenue control. The regulator needs to include a correction factor (or K-factor) that has the effect of reducing (or increasing) the utility's maximum allowable revenues in one year if it over-recovers (or under-recovers) in the previous year.

As a result, the second stage of the revenue-yield approach is for the regulator to adjust the maximum allowable revenue within each year of the revenue control, to take account of changes in demand and other adjustments unforeseen at the start of the revenue control.

The CER proposes to adopt the revenue-yield approach. One of its advantages is that the CER does not need to specify a list of tariff schedules, or tariff amounts, in setting the revenue control of IW.<sup>10</sup> The utility would be free to change the structure of tariffs or introduce more innovative tariff

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<sup>10</sup> The principles to be applied in developing the various water services tariffs are a separate matter, which will require CER approval. However it will be consulted upon by the CER at a later date.

structures during the revenue control period subject to the appropriate regulatory approval. This would be proper so long as the total revenues recovered from its regulated activities remained within the maximum level specified by the revenue-yield formula.

However, under this approach the utility has to set and publish its tariff schedule in advance of the new year of charging. It can only check that the revenues raised are within the control only after the end of that particular charging period year. Nevertheless this can be addressed by the inclusion of a k-factor in the following year to take account of under or over recoveries. This also shows the importance of effective working capital operation from year-to-year.

The revenue-yield approach (including the application of a k-factor) has been used to date by the CER in the energy sector. It is acknowledged that it is more complicated to design with assumptions around demand and unit price required at the start of the revenue control. However, the CER considers that a revenue-yield approach would best meet the principles identified in section 2; it provides stability and predictability to both the water customer and the utility through the application of the 'k-factor'.

In addition, it protects the interests of all customers by allowing for innovation in tariff structure during the revenue control period.

#### **4.13 The CER's position**

In setting the revenue cap (RPI-X) framework for IW the CER must estimate a level of revenue that would be sufficient to finance an efficient, well-run business. This allowed revenue must also include an adequate return on the capital employed in the business so as to allow continued efficient investment in the water services infrastructure. The above section has detailed the main areas for consideration in constructing the RPI-X framework and has arrived at a number of positions. The CER is proposing to:

- (1) Use benchmarking as an aid in determining the efficient levels of operational expenditure for IW, along with efficiency trends and advice from industry experts. It is also proposed that the CER will engage in a 'line-by-line' approach in determining the respective amounts of each operational expenditure item.
- (2) Use the IHC approach to valuing the assets being added to/within the IW RAB. The indexation factor proposed is general inflation.
- (3) Recommend that the opening IW RAB is set taking into account the charges for customers, the capital investment requirements and the planned equity investment.
- (4) Require IW to implement effective short and long-term planning of investment in the water services infrastructure, investment that is correct, appropriate and fully justified. The CER is proposing to

examine variances between estimated and actual capex during the revenue control review process.

- (5) Require that direct customer capital contributions and/or grants (but not government equity used for the purposes of funding capital projects) for the build of efficient assets are subtracted from gross capital expenditure figures in the relevant year.
- (6) Use the CAPM in deriving the cost of equity input of the WACC calculation. An assumption will be made on the optimal level of gearing in the WACC calculation, as opposed to the actual gearing of IW. It is also proposed that the WACC calculation is made on a pre-tax (real) basis.
- (7) Use a straight-line approach to the calculation of depreciation. Asset lives will be based on the average economic asset life of the asset category in question.
- (8) Use performance based revenue incentives to improve IW's performance in the delivery of its responsibilities, particularly with regard to quality, efficiency and timeliness of service delivery to the water customer.
- (9) Use the cash-flow approach in the calculation of the maximum allowable revenues of IW.
- (10) Use a revenue-yield approach to adjust tariffs within the revenue control period.

**Questions for respondents:**

Q6. Do you agree with the CER's proposed approach in each of the following areas?

The treatment of operational expenditure;  
The approach to setting the opening asset value of the IW RAB;  
The approach to valuing assets being added to/within the IW RAB;  
The treatment of capital expenditure;  
The capitalisation policy for adding assets to the IW RAB;  
The estimation of a reasonable rate of return on assets in the IW RAB;  
The treatment of depreciation for assets in the IW RAB;  
The use of specific revenue-based incentives;  
How maximum allowable revenues are calculated; and  
The form of the tariff adjustment.

