Review of WaterNSW Cost Shares

A REPORT PREPARED FOR IPART

December 2016

Review of WaterNSW Cost Shares

Contents

Review of WaterNSW Cost Shares

Boxes

Figures

Tables

Executive summary

Background

In providing rural bulk water, WaterNSW provides a range of services to the NSW community and there are many users of these services. The scope of WaterNSW's services has evolved over time, as has the type of users of these services and the nature of their use.

Prices and charges for water should in general recover the full efficient cost of providing the service to water users. However, as in other industries that IPART regulates (such as public transport), there are economic arguments for some government contribution to the costs of providing water services. These include the existence of public goods, the existence of unavoidable legacy costs, and where it is impracticable to recover costs from specific users or beneficiaries of these services.

As part of its role as the independent regulator determining the maximum prices that can be charged for certain water services in New South Wales, the Independent Pricing and Regulatory Tribunal (IPART), is required to review WaterNSW's prices for NSW Rural Bulk Water Services to be applied from 1 July 2017. In particular, one of IPART's key tasks in setting WaterNSW's maximum charges is assessing the share of costs allocated between extractive users and the government (i.e. the prices should recover only the users' share of the efficient costs).

IPART is seeking to review these cost shares for the 2017 WaterNSW price review given:

- The importance of the user cost shares in determining charges for extractive users (and amounts to be recovered from the NSW Government on behalf of past users or other current and future users)
- These cost shares have not been revisited for some time, and there have been some significant changes in WaterNSW's operating environment (including the Water Sharing Plans)
- There is significant diversity in the views of WaterNSW's stakeholders as to the appropriate sharing recovery of WaterNSW's efficient costs.

In this context, Frontier Economics was engaged by IPART to provide assistance by undertaking a review of the cost shares framework used to allocate capital and operational expenditure between water users and the NSW Government proposed by WaterNSW for its rural bulk water services from 1 July 2017.

Our proposed framework

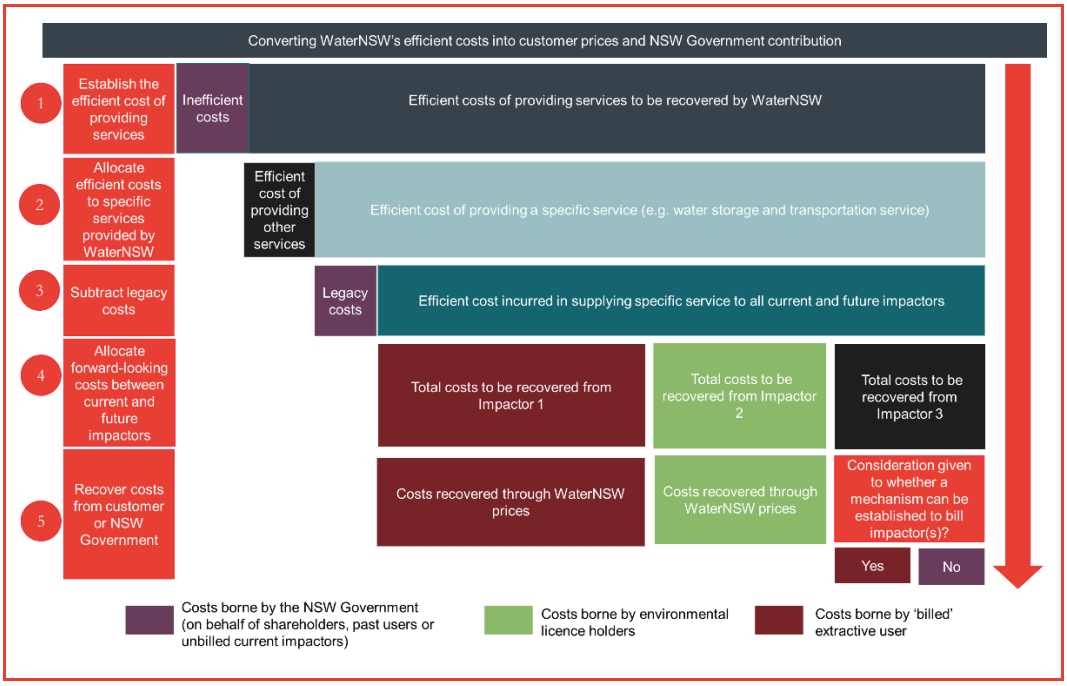
It is well recognised that a robust cost sharing framework should provide incentives for users and suppliers to act efficiently and reduce the incentive for

parties to seek to shift costs to others. It should also promote transparency—in term of who is bearing the cost of providing WaterNSW services and on what basis— and consistency in the application of the principles.

Our report has sought to set out a long-term sustainable approach to cost sharing based on sound and well-accepted economic principles. The report provides a clear and transparent process for allocating costs between users of WaterNSW's specific services to establish a set of customer and NSW Government cost shares, which are then used to derive WaterNSW's charges (see Figure 1).

It establishes the cost sharing framework from 'first principles' by re-examining the services that WaterNSW provides (as well as users of these services), and the appropriate economic principles for allocating costs between these services, and the users of each of these services.

Figure 1: Our proposed approach to allocating costs between users and establishing a customer and Government cost sharing framework



Note: Figure is not to scale

Source: Frontier Economics.

In our view, getting this conceptual framework 'right' when setting WaterNSW's charges should:

- Ensure that the cost sharing framework provides the right incentives for extractive water use, flood mitigation and other community activities and the incentives for WaterNSW to invest to provide these services

- Encourage greater consistency in the application of the principles for cost sharing over time and with other industries (including the treatment of costs associated with the imposition of Government standards and obligations)
- Make the cost of providing specific services—for example, flood mitigation services—more transparent. This in turn, should allow for informed decision-making regarding the:
  - Provision of these services relative to alternatives measures[1]
  - Appropriate set of tariff structures to recover the costs of each of WaterNSW's specific services[2].
- Make the sharing of these costs between customers and the NSW Government more transparent, including the quantum and basis on which the NSW Government is providing funding to WaterNSW[3]. This should provide stronger incentives to consider any barriers to the application of charges to those current and future impactors that are not currently billed by WaterNSW, and should ensure that any funding provided by the NSW Government on equity grounds is excluded from the cost sharing framework.
- Support IPART's preference for the continuation of valley based pricing.

Importantly, the framework will involve a changing share of costs borne by customers and the NSW Government over time. For example, as WaterNSW's operating environment evolves, it may become efficient and cost-effective to identify specific impactors, their contribution to the forward-looking costs incurred by WaterNSW's services and to levy WaterNSW's charges on these impactors in line with their contribution to WaterNSW costs. This may reduce pressure on the NSW Government budget and importantly provide stronger incentives for both users and WaterNSW to act efficiently.

The way forward

We recognise that implementing this framework will require consideration of a number of complex issues as well as accessing and analysing a range of information relating to the drivers of specific costs. These include:

- Defining WaterNSW's key services for regulatory price setting purposes

---

1 Say investment in other measures to mitigate and/or manage the impacts of flooding, consistent with the Productivity Commission's recommendations regarding cost–benefit analysis and the transparency, and therefore accountability, it brings to decision making. Productivity Commission, *Natural Disaster Funding Arrangements*, Inquiry Report, December 2014.

2 For example, a two-part tariff may not be appropriate if the costs are not related to volumes of water used.

3 That is, how much funding is being provided on behalf of past users (reflecting legacy costs) relative to current and future users (where it is impracticable to recover costs from specific users),

- Allocating the efficient costs of provision to each of these services (including a proportion of shared costs)
- Identifying the impactor(s) for costs within each service,
- Allocating costs to the impactor(s)—including identifying the appropriate causal allocator[4] for allocating shared costs between impactors where there are multiple impactors on the costs of providing specific services.

As part of developing this report, Water NSW was unable to commit resources to support a detailed review of cost shares and as a result we were unable to access key information from WaterNSW to implement the proposed cost sharing framework.

In our view, implementing this framework in a sustainable way will require consultation with WaterNSW and other stakeholders regarding these matters. It may also require changes to WaterNSW's systems for information collection and billing as well as changes to the legislative and regulatory framework.

However, there are opportunities to move towards our recommended long-term sustainable approach to cost sharing in the 2017 Determination, and we have recommended a potential area of focus for IPART if it is minded to update the cost shares for the 2017 Determination.

On balance, however, we recommend retaining the current cost shares until such time as a revised framework can be fully and appropriately implemented in line with the long-term sustainable approach to cost sharing that we have outlined in this report. Retaining the current cost shares would:

- Minimise the risk of making changes in this determination which may be potentially reversed in the next determination following a detailed application of the proposed long-term framework.
- Ensure that stakeholder attention is focussed on the longer-term framework rather than diverted to an interim approach.
- Provide for completion of any remaining upgrades under the 1997 'line-in-the-sand' approach previously applied by IPART to other dam upgrades.

4 Consistent with ACCC Pricing Principles for cost allocation. ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p50.

1 Purpose and scope of this report

1.1 Contextual background

WaterNSW (Rural) (WNSW) (formerly State Water Corporation) delivers bulk water services to irrigators and other licence holders on regulated rivers in NSW. Services are provided in MDB valleys, the North Coast, Hunter and South Coast valleys.

As part of its role as the independent regulator determining the maximum prices that can be charged for certain water services in New South Wales, the Independent Pricing and Regulatory Tribunal (IPART), is required to review WaterNSW's prices for NSW Rural Bulk Water Services to be applied from 1 July 2017. In particular, one of IPART's key tasks in setting WaterNSW's maximum charges is assessing the share of costs allocated between extractive users and the government (i.e. the prices should recover only the users' share of the costs).

In this context, IPART is seeking assistance in undertaking a review of the cost shares framework used to allocate capital and operational expenditure between water users and the NSW Government proposed by WaterNSW for its rural bulk water services from 1 July 2017.

1.2 User and customer cost shares

Consistent with the NWI principles, prices and charges for water should in general recover the full efficient cost of providing the service to water users. However, as in other industries that IPART regulates (such as public transport), there are economic arguments for some government contribution to the costs of providing water services. These include the existence of public goods, the existence of unavoidable legacy costs, and where it is impracticable to recover costs from specific users or beneficiaries of these services.

For example, WaterNSW's bulk water services contain a public good element as the costs incurred in managing dams, weirs, canals, monitoring and flow control assets, and other parts of the bulk water system do not exclusively relate to bulk water delivery. These infrastructure assets provide broader community services such as flood mitigation and environmental monitoring benefits, and as such, arguably, it would be inefficient for currently 'billed' customers to bear the entire burden of such costs.[5] The question then becomes how to determine the shares of costs to be recovered from users and from the NSW Government respectively.

Since its 2001 Bulk Water Price Determination, IPART has adopted a method for sharing costs between extractive users and the government based on the 'impactor

5 IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.142.

pays' principle.[6] As discussed in more detail in section 5.2, the 'impactor pays' principle requires that costs are allocated to the party which created the costs or the need to incur the costs. This principle is also enshrined in the COAG pricing principles for cost recovery of water planning and management.

Box 1: The evolution of user cost sharing for rural bulk water services in NSW

Since its 2001 Bulk Water Price Determination, IPART has adopted a method for sharing costs between extractive users and the government based on the 'impactor pays' principle.[7] This was based on a foundational 2001 ACIL report. The 'impactor pays' principle requires that costs are allocated to the party which created the costs or the need to incur the costs.

Under the current 'impactor pays' approach, the majority of WaterNSW's costs are allocated to users (65% for WaterNSW's Notional Revenue Requirement over the proposed determination period). As part of its submission to IPART, WaterNSW proposed user shares of operating and capital expenditures (see Appendix A), equal to those applied by the ACCC in its 2014 decision. These cost share ratios were established in IPART's 2006 Determination and have remained constant since that time.[8]

However, the total expenditure for each activity to which these shares apply generally changes over time, which means that the total user share as a percentage of notional revenue requirement can also change over time. For the 2017 determination period, WaterNSW's proposed user share of its notional revenue requirement is 70% (including MDBA costs), compared to user shares of notional revenue requirement under the 2014 ACCC determination and the 2010 State Water determination of 62% and 60%, respectively.[9] [10]

Source: IPART Issues Paper, WaterNSW proposal.

Many stakeholder submissions to IPART's Issues Paper for this review have highlighted concerns about the current user shares (including the framework for setting this shares) and requested IPART review these shares for the 2017 Determination. In particular, various stakeholders noted there may be a number of types of 'users' of WaterNSW services beyond licensed entitlement holders (e.g. basic landholder right, planned and licensed environmental water, downstream communities who receive flood mitigation benefits) and expressed concern that they are currently not taken into account in setting the user shares.[11]

---

6 This is compared to their previous methodology which reflected a combination of the 'impactor pays' and 'beneficiary pays' (where users pay charges on the basis of benefiting from the service) principles.

7 This is compared to their previous methodology which reflected a combination of the 'impactor pays' and 'beneficiary pays' (where users pay charges on the basis of benefiting from the service) principles.

8 IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.32.

9 ACCC, *Final Decision on State Water Pricing Application 2014-15 to 2016-17,* Attachments, p 15.

10 IPART, *Review of Bulk Water Charges for State Water Corporation,* Final Report, June 2010, p 48.

11 See Murray Lower Darling – WaterNSW Customer Service Committee (2016), Water NSW Regulated Water Charge Review, Murray Irrigation (2016), Review of Prices for WaterNSW submission to IPART, The Macquarie River Food and Fibre, NSWIC (2016), Water NSW Regulated Water Charge Review, Toonumbar dam,

Given the importance of the user cost shares in determining charges for extractive users (and amounts to be recovered from the NSW Government on behalf of past users or other current and future users), and the fact that these cost shares have not been revisited for some time, since when there have been some significant changes in the operating environment (including the Water Sharing Plans), IPART is seeking to review these cost shares for the 2017 WaterNSW price review.

