Information Paper

Water

Hunter Water Operating Licence Review Cost Benefit Analysis – Information Paper 2

25 February 2022

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders, past, present and emerging. We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

Contents

This information paper presents results from economic cost-benefit analysis on the proposed terms for Hunter Water's operating licence 2022-2027. The analysis follows the sequence of clauses in the Hunter Water operating licence. For each clause, the analysis considers the following questions:

- Where it is possible to vary or remove the licence condition, what is the counterfactual (ie, what would happen if this licence condition did not exist)?
- What are the economic benefits of having the licence condition (versus the counterfactual)?
- What are the economic costs of the licence condition (versus the counterfactual)?
- How do the benefits and costs compare? If it is possible to say, what is the quantum of any net benefit (or net cost)? If it is not possible to say, can we be confident that benefits exceed costs (or vice versa)?

Factual and counterfactual defined

A cost-benefit analysis compares the factual situation, in which a particular licence condition is in force to a different, hypothetical situation in which it is not. We refer to this alternative situation as the "counterfactual." It is important that the counterfactual is defined well enough to be able to quantify the costs and benefits it entails. It is essential that the counterfactual represents a state of the world that could actually exist and that would be likely to exist if the licence condition was not in force.

Benefits of licence condition

Benefits of licence conditions are usually experienced by the customers of the licensee or the general public (for example with environmental conditions). Quantifying these benefits is sometimes difficult, particularly if they relate to non-monetary values.

Costs of licence condition

Licence conditions usually impose costs on the licensee because the licence requires it to undertake certain activities or to refrain from undertaking certain others that it might prefer to do on commercial grounds. Activity costs or costs of foregone opportunities are usually able to be quantified with accounting data.

Comparison of benefits and costs

Provided that both benefits and costs of the factual, compared to the counterfactual can be quantified, the comparison can be expressed simply by subtraction (to obtain a net benefit, which would ideally be positive, but could be negative) or division (to obtain a benefit to cost ratio, which would ideally be greater than 1, but could be less than 1).

If benefits or costs cannot be quantified, then other techniques may be available.

1 Licence context

1.1 Objective

IPART has no discretion to adopt a licence objective that differs substantially from this objective.

1.2 Area of operations

IPART has no discretion to vary the area of operations.

1.3 Licence term

Factual and counterfactual defined

The licence term is 5 years. Counterfactuals include shorter or longer terms than this.

Benefits of licence condition

The main benefit of a shorter licence term is that it allows the licence to adapt to changing circumstances and take account of new information. It is very difficult to quantify this type of benefit.

In general, we expect that this benefit would be greater in volatile times where circumstances change rapidly. For a public water utility in a region with relatively predictable population growth and environmental and water quality standards that do not change frequently, this benefit may not be increased by shortening the licensing regulatory period past 5 years.

On the other hand, there remain important uncertainties around the climate, so that this benefit could become very important if the regulatory period were extended, say, to 10 years.

Costs of licence condition

Each licence review leads to certain fixed costs. The longer the licence term, the lower the average cost per year of licence reviews. These costs are borne both by Hunter Water and IPART.

In response to our information request, Hunter Water said that it would incur $750,000 in-house expenses plus $250,000 consultancy expenses to complete a single licence review cycle.

Comparison of benefits and costs

A strict quantitative comparison of costs and benefits is not feasible since it is so hard to quantify the benefits of more frequent licence reviews to take account of changes to the climate, environmental and water quality standards, and population pressures.

Heuristic arguments about the rate of change in those activity drivers suggest that a term of between 5 and 10 years is likely to maximise the benefit.

The cost analysis shows that each review carries with it a non-trivial fixed expense, so one would not want to undertake reviews too frequently. That said, the million dollar cost of a licence review is not so large in the scheme of Hunter Water's overall revenue requirement that it should drive a preference for longer licence terms approaching 10 years. In any case, section 15(2) of the Act does not allow a term longer than 5 years.

A qualitative analysis suggests that a 5 year term represents a plausible balance of benefits and costs. There is no strong evidence that it should be either increased or decreased.

1.4 Amendment

This provision is simply a procedural note clarifying what the Act already requires. No cost-benefit analysis is required.

1.5 Non-exclusivity

The counterfactual to this non-exclusivity provision would be an exclusive licence. This counterfactual would strengthen Hunter Water's already substantial market power within its service area. We consider that this enhancement to Hunter Water's market power would not be in the public interest.

1.6 Availability

This provision imposes minimal cost on Hunter Water, yet it potentially provides substantial economic benefits by making customers better informed of their rights. We consider it creates net economic benefits.

1.7 Pricing

Factual and counterfactual defined

The licence requires Hunter Water to comply with IPART's price determination. Counterfactual scenarios could involve Hunter Water charging prices that are either higher or lower than the IPART-determined prices.

Comparison of benefits and costs

Section 15(1) of the IPART Act identifies the matters to be considered by the Tribunal in making price determinations. The first of these matters (a) is the cost of providing the services concerned. In keeping with that requirement, IPART uses a building block method to determine prices for Hunter Water. The objective is to set cost-reflective prices.

Prices that are higher than the cost-reflective level will benefit the firm at the expense of customers and vice versa for prices lower than cost-reflective. However, when prices depart from the cost-reflective level in either direction, there is a deadweight loss. The deadweight loss is minimised, and net benefits maximised when the prices charged by Hunter Water are cost-reflective.