If not, then please explain why for each particular section.

Q7. Are there any other approaches to each of the areas detailed in this section that the CER has not considered? Please detail why they could be considered superior to this proposed CER approach.

## 5 Interim, Transitional and Other Issues

This section discusses matters that need to be addressed in the short-term, but would not be expected to be enduring features of the regulatory regime.

### 5.1 Interim Revenue control

As noted in section 4 a one-year interim revenue control for the electricity network utilities was implemented in 2000. With the CER being established as the economic regulator in mid-1999 this decision was made so as to allow the CER to engage in a full scale review of appropriate costs for the first five year revenue control. This first five-year revenue control (known as PR1) for the electricity network ran from 2001 to 2005.

Given the current structure of the public water services sector and the changes expected in the coming years, there is a need to consider whether such an 'interim' process is required for the water services sector. The Water Service Act 2013 states that the introduction of water charges for household customers 'will not commence before 1 January 2014'.<sup>11</sup> Further to this, on 13 June 2013 the Department of Finance published a revised Memorandum of Understanding (MoU) between the Government and the Troika.<sup>12</sup> The revised MoU stated that 'the authorities will announce a definitive time-plan for the introduction of domestic water charges in the fourth quarter of 2014'. The implication of this statement is that domestic water charging will now be introduced on 1 October 2014, at the earliest.

The CER understands that it is Government policy to introduce independent regulation coincident with the introduction of domestic water charges, i.e. 1 October 2014. This paper marks the beginning of the process of developing the regulatory framework for IW. Once the principles and methodologies have been determined, the next step is for the CER to determine an allowable revenue for IW to recover from customers.

In addition, the CER will need to recognise the recoverability of initial efficient expenditure incurred in the establishment phase of Irish Water and the role out of water meters across Ireland. The CER will also need to recognise the scope for Ministerial direction in this regard, as this will influence proposals on any Interim Revenue control.

The process for determining an allowable revenue for a multi-annual revenue control takes a number of years to complete, starting with the utility developing its capex and opex plans, submitting them to the regulator, who then reviews them and publishes its findings for consultation and then makes a final decision on the matter. The CER believes that there will be insufficient time for either IW or CER to undertake a normal multi-annual revenue control review in 2013/2014. Therefore the CER proposes to implement an initial shorter revenue control period of up to two years depending on the date

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<sup>11</sup> Please refer to the following link [here](#) for a copy of the Act.

<sup>12</sup> Please refer to the following link [here](#) for a copy of the revised MoU on the Department of Finance website.

charges are to be introduced. This will also meet the requirements of the DECLG Implementation Strategy.<sup>13</sup>

## **5.2 Establishment of an Opening RAB**

As discussed in section 4 setting the Opening IW RAB is a significant decision. Given the impact this will have on the Exchequer this is a matter that will be determined by Government. The CER sees three possible options:

1. Set the Opening IW RAB later: In order to understand the consequences of setting a particular level of RAB, a robust estimate of future capex requirements and the level of Exchequer funding is needed. This may not be available until later (i.e. after the asset transfer date). It may therefore be appropriate to wait until better information is available. In the meantime, the cost of borrowing and principal repayments would be included in the allowable revenues.
2. Set the Opening IW RAB based on future funding requirements: This option follows from option 1 above. Once sufficient information is available the Opening IW RAB is set based so as to finance a certain profile of debt and equity to achieve a level of future capex.
3. Set the Opening IW RAB based on IW expenditure and liabilities transferred from the Local Authorities: This option entails setting the Opening IW RAB based on the recent expenditure incurred by IW in setting up the utility and any liabilities transferred from the Local Authorities (up to the date of asset transfer). This option would effectively value the existing water infrastructure equal to the liabilities transferred. Any inability to raise debt would have consequential impacts on the level of equity needed and/or capex undertaken.

Option 1 and 2 envisage that the Opening IW RAB is set when more information is available and ensures that the consequences of setting a particular opening RAB value can be modelled with some degree of certainty. The downside to this course of action is that application of the enduring model is delayed, potentially delaying IW from source funding on the debt markets. Option 3 allows the opening RAB to be set from the start, so it has the benefit of implementing the enduring model from the start. However this approach may lead to a longer period where Exchequer funding is required to support capital investment.