1.3 Purpose and scope of this consultancy

In this context, Frontier Economics was engaged by IPART to provide assistance by undertaking a review of the cost shares framework used to allocate capital and operational expenditure between water users and the NSW Government proposed by WaterNSW for its rural bulk water services from 1 July 2017. In particular, the primary aims of this engagement are to:

- Assess the existing cost share framework, including the cost shares and determine whether it is meeting the objective of the 'impactor pays' principle.
- Recommend the appropriate share of costs between water users (to be recovered via regulated prices) and the NSW Government (on behalf of the broader community), based on the impactor pays principle.

Our objective in this report is to provide a clear articulation of the rationale for a sharing of these costs between current and future users of these services and the NSW Government, and how a framework can be developed and applied to WaterNSW costs (including the information that is required to implement this framework).

The key question that is the focus of this report is therefore what proportion of WaterNSW's efficient costs over the 2017 Determination period should be met by current and future 'billed' customers of WaterNSW services relative to the NSW Government (on behalf of past users or other current and future users).

1.4 Structure of this report

This report is structured as follows:

- Chapter 2 sets out our approach to the review of the cost sharing arrangements that should apply to WaterNSW efficient costs.
- Chapter 3 outlines the services provided by WaterNSW over the 2017 Determination, and the users of its services, and highlights the changing nature of both the services and the users of these services.
- Chapter 4 discusses the rationale for sharing WaterNSW's efficient costs between customers and the NSW Government.
- Chapter 5 establishes the principles for sharing WaterNSW's efficient costs.

- Chapter 6 sets out the proposed cost sharing framework that meets these principles.
- Chapter 7 outlines the information and processes that may be required to implement the proposed cost sharing framework.
- Chapter 8 outlines a recommended way forward, for the 2017 Determination and beyond.

2 Our approach to the review

Our report has sought to set out a long-term sustainable approach to cost sharing based on sound and well-accepted economic principles.

To do this the report establishes the cost sharing framework from 'first principles' by re-examining the services that WaterNSW provides (as well as users of these services), and establishing the appropriate economic principles for allocating costs between these services, and the users of each of these services (see Table 1).

In our view, this approach will assist IPART and stakeholders in interpreting the relevant economic principles — including what the 'impactor pays' principle means in theory and how it can be applied in practice.

Table 1: Key steps in our approach to the review

Step	Task	Content
1.	Outline the services provided by WaterNSW, and the users of these services	• Outline the specific 'shared' and non-routine services provided by WaterNSW • Outline the users of these services including : ○ 'billed' customers, such as extractive users) ○ other users—some of whom are not billed by WaterNSW—such as planned environmental water, landholders, towns and recreational fishers etc.
2.	Asses the underlying rationales for sharing costs between users and the NSW Government.	• Detail the importance of full cost recovery from users (in most circumstances) • Discuss why should the NSW Government contribute or share in (some of) WaterNSW costs
3.	Establish a set of principles for a long-term sustainable approach to sharing WaterNSW's efficient costs.	• Compare the impactor pays and beneficiary pays principles • Detail the proposed impactor pays approach • Discuss the principles for allocating common costs between multiple impactors
4.	Develop a robust conceptual framework for applying these cost sharing principles to the capital and operational expenditure required to deliver WaterNSW services.	• Articulate the proposed cost sharing framework: ○ Establish the efficient costs of providing WaterNSW's services. ○ Allocate efficient costs to specific services provided by WaterNSW. ○ Subtract legacy costs to determine the efficient forward-looking costs to be

		recovered from current and future impactors. ○ Allocate efficient forward looking costs between current and future impactors. ○ Recover costs from customer or NSW Government through prices, NSW Government contribution (or other cost-recovery mechanism). • Outline supporting measures such as IPART publishing the breakdown and total NSW Government contribution across each of the specific services WaterNSW provides).
5.	Set out the information and processes that are required to implement this framework to develop a long-term sustainable approach to sharing WaterNSW's efficient costs	• Key information required • Potential information and billing system changes required • Potential legislative, policy or regulatory changes required • Targeted consultation and stakeholder engagement
6.	Recommend an interim pathway including a set of cost shares for the 2017 Determination	• Establish the two options for an interim set of cost shares: ○ Maintain the status quo ○ Targeted review of sharing for a sub-set of cost expenditure categories

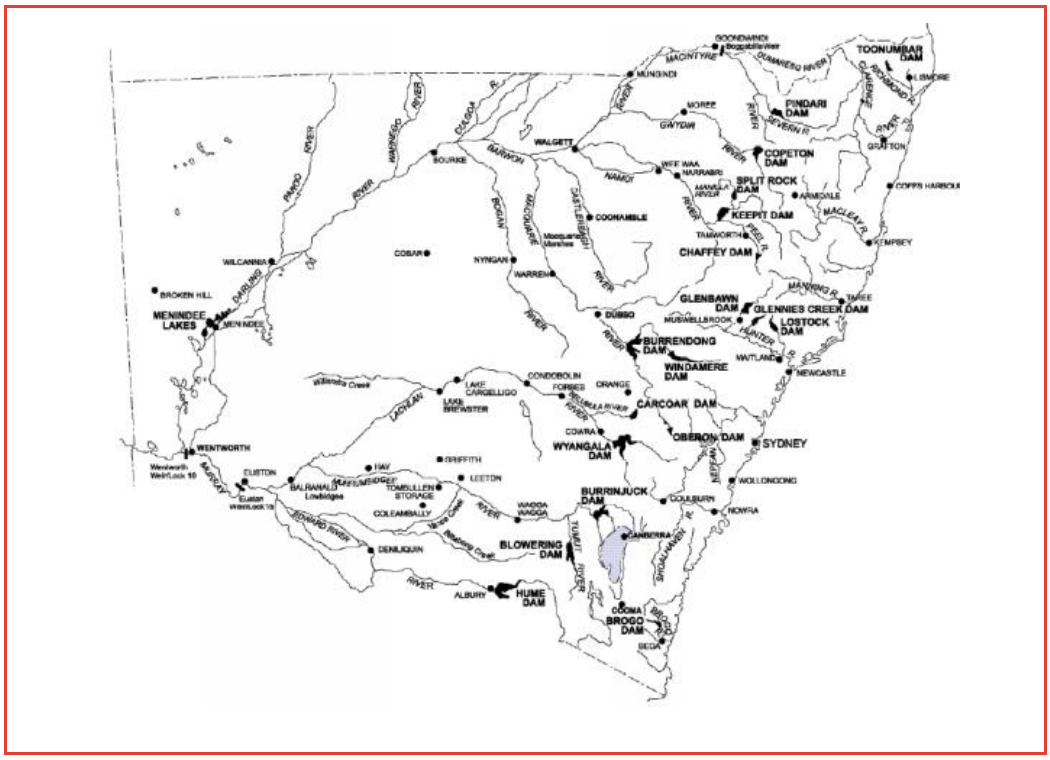
Source: Frontier Economics

3 WaterNSW's services and the users of its services

3.1 Overview

WaterNSW is Australia's largest water supplier and the major supplier of raw or bulk water in NSW, providing multiple services such as water storage and transportation services and environmental flows to various users across the Murray Darling Basin, the North Coast, the Hunter and the South Coast valleys**Error! Reference source not found.**.

Figure 2: WaterNSW's area of operation in providing bulk water services



Source: ACCC (2014), ACCC Final Decision on State Water Pricing Application, p 5.

To provide these services WaterNSW owns and operates 42 large dams, as well as pipelines, canals and other infrastructure necessary to ensure that the water supplied to customers is reliable and meets relevant water quality standards.

All of this involves capital and operating expenditure, as well as a range of other costs (including costs of debt and equity to fund investment) that need to be funded if WaterNSW is to remain financially viable and be in a position to continue providing its services.

However there is significant diversity in the views of WaterNSW's stakeholders as to the appropriate recovery of WaterNSW's efficient costs; specifically the proportion

of efficient costs that should be recovered from 'billed' customers relative to the NSW Government (on behalf of past users or other current and future 'unbilled' users). Two of the key factors influencing this divergence in views are likely to be:

- Changes to WaterNSW's services and operating environment (reflecting evolving government obligations and community expectations, as well as its corporate structure and scope), and changes in the types of users of WaterNSW services and the nature of their use.[12] [13].
- Changes to WaterNSW's mix of expenditure in providing these services, which result in changes in the proportion of costs borne by customers (i.e. billed customers such as extractive users) who pay WaterNSW's charges.[14]

For this reason, Step 1 in our approach to the review is to outline the services provided by WaterNSW, and the users of these services. This chapter highlights the evolving nature of these services and the users of these services.

3.2 Changes in WaterNSW's role

Since 2001 (when the cost share framework was first implemented), WaterNSW's role as the state's bulk-water provider has changed significantly. In particular, WaterNSW is now responsible for:

- **Delivering Environmental water flows**: through the introduction of the *Water Management Act 2000* and the NSW Water Initiative (2004).
- **The Fish River Water Supply Scheme to WaterNSW**: Under the *State Water Corporation Act 2004*, WaterNSW took responsibility for the Fish River Supply Scheme[15] when it was declared a water supply authority under the WMA. The operation of this provision took effect from 1 January 2005.
- **Customer service:** Under *the Water NSW Amendment (Staff Transfers)* a number of functions related to the delivery of water services in NSW have been transferred from DPI Water to WaterNSW. These include:

12 For example, some of the current and future users are not 'billed' customers, whereas others may no longer be users (i.e. may be past users).

13 See NSWIC (2016), *Water NSW Regulated Water Charge Review*; Murray Lower Darling – WaterNSW Customer Service Committee (2016), *Water NSW Regulated Water Charge Review*; Murray Irrigation (2016), *Review of Prices for WaterNSW submission to IPART*.

14 This is because different cost or expenditure activities have different proportions allocated to extractive users.

15 The Fish River Water Supply Scheme was, until 2005, a Government-owned bulk water supplier on the Fish River. The scheme supplies raw and filtered water directly to three major customers- Energy Australia, Lithgow City Council and Oberon Council- around 280 smaller customers, including farmers and industrial customers who use water for domestic purposes.

- **Administration, billing and customer Transactions** (excluding corporate customers);
- **Compliance investigations for customer**s;
- **Water Quality Monitoring;**
- **Hydrometric Assessment;** and
- **Metering Operations.**[16]

Box 2: Principal objectives of WaterNSW

- Capture, store and release water in an efficient, effective, safe and financially responsible manner
- Supply water in compliance with appropriate standards of quality
- Ensure that declared catchment areas and water management works in such areas are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment
- Provide for the planning, design modelling and construction of water storages and other water management works, and
- Maintain and operate the works of WaterNSW efficiently and economically and in accordance with sound commercial principles.

Source: Water NSW Act (2014) No 74, s.6.

3.3 WaterNSW's bulk water services

In its role under Section 6 of the *Water NSW Act 2014*, WaterNSW maintains, manages and operates major infrastructure to deliver bulk water to licensed water users on the State's regulated rivers. It delivers raw water from 42 large dams and more than 280 weirs, pipelines, canals and the State's rivers to deliver water for town water supplies, industry, irrigation, stock and domestic use, riparian and environmental flows. In addition, given the recent transferral of roles from DPI Water to WaterNSW, WaterNSW is responsible for many customer activities, such as metering operations. Table 2 summarises some of the services provided by WaterNSW and some (but not all) of the dedicated and shared assets and costs associated with providing each of these services, with more detail on the nature of these services provided below. One of the key steps in our proposed cost sharing framework is to separately identify the cost of providing each of WaterNSW's key services (see Section 6.3).[17]

16 DPI Water (2016), Water NSW Amendment Bill, http://www.water.nsw.gov.au/water-management/water-nsw-amendment.

17 In providing most of these services, WaterNSW is likely to undertake a number of shared activities with associated costs such as the costs of corporate systems, office accommodation, information management projects and insurance.

Table 2: WaterNSW's services and underlying activities required to deliver services

WaterNSW's services	Description/examples of activities
Water storage and transportation services	
Water delivery operations	One of WaterNSW's primary objectives is to capture, store and release water in an efficient, effective, safe and financially responsible manner. Water delivery operations relate to those activities undertaken to achieve this objective, including determining and implementing storage releases.
Water quality monitoring	WaterNSW conducts extensive water quality and quantity monitoring in the catchments, storages and in-flows to water filtration plants. Monitoring provides information to enable the best quality water to be drawn-off into the supply system, and to identify areas requiring special catchment management attention.
Asset management	Activities associated with asset planning and safety, operational risk and incident management.
Flood mitigation services	
Flood mitigation	Although flood mitigation is rarely the primary service provided by a dam operated by WaterNSW, it provides a flood mitigation service to downstream communities that covers the full range of measures to reduce flood risk, including governance arrangements, policy settings, planning, community education and infrastructure. Flood mitigation prevents costly impacts to land, bridges and roads and the community.
Asset management	Activities associated with asset planning and safety, operational risk and incident management.
Dam Safety Compliance	Activities associated with dam surveillance and dam safety inspections and associated risk assessment.
Environmental services	
Water delivery for environmental purposes	Under the Water Management Act 2000, WaterNSW is required to release sufficient water to ensure that bodies of water have sufficient flow to sustain life ('environmental flows')..
Fish passage projects	Under the Fisheries Management Act 1994 (NSW), WaterNSW is required to provide for fish passages or offset equivalents arising from dam safety upgrades (see Box 4). Activities associated with fish passage projects such as the (now deferred) Fish Superhighways program.
Retailing and customer service activities	
Administration, billing and customer transactions	As with any company, WaterNSW needs to have systems and processes for engaging with its customers. These include administration services; customer support; and customer billing..
Metering operations	Activities associated with compliance and with maintaining and reading water meters for extractive customers and non-extractive customers.
Miscellaneous services or non-routine services	
Non-routine services	Activities associated with providing non-routine services such as Fish River connection/disconnections

Note: In most of these services, there will also be a number of shared activities and associated costs such as the costs of corporate systems, office accommodation, information management projects and insurance.