This concern about deadweight loss is also consistent with matters (b) and (c) (protection of consumers from abuse of monopoly power, and appropriate rate of return on public sector assets).

Some other matters that IPART must consider include the effect on general price inflation (d), the need for efficiency (e), ecologically sustainable development (f), the impact on borrowing, capital and dividend requirements of a government agency (g), the need to promote competition (i), demand management and least cost planning (j), social impact of determinations (k) and quality of service (l).

We consider that where some of these matters may lead to a conflict with the principle of minimising deadweight loss, such a conflict is required to be resolved by IPART with a view to maximising overall economic welfare in all of its various aspects.

As long as IPART's price determinations reflect these principles, then net benefits are maximised by enforcing the price determination.

2 Licence authorisation

2.1 Licence authorisation

This provision clarifies the purpose of the licence. No cost-benefit analysis is required.

2.2 Obligation to make services available

This provision requires that Hunter Water provides the relevant services within its service area. The counterfactual, in which Hunter Water would have discretion to refuse to provide certain relevant services to some customers within its area, would strengthen Hunter Water's already substantial market power in a manner that would not be in the public interest.

3 Water conservation and planning

3.1 Catchment to water treatment plants

Factual and counterfactual defined

The licence requires that Hunter Water must calculate the system yield according to a methodology that is either in accordance with the memorandum of understanding with DPIE or, absent such an MoU, that Hunter Water considers suitable. Hunter Water is also required to implement its water conservation work program in relation to Water Storage and Transmission developed under the 2017-2022 Licence.

In the counterfactual, these licence requirements would not exist. Without these requirements, Hunter Water's commercial incentive may be to undertake water supply augmentations that are not least cost, for example, if the regulatory pricing scheme guaranteed recovery of actual investment costs.

Benefits of licence condition

This licence condition would make it more likely that Hunter Water would thoroughly investigate future supply augmentation options and adopt the most efficient options.

Costs of licence condition

The costs of this licence condition are the additional costs of planning and analysis required to determine the most efficient options.

Comparison of benefits and costs

It would be necessary to examine specific instances to quantify the net benefits of planning augmentation investments. However, it is generally true that businesses that invest in thorough investigation of alternatives before establishing a capital works program obtain a high, positive return on that planning investment.

We consider that this requirement is likely to generate strong net benefits.

3.2 Water treatment plants to tap

Factual and counterfactual defined

The licence requires that Hunter Water must maintain a water conservation work program for water treatment and transmission consistent with the Current Economic Method. It must implement water conservation measures that have been assessed as economic under that method.

In the counterfactual, these licence requirements would not exist. Without these requirements, Hunter Water's commercial incentive may be to encourage excessive water consumption by customers because the revenue it earns from the water usage charge exceeds the short-run variable cost of water.

Benefits of licence condition

The licence condition would require Hunter Water to thoroughly investigate all measures available to conserve water, including by reducing leakage and influencing its customers to conserve water. Having determined which of these measures are consistent with the Current Economic Method, this licence condition requires that Hunter Water implement them.

The benefits are twofold. First, the requirement for thorough investigation makes it more likely that prudent investments will be identified and less likely that good conservation opportunities will be overlooked.

Second, the requirement to implement the selected measures means that the calculated benefits will be realised.

Costs of licence condition

The costs of this licence condition are that it obliges Hunter Water to undertake thorough investigation of a range of possible measures and then invest in implementing the ones found to be economic. Concerning demand management actions specifically, there is an additional opportunity cost to Hunter Water in the form of the foregone opportunity to maximise net revenue by encouraging excess water consumption (because the water usage price exceeds the short-run variable cost of water).

Comparison of benefits and costs

The net benefit of a water conservation requirement depends on the target level of conservation. Ideally, the target level should be the economic level of water conservation (ELWC). This is the largest amount of water conservation that can be achieved for a cost that is less than the value of the water that is saved. Conservation activities beyond that point are not useful for customers or taxpayers because the cost of achieving that extra conservation is higher than the benefit of the water saved. Here, the estimation of benefits should include environmental uses of water as well as consumptive uses.

However, if a target level of conservation is chosen arbitrarily and that level departs from the ELWC, then there will be a net disbenefit from this licence requirement.

If a target higher than the ELWC is mandated in the licence, then Hunter Water's customers and taxpayers will be worse off. They will be paying more to achieve that extra conservation than it is worth to all members of society.

Similarly, if a target lower than the ELWC is mandated in the licence, then Hunter Water's customers and taxpayers will also be worse off. Insufficient conservation will be undertaken. Some water will be consumed for low-value end-uses that generate less social value than the long-run cost of producing it and consuming it now.

3.3 Water Efficiency Plan

Hunter Water is required to develop a 5 year water efficiency plan, to submit it to IPART for approval, and then revise its water conservation work program(s) to be consistent with the water efficiency plan.

The net benefit of this requirement is difficult to quantify because it depends on the quality of the water efficiency plan that is developed.

Qualitatively, it seems likely that net benefits would be positive from a requirement to do water efficiency planning since the absence of planning could lead to costly mistakes. Among these mistakes is the possibility of having to bring forward large investments in future supply augmentation to compensate for inefficient water usage.

3.4 Water Planning

Hunter Water is required to develop an emergency drought response plan and implement it. Again, the net benefits of this requirement are difficult to quantify without considering specific circumstances.

Nevertheless, planning investments usually create net economic benefits when the consequences of poor planning can be extremely serious. Overall, we consider that this requirement would create net benefits.