It needs to be borne in mind that the larger the Opening IW RAB value, the larger the level of revenues accruing to IW, which in turn will ultimately mean higher bills for customers and/or Government operating subvention. Therefore, it is important that the correct balance between ensuring customers are protected (to the greatest possible extent) and the financeability of IW's investments, is met.

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<sup>13</sup> Please refer to the following link [here](#) on DECLG website.

The CER's current position is that the setting of the Opening IW RAB is likely to require decisions by Government and/or Ministerial Direction to the CER (to the extent that this is provided for in future legislation). It will also require significant engagement with various stakeholders, including IW. Modelling will need to be undertaken to estimate the impact of all three options on the water services customer and IW revenue stream before a decision is ultimately made.

### **5.3 Interim Arrangements - Capex**

There is currently a water services capital investment programme being undertaken by the Local Authorities. At the time of transfer of responsibilities from the Local Authorities it is expected that IW will take over all decisions related to this capital investment programme (and payments under contracts, where decisions have previously been made by Local Authorities). Prior to the formal handover from the Local Authorities to IW, through enactment of legislation, the CER expects that IW will have carried out a review of these capital programmes to ensure that all investments represent value for money and consistent with its view of the strategic needs and priorities. This review will form the basis of its capex submission to the CER.

The expectations on stakeholder and customer engagement required to be undertaken by IW before submitting a capital investment programme to the CER are set out in section 4. As outlined in section 5.1 above the CER does not believe that there will be sufficient time to undertake all the normal processes for the first interim revenue control and therefore it is expected that IW will have a limited stakeholder engagement process. Given that these capital investment programmes have already been through a rigorous assessment by DECLG it is expected that this is not a significant deficit to the process and the majority of projects initiated by the Local Authorities will continue/be completed under IW.

### **5.4 Transitional Arrangements - Opex**

The CER understands that the programme for water sector reform envisages that ownership of the water services infrastructure and responsibility to provide water services will transfer from the Local Authorities to IW. The CER has been advised by DECLG that legislation will provide for the Local Authorities to provide services to IW under service level agreements (SLAs) for a period of time. Effectively the Local Authorities will provide the 'service on the ground' for a defined period reflecting the transition, while also empowering Local Authorities to continue to engage in such agreements with IW in the future.

While there are obviously benefits to these arrangements – there is no alternative in the transition phase given the need to provide a continuous service to customers. However, the CER has concerns that if these arrangements were extended indefinitely that they would not facilitate the achievement of significant efficiencies, which are anticipated from this reform programme and the model outlined in the PWC report.<sup>14</sup> Nevertheless, our

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<sup>14</sup> Please refer to the following link [here](#) on the DECLG website.

understanding, with respect to the regulatory treatment of the SLAs, is that they are an internal cost of IW, allowing IW to manage these costs in an efficient manner.

The CER further understands that a framework for SLAs has been agreed under the auspices of the Irish Water Consultative Group, which advocates the balancing of certainty for parties with flexibility to reflect the evolving regulatory framework. Therefore, in support of this SLA framework, the CER proposes to advise that the relevant legislation provides a flexible contractual structure between IW and the Local Authorities, which allows the CER to set challenging targets for efficiency and service. After the transition period IW should be given a free hand to determine how these services are procured - one of the options would be to issue a public tender to which the Local Authorities can participate in.

### **5.5 Exchequer Funding**

The CER notes the provisions of the Water Services Act 2013 concerning the potential guarantee of borrowings of IW by the State. The CER believes that IW will require, in addition to this potential guarantee, direct financial support and investment from the State. This may be through borrowings from State agencies (such as the NTMA or NPRF), equity investment, or direct financial support, or most likely a combination of all three.

While State support for IW will be very important in the initial stages the CER believes that a plan needs to be put in place where over a defined period IW becomes less reliant on State support and can fund its activities from customer charges and the international debt markets. While these are entirely matters for the Government budgetary process, the CER makes the following observations in relation to the interaction between Government funding and the regulatory process

#### ***Capital Investment***

The CER understands that there is significant capital investment needed in water services infrastructure. While in the medium to long-term the CER expects that IW will source a large portion of its funding needs in the international capital markets, in the short-term it is expected that State support will be required.