Source: Frontier Economics; WaterNSW pricing proposal

Box 3: Environmental management services - Fish passage

Many native Australian fish rely on a variety of habitat types and migrate as part of their life cycle, however there are many barriers to fish migration. One of the barriers is the infrastructure used to store and transport water such as dams, weirs and regulators.

Until recently WaterNSW has been delivering the Fish Superhighways Program— a strategic program to improve the capacity of fish to move within and between waterways in New South Wales by allowing fish migration past structures such as weirs and regulators.

The Fish Superhighways Program was developed in conjunction with the NSW Department of Primary Industries Fisheries. However, WaterNSW has indicated that it has substituted the fishways program for other planned works, whilst finalising discussions with Fisheries NSW on developing a least cost, long-term strategy to fish passage management,[18] as part of its compliance with the Fisheries Management Act 1994 (NSW).

Source: NSW Government Primary Industries (2011), State Water Fish Superhighways: A strategic program for securing fish passage; WaterNSW proposal

3.4 Understanding the users of WaterNSW services

WaterNSW serves around 6,300 billed customers across 14 regulated river systems, including irrigation corporations, country town water supply authorities, farms, mines, electricity generators and environmental water holders. It also meets community needs by providing water for stock and domestic users, and is responsible for maintaining environmental flows on regulated rivers. Thus there are a range of users of WaterNSW's bulk water services beyond extractive users such as irrigators (with irrigators being the primary customer of WaterNSW services), who may influence the costs of providing WaterNSW's services or may receive benefits from these services.[19]

Users include:

- **Private Irrigators and Irrigation Companies:** irrigators use water for agricultural production, while irrigation companies distribute water supplied by WaterNSW to their retail customers.
- **Local councils:** Local council customers such as the Dubbo City Council and the Tamworth Regional Council use water supplied by WaterNSW to supply their local communities.

18 WaterNSW, Pricing Proposal for Rural Bulk Water Services, June 2016, p 113.

19 IPART's Issues Paper notes that these users may also be beneficiaries of these services through flood mitigation and environmental monitoring benefits. IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.142.

- **Basic landholder water right holders**: There are three types of basic landholder rights in NSW under the *Water Management Act 2000:*
  - **Domestic and stock rights:** Owners or occupiers of land which is overlaying an aquifer or has river, estuary or lake frontage can take water without a licence for domestic (household) purposes or to water stock.
  - **Native title rights:** Anyone who holds native title with respect to water, as determined under the Commonwealth Native Title Act 1993, can take and use water for a range of personal, domestic and non-commercial purposes.
  - **Harvestable rights – dams:** Harvestable right water allows landholders in most rural areas to collect a proportion of the runoff on their property and store it in one or more farm dams up to a certain size.
- **Tourism and recreational water users:** many of the damns operated by WaterNSW are popular recreational destinations, offering attractions for water sports and recreational fishers.
- **Downstream communities:** communities downstream of dams operated by WaterNSW are users of WaterNSW's services aimed at flood mitigation.
- **Broader NSW/Australian community:** the broader NSW/Australian community benefit from the existence of environmental outcomes of planned environmental watering.
- **Environmental water holders**: WaterNSW releases water for environmental purposes. WaterNSW's proposal notes that environmental water holders are increasingly becoming a major customer segment for WaterNSW.[20]

Further details of these users and the nature of the services they receive is contained in Appendix A.

Many of these users will utilise (or be impactors) on a number of WaterNSW's services. However, not all of them are currently billed customers of these services. For example, while private irrigators and irrigation companies, environmental water holders and local councils are billed users (or direct customers of WaterNSW), other users such as 'planned' environmental water, those with basic water rights and tourism and recreational water users are not currently billed customers.

Table 3 sets out a summary of the users of WaterNSW's services and highlights the important distinction between users and customers of WaterNSW's services. The sections below provide further detail on some of the types of users and the nature of their use.

20 WaterNSW, Pricing Proposal for Rural Bulk Water Services, June 2016, p 12

Table 3: Distinguishing between users and customers of WaterNSW's services

Users	WaterNSW Services	Billed customer?	Nature of use
Irrigators/irrigation companies	Water storage and transportation services, environmental management services, retailing and customer service activities.	Yes	WaterNSW supplies water both to end-use irrigators and irrigation companies, who then distribute to their retail customers. These extractive users also create the need for environmental management services (see Section 5.2).
Local councils	Water storage and transportation services, flood mitigation service, environmental management services, retailing and customer service activities.	Yes	WaterNSW supplies water to local councils to supply their local communities. These users also create the need for environmental management services (see Section 5.2).
Holders of basic landholder water rights	Water storage and transportation services, flood mitigation service	No	Depending on the nature of the right, water can be taken and used for a range of needs including personal, domestic and non-commercial communal purposes.
The Environment (planned water)	Water storage and transportation services (water quality monitoring and flood mitigation), environmental management services.	Not billed directly by WaterNSW, however, users may contribute through other means	WaterNSW implements rule-based environmental water necessary for the fundamental environmental health of our rivers and groundwater systems.
Environmental water holders	Water storage and transportation services, environmental management services, retailing and customer service activities.	Yes	Water NSW delivers water ordered by OEH from their licensed entitlements for environmental purposes
Downstream communities	Flood mitigation service	Not necessarily	Downstream communities benefit from and contribute to the need for WaterNSW's flood mitigation services.
Broader NSW/Australian community	Environmental management services.	No	The broader Australian community has a commitment towards the conservation of the environment and thus are users of WaterNSW's services aimed at environmental sustainability.
Recreational water users	Environmental management services.	Not billed directly by WaterNSW, however, users may contribute through other means.	While not direct consumers of WaterNSW's services, recreational water users rely on the provision of services that ensure the sustainability of the environment.

4 Rationale for cost shares

4.1 Introduction

In reviewing the current approach to cost sharing from first principles it is essential to revisit the underlying economic rationale for not recovering all of Water NSW's efficient costs from its current and future customers, and recovering some from the NSW Government.

4.2 Full cost recovery from users

Prices and charges for water should in general recover the full efficient cost of providing the service to water users. This is well-accepted and articulated by regulators and policy-makers across a range of infrastructure services, and is reinforced in the National Water Initiative (NWI) and in the water charging objectives of the *Water Act 2007*. As Principle 1 of the NWI Pricing Principles states:

> Water businesses should be moving to recover efficient costs consistent with the National Water Initiative (NWI) definition of the upper revenue bound: 'to avoid monopoly rents, a water business should not recover more than the operational, maintenance and administrative costs, externalities, taxes or tax equivalent regimes, provision for the cost of asset consumption and cost of capital, the latter being calculated using a Weighted Average Cost of Capital (WACC).

The economic rationale underlying the principle of full cost recovery is that this signals to water users the true (forward-looking) costs of supplying services to them. This in turn will help to ensure users consume the service only to the point at which the cost of supply is justified by the value to the users of receiving the service. It also provides incentives for suppliers (in this case, WaterNSW) to invest to provide services to users. Conversely, subsidisation of such services may result in excessive extraction of water beyond the economically efficient level or dampened incentives for investment to provide services to users.

There is therefore a general starting presumption that the forward-looking prudent and efficient costs of rural bulk water services provided by Water NSW to its users should be recovered from those users. Such a 'user pays' principle is widely accepted as appropriate for the supply of services for private benefit, and this would include the supply of bulk water services to irrigators and other customers of WaterNSW.

However, as noted in Chapter 3, Water NSW also provides services to a number of other users and undertaken a number of other activities.

4.3 Why should the NSW Government share in Water NSW costs?

The economic rationale which appear to underpin IPART's approach to cost sharing are:

1. The existence of public good or externalities.
2. 'Legacy' issues arising from past activities.

A third rationale raised by other stakeholders is the existence of a broader set of users or impactors beyond licensed extractive users.

4.3.1 Public goods/externalities

IPART suggests that the costs incurred by Water NSW in managing dams, weirs, canals, monitoring and flow control assets, and other parts of the bulk water system do not exclusively relate to bulk water delivery, but can provide broader community services such as flood mitigation[21].

The existence of public goods is a well-established economic grounds for government funding, as otherwise such services may be under-provided. As such, water-related services that provide public benefits to the community (such as flood mitigation services) could in principle be met by Government (i.e. the community is the user of the service). This is broadly consistent with the way that IPART has set public transport fares, and as noted by the ACCC's Darryl Biggar:

> There may arise an economic argument for long-term under-recovery of costs where there are public good aspects to the service provided. Specifically, long-term under-recovery of costs might be justified if:
>
> - The monopoly infrastructure provides services other than services directly associated with the provision of bulk water; and
> - Those additional services cannot easily be charged to the beneficiaries.
>
> Either those service require the supplier to incur some additional (incremental) cost; and/or there is an implicit or explicit agreement that any common costs will be shared in a particular way. [22]

However as discussed in Section 5.5, the costs of providing WaterNSW's flood mitigation services should not necessarily recovered from the NSW Government. Consistent with IPART's funding hierarchy established in its *Review of funding framework for Local Land Services NSW* [23], in this first instance the costs of providing

---

21 IPART, Issues Paper, p142.

22 ACCC (Darryl Biggar), *The allocation of costs between government and users in the regulation of wholesale water service providers in New South Wales*, Working Paper Series no. 7, September 2012.

23 Source: IPART, *Review of funding framework for Local Land Services NSW, Draft Report, September 2013.*

these services should be recovered from those that create the need for this service (i.e. the impactors). Separately identifying the costs of providing each of WaterNSW services and the impactors on the costs of these services are discussed in Chapter 6.

4.3.2 'Legacy issues'

The second rationale for Water NSW bulk rural water costs being shared by government relates to what IPART describe as 'legacy assets'.

This appears to have been interpreted by IPART as requiring government (rather than users) to pay for any costs associated with changed regulatory standards.

In our view the economic rationale for government paying for costs associated with changed regulatory requirements, rather than being reflected in charges to users, is weak.

Legislation and regulation is constantly changing in a range of activities and the costs of complying with such regulation is typically absorbed by the party which has to comply and then passed on to users of the products or services which they supply.

Indeed, regulatory frameworks generally applied by IPART and other economic regulators generally explicitly provide that the costs able to be recovered by regulated businesses include the prudent and efficient costs of meeting all clearly imposed legal and regulatory obligations. In many cases these regulatory obligations are imposed to protect the broader community. For example, the cost to Sydney Water of complying with wet weather overflow requirements imposed by the EPA as a licence condition are permitted by IPART to be passed through to customers.

Legislation or regulation requires Water NSW to comply with certain obligations, and this represents part and parcel of the costs to Water NSW of supplying its services and should properly be recovered from users.[24] To do otherwise would be to subsidise the costs of activities required in supplying services to those users.

In this regard we disagree with the arguments presented by Darryl Biggar in his 2012 paper, in which he suggests "there is also an economic argument for a government contribution during the period of phase-in of new regulatory requirements, as assets created under a previous regulatory framework come to the end of their life and are replaced:

> The argument runs as follows: in the course of their regulatory activity governments routinely impose costs or obligations on individuals and firms. These obligations might involve, for example, regulatory requirements relating to health and safety, the environment, or land use. But individuals and firms must often make substantial sunk

[24] In some sense, there is no different to the cost of electricity generators needing to comply with the Carbon Pollution Reduction Scheme (CPRS), which IPART then included in regulated retail electricity prices, or the costs of electricity retailers complying with the Renewable Energy Target (RET). In both these examples, IPART provided for the recovery of the efficient costs of meeting these obligations in energy prices (i.e. full cost recovery from the impactor).

> investments to maximise the value of economic transactions, such as investment in plant and equipment, buildings, or in human capital. The value of that investment may be sensitive to the nature and extent of the regulatory requirements. The threat of future changes in regulatory requirements therefore can have a chilling effect on private investment….
>
> A change in regulatory obligation, if it is material enough, may constitute a 'taking' for which compensation must be paid. Such compensation, like grandfathering, reduces the impact of new regulatory obligations on existing investment, fostering a climate in which private sunk investment is protected and thereby promoted. [25]

In our view, changes to standards (e.g. OH&S, dam safety) does not constitute a fundamental breach of the 'regulatory contract' between the economic regulator and the regulated business, particularly if standard regulatory practice was adopted which allowed the prudent and efficient cost of meeting the regulatory changes to be recovered from end users. Provided such pass-through of changes in costs arising from changes in regulatory obligations is permitted, the regulated business would not face any disincentive to invest. While Biggar acknowledges that his argument does not apply to government-owned firms, he does suggest that there may nevertheless be a chilling effect on investments by end users (e.g. irrigators) if these cost are passed through.