4 Performance standards for water quality

4.1 Drinking water

Under the operating licence Hunter Water is required to maintain a Drinking Water Quality Management System that is consistent with the Australian Drinking Water Guidelines (ADWG). It is also required to ensure that the Drinking Water Quality Management System is fully implemented to the satisfaction of NSW Health.

Factual and counterfactual defined

The ADWG is intended to provide a framework for good management of drinking water supplies, that if implemented, will provide consumers with water that is safe to use. The operating licence requires Hunter Water to implement a Drinking Water Quality Management System consistent with the ADWG—the factual.

In order to test whether the benefits of this requirement exceed the cost, it is necessary to consider what would happen if the requirement did not exist—the counterfactual. It is not realistic to contemplate a counterfactual in which there is no regulation of drinking water quality.

Instead we examine a counterfactual in which the level of water treatment would be the same as the then Sydney Water Board provided in the early 1990s. That time pre-dated four events:

- the corporatisation of Sydney Water
- the introduction of an operating licence for Sydney Water
- the inclusion in that licence of requirements to meet the ADWG, and
- the construction of four new water filtration plants (WFPs).

These four events were interrelated and driven by the Government's intent to modernise Sydney Water. Most of these events happened in 1995 or soon thereafter, providing a natural experiment that can help us to quantify costs and benefits attributable to the ADWG requirement. [1]

[1] Construction of the Prospect WFP began in 1993 and it was commissioned in 1996. Construction of the MacArthur WFP began in 1994 and it was commissioned in 1995. Sydney Water was corporatized with effect from January 1995 following the passage of the Water Board Corporation Act (1994). Contracts to build the Illawarra and Woronora WFPs were signed in 1994. Sydney Water's first operating licence took effect in January 1995. Among the requirements of the operating licence were that Sydney Water Corporation must meet the 1980 version of the ADWG immediately, must work to an agreed timetable to meet the 1987 version of the ADWG, and endeavour to meet the 1996 ADWG. There is clearly a causal link between the decision to commence these WFPs, the formation of Sydney Water as a SOC, and the requirement that Sydney Water meet the ADWG. While the WFPs were initiated before Sydney Water was corporatized this development had been widely anticipated in the years prior.

Benefits of licence condition

The benefit of requiring an ADWG-consistent framework is improved health outcomes for Hunter Water's customers. Its implementation would reduce the incidence and severity of water-borne illnesses within the population.

It is possible to estimate a lower bound to these health benefits by calculating the avoided costs of medical care for sufferers of water-borne illnesses and the avoided economic losses from absenteeism due to illness. This reckoning of health benefits is incomplete because it is not practical to capture all of these benefits in the calculation. Nevertheless, this calculation yields a useful lower bound to the benefits.

Our estimate of the health-related benefits is based on analysis conducted on IPART's behalf by the Sapere Research Group in October 2018. That study considered health benefits for Sydney. Sapere's work was based on a similar counterfactual that was used in a New Zealand cost-benefit study of a proposal to raise drinking water standards in 2010.[2] Sapere found that the health benefits of ADWG-consistent water treatment for harmful chemicals and pathogens were $135/person/year in the base case.

A key uncertainty was the incidence of water borne disease in raw water supplies. To address that uncertainty, Sapere conducted sensitivity analysis. They examined a low incidence scenario based on replies to IPART's questions from NSW Health in 2018. The health benefits in that scenario were $122/person/year.

Sapere also examined a high incidence scenario based on the upper bound estimate used in a 2010 Sapere study conducted in New Zealand. The health benefits in that scenario were $369/person/year.

We assume per capita benefits per annum would be the same for the Hunter Water service area, even though its population is approximately 12% of Sydney Water's population.

[2] "Cost benefit analysis of raising the quality of New Zealand networked drinking water", LECG (June 2010). See http://srgexpert.com/wp-content/uploads/2018/02/cba-raising-quality-of-networked-drinking-water-jun20101.pdf

Costs of licence condition

To estimate the cost of the ADWG requirement, we rely on the natural experiment in which we compare pre-1995 to post-1995 scenarios in Sydney. We assume that the additional cost to Sydney Water of the four new WFPs (Prospect, MacArthur, Woronora and Illawarra) represents the additional cost imposed by the ADWG requirement. The construction of these new WFPs coincided with and was causally connected to the introduction of the ADWG requirement.[3] [4]

In response to our information requests, Hunter Water did not provide estimates of the incremental cost of units at its water treatment plants.

However, we can proceed with our cost estimate by adjusting Sydney Water's WFP costs to reflect Hunter Water's smaller scale. In September 2018, Sydney Water estimated a ballpark figure of $138m/yr for operating and capital costs for its suite of WFPs.

Cost and capacity information for WFPs of various sizes

WFP name	Total cost of finance lease in $m/yr	Maximum throughput (ML/day)	Population served
All four WFPs	138[a]	3,635	4,850,000
Prospect (from 1996)	71.4[b]	3,000	4,000,000
Remaining three WFPs	66.6[c]	635	850,000

Sources:
a 7 September 2018 information return from Sydney Water to IPART (Response 3),
b https://www.govnews.com.au/suez-gets-1-bil-sydney-water-14-year-contract-extension/ ($1b / 14 years)
c IPART calculations, and public data on throughput and population served..