Obviously the more certainty IW has with respect to its funding the better it will be able to plan its investments and the sooner it will be able to find other sources of funding. The current water investment programme is specified in the Government medium term investment strategy entitled “Infrastructure and Capital Investment 2012-2016”<sup>15</sup>, which covers a five year investment cycle. Development by Government of a similar multi-annual capital investment budget, to cover the period 2016 to 2021, would be beneficial.

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<sup>15</sup> A copy of the Infrastructure and Capital Investment 2012-2016 programme can be found [here](#).

### ***Financial support***

One of the goals of this reform programme, as set out in the DECLG Implementation Strategy document of October 2012,<sup>16</sup> is for Irish Water to be able to access third party finance with the objective of becoming self-financing in time. It is expected that these reforms will reduce the costs of delivering the water services. However, the reform programme itself will drive some additional costs before efficiency savings can be realised. Also, while the CERs expect that there will be some quick wins, such as economies of scale in procurement, it will take some time before the full benefits of reform are realised.

Therefore the CER believes that there is a case for Exchequer support for IW for an interim period, to cover areas like operational costs and working capital requirements. This support would be phased out as efficiency savings are delivered and improvements in service are achieved.

#### **Questions for respondents:**

Q8: Do you agree with the need to introduce an interim revenue control? If not, then please explain why.

Q9: Which of the three approaches to the initial valuation of the IW RAB do you consider most appropriate for the Irish water services sector? Please explain your reasoning.

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<sup>16</sup> Please refer to the following link [here](#) on the DECLG website.

## 6 Summary and next steps

Under Section 27 of the Water Services Act 2013 the remit of the CER was expanded to include a function to prepare to become the independent economic regulator for the public water services sector. The Act also enables the CER to advise the Minister on matters related to the economic regulation of the public water services sector in Ireland.

Part of the preparation includes the CER creating a regulatory framework for IW. The regulatory framework must have as its primary goal the protection of the interests of the Irish water services customer. The purpose of the paper was to examine how this economic regulatory framework should be developed.

This framework must, among other things, ensure that only reasonable and appropriate costs incurred by IW are charged to customers. Furthermore IW, as the single water utility in Ireland, must have a strong incentive under the framework to improve service and reduce costs from the outset of regulation.

The CER believes that the use of an incentive based (RPI-X) revenue cap framework will facilitate a stable, predictable, sustainable framework, which incentivises IW to seek cost efficiencies in the operation of its business. This framework will also allow for the sharing of efficiencies with customers and progressively reduce costs in IW.

This consultation process will allow the CER to formulate advice for submission to the Minister on the establishment of a regulatory framework for the public Irish water services sector. This advice will help the Minister to develop policy around the broader subject of regulation of the provision of water services in Ireland.

### 6.1 Summary of Specific Proposed Recommendations

As outlined in this paper, the CER proposes to introduce an incentive regulation model for the public Irish water services sector, which supports the stable legislative framework established by the Government. The CER considers that this will, amongst other things, provide a firm platform for IW to undertake its activities, ultimately to the benefit of the water services customer.

There are a number of specific recommendations that the CER proposes to make to the DECLG. This is in addition to the questions posed in the paper (listed in Appendix B below).

The first concerns the opening asset value of the IW RAB. The CER currently foresees three options in the area. However, fully informed CER advice is dependent on inputs from certain parties, including IW. This includes figures for the future Capex programme and the level of Exchequer funding to be provided over the next couple of years for it. When these figures are available the CER will be in a more definitive position to provide advice in this area.

The second piece of advice concerns the financial support of the water services sector by the Exchequer. To help re-enforce the stable legislative and regulatory framework established for the sector this Exchequer support needs to be firmly committed to, clearly signalled in advance and focused on areas where it is required, such as the IW capital investment programme.

Finally, the CER proposes to advise, in support of the agreed SLA framework, that the relevant legislation provides a flexible contractual structure between IW and the Local Authorities, which allows the CER to set challenging targets for efficiency and service. Such a provision would allow IW to seek efficiencies, which again would be to the benefit of the Irish water services customer.

## **6.2 Next Steps**

The CER will review the responses received to this consultation and meet with stakeholders, where requested.