We do not agree with this contention. This would imply that end users should be forever immune from any higher costs of providing water services to them arising from changed standards. This would not seem a reasonable assumption on which to make private investment decisions. In any event, there does not appear to be strong evidence that passing through the costs of WaterNSW complying with new standards to end users would have a major impact on the viability of end user investments.

A quite separate 'legacy' issue identified in the original ACIL report on user cost shares relates to the costs of activities which would continue to be required, even if extractive use was to cease. In this sense such costs (e.g. costs of remediating past environmental damage) may be required regardless of any future users. Such legacy costs therefore do not form part of avoidable forward-looking costs of supplying services to extractive users. There is therefore no economic efficiency argument for signalling these costs to users as these costs will not change regardless of water users' consumption decisions, and as such they should be borne by the Government.

4.3.3 Where it is not efficient and cost-effective to identify and/or allocate costs to the impactor

As noted by a number of stakeholders, there may be a number of types of 'users' of Water NSW services beyond licensed entitlement holders (e.g. basic landholder

---

25 ACCC (Darryl Biggar), *The allocation of costs between government and users in the regulation of wholesale water service providers in New South Wales*, Working Paper Series no. 7, September 2012.

rights, planned environmental water, downstream communities who receive flood mitigation benefits).

To the extent that such parties cause Water NSW to incur costs in providing these services, there may be a legitimate case for assigning a share of these costs to these users rather than to irrigators.

However, as IPART noted in its *Review of funding framework for Local Land Services* it may not be efficient and cost effective to:

- Identify the specific impactor.
- Identify the proportion of forward-looking costs that current and future impactors may contribute to the costs of providing WaterNSW's services.
- Levy WaterNSW's charge on the impactors (say due to policy, regulatory or commercial billing barriers). [26]

In these contexts, it may be appropriate for taxpayers, through the NSW Government, to bear the costs created by these impactors on their behalf. However, as noted in Chapter 3, the services provided by WaterNSW and the make-up of users of these services are dynamic suggesting that IPART should revisit these costs shares and whether these specific circumstances continue to exist. For example, changes to policy, regulatory or commercial relationships may mean that it is possible to identify, quantify and levy WaterNSW charges on new types of users in proportion to their contribution to the cost of providing WaterNSW's services (see section 7.3 for discussion on potential legislative, policy and regulatory changes necessary to implement the proposed cost sharing framework).

4.4 Conclusion

While there are sound economic arguments for water users to pay for the costs associated with the provision of water-related services to them by Water NSW, there are also sound arguments for costs associated with providing services to other parties/or providing public goods to be borne by these other parties or by government on their behalf when it is impractical or cost-effective to recover costs from these other impactors. However, unlike previous approaches to cost sharing adopted by IPART, we do not consider changing regulatory standards or obligations as being one of these legitimate rationales, nor the existence of public goods or benefits (unless there is no cost effective mechanism to identify and levy the impactors).

In our view, the approaches adopted to cost sharing should be closely aligned to these underlying rationales.

26 IPART, Review of funding framework for Local Land Services NSW, Draft Report, September 2013.

5 Establishing the principles for sharing WaterNSW's efficient costs

5.1 Introduction

The next step in our approach is to establish a set of principles for a long-term sustainable approach to sharing WaterNSW's efficient costs, given that there are legitimate grounds for such cost sharing.

It is well recognised that a robust cost sharing framework should provide incentives for users and suppliers to act efficiently and reduce the incentive to cost shift.[27] It should also promote transparency and consistency.[28] As such, getting the principles that underpin IPART's cost sharing framework for WaterNSW 'right' will not only ensure that the cost sharing framework provides the right incentives for extractive water use, flood mitigation and other community activities and for WaterNSW to invest to provide services to users, it should also make the framework more sustainable — by making it more transparent and consistent (both over time and with other industries).

However as noted in Chapter 1, there is significant diversity in the views of WaterNSW's stakeholders as to the appropriate recovery of WaterNSW's efficient costs; specifically the proportion of efficient costs that should be recovered from current and future licence holders (or 'billed' customers) of these services relative to the NSW Government (on behalf of past users or other current and future 'unbilled' users including the community). Two of the key factors influencing this divergence in views are likely to be the:

1. Long history of sharing the costs of providing bulk water services between certain users and the NSW Government, but with the basis and rationale for this cost sharing shifting over time.
2. Different interpretations of the rationale for cost sharing and the appropriate principles to guide its practical application. [29]

---

27 As noted by IPART, "This approach provides a signal to the identified party the cost of their decisions or actions and provides an incentive to act efficiently. When those creating the need or receiving a benefit from a service are disconnected from the cost of their actions, there is a real risk that inefficient demand for action will occur or that individuals will rely on the efforts of others." IPART, *Submission to Productivity Commission Review of Natural Disaster Funding Arrangements: Issues Paper*, 2014, p3.

28 For example, the Australian Energy Regulator (AER) notes that the purpose of developing robust cost allocation methodologies is not only to ensure that customers only pay for the efficient costs of providing services and to prevent cost shifting or incorrect allocation of costs between services, but also to promote transparency and consistency, "all of which is likely to be in the long-term interests of electricity customers." AER, *Electricity distribution network service providers: Cost allocation guidelines*, June 2008.

29 See Toonumbar Water Users Group (2016), *Reply to IPART Issus Paper September 2016*; Lachlan Valley Water INC (2016), *Submission to IPART on WaterNSW Regulated Charges 2017-2021;* The Macquarie River

For example, in 2012 an ACCC *Working Paper* by Darryl Biggar noted that:

> …it appears that the current methodology used by IPART to allocate costs remains somewhat blurred. The imprecision in the application of the 'impacter pays' cost allocation framework seems to result from a failure to clearly articulate the rationale for the government contribution.[30]

This chapter establishes the rationale and the relevant principles for a long-term sustainable approach to sharing WaterNSW's efficient costs. In particular, the chapter articulates the 'impactor pays' principle, why it is relevant and appropriate in setting user shares, and in practice how it differs from the 'beneficiary pays' principle.

5.2 The impactor pays principle

The 'impactor pays' principle allocates the costs associated with providing the service to the parties that directly cause, or impose, the costs on others. In this case, according to the 'impactor pays' principle the costs associated with providing WaterNSW's services should be borne by individuals or groups according to the contribution they make to creating the costs or the need to incur the costs. This is broadly consistent with the funding 'hierarchy' developed by IPART in its *Review of funding framework for Local Land Services* (see Box 4*).*[31]

Box 4: Impactor pays principle and funding hierarchy articulated by IPART in its *Review of funding framework for Local Land Services*

In its review of the funding framework for Local Land Services, IPART suggested that whether someone should fund a service should be determined by a hierarchy. In particular:

- Where identifiable, the party causing the adverse impact to which the activity is directed should fund that activity (i.e. the 'impactor pays' approach);
- Where there is no adverse impact being addressed, or whether the impactors are too difficult to charge, then those benefiting from the activity should pay (i.e. the 'beneficiary pays' principle); and
- As a last resort, where clearly identifying the impactor or beneficiary is too difficult or where it is administratively inefficient to charge either party, the taxpayer should fund the activity.

Source: IPART, Review of funding framework for Local Land Services NSW, Draft Report, September 2013.

Food and Fibre (2016), *Submission on WaterNSW's Pricing Application for Rural Bulk Water Services from 1 July 2017*.

30 ACCC (Darryl Biggar), *The allocation of costs between government and users in the regulation of wholesale water service providers in New South Wales*, Working Paper Series no. 7, September 2012

31 However the terminology used by IPART regarding 'who demands an activity' when identifying the impactor, in our view, creates the potential for confusion, particularly when articulating who should bear the costs associated with the imposition of various Government standards or obligations on WaterNSW (say, dam safety, OH&S or in other industries such as the impact of the Renewable Energy Target on the cost of electricity).

5.3 Beneficiary pays principle

In contrast to the 'impactor pays' principle, the 'beneficiary pays' approach suggests that those who benefit from an action should contribute to the costs of the action. Beneficiaries can include:

- **Direct beneficiaries**: those who derive a direct private benefit from the activity, such as the irrigators using WaterNSW's water delivery and transportation services.
- **Indirect beneficiaries:** those who derive an indirect benefit, such as the broader community which benefits from an improved environment.

In this case, according to the 'beneficiary pays' principle the costs of providing WaterNSW's services should be allocated to the individuals or groups in proportion to the benefits they derive from such services.

However, as discussed above, subsidisation of services (where impactors are not contributing to the costs of providing such services) may result in excessive extraction of water beyond the economically efficient level or dampened incentives for investment by WaterNSW to provide services to users.

As not all impactors are beneficiaries (and vice versa), imposing the costs of service provision solely on those who benefit from such services (and not those who create the need for such services or impose the costs on others), can result in economically inefficient outcomes.

In addition, the 'beneficiary pays' approach requires sufficient information to determine the proportion of benefits that accrue to different user groups. This is difficult to quantify when a significant share of the benefits is accrued to public good services, which, as discussed below, are an integral component of WaterNSW's services.

5.4 Comparing the impact and beneficiary pays approaches

In the past, IPART has used both the 'impactor pays' and the 'beneficiary pays' approaches to allocating costs. While the two approaches may appear similar, in practice, they can lead to very different results. In many cases, the users of WaterNSW's services are both impactors and beneficiaries, but as shown in Table 4 to Table 6, this is not always the case.

For example, beneficiaries may be 'free riders', benefiting from the provision of a service, even if they did not demand it or necessitate its provision. Under the 'beneficiary pays' principle, such a user would be required to meet some of the costs of the provision of services associated with environmental management. However, as they do not impose costs on WaterNSW in their use of such services, under the 'impactor pays' principle, they are not required to contribute to those costs.

Table 4 and Table 5 set out the likely impactors and beneficiaries of two key services provided by WaterNSW: its water storage and transportation service as well as environmental management service.[32] Table 6 sets out the likely impactors and beneficiaries of WaterNSW's flood mitigation services.

It is also important to note that in practice differences between the approaches can become narrowed or blurred in some circumstances. For example, in some cases impactors and beneficiaries may be the same parties – extractive water users impose the requirement for environmental management activities (to ensure sustainable and optimal water usage for society as a whole) but these users also derive benefits including supply certainty from the planning and management activities. Section 5.6 sets out the principles for allocating common or shared costs between services, while Section 6 outlines one of the key steps in our proposed cost sharing framework—allocating the efficient forward looking costs between current and future impactors (i.e. where there are multiple impactors) to ensure each impactor contributes at least the incremental costs associated with the provision of these services to them.

Table 4: Establishing whether users are impactors or beneficiaries of WaterNSW's water storage and transportation services

Users of WaterNSW's service	Users	Impactor	Beneficiary
Irrigators	✔	✔	✔
Local councils	✔	✔	✔
Holders of basic landholder water rights	✔	✔	✔
The Environment (planned water)	✔	✘	✔
Environmental water holders	✘	✘	✔
Downstream communities	✔	✔	✔
Broader NSW / Australian community	✔	✘	✔
Recreational water users	✔	✘	✔

32 Chapter 6 discusses the benefits of separately identifying each of the key services provided by WaterNSW and then specifying the costs of providing each of these services.

Source: Frontier Economics

Table 5: Establishing whether users are impactors or beneficiaries of WaterNSW's environmental management services

Users of WaterNSW's service	Users	Impactor	Beneficiary
Irrigators	✗	✓	✓
Local councils	✗	✓	✓
Holders of basic landholder water rights	✗	✓	✓
The Environment (planned water)	✓	✓	✓
Environmental water holders	✗	✗	✓
Downstream communities	✓	✓	✓
Broader NSW / Australian community	✓	✗	✓
Recreational water users	✓	✗	✓

Source: Frontier Economics

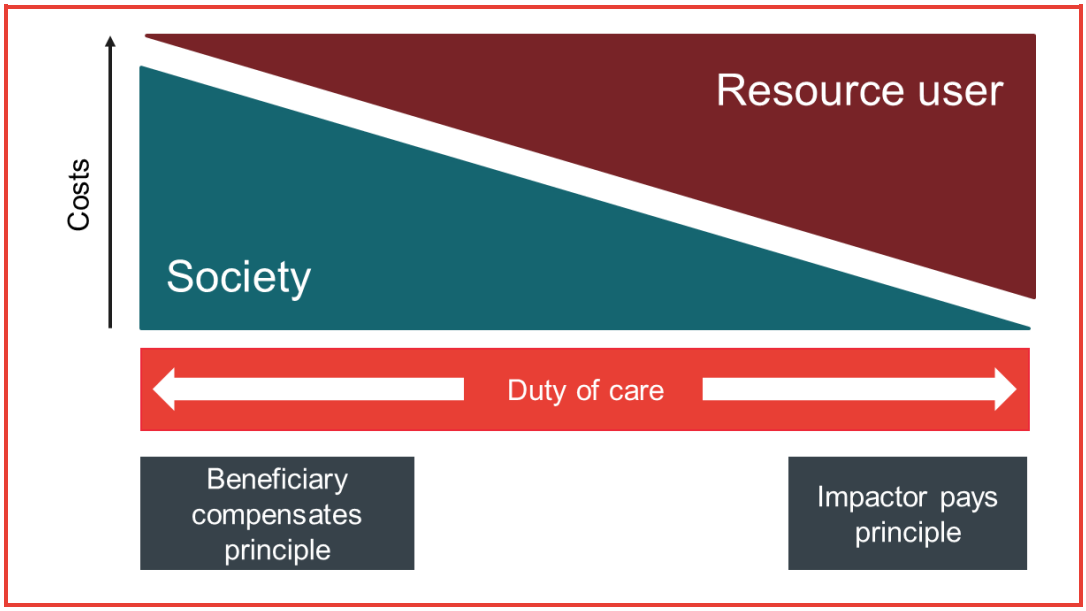
Table 6: Establishing whether users are impactors of WaterNSW's flood mitigation services

Users of WaterNSW's service	Users	Impactor	Beneficiary
Irrigators	✔	✔	✔
Local councils	✔	✔	✔
Holders of basic landholder water rights	✔	✔	✔
The Environment (planned water)	✔	✔	✘
Environmental water holders	✘	✘	✘
Downstream communities	✔	✔	✔
Broader NSW/ Australian community	✘	✘	✔
Recreational water users	✘	✔	✔

Source: Frontier Economics

One way of understanding the difference between the impactor and beneficiary pays approaches is to view them as representing different points on a spectrum of the relative sharing of the duty of care to maintain sustainable water resource supplies between water users and government (see Figure 3).