[3] Sydney Water stated in its 7 September 2018 reply to an IPART information request that:

A cost benefit assessment was undertaken in the early 1990s to inform the decision to build water treatment plants at Prospect, Macarthur, Illawarra and Woronora. The decision to install treatment plants at these locations to filter and further treat water was part of a strategy to meet the 1987 National Health and Medical Research Council (NHMRC) guidelines on drinking water quality by 1996, and ensure that Sydney was positioned to meet predicted community based water quality standards.

[4] It is possible that part of the expenditure on the four new WFPs would have been incurred anyway to meet population growth in Sydney, even if the ADWG requirement had not been imposed at that time. To the extent that might be the case, our cost for meeting the ADWG will be an overestimate. If the cost is overestimated, then the true benefit-to-cost ratio will be higher than our estimate, making this calculation conservative.

Hunter Water's population of 600,000 could be served by three plants with equivalent capacity to the combination of MacArthur, Woronora and Illawarra WFPs in Sydney. Based on this information, we estimate that the annuity to Hunter Water for capital and operating costs of equivalent water filtration would be in the ballpark of $67m. This estimate takes account of scale economies, recognising Hunter Water's smaller scale compared to Sydney Water. On a per capita basis, this cost is $112/person/year.

Comparison of benefits and costs

The table below compares costs and benefits. It shows that in the base case, the ADWG requirement for Hunter Water's scale of operation leads to modest net benefits in the base case. Net benefits are approximately zero in the low case, and strongly positive in the high case.

Note that the benefit column shows the quantum of benefit in the factual compared to the counterfactual. The cost column shows the quantum of cost in the factual compared to the counterfactual.

Summary of benefits and costs for licence condition to meet the ADWG

Scenario	Benefit per person per year	Cost per person per year	Net benefit per person per year	BCR
base	135	112	23	1.2
low	122	112	10	1.1
high	369	112	257	3.3

Benefits, costs and net benefits are expressed in units of $/person/year.

4.2 Recycled water

Hunter Water is required to maintain a management system for recycled water that is consistent with the Australian Guidelines for Water Recycling (AGWR). It is also required to ensure that the Recycled Water Quality Management System is fully implemented to the satisfaction of NSW Health.

Factual and counterfactual defined

Like the ADWG, the AGWR is intended to provide a framework for good management of recycled water, that if implemented, will provide consumers with recycled water that is safe to use for various purposes. The operating licence requires Hunter Water to implement a management system consistent with the AGWR—the factual.

In order to test whether the benefits of this requirement exceed the cost, it is necessary to consider what would happen if the requirement did not exist—the counterfactual. If there are questions about the safety of recycled water, as there may be in the counterfactual, then it seems likely that less recycled water would be used for many of these purposes.

Benefits of licence condition

We consider two scenarios:

1. Indirect potable reuse (IPR) of recycled water remains not widely accepted in NSW
2. IPR becomes widely accepted in NSW.

In the absence of IPR, recycled water has only limited uses and generates only modest benefits. In a residential setting, recycled water can only be used for flushing toilets and a few other household applications. In outdoor settings recycled water can be used for irrigation of sporting fields and parks, but irrigation of crops would require more costly treatment. Environmental release of recycled water may produce some public benefits but during drought conditions, when these benefits would be maximised, environmental release is often prohibited.

If IPR was widely accepted, however, recycled water could directly augment drinking water supplies. This would allow Hunter Water to defer costly water supply augmentations and improve the resilience of water supply in Hunter Water's area.

Costs of licence condition

The AGWR requirement adds to the cost of water recycling by imposing significant requirements on recycled water producers to meet pathogen reduction targets.[5]

[5] The AGWR have defined safety using disability life years or DALYs and specify log reductions to be achieved based on intended end use exposure assessment.

In the absence of IPR, household users of recycled water are required to incur significant expense to install and maintain dual reticulation systems (ie, purple pipes). Recycled water plants may also incur significant expense to construct holding tanks or dams for excess recycled water that cannot be released to the environment until it rains.

If IPR was widely accepted and recycled water was widely considered 'as good as' potable water, many of these costs would be avoidable, although the cost of treating wastewater to a near-potable standard would still be significant.

We also note that recycled wastewater is diverted away from wastewater treatment plants. This will reduce the costs incurred by those plants. However, it would simply substitute the volumetric cost of producing purified recycled water for the cost of treating the same volume of wastewater for disposal. As the former costs are likely to be significantly higher, this would not generate any net cost savings.

Comparison of benefits and costs

In the absence of IPR, the net benefit of the AGWR is likely to be negative. That was the result of our cost-benefit analysis of recycled water for the 2018 Sydney Water operating licence. That conclusion focused on the risk of cross-connection for residential uses. Some other uses of recycled water in the Hunter Water area, including industrial uses, irrigation of sporting fields and parks may show net benefits from the quality assurance that the AGWR provides in those applications. However, we did not receive the quantitative information we would need from Hunter Water to explore that point more fully.

If IPR was widely accepted, that would significantly improve the economics of recycled water. Whether IPR of AGWR-consistent recycled water would generate net benefits depends on the relative costs of:

- purified recycled water
- other water supply augmentation options, including
  - conservation
  - leak reduction
  - new sources.

At present, we have insufficient information to perform this comparison of costs.

5 Performance standards for service interruptions

The system performance standards in the Hunter Water Operating Licence refer to water pressure, water continuity and wastewater overflows. These standards impose levels of minimum acceptable performance, expressed as the maximum number of properties that may experience each of water pressure failure, water service interruptions of five hours or more, or uncontrolled wastewater overflows in dry weather in any year.