After this review the CER will provide an advice document to the Minister as per Section 27 of the Water Services Act 2013.

## **6.3 Responding to this paper**

Responses to this consultation paper should be submitted by close of business Friday 29 November 2013 and addressed to the following in the CER:

Jamie Burke  
Analyst – Water Regulation  
Commission for Energy Regulation  
The Exchange  
Belgard Square North  
Tallaght, Dublin 24.

Email: [jburke@cer.ie](mailto:jburke@cer.ie)

Telephone: (01) 4000800

## Appendix A Sharing efficiencies under RPI-X

Section 3 of the paper described the rationale for introducing incentive-based regulation. An important part of the approach is the set of rules determining how efficiency gains are shared with customers and when.

The CER believes that it is important to clarify the rules for sharing efficiencies as part of a credible long-term regulatory framework. While the prospect of extra profit in return for increased efficiency is a key part of the logic of RPI-X regulation, there is no clear theory or evidence behind how much above normal profit has to be left with the regulated utility to generate the required effort to reduce costs. Accordingly, judgement is required about the proportion of profit which can be left to accrue to the regulated utility, without risking unacceptable rates of profitability. Such unacceptably high levels could undermine the stability of the regulatory framework.

Once the appropriate judgements have been made, it will be important for the CER to develop rules for implementing them. These rules should achieve the desired level of profit sharing by means which are objective (i.e. they are based on observable data and statistical methods) and replicable (i.e. they are liable to be used for subsequent revenue controls). Broadly speaking, the sharing of cost savings comes in two parts:

- through an X-factor, which represents anticipated efficiency gains (cost savings) shared with customers during the current control period; and
- through the return to customers in the subsequent control period of unanticipated efficiency gains made by the regulated business in the current control period.

Clarifying the rules for sharing gains with the water customer at each review is an important step in protecting their interests and creating incentives for the regulated utility to find efficiencies.

### A.1 Sharing during the revenue control

In a competitive market, prices are set by external forces and companies are forced to operate efficiently to cover their costs and make a return on capital. The X-factor shares efficiency gains with customers during the review period. It could therefore be argued that the value for X for a regulated business should be set at the estimate of the total feasible efficiency gains, leaving no opportunity for above normal profits to be earned by the utility. Businesses will have an incentive to ensure they achieve efficiency gains, or they will not earn their cost of capital or meet their operating costs.

The problem with this approach is that it would be difficult for the CER to accurately forecast the total feasible efficiency gains that an individual business could make over the course of a revenue control. Pitching X at too high a level would expose the utility to the risk of not achieving a rate of return equal to or above its cost of capital. This uncertainty would discourage

investment in the water services infrastructure, which would ultimately not be in the interests of the water services customer.

On the other hand, pitching the level of X too low could also affect the interest of the water customer. If the utility was to earn very large profits during the revenue control period, there would be substantial pressure to share the gains with customers before the next review. This may take the form of re-opening the revenue control, or introducing a windfall tax on profits. The regulatory framework loses credibility to the extent that there is an actual or perceived risk of profits being removed retrospectively – such a process would promote uncertainty on the part of the regulated utility. This uncertainty would discourage investment in the water services infrastructure, which again would ultimately not be in the interests of the water customer.

In addition, over the longer term, assuming the regulatory framework promotes incentives to make efficiencies, the regulated utility cannot be expected to make efficiency gains that are substantially and consistently above productivity gains in the economy as a whole. Therefore a general price index itself incorporates the broad efficiency gains in the economy (since general productivity gains will feed through to producer and consumer prices). So a positive X in the longer term implies that the efficiency of the utility will improve more rapidly than that in the economy as a whole. Singling out the utility from the economy as a whole is not considered to be a credible step in the establishment of a regulatory framework.

## **A.2 Sharing after the revenue control**

The CER considers it more appropriate to implement rules for sharing achieved efficiency gains in one control period with customers in the next revenue control period.

The general rule is that if the utility spends more than it is allowed; it bears the cost, unless there is a specific/identifiable development during the revenue control that was unforeseen at the time of its setting (e.g. a natural disaster trebling the input prices of chemicals used to treat water).