Figure 3: Cost sharing along the duty of care spectrum



Source: Adapted from Hajkowicz, S. and Young, M. (2000), An Economic Analysis and Cost Sharing Assessment for Dryland Salinity Management, A Case Study of the Lower Eyre Peninsula in South Australia, A Report to Primary Industries and Resources, South Australia, Policy and Economic Research Unit CSIRO Land and Water, April, p.13.

Under the impactor pays approach, impactors meet the costs of required management and mitigation actions on the basis that they bear the duty of care. Under a beneficiary pays approach the government takes on more of the duty of care and individuals or groups only contribute to management and mitigation costs where they derive benefits. As noted by Hajkowicz and Young:

> The landholder's duty of care is an important issue in the cost sharing framework. This represents the minimum environmental performance standard which society demands of land management activities. In general, government should not enter into cost sharing arrangements which enable a landholder to avoid duty of care obligations. This suggests that cost sharing is only justifiable for actions that go above and beyond the duty of care. Duty of care is an evolving concept that changes with time and experience.

Viewed in this way, it becomes apparent that the 'impactor' and 'beneficiary' pays methodologies are closely related to the underlying assignment of property rights.

5.5 Our interpretation of the impactor pays approach

As noted in section 1.2, over a series of determinations IPART has developed and applied a version of the 'impactor pays' principle to the allocation of cost shares to users and the NSW Government for certain Water NSW expenditures.

Key reasons for the adoption of the 'impactor pays' rather than 'beneficiary pays' principle (dating back to the 2001 determination) are that the impactor pays approach better signals the costs to users and other parties and is therefore more likely to promote economically efficient outcomes. The impactor pays approach was also seen

as easier to implement than the beneficiary pays approach for which it would be difficult to estimate the quantum of benefits accruing to different parties and in some cases to 'bill' customers for these benefits.

While we support at a high level the adoption of the impactor pays approach, experience suggests that there are a number of different interpretations of how this principle should be applied in practice, and in particular how to define who is the impactor(s) for particular activities undertaken by Water NSW.

In our view, in order to achieve the underlying economic efficiency objectives of the impact pays approach, it should be applied in a way which:

- Focuses on the efficient forward-looking costs of undertaking activities to meet the needs of users/impactors, and
- Reflects the existing property rights or 'duty of care' established in legislation and regulation.

The key question is who is the ultimate impactor(s) which is driving the ongoing need for the activity to be undertaken?

If the activity and associated expenditure would need to be undertaken even if the impactor ceased its activities, so that the cost is not avoidable, then that party is not an impactor for that activity/expenditure. If there is no such identifiable *current* impactor or group of impactors for a particular Water NSW activity, then the activity is a true 'legacy' issue and the 'impactor' can be seen as 'past users or government policy', and for which it would be appropriate to assign cost to the NSW Government.

In assessing who is an impactor, reference to the existing property rights or 'duty of care' would also imply that government should not be treated as an impactor simply because it establishes these rights in legislation or regulation.

A property rights approach would define impactor based on this 'duty of care' obligation which would imply any costs associated with meeting minimum standards should rest with those whose activities require these standards to be established.

This approach to the impactor pays principle is illustrated in the Box below.

Box 5: Proposed approach to applying impactor pays principle

In applying this approach, the key questions are:

- Would the Water NSW activity/service be required if the current/future users no longer existed or ceased their water-related activities? Which current or future users/impactors are causing the ongoing need for this activity to be undertaken and the associated costs to be incurred?
  - If the activity relates only to the need to address/ameliorate activities undertaken in the past (e.g. past environmental damage), and would still be required even if the current /future users did not continue their activities, then the cost of these activities should be assigned to the Government and not to current or future users.

- Do the activities and associated costs reflect the standards required by existing legislation/regulation?
  - The costs of undertaking activities or providing services to end users should reflect the full costs of complying with legislative/regulatory obligations and should be assigned to the relevant users/impactors (consistent with other IPART regulatory precedent for passing through efficient and prudent costs of meeting Government obligations—say cost of meeting higher electricity network reliability licence conditions[33])
  - Where Water NSW provides services or undertakes activities at a level higher than the mandated minimum standards, the user/impactor is the party which requests or agrees to the higher standards.
  - Where WaterNSW is providing a commercial water services at the request of water-users then these users are also the impactors.
- Is there more than one user/impactor or group of users/impactors?
  - If the activity/services is provided because of/to more than one impactor or group of impactors (e.g. different types of extractive users and/or other parties such as environmental water holders) the full range of such users/impactors should be identified
  - Identification of all impactors requires repeatedly asking the question (for each identified impactor) of whether the activity/service would still be required even if one identified impactor ceased their water-related activities
  - Where multiple users/impactors are identified, there is a need to assess the direct and common or shared costs associated with servicing each identified user/impactor (see section 5.6 for the relevant principles in allocating costs between impactors).

Source: Frontier Economics

We recognise that this interpretation of how to apply the 'impactor pays' principle departs in some respects from the version of 'impactor pays' currently applied in the most recent determinations of user shares of Water NSW rural bulk water costs, particularly in relation to:

- definition of 'legacy' costs
- treatment of environmental planning and management costs
- flood mitigation.
- dam safety upgrades

Definition of Legacy costs

One key difference, already discussed in section 4.3, relates to the definition of 'legacy costs; to be assigned to the Government share. Under our proposed approach, only costs which are unavoidable are properly categorised as 'legacy costs;' to be assigned

[33] IPART, NSW Distribution Network Cost Pass Through Review: Statement of Reasons for Decision: May 2006.

https://www.ipart.nsw.gov.au/Home/Industries/Energy/Reviews/Electricity/NSW-Electricity-Distribution-Network-Service-Providers-Applications-for-a-cost-pass-through?qDh=2

to the NSW Government. This contrasts with IPART's 'line-in-the-sand' approach to changes in standards pre- and post-1997. IPARTs Issues Paper notes that:

> To determine legacy costs, it is more appropriate to draw a line in the sand at a particular date and to consider only expenditure required to meet standards established at or before that date. We drew a line in the sand at July 1997, so the NSW Government bore all legacy costs incurred before that date.[34]

As discussed above, in our view assigning costs attributable to changes in standards to government would undermine the cost signalling intention of an impactor pays approach and is also inconsistent with general regulatory practice.

As outlined in Box 5, the key question is; would the Water NSW activity/service be required if the current or future users no longer existed or ceased their water-related activities? If the answer is no, then it is unlikely to be a true legacy cost.

Environmental water

Another key difference relates to the treatment of Water NSW activities aimed at improving environmental outcomes.

A key question to resolve here is whether the environment is seen as:

- Just another user of equal standing to extractive users and therefore liable for costs in an analogous manner; or
- Whether (as some have argued in the past) that costs associated with for example planned environmental water are caused by the activities of extractive users (as the needs of the environment need to be met as extractive use occurs) and should therefore be wholly allocated to extractive users as part of the cost of sustainably supplying water to extractive users.

In our view, planned environmental water as prescribed in WSPs should be seen as part of the 'duty of care' of water extractive water users. This is consistent with the definition of planned environment water under Section 8 of the Water Management Act 2000 as being:

> "water that is committed by management plans for **fundamental ecosystem health** or other specified environmental purposes, either generally or in specified circumstances, and that cannot to the extent take or used for any other purpose. [own emphasis added]

This would imply that costs incurred by WaterNSW in providing planned environmental water (as a 'minimum' standard) would be allocated to (all) consumptive water users under an impactor pays approach. This differs from the approach proposed by CIE in the 2006 review, which viewed extractive users and the broader community as joint impactors in the development of WSPs.

---

34 IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.147.

In contrast, costs associated with managing adaptive environmental water in accordance with environmental water holders' instructions would be allocated to those environmental water holders.

Flood mitigation

As noted above, one potential service provided by Water NSEW is flood mitigation for downstream communities, and as such they may be an impactor in causing the need for expenditure.

For example, in its submission to the current review, Macquarie River Food and Fibre (MRFF) noted that the officially acknowledged purpose of Burrendong Dam when it was expanded in the 1950s was for flood mitigation, in addition to irrigation and provision of stock and domestic supplies. MRRF suggested that almost one third of the dam's total storage capacity is designated and operated solely for flood mitigation, with the remaining capacity designated for irrigation, stock, domestic and environmental purposes. It suggested that it was therefore inequitable to allocate all operating costs associated with the dam to irrigation customers:

> MRRF submits that recognitions of Burrendong Dam's flood mitigation role is particularly important and valley specific, given such a large part of the Macquarie's infrastructure, storage and delivery costs are related to Burrendong Dam. Bearing in mind this officially recognised role of the dam, flood mitigation must be recognised under the 'impactor pays' approach.

However, we also note analysis by Biggar (2012) which suggests that:

> … although some dams in Australia provide flood mitigation services as either a primary or secondary purpose, flood control is seldom the primary reported purpose of a dam, and dams whose primary purpose is flood control are not usually very large… In NSW, Burrendong Dam is the only dam of a material size which provides flood mitigation as a primary or secondary purpose. For the average or typical dam, flood mitigation is not an important service.

Application of the impactor pays principle; will therefore require carefully assessing the role of flood mitigation for various Water NSW assets.

Dam safety upgrades

The costs of meeting dam safety requirements can be significant, and there is significant divergence among stakeholders about who should pay for these costs and the underlying rationale for any cost sharing.

Many stakeholders are of the view that the NSW Government should fund some (or all) of the costs of meeting dam safety requirements. The reasons provided by stakeholders include:

- The costs of meeting current dam safety requirements reflect lower levels of safety required by past legislation and regulation. As past users only funded the relatively lower costs of these dam safety requirements, current and future users

should not be required to fund 'catch-up' related costs (i.e. NSW Government as funder of legacy costs).

- The NSW government 'demands the activity' through new legislation and regulation that increases the costs of dam safety and should be considered the impactor (i.e. NSW Government as impactor through imposition of higher costs).
- Downstream communities are the primary beneficiaries of high dam safety requirements through reduced risks of dam failure and flooding (i.e. NSW Government as beneficiary on behalf of downstream communities).
- Some of the costs of meeting dam safety requirements are unlikely to be efficient, and therefore the NSW Government should fund any 'inefficient costs' (i.e. Government as shareholder of WaterNSW).

While IPART's approach to setting WaterNSW's maximum charges is to firstly determine the efficient costs required to provide its services (and meet its relevant obligations), the issues to explore in allocating these efficient costs is whether there is a clear and identifiable impactor and whether it is efficient and cost-effective to allocate costs to this impactor. In our view, consistent with the principles outlined in Box 9, the relevant questions to ask are:

- Is the dam required to provide services to current and future users of WaterNSW's services? If so, then current and future users of the dam are the impactors, not the NSW Government (either as funder of legacy costs on behalf of past users or as the party that 'demands the activity')
- Is there more than one identifiable impactor (say because dam safety standards are required to ensure there is sufficient water available for irrigation and to minimise risk of downstream flooding)?
  - If so, consideration needs to be given to the principles for allocating common costs (i.e. where both parties contribute the need for expenditure). Causal drivers might include dam capacity, so for example it may be appropriate to allocate costs between extractive users and downstream communities on the basis of the proportion of the actual capacity of the dam accounted for by full supply levels and airspace for flood mitigation respectively.

5.6 Principles for allocating common costs between multiple impactors

As noted above, in many vases there may be multiple impactors or groups of impactors for activities/services provided by Water NSW. As a result, in the provision of these services regulated businesses typically utilise a number of dedicated assets and activities/operations as well as a number of shared or common assets and activities/operations.