The cost-benefit analysis is used to determine the level for each of these standards that generates the highest net benefit. Hunter Water conducted this cost-benefit analysis in late 2021. The findings were as follows:

1. For water pressure, the standard level in the 2017-2022 licence generated the highest net benefit.
2. For water continuity, the standard level in the 2017-2022 licence did not generate the highest net benefit.
    a. An option involving a reduced level of preventative maintenance activity generated a higher net benefit than the pre-existing standard level.
    b. However, sensitivity testing revealed that this result was sensitive to input assumptions, including the assumed Value of Customer Reliability (VCR) and the discount rate.
    c. The cost-benefit analysis using a plausibly higher VCR value showed the pre-existing standard level to generate the highest net benefits.
    d. For these reasons, we conclude that the cost-benefit results are not sufficiently robust to justify a departure from the pre-existing standard level.
3. For wastewater overflows, the standard level in the 2017-2022 licence generated the highest net benefit of the options originally investigated.
    a. At our request, Hunter Water conducted further sensitivity tests.
    b. Sensitivity testing revealed that an option involving a somewhat increased level of preventative maintenance activity generated a somewhat higher net benefit than the pre-existing standard level.
    c. However, the improvement in net benefit from this option was slight, and sensitive to input assumptions, including the VCR.
    d. For these reasons, we conclude that the cost-benefit sensitivity results are not sufficiently robust to justify a departure from the pre-existing standard level.

Factual and counterfactual defined

For each of the standards, Hunter Water identified a preventative maintenance activity that could be undertaken to improve system reliability. They calculated the present value of the cost of undertaking that activity at different levels of intensity. The factual corresponds to the level of intensity that corresponds to current practice. Two counterfactual scenarios were examined: more intensity than current, and less intensity than current.

Benefits of licence condition

The benefit of better reliability is that customer inconvenience and disamenity is reduced. Hunter Water surveyed its customers to quantify the VCR—the customers' average willingness to pay to improve performance or willingness to accept a compensation payment for under-performance. In each scenario, the expected number of adverse events (ie, water pressure failure, long water service interruption, or dry weather wastewater overflow) was multiplied by this VCR value to determine a present value of this benefit over the study period.

Costs of licence condition

The cost of better reliability is the additional cost of more intense preventative maintenance. Hunter Water was able to quantify these costs based on its operational experience and management information.

Comparison of benefits and costs

As noted above, the net benefit, meaning the benefit minus the cost of a scenario compared to the factual, was generally maximised by the level of maintenance intensity that corresponds to the standard. There were two exceptions to this finding, but the conclusion from these exceptions was insufficiently robust to changes in input assumptions to justify a departure from the status quo.

6 Organisational systems management

Factual and counterfactual defined

The licence contains requirements that Hunter Water must maintain and fully implement three organisational management systems: the asset management system (AMS), the environmental management system (EMS) and the quality management system (QMS).

In our 2018 review of Sydney Water's operating licence, we removed the EMS and QMS requirements because we considered at that time that these conditions would not alter Sydney Water's behaviour—it would likely maintain these systems even if the licence did not require them to do it.

Hunter Water stated, in response to our questions on this topic:

> Hunter Water's management systems are mature, well-embedded, and enable us to efficiently meet business objectives and stakeholder expectations. If existing licence requirements to maintain the AMS, EMS and QMS were removed, we would choose to retain these systems. That is, we would not do anything differently.
>
> There was significant cost, effort, and organisational change involved in establishing the management systems. These costs are sunk, and pivoting now to a different method of ensuring performance, efficiency and meeting objectives is unlikely to be cost effective. We believe it would also introduce risks to service quality.
>
> Because we would not do anything differently, there are no material costs or benefits that would arise if the existing licence requirements were removed.

These considerations suggest that the AMS, EMS and QMS licence requirements are superfluous. In the counterfactual, Hunter Water states that it would continue to maintain and implement these systems.

Comparison of benefits and costs

The benefits of retaining the licence conditions are very modest. They would only arise in a situation where some future management of Hunter Water might form a different view to the one expressed in the paragraphs above and cease to implement one or all of these systems.

The costs of retaining the licence conditions are also very modest. They consist only of the compliance-related costs for Hunter Water and IPART, which we expect would be small.

Overall, we consider that the net benefits of retaining these licence requirements will be small, and could be negative. However, in the event that a future management team decides to change its view, some of the benefits to IPART, the EPA and customers from these systems could be lost.

We consider that this logic provides some support for retaining these licence requirements.

7 Customer and stakeholder relations

7.1 Customer Contract

Factual and counterfactual defined

Broadly speaking, the customer contract sets out the respective obligations of Hunter Water and its customers. Insofar as these obligations apply to Hunter Water, they are consistent with, and largely mirror the clauses in the licence.

The counterfactual would be the absence of a customer contract.

Benefits of licence condition

The customer contract helps customers to understand their rights under the licence. Hence it makes it somewhat more likely that any licence breaches observed by customers will result in corrective action.

Costs of licence condition

Establishing the customer contract for the first time involves a certain amount of effort in legal drafting. Modifying the customer contract at subsequent licence renewals would involve considerably less legal effort.

There would be some level of cost for Hunter Water and IPART in ensuring ongoing compliance with the customer contract, but these costs should not be overstated. Since the customer contract largely mirrors the requirements of the licence itself, it imposes few additional obligations on Hunter Water. For these reasons, the costs of the customer contract are likely to be relatively low.