Equally, if the utility spends below what they are allowed during a revenue control period it can keep the surplus made in any one year for a rolling period where it can be shown that the surplus is due to efficiency gains and not forecast errors, windfall gains or the avoidance of expenditure to the detriment of the water services infrastructure. The result of this process is that customers benefit in the medium term by the progressive decrease in allowed opex at subsequent price reviews.

A rolling retention of surplus of say five to six years could be put in operation, so that the utility remains neutral as to when in the regulatory cycle those efficiencies are gained. The rolling element is important because without it the utility may be incentivised to wait until the end of the revenue control period to meet the level set by the regulator, even though it could have achieved these savings in say Year 3. The below example provides an illustration of this process for a five year rolling retention.

Table 3: Opex savings with rolling retention

	Year 1	Year 2	Year 3	Year 4	Year 5	Total Savings
Allowed Opex	100	98	96	94	90	
Actual Opex	100	98	92	92	90	
Efficiency Saving (Allowed minus Actual)	0	0	4	2	0	6

Table 4: Opex savings without rolling retention

	Year 1	Year 2	Year 3	Year 4	Year 5	Total Savings
Allowed Opex	100	98	96	94	90	
Actual Opex	100	98	96	94	90	
Efficiency Saving (Allowed minus Actual)	0	0	0	0	0	0

In both situations the utility knows at the start of the revenue control period it can achieve an Opex level of 92 by Year 3 and 90 by Year 5 of the revenue control period. With the rolling retention in place (Table 3) the utility is incentivised to achieve 92 in Year 3 as it is allowed to retain those savings for a period of 5 years after Year 3. Without the rolling retention (Table 4) the utility is not incentivised to push its opex below the allowance in Year 3, but wait until the end of the revenue control to meet the efficiency level set by the regulator.

The customer has benefited from the utility being incentivised to push its opex below the level set by the regulator as quickly as possible (i.e. in Year 3). In the following revenue control period the regulator will set allowed opex at a level which reflects the rolling retention and an efficient level of opex.

The CER has operated this process of sharing efficiency gains with the customer after the revenue control in the energy sector to date and proposes to apply this process to the water sector.

**Questions for respondents:**

Q10. Do you agree with the CER's proposed approach for sharing achieved efficiency gains in one control period with customers in the next revenue control period? If not, then please explain why.

## Appendix B List of questions

The CER has outlined a number of questions in each of the sections in this paper. It would be helpful, for the purposes of reviewing submissions, if respondents could format their responses to answer the questions posed. Additional commentary or supporting data from respondents is also welcome. This appendix provides a list of the questions above.

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*Q1. Do you agree with the proposed principles of the regulatory framework? If not, then please explain why.*

*Q2. Are there any further principles of a proper regulatory framework that the CER needs to consider / or principles that need to be removed from the above list? If so, please provide an explanation for inclusion/exclusion.*

*Q3. Do you agree with the CER's assessment of each of the proposed regulatory frameworks? If not, then please explain why.*

*Q4. Are there any advantages or disadvantages to any of the proposed frameworks that the CER has not considered? Please detail.*

*Q5. Do you agree with the CER's assessment that a revenue cap (RPI-X) framework should be put in place for the Irish water sector? If not, then please explain why.*

*Q6. Do you agree with the CER's proposed approach in each of the following areas?*

*The treatment of operational expenditure;  
The approach to setting the opening asset value of the IW RAB;  
The approach valuing assets added to/within the IW RAB;  
The treatment of capital expenditure;  
The capitalisation policy for adding assets to the IW RAB;  
The estimation of a reasonable rate of return on assets in the IW RAB;  
The treatment of depreciation for assets in the IW RAB;  
The use of specific revenue-based incentives;  
How maximum allowable revenues are calculated; and  
The form of the tariff adjustment.*

*If not, then please explain why for each particular section.*

*Q7. Are there any other approaches to each of the areas detailed in this section (section 4) that the CER has not considered? Please detail why they could be considered superior to this proposed CER approach.*

*Q8. Do you agree with the need to introduce an interim revenue control? If not, then please explain why.*

*Q9: Which of the three approaches to the initial valuation of the IW RAB do you consider most appropriate for the Irish water services sector? Please explain your reasoning.*

*Q10. Do you agree with the CER's proposed approach for sharing achieved efficiency gains in one control period with customers in the next revenue control period? If not, then please explain why.*