Direct costs, including the costs of dedicated assets and activities/operations, can relatively easily be allocated to specific impactors. The key principle is to ensure there is a clear identification of the characteristics of the cost item that associate it uniquely with a particular category of service or a specific impactor.[35]

Common costs are those costs that are incurred in the supply of more than one service or to more than one customer, but which cannot easily be attributed to any single service or customer because they may not be directly affected by the variation in the provision of any one service or product. There is considerable literature and precedent across economic regulation of infrastructure services in allocating costs associated with dedicated assets and activities as well as costs associated with shared or common assets and activities.[36]

In terms of allocating costs associated with shared or common assets and activities—where there are multiple users/impactors of a service — the key cost allocation principles involve:

- Using a causal allocator where possible—which is likely to vary depending on the nature of the shared cost—to share those costs between services[37] or impactors and ensuring that the same cost is not allocated more than once i.e. avoid double-counting (see Box 8).
- Ensuring that the aggregate costs allocated to each service or users of a service are between the stand-alone and avoidable cost of providing services (see Box 7). This ensures that costs recovered from users of specific services are not outside the bounds defined by economic efficiency. Many regulatory frameworks, such as the NGR[38], utilise these principles in setting tariffs or allocating common costs.

35 Consistent with the ACCC's pricing principles for cost allocation. : ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p50.

36 For example, under the National Electricity Rules, the AER is required to develop and publish certain cost allocation information. The AER's cost allocation guidelines set out arrangements to manage the attribution of direct costs and the allocation of shared costs by DNSPs between different categories of distribution services. These guidelines are designed to provide guidance to DNSPs in developing their Cost Allocation Method (CAM). AER, *Electricity distribution network service providers: Cost allocation guidelines*, June 2008.

37 Where there is an identifiable relationship between the shared costs and the services being provided. A non-causal allocator should only be used for shared costs where it the costs are immaterial and/or where it is not efficient or effective to establish causal relationship.

38 For example, National Gas Rule 94(3) requires that for each tariff class, the expected revenue to be recovered should lie on or between an upper bound representing the stand-alone cost of providing the reference service to customers who belong to that tariff class; and the lower bound representing the avoidable cost of not providing the reference service to those customers.

Box 6: ACCC Pricing Principles – Cost allocation

Charges are to be approved or determined on the basis of a cost allocation methodology that:

- identifies which costs arise from providing infrastructure services (to which regulated charges apply) and which costs arise from other activities undertaken by the operator attributes direct costs to the service to which they relate and not more than once to any category of service[39]
- uses an appropriate allocator when a causal allocator for shared costs can be identified
- only uses a non-causal allocator for shared costs where those costs are immaterial or no causal relationship could be established without undue cost and effort
- allocates shared costs such that the full amount of those costs, no more or no less, is allocated to the services to which it relates.
- the same cost must not be allocated more than once in any instance.

Source: ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p50.

Box 7: Allocating costs consistent with the stand-alone and avoidable costs principles

The purpose of applying stand-alone and avoidable cost bounds on the recovery of costs or revenues is to ensure that, regulated businesses are not pricing outside the bounds defined by economic efficiency.

- Stand-alone costs of providing a service represent the costs of providing a specific service to one or multiple users (say a tariff class). This is an upper bound because the regulated business supplying only one class of users would not achieve the same economies of scale of supplying multiple classes of users.
- Avoidable costs for each class of users are the costs a regulated business would avoid were the class of users to no longer exist. This only includes costs related to dedicated assets and operations and is therefore generally a relatively low value.

These stand-alone and avoidable cost bounds are the highest and lowest theoretical prices that a regulated business could charge a set of users (or tariff class) for a specific service without inefficiently imposing costs on that set of users or other sets of users. That is, pricing outside these efficient bounds implies inefficient levels of cross subsidisation between customer classes or specific services if the business is recovering its costs.

Source: Frontier Economics

5.7 Summary of principles for establishing a long-term sustainable approach to cost sharing

Box 8 sets out a set of principles for establishing a long-term sustainable approach to cost sharing. These principles have been used to develop the cost sharing framework discussed in Chapter 6.

[39] This is consistent with step 2 in our proposed cost sharing framework which involves allocating WaterNSW's efficient costs to its key services.

Box 8: Principles for establishing a long-term sustainable approach to cost sharing

The following set of principles draws upon the well-established regulatory principles and precedent as well as the objectives in the NWI and Water Act. These principles, in our view, are most likely to facilitate a long-term sustainable approach to cost sharing:

- The services, users, and the efficient cost of providing each of these services to these users, should be clearly identified.
- Users should contribute to the efficient and forward-looking costs of providing WaterNSW's services consistent with promoting economically efficient water use behaviour, including the impactor pays principle[40], and other principles for allocating common costs.[41]
- The framework for allocating costs to users should promote consistency with regulatory precedent for cost recovery in other industries IPART regulates (and to extent possible, other regulatory frameworks), including the treatment of legacy costs and recovery of other costs in incurred in supplying services as a result of Government standards/obligations.
- Equity concerns should be addressed directly and transparently, rather than through user cost shares.
- The NSW Government funding should be considered only where:
  - There are legacy costs, such that current and future users do not contribute to the need for this expenditure;
  - There are quantifiable externalities resulting from the existence of public goods; or
  - It is not efficient or effective to charge impactors (with this being reviewed over time as circumstances change).
- Where possible, the cost sharing framework should be as simple and transparent as possible, with decision-making guided by a set of well-articulated principles

Source: Frontier Economics

40 This is broadly consistent with the funding 'hierarchy' developed by IPART in its *Review of funding framework for Local Land Services*.

41 This may require separately identifying assets and activities associated with dedicated assets (and activities) and share assets (and activities).

6 Proposed cost sharing framework

6.1 Overview

The third step in our approach is to develop a robust framework for applying these cost sharing principles to WaterNSW services.

Our proposed framework provides a clear and transparent process for allocating costs between users to establish a set of customer and NSW Government cost shares, which are then used to derive WaterNSW's charges. The proposed framework involves five key stages:

1. Establish the efficient costs of providing WaterNSW's services.
2. Allocate efficient costs to specific services provided by WaterNSW.
3. Subtract legacy costs to determine the efficient forward-looking costs to be recovered from current and future impactors.
4. Allocate efficient forward-looking costs between current and future impactors.
5. Recover costs from customer or NSW Government through prices, NSW Government contribution (or other cost-recovery mechanism).

We also recommend IPART publish the breakdown and total NSW Government contribution across each of the specific services WaterNSW provides to make clear on what basis the NSW Government is providing funding to WaterNSW.[42]

This proposed cost sharing framework should:

- Ensure that the cost sharing framework provides the right incentives for extractive water use, flood mitigation and other community activities and the incentives for WaterNSW to invest to provide these services. This would mean that all impactors of Water NSW services should be allocated at least the incremental costs associated with the provision of these services to them but no user of group of impactors should pay more than the standalone costs of providing the service.
- Encourage greater consistency in the application of the principles for cost sharing over time and with other regulatory precedent across other industries (including the treatment of costs associated with the imposition of Government standards and obligations)

---

42 That is, how much funding— for each of WaterNSW services—is being provided on behalf of past users (reflecting legacy costs) relative to current and future users (where it is impracticable to recover costs from specific users).

- Make the cost of providing specific services—for example, flood mitigation services—more transparent. This in turn, should allow for informed decision-making regarding the:
  - provision of these services relative to alternatives measures[43]
  - appropriate set of tariff structures to recover the costs of these services (a two-part tariff may not be appropriate if the costs are not related to volumes of water used).
- Make the sharing of these costs between customers and the NSW Government more transparent and highlight on what basis the NSW Government is providing funding to WaterNSW—that is, how much funding is being provided on behalf of past users (reflecting legacy costs) relative to current and future users (where it is impracticable to recover costs from specific users). This may provide incentives to consider any barriers to the application of charges to those current and future impactors that are not currently billed by WaterNSW, and should ensure that any funding provided by the NSW Government on equity grounds is excluded from the cost sharing framework.

Box 9: Key issues in implementing the proposed cost sharing framework

- What are the services WaterNSW provides to the NSW community? If these, which are provided to many users and which are only provided to a subset of users?
- What are the efficient costs of providing each of these services to a defined set of users? In determining this:
  - Are there any activities/costs which relate to addressing past issues and would be required regardless of future extractive patterns (i.e. true 'legacy' costs)? These would be assigned to the 'government' share.
  - What are the prudent and efficient forward-looking costs of providing each of these services to a defined set of users? In determining this, what are the direct costs and what are the costs that need to be shared amongst the different services that WaterNSW provides?
- What are the prudent and efficient forward-looking costs to be borne by each of the users or impactors of these specific services: In determining this:
  - Who are the users of each of these services, and of these, who are the impactors creating the need to incur the prudent and efficient forward-looking costs of providing each of these services?
  - What are the direct costs that can be assigned to specific impactors?
  - What are the costs that need to be shared amongst the multiple impactors (if relevant)?
    - What is the appropriate causal allocator to share these costs between multiple impactors? i.e. what is the factor that influences the nature and quantum of costs,

43 Say investment in other measures to mitigate and/or manage the impacts of flooding, consistent with the Productivity Commission's recommendations regarding cost–benefit analysis and the transparency, and therefore accountability, it brings to decision making. Productivity Commission, *Natural Disaster Funding Arrangements*, Inquiry Report, December 2014.

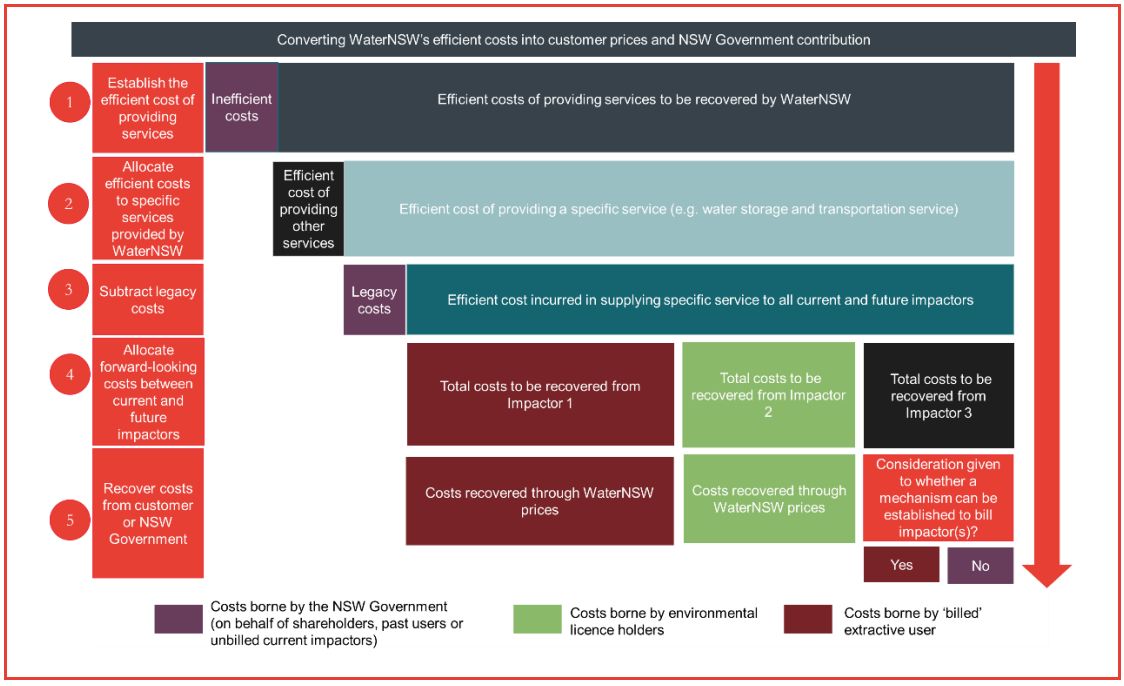
and can it be easily and transparently applied to share costs (i.e. ML supplied, share of asset base, capacity of dam for different purposes etc)

- Does it ensure that each group of impactors pays at least the incremental costs associated with the provision of these services to them, and no group of impactors pays more than the stand-alone costs of providing services to them?

Source: Frontier Economics

Figure 4 summarises the process, commencing with identifying WaterNSW's total efficient cost of providing services and ending with establishing prices and charges paid by 'billed customers' for specific services.

Figure 4: Our proposed approach to allocating costs between users and establishing a customer and Government cost sharing framework



Note: Figure is not to scale

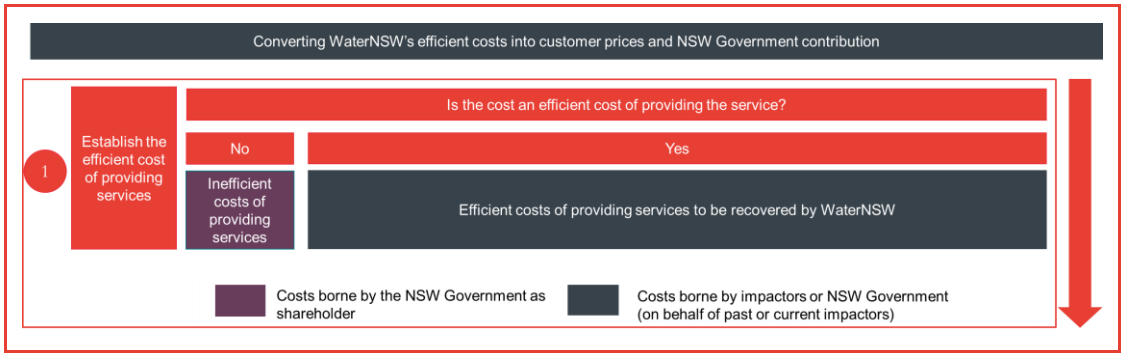
Source: Frontier Economics

This chapter discusses each of these steps.