Comparison of benefits and costs

The benefits of the customer contract are hard to quantify, but they could be significant for some customers who might otherwise be unaware of their rights. As the costs of the customer contract are relatively low, there is likely to be a net benefit in this licence condition.

7.2 Provision of information to Customers and the general public

Factual and counterfactual defined

The counterfactual involves no requirement to provide this information to customers and the general public. Absent a licence requirement, it is possible that Hunter Water may volunteer to provide it. However, in circumstances where the information may tend to portray Hunter Water's service in an adverse light there may be commercial incentives not to provide it. In this counterfactual, we assume that Hunter Water's information provision to customers and the general public would be less helpful in ensuring compliance with other licence conditions, since any non-compliances could be made less visible to customers.

Benefits of licence condition

We consider that the purpose of requiring Hunter Water to inform its customers of their rights is to better enable customers to raise any issues about the quality of the service they receive either with Hunter Water, an ombudsman, or other regulatory authorities.

We have assumed that the practical effect of this requirement would be more comprehensive compliance by Hunter Water with its licence conditions. By requiring Hunter Water to disclose the information, customers would have a more detailed picture of Hunter Water's operating performance.

Costs of licence condition

The costs to Hunter Water of providing this information are quantified below. Hunter Water's response to our information request:

> The cost involved in making documents listed in the reporting manual publicly available is minor. We estimate less than $3,000 per annum, including:
>
> - Adding new documents to the website
> - Training and information given to customer-facing employees periodically
>
> We are unable to disaggregate the time our customer-facing employees spend providing to customers the documents required under our Reporting Manual.

Overall, we consider that these costs are low.

Comparison of benefits and costs

These obligations would pass a cost-benefit analysis because:

- the other licence obligations that they relate to pass the cost-benefit test and
- the compliance costs are not high in comparison to the net benefits.

We consider that the costs of providing this customer information are low, so the obligation provides a net benefit.

7.3 Consumers

Factual and counterfactual defined

Consumers of water services who are not customers of Hunter Water enjoy similar protections to those provided under the customer contract.

The counterfactual scenario would involve a lack of protections to water consumers who are not direct customers of Hunter Water. The largest group of such consumers would include residents who rent their homes. Their landlords, as property owners, would be customers of Hunter Water. Even though not customers, renters may be required to pay for their own water usage. The Hunter Water usage charge would apply, and the landlord would collect this payment from the renters. In some situations, rental dwellings are not separately metered. This creates problems of measurement and cost attribution, potentially leading to disputes between renters and their landlords.

Benefits of licence condition

The net benefits of consumer protection generally would be increased if a larger group of consumers is included in the scheme for protection.

Costs of licence condition

There may be some incremental costs to Hunter Water in measuring and attributing usage of renters, particularly in unit blocks where separate metering has not yet been installed for the individual residences.

We understand that this group of residences in the Hunter area is a relatively small proportion of the total. For them, it is possible to roughly estimate their usage based on readings of the master meter for the building. Some residents have installed their own meters.

Comparison of benefits and costs

Only a qualitative comparison of benefits and costs is possible with the available information. However, the costs are expected to be small and the benefits potentially significant.

7.4 Payment difficulties and actions for non-payment

Factual and counterfactual defined

The licence requires Hunter Water to maintain and fully implement the following:

a. a financial hardship policy to help residential customers and consumers experiencing financial hardship
b. procedures relating to a payment plan for customers experiencing hardship
c. procedures for identifying when Hunter Water may disconnect or restrict water supply
d. provision for self-identification of customers experiencing hardship.

The essence of this requirement is leniency toward customers who may struggle to pay bills on time.

The counterfactual scenario would involve an absence of leniency. This could involve harsh measures for customers facing payment difficulties, including disconnection or restriction of water supply.

Benefits of licence condition

The leniency provided to customers experiencing hardship is of benefit to them. By forming part of the general social safety net, this type of leniency policy provides wider benefits to the community. That is to say that there is a public benefit to the hardship policy.

Costs of licence condition

A leniency policy might encourage some customers to refuse to pay their bills, even in situations that do not involve financial hardship.

To explore this possibility, we asked Hunter Water to quantify any cost savings if a residential customer was disconnected for non-payment. We also asked them to quantify any costs they would incur as a result of the administrative and regulatory requirements imposed by government relating to disconnection.

Hunter Water replied:

> Hunter Water has only once disconnected a residential customer for non-payment. In that instance, after negotiations and costs, the water supply was reconnected. A decision was subsequently made to not disconnect residential customers for non-payment except in extreme circumstances, due to health and hygiene considerations.
>
> Hunter Water does restrict the water flow of residential customers due to non-payment - after all notices have been issued, as set out in our Customer Contract. Restriction of the water supply involves the reduction of flow at the meter device to reduce the flow to a minimal level yet still enable drinking and other basic uses. …

Hunter Water rarely takes the action to disconnect a property (even a non-residential property). It may be conducted if a property poses a threat to the integrity of our water supply system, such as a backflow prevention device issue or having no backflow prevention device fitted. Non-residential customers are required to install and annually test backflow prevention device as a measure.

Hunter Water does not see a cost saving for disconnection/restriction of properties for non-payment. These actions do present additional costs such as debt recovery fees, meter maintenance fees, legal costs, resource costs and loss of revenue in some instances.

We conclude from this response that a non-lenient counterfactual scenario does not generate cost savings for Hunter Water.