6.2 Establish efficient costs of providing WaterNSW services

As shown in Figure 5, the first step of our proposed approach for converting WaterNSW's efficient costs of service provision into prices (reflecting assigned cost shares) is to establish the efficient cost of providing those services.

Figure 5: Step 1 of our proposed approach to establishing cost shares: Establish the efficient cost of providing services



Note: Figure is not to scale

Source: Frontier Economics

As noted in IPART's Issues Paper, IPART aims to set prices to allow WaterNSW to recover only the efficient costs of the services that it provides. This is well-accepted and articulated by regulators and reflects the need to:

- Signal to consumers the costs of their consumption decisions and result in an efficient use and allocation of resources.[44]
- Provide incentives for efficient investment in service provision.
- Mimic outcomes expected in a competitive market.

The efficient costs of service provision or the notional revenue requirement (NRR) are typically set through a 'building block' approach (see Box 10) which is commonly used across the infrastructure sector in Australia and overseas.

This approach seeks to ensure that there is a close relationship between the overall level of prices and the efficient costs of the regulated business. Central to this approach is that inefficient costs are borne by shareholders of the business rather than its customers—as is expected to occur in a competitive market.

Box 10: The building block approach to determining the efficient costs of providing regulated services

IPART's Issues Paper notes that the building block costs of service provision include:

- The revenue required for operating expenditure over the period, which represents an estimate of WaterNSW's forecast efficient operating, maintenance and administration costs.
- An allowance for a return on assets used to provide the regulated services, which represents an assessment of the opportunity cost of the capital invested in WaterNSW by its owner, and ensures WaterNSW can continue to make efficient investments in capital.

44 IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.9.

- An allowance for a return of assets (regulatory depreciation), which recognises the revenue needed to recover the cost of maintaining the RAB, because a water utility's capital infrastructure will wear out over time.
- A regulatory allowance for tax, which is needed under a post-tax rate of return model.
- An allowance for working capital, which represents the holding cost of net current assets.

Source: IPART, Issues Paper, p26.

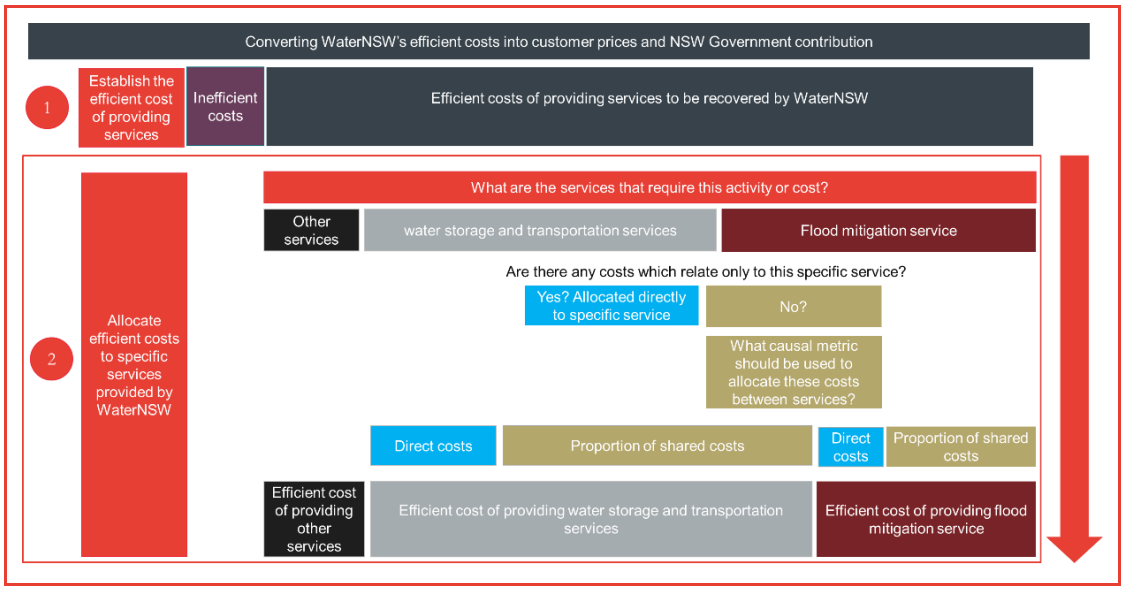
However, it is important to note that the efficient costs of service provision may include costs that could be considered 'legacy costs' — as defined by IPART to include "current and future costs that relate to past practices and activities."[45]

The classification and treatment of legacy costs is discussed further in sections 4.3 and 5.5.

6.3 Allocate costs to specific services provided by WaterNSW

As shown in Figure 6, step 2 of our proposed approach for converting WaterNSW"s efficient costs of service provision into prices involves allocating WaterNSW's efficient costs to its key services.

Figure 6: Step 2 of our proposed approach to establishing cost shares: Allocate efficient costs to specific services provided by WaterNSW



Note: Figure is not to scale

Source: Frontier Economics

45 IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.143.

Regulated businesses often provide many services to multiple users— for example WaterNSW provides bulk water services to:

- **Rural customers**, which is the focus of this report.
- **Sydney Water and other customers in the Greater Sydney region**, which is subject to a separate IPART (WaterNSW Greater Sydney) Determination.

Typically the cost of providing these services to all of the users is more efficient than different providers serving each of these users.[46]

As discussed in Chapter 4 customers should only pay for the efficient costs of providing services for which they use or for which they are impactors.

But even within the broad split of service provision to rural and Greater Sydney region customers, WaterNSW provides a range of more specific services (refer Chapter 3).

Many regulatory frameworks, such as the National Electricity Rules (NER) and National Gas Rules (NGR), require regulated businesses to separately allocate the costs of providing these separate services as it promotes efficient use of, as well as investment in, specific services, and promotes greater transparency as to the costs of providing specific services.

Similarly the ACCC's Pricing Principles note that:

> Charges are to be approved or determined on the basis of a cost allocation methodology that:
>
> • identifies which costs arise from providing infrastructure services (to which regulated charges apply) and which costs arise from other activities undertaken by the operator.[47]

Currently WaterNSW allocates its costs between:

- Its rural customers and its Greater Sydney customers (Sydney Water and other customers in the Greater Sydney region) to "prevent any cross subsidy between the bulk water charges in the rural business and other business segments such as Greater Sydney and other segments."[48]
- Rural customers including the costs of providing:
  - Bulk water infrastructure services
  - Metering services

---

46 This may be because there are economies of scale and many costs such the cost of corporate overheads are fixed (or increase in small amounts when new users are served) and can be spread or recovered from all users. However this is not always the case. In some circumstances it may simply be a legacy issue.

47 ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p50.

48 P66.

- Miscellaneous services

We consider there to be merit in further delineation of WaterNSW's rural bulk water services and costs, including separately specifying:

- The specific services that WaterNSW provides (see Box 11 for an example of the types of services that could be specified for price setting purposes).[49] The specification of the individual services should reflect the nature of the services — both in terms of activities undertaken (say storage and transportation of water from points A to points B), assets used (including any dedicated assets)—and any relationships between activities.[50]
- The costs of providing each of these separate services using well-articulated cost allocation principles. Some services will involve direct costs including the costs of dedicated assets and activities/operations and can relatively easily be allocated to these services.[51] Other assets and activities/operations will be common to multiple services, which requires the allocation of common costs between services (see section 5.6).

Allocating WaterNSW's efficient costs to its key services (before step 3-5: allocating the costs of each of these services to specific users or impactors) is likely to ensure that:

- Users or impactors (noting these parties may be different) only pay for the services that they use or costs they create. Some services will be provided to many customers, while others will only be provided to some customers.
- The cost sharing framework can cater for a more granular level of cost allocation between impactors. Currently, this is limited by the definition of the relevant category of expenditure (say corporate systems), which is then applied to all services (except metering and miscellaneous services).
- There are clear incentives for WaterNSW to efficiently invest in and operate specific services.
- There is transparency regarding the costs of providing those services, particularly when some of these services involve different activities and utilise different assets (recognising that there will be some common costs, such as dam safety compliance, corporate overheads). Making the cost of providing specific

---

49 Many regulatory frameworks, such as the NGR, provide regulators with some discretion in considering the appropriate regulatory treatment of pipeline services that are likely to be sought by a significant part of the market. However, it is typically best practice for this discretion to be exercised with a set of principles. For example, the under the NGR, the AER has discretion in making a decision about reference services subject to the revenue and pricing principles specified in the NGR.

50 Say where activities can be separately identified but where it is not appropriate to specify them as separate services (say water storage and transportation)

51 WaterNSW's proposal refers to the cost of operating Copeton dam as an example of a direct cost. WaterNSW, Pricing Proposal for Rural Bulk Water Services, June 2016, p 66.

services—for example, flood mitigation services—more transparent should allow for informed decision-making regarding the provision of these services relative to alternatives measures[52]

- The cost sharing framework can accommodate changes in the policy, regulatory and operating environment, say by facilitating a move to light-handed forms of regulation for a specific service or facilitate the introduction of competition for that specific service.[53]

Box 11 sets out a number of potential services that could be specified for regulatory price setting purposes.

These services would need to be specified for each valley given the mixture of services provided by WaterNSW and the varying cost of providing these services across each valley. For example, investment in, and use of, dams in some valleys may be primarily for water storage and transportation services, while in other valleys they may primarily be for flood mitigation services.[54]

As noted in Chapter 7, establishing the services provided by WaterNSW for regulatory price setting purposes should be the subject of consultation between IPART, WaterNSW and other stakeholders.

Box 11: Potential WaterNSW services that could be separately for regulatory price setting purposes

As discussed in Chapter 3, WaterNSW provides a range of rural bulk water services to the NSW community. However within this, it is likely that WaterNSW provides a number of distinct 'reference or scheduled' services to the NSW community as well as a number of other 'ancillary' type services, including:

1. **Water storage and transportation services** — which involves capturing, storing and transporting water to downstream users.
2. **Flood mitigation service** — which involves reducing the risk of extreme downstream flooding
3. **Environmental management services**— which involves planning and management activities as a result of water use or need to mitigate the impacts of water use.

---

52 Say investment in other measures to mitigate and/or manage the impacts of flooding, consistent with the Productivity Commission's recommendations regarding cost–benefit analysis and the transparency, and therefore accountability, it brings to decision making. Productivity Commission, *Natural Disaster Funding Arrangements*, Inquiry Report, December 2014.

53 For example, in metering in the electricity sector in Australia, the AER has for many years regulated metering as a separate service from electricity distribution (despite metering being provided by the same regulated business as distribution services). However in November 2015, the AEMC made a final rule that opens up competition in metering services. http://www.aemc.gov.au/Rule-Changes/Expanding-competition-in-metering-and-related-serv#

54 For example, the WaterNSW proposal notes that the capital investment of $31.8m (out of the total cost of $50m) on the Chaffey Dam Upgrade and Augmentation (Stage 2) was for augmentation, with the other $18m of the investment was for dam safety upgrades to meet NSW Dams Safety Committee standards for extreme floods. WaterNSW proposal, p92.

4. **Retailing, metering and customer service activities—** for example, IPART's Issues Paper notes that WaterNSW provides a metering service to those customers who extract water through a WaterNSW-owned meter.[55]
5. **Other services, including ancillary or miscellaneous services,** such as costs of facilitating water trading, Fish River connection/disconnections.

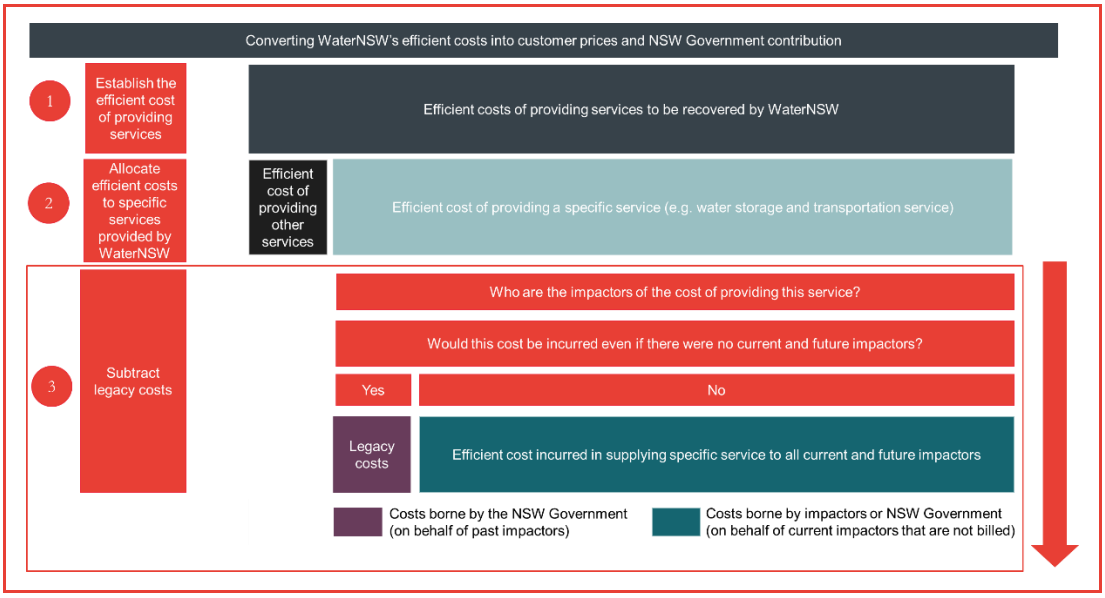
As discussed in Chapter 7, establishing the services provided by WaterNSW for regulatory price setting purposes should be the subject of consultation between IPART, WaterNSW and other stakeholders.