Comparison of benefits and costs

Hunter Water's comments indicate that the present management sees commercial benefit in having a lenient hardship policy. We have also noted that there are public benefits to the hardship policy. The benefit to customers and the wider community is not fully accounted for in Hunter Water's commercial considerations.

Given these points, we consider that a licence requirement for a hardship policy would take Hunter Water further in the direction of leniency than they might choose to go based on commercial considerations alone. Therefore we consider that this licence requirement generates net economic benefits.

7.5 Family violence policy

This provision imposes modest costs on Hunter Water, but it potentially provides vital protection to customers who may be vulnerable to or because of family violence. We have not performed a quantitative cost-benefit analysis on this provision, but we consider that this provision would be likely to provide net social benefits.

7.6 Customer engagement

The licence requires Hunter Water to undertake customer engagement to understand its customers' preferences and willingness to pay for services, and to understand how its systems and processes can better support better relationships with consumers.

The Act requires the operating licence to include terms and conditions requiring Hunter Water to consult with its customers at regular intervals (s13(2)). The Act gives IPART no discretion to remove this requirement from the licence.

7.7 Internal Complaints Handling

Factual and counterfactual defined

The licence requires Hunter Water to maintain and implement a procedure for receiving, responding to and resolving complaints which is consistent with the relevant ANZ standard.

The counterfactual scenario would have no such requirement. It is quite likely that if this requirement were not in the licence, Hunter Water may be less prompt in resolving customer complaints where there might be a commercial advantage in ignoring them or delaying a response.

A firm in a competitive market would have strong incentives to address customer complaints promptly or lose market share to those competitors who do. However, that competitive discipline is absent for a monopoly supplier.

Benefits of licence condition

An effective complaints handling mechanism means that customers will enjoy a higher quality of service than they otherwise would, everything else being the same.

Costs of licence condition

Hunter Water would incur some direct costs in providing the complaints-handling mechanism, and also some costs of having to rectify problems when convenient for customers, rather than when most convenient from a work scheduling point of view.

Comparison of benefits and costs

The net benefit of an effective complaint-handling process is that the firm is prevented from earning monopoly rents by providing a lower quality of service. Complaint-handling systems help to ensure that quality standards are enforced.

While a monopoly firm foregoes an opportunity to increase profits by reducing quality (something that even a price-regulated firm can sometimes do), there is a net gain to society. Deadweight loss through lower quality service is minimised by good complaint-handling.

This analysis presumes that the complaint-handling system is relatively efficient itself, and that Hunter Water's reputation would be an insufficient incentive to provide the ideal level of quality.

7.8 External dispute resolution scheme

Factual and counterfactual defined

Hunter Water is required to maintain membership in an external dispute resolution scheme such as EWON, or an alternative scheme subject to IPART's approval. The counterfactual would be the absence of such a requirement, which could lead to Hunter Water preferring to resolve disputes through internal mechanisms instead.

Comparison of benefits and costs

The analysis of this licence requirement is the same as the analysis of the requirement for an internal complaints handling system. External dispute resolution scheme membership is another safeguard against monopoly rents and the associated deadweight loss caused by providing substandard quality of service.

Therefore, as long as the external dispute resolution scheme is relatively efficient itself, it should yield net economic benefits by reducing the deadweight loss that might otherwise occur from the use of monopoly power to deliver a lower quality of service than a competitive firm would.

8 Stakeholder cooperation

This section of the licence deals with three memoranda of understanding (MOU): one with NSW Health, one with DPIE, and one with Fire and Rescue NSW (FRNSW). A MOU is a flexible administrative tool that facilitates future agreements between the parties on matters that may not be foreseen at the time the licence is established.

In the absence of a MOU, additional rules would need to be inserted in the licence at a time when the costs and consequences of those rules might not be well understood.

The benefit of a MOU is flexibility to deal with uncertain future events. The main cost of a MOU is the cost of providing a regular forum for staff of Hunter Water and the respective agencies to discuss emerging issues and attempt to negotiate solutions.

It is intrinsically difficult to quantify the value of flexibility, but not hard to anticipate that this value could be high in particular situations. In contrast the costs of an MOU, being principally staff time, are relatively modest.

In general, we would consider that MOUs are an appropriate and efficient administrative tool and that they are likely to generate net economic benefits.

9 Information and services for competitors

Hunter Water has substantial market power in its area of operations. The Water Infrastructure Competition Act (WIC Act) creates certain rights for potential competitors to Hunter Water and other public water utilities in NSW to enable them to place greater competitive pressure on these incumbents.

The WIC Act is necessary, but not always sufficient to ensure that potential competitors have the opportunity to compete on the merits. This section of the licence provides further protections to WIC Act licensees (the competitors).

In the absence of these protections, it would be open to an incumbent such as Hunter Water to pursue strategies that would have the same practical effect as a refusal to deal. In this counterfactual case, it would likely be in the commercial interest of an incumbent to refuse to deal with potential competitors who are trying to win business from them.

The benefit of these licence requirements is an increase in competitive tension faced by Hunter Water, with the potential gains to consumers that effective competition would create. The costs are specific to each requirement, and these are discussed below.

9.1 Negotiations with potential competitors

The licence requires that Hunter Water must negotiate in good faith with potential competitors, including WIC Act licensees.

The counterfactual is the absence of this obligation, in which case Hunter Water could not be relied upon to negotiate with its competitors who seek to win business from it. This may lead to less vigorous competition from WICA licensees for parts of Hunter Water's customer base.

The cost of a good faith requirement would be modest. While Hunter Water might lose some business, that would be offset in a whole of society sense by the gains to competitors. With a more competitive industry, the deadweight loss would be reduced. Hence the net economic benefits would likely be positive.

9.2 Publication of servicing information

The licence requires that Hunter Water must publish certain servicing information which will assist WIC Act licensees to bid for new projects in a timely way.

The counterfactual is the absence of this obligation, in which case Hunter Water could not be relied upon to publish commercially sensitive servicing information that could help its competitors win business from it. This may lead to less vigorous competition from WICA licensees for parts of Hunter Water's customer base.

The cost of a requirement to publish servicing information would be modest, given that the required information should already be available to Hunter Water. While Hunter Water might lose some business, that would be offset in a whole of society sense by the gains to competitors. With a more competitive industry, the deadweight loss would be reduced. Hence the net economic benefits would likely be positive.

9.3 Code of Conduct with WIC Act Licensees

Factual and counterfactual defined

The licence requires that Hunter Water uses best endeavours to cooperate with any WIC Act Licensee that seeks to establish a code of conduct required under a WICA licence.

The counterfactual is the absence of this obligation, in which case Hunter Water could not be relied upon to take positive steps beyond good faith negotiations and publication of servicing information that could help its competitors win business from it. This may lead to less vigorous competition from WICA licensees for parts of Hunter Water's customer base.

Benefits of licence condition

The benefit of this condition is tied to the benefit more broadly of the WIC Act, which aims to promote competition in the water industry. Evaluating that broader benefit is difficult. While the WIC Act has promoted small-scale competitive entry, those new players are not challenging Hunter Water for its core business so far. Thus they are not likely to impose significant competitive pressure on Hunter Water for the foreseeable future.

That broader benefit would be advanced to some extent by this particular licence condition.

Costs of licence condition

The immediate costs of the licence condition would be administrative in nature. An efficient organisation should be able to meet the licence requirement at modest cost.

Comparison of benefits and costs

The benefits and costs of this licence condition are each very modest. The condition could be retained on the basis that it causes little or no harm, while helping to promote a more competitive industry structure in the future.

10 Performance monitoring and reporting

Factual and counterfactual defined

The operating licence requires Hunter Water to provide to IPART or its Auditor all information in Hunter Water's possession, or under its custody or control, which is:

- necessary or convenient for the conduct of the Operational Audit
- set out in the Reporting Manual, or
- otherwise required by IPART to enable any review or investigation of Hunter Water's obligations under the licence.

In the absence of this requirement (the counterfactual), IPART and its Auditor would find it more difficult or even impractical to verify compliance with the Licence, Reporting Manual and any other matters required by the Minister.

Benefits of licence condition

The benefit of regular, formal reports to IPART on Hunter Water's compliance with its licence requirements is a much greater likelihood that Hunter Water will comply with these requirements.

The overall cost-benefit analysis of Hunter Water's operating licence has established that most or all of its conditions generate net economic benefits compared to counterfactual scenarios in which those licence conditions were not met. If licence compliance is necessary to obtain those net benefits, then the lack of compliance would imply that those net benefits were not obtained.

Costs of licence condition

In response to our information request, Hunter Water provided the information in the table below on its costs of reporting to IPART for operational audits, the reporting manual or as otherwise required by the licence.

Clauses of the 2017-22 licence	Reporting requirement	Administration ($2021-22)	Questionnaire ($2021-22)	Verification ($2021-22)	Reports ($2021-22)	Total cost ($2021-22)	Total hours (#)
1.5	Obligation to make services available	499	748	499	166	**1,912**	12
1.8	Pricing	819	1,062	493	246	**2,620**	16
2	Water conservation	1,248	1,386	1,074	617	**4,325**	28
3.1	Drinking Water	3,812	19,081	15,747	9,298	**47,938**	330
3.2	Recycled Water	4,342	19,440	12,500	4,342	**40,624**	253
3.3	System Performance Standards	868	1,353	2,540	380	**5,141**	35
4.1	Asset Management System	3,043	7,103	6,704	1,943	**18,793**	126
4.2	Environmental Management System	956	3,991	3,159	2,494	**10,601**	68
4.3	Quality Management System	758	3,505	1,801	617	**6,681**	45
5	Customer and Stakeholder	1,065	2,840	1,988	1,988	**7,880**	60
6.2	Reporting Manual	653	2,611	1,305	326	**4,895**	30
All	Overall coordination / general	38,640	9,335	19,005	13,410	**80,391**	443
6.2.1	NWI indicators – coordination / general	1,200	450	600	450	**2,700**	18
	TOTAL	**57,903**	**72,905**	**67,414**	**36,278**	**234,500**	**1,463**
6.2.1	NWI indicators – cost per indicator	140	210	105	35	**490**	4

Comparison of benefits and costs

Hunter Water's response indicates that its total costs of meeting the operational audit licence condition are on the order of $250,000 per annum. The net benefits of licence compliance are likely to far exceed that figure. To take only a few licence conditions, for example,

- Compliance with the ADWG generates net benefits of $7.8m per annum[6]

We conclude that these net benefits from other licence requirements would not be fully achieved if the reporting requirements were not imposed by the licence. As the net benefits far exceed the cost of reporting, we conclude that the reporting requirement itself generates net benefits.

[6] See section 3.1 above. The figure is for the base case, in which a net benefit of $13/person/yr is multiplied by the 600,000 population of the Hunter Water service area.