Source: Frontier Economics

6.4 Subtract legacy costs to determine the forward looking costs to be recovered from current and future impactors

As shown in Figure 7, step 3 of our proposed approach involves subtracting 'true' legacy costs from the estimate of the efficient cost of providing specific services.

Figure 7: Step 3 of our proposed approach to establishing cost shares: Subtract legacy costs



Note: Figure is not to scale

Source: Frontier Economics

As discussed in Section 4.3.2, legacy costs include costs that would be incurred if there were no current and future impactors. Under our proposed approach, only costs

55 IPART's Issues Paper notes that current metering service charges cover the cost of operating, maintaining and reading the WaterNSW owned meters as well as the provision, maintenance and operation of information systems to process water meter data. IPART 2016, *Review of prices for WaterNSW, Rural bulk water services from 1 July 2017, Issues Paper*, p.106.

which are unavoidable are properly categorised as 'legacy costs;' with these costs to be assigned to the NSW Government on behalf of past impactors.

Identifying any legacy costs requires:

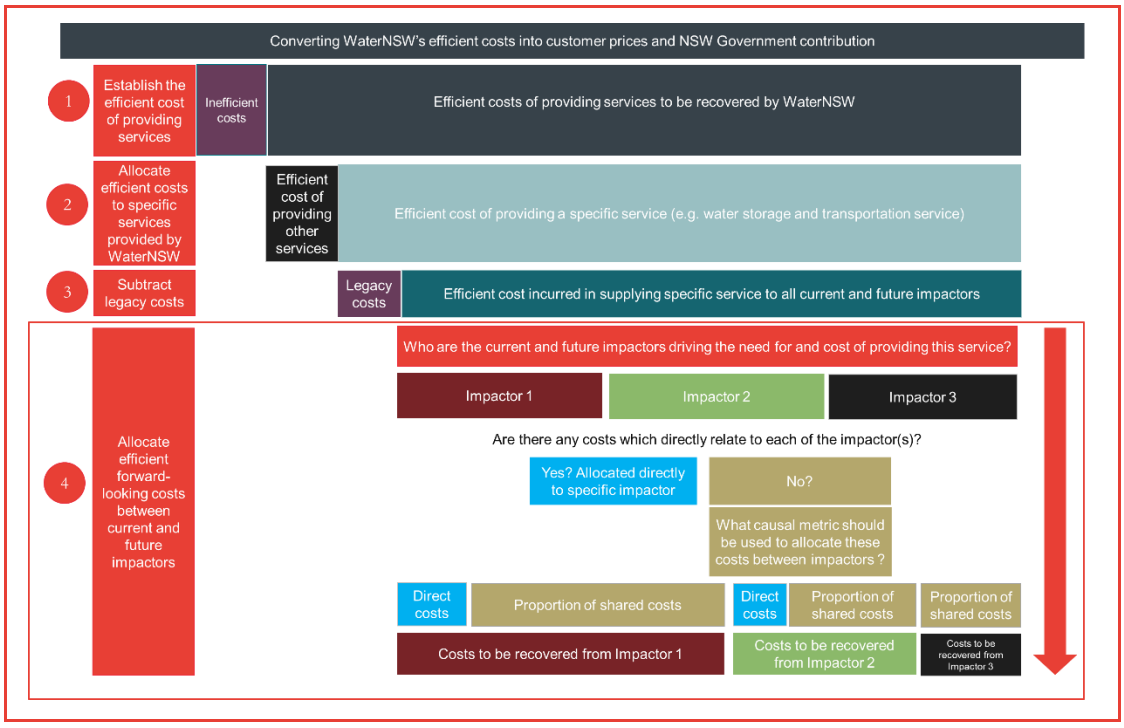
- Identifying the impactors of the costs of providing a specific service.
- Establishing whether any costs are unavoidable in that they are driven by past impactors (i.e. would be incurred even if there were no current and future impactors).
- Allocating costs to past impactors (i.e. establishing any true legacy costs) using an appropriate metric that clearly links costs to the actions of past impactors.

As discussed in Section 4.3.2, in our view, a 'line-in-the-sand' approach to establishing legacy costs is unlikely to be consistent with an impactor pays approach nor with general regulatory practice for the treatment of costs associated with the imposition of Government standards and obligations.

6.5 Allocate forward looking costs between current and future impactors

As shown in Figure 8, step 4 of our proposed approach is to allocate efficient forward- looking costs between various identified current and future impactors.

Figure 8: Step 4 of our proposed approach to establishing cost shares: Allocate forward-looking costs between various current and future impactors



Note: Figure is not to scale

Source: Frontier Economics

There are several key steps in allocating the efficient forward-looking costs between current and future impactors, including:

- Identifying all the current and future impactors of the costs of providing a specific service. In most cases, it is likely that there is more than one impactor.
- Allocating the direct costs (such as dedicated assets) to each of the specific impactors where appropriate.
- Allocating the shared costs of providing the specific service across multiple impactors using the principles outlined in section 5.6. This will require:
  - Using a causal allocator where possible—consistent with the ACCC pricing principles for cost allocation[56] (see Box 6)— which is likely to vary depending on the nature of the shared cost (see Box 12) and ensuring that the same cost is not allocated more than once (i.e. avoid double-counting).
  - Ensuring that the aggregate costs allocated to each impactor service or user of a service are between the stand-alone and avoidable cost of providing services. This ensures that costs recovered from specific users are not outside the bounds defined by economic efficiency and would mean that all impactors of Water NSW services should be allocated at least the incremental costs associated with the provision of these services to them but no user of group of impactors should pay more than the standalone costs of providing the service.

Box 12: Establishing a causal metric to allocate shared costs between impactors

For many of the specific services provided by WaterNSW— such as a water storage and transportation service— there are likely to be multiple impactors of the costs of providing this service.

This will mean there is a need to allocate a number of shared costs between the impactors. Consistent with the ACCC's pricing principles for cost allocation between services, allocating the shared costs of providing a specific service between impactors requires:

- Consideration of the nature of each of the shared costs (say corporate overheads including the systems, staff, accommodation etc.)
- Identification of the most appropriate causal allocator(s) for sharing this cost— which requires identifying:
  - The metric that best captures the impact on this cost item (value of assets, volume of water delivered, capacity of dam etc.)
  - Whether this metric is likely to be accessible and able to be replicated over time (both by WaterNSW and IPART)
  - Whether this metric likely to lead to contribute to relatively stable allocations of shared costs over time (i.e. to what extent could it result in volatility in cost sharing)

[56] *Source: ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p50.*

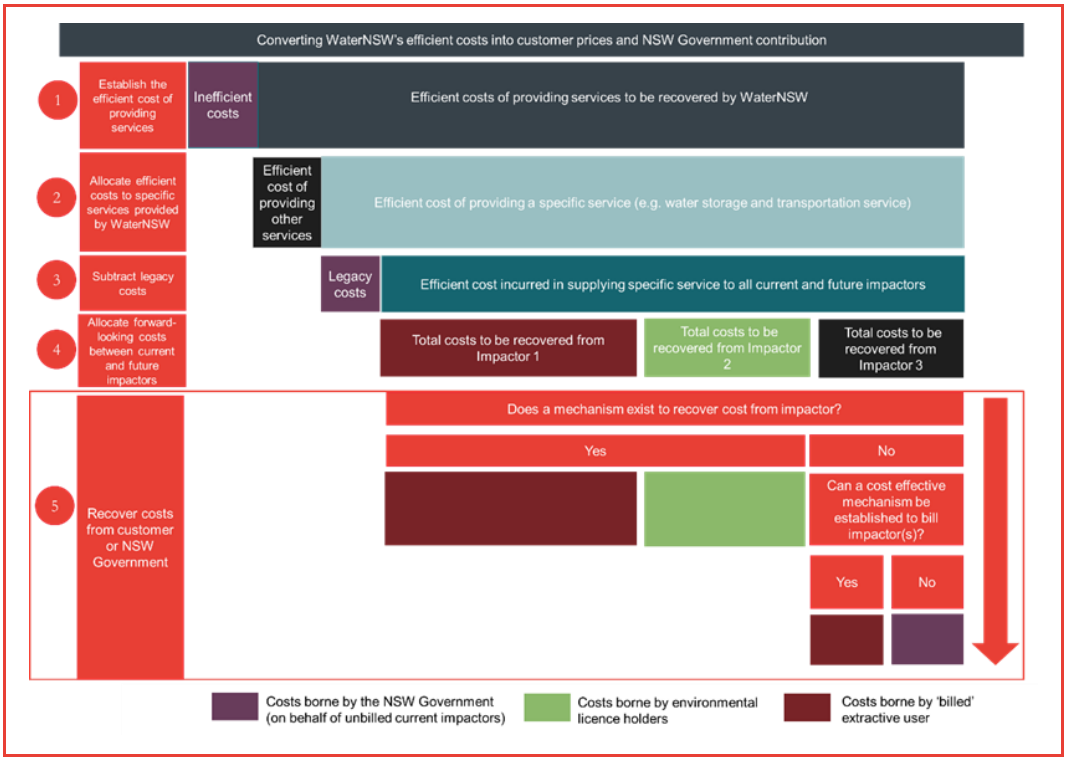
- Reviewing these metrics (including through stakeholder consultation) over time to ensure they remain appropriate

Source: Frontier Economics

6.6 Recover costs from customer or NSW Government (or other cost-recovery mechanism)

As shown in Figure 9, of our proposed approach involves recovering the efficient costs of each of the specific services from customers or the NSW Government (or through some other cost-recovery mechanism).

Figure 9: Step 5 of our proposed approach to establishing cost shares: Recover costs from customer or NSW Government (or other cost-recovery mechanism)



Note: Figure is not to scale

Source: Frontier Economics

As highlighted in Table 7, there are likely to be a number of impactors that are not currently billed customers in that there is not currently a mechanism to recover from these customers the costs they potentially create. For example, holders of basic landholder water rights are not currently billed for the costs of providing WaterNSW's water storage and transportation services.

Table 7: Establishing whether impactors off WaterNSW's water storage and transportation services are billed customers

Users of WaterNSW's service	Users	Impactor	Billed customer
Irrigators	✔	✔	✔
Local councils	✔	✔	✔
Holders of basic landholder water rights	✔	✔	✘
The Environment (planned water)	✔	✘	✘
Environmental water holders	✔	✔	✔
Downstream communities	✘	✔	✘
Broader NSW/Australian community	✔	✔	✘
Recreational water users	✔	✔	✘

Source: Frontier Economics

6.7 Articulating the breakdown and total NSW Government share of WaterNSW costs

Once prices have been determined, we consider it important that it be made clear on what basis the NSW Government is providing funding to WaterNSW—that is, how much funding— for each of WaterNSW services—is being provided on behalf of:

- past users (reflecting legacy costs);
- current and future users (where it is impracticable to recover costs from specific users).

We recommend that IPART consider publishing a breakdown of the NSW Government share across each of the specific services WaterNSW provides, with an example set out in Table 8 based on some indicative defined services.[57]

[57] As noted discussed in Section 7.4, establishing the services provided by WaterNSW for regulatory price setting purposes should be the subject of consultation between IPART, WaterNSW and other stakeholders.

For example, as WaterNSW's operating environment evolves, it may become efficient and cost-effective to identify specific impactors, their contribution to the forward-looking costs incurred by WaterNSW's services and to levy WaterNSW's charges on these impactors in line with their contribution to WaterNSW costs. This may reduce pressure on the NSW Government budget and importantly provide stronger incentives for both users and WaterNSW to act efficiently.

Table 8: Specifying the basis and quantum of NSW Government funding in meeting the efficient cost of providing each of WaterNSW's key services

Total	Rationale and basis for NSW Government funding	$	%
Water storage and transportation services			
Past users	Legacy costs	$X	X%
Current and future users	Impracticable to recover costs from specific users)	$X	X%
Total NSW Government *contribution: Water storage and transportation services*	-	=$X+$X	100%
Flood mitigation services			
Past users	Legacy costs	$Y	Y%
Current and future users	Impracticable to recover costs from specific users)	$Y	Y%
Total NSW Government *contribution: Flood mitigation services*	-	*=$Y+$Y*	*100%*
Environmental management services			
Past users	Legacy costs	$Z	Z%
Current and future users	Impracticable to recover costs from specific users)	$Z	Z%
Total NSW Government *contribution: Environmental management services*	-	=$Z+$Z	100%
Retailing and customer service activities			
Past users	Legacy costs	$A	A%
Current and future users	Impracticable to recover costs from specific users)	$A	A%
Total NSW Government *contribution: Retailing and customer service activities*	-	$A+$A	100%
Miscellaneous services			
Past users	Legacy costs	$B	B%

Current and future users	Impracticable to recover costs from specific users)	$B	B%
Total NSW Government *contribution: Miscellaneous services*	-	*$B+$B*	*100%*
Total NSW Government contribution to WaterNSW		***=$X+$Y+$Z +$A+$B***	

7 Preconditions for implementing the proposed cost sharing framework

The fourth step in our approach is to set out the pre-conditions for implementing the proposed cost sharing framework in terms of:

- Information requirements
- Potential information collection and billing systems changes
- Potential legislative, policy or regulatory changes
- Broader consultation and stakeholder engagement

7.1 Key information required to implement the framework

A robust cost allocation framework is likely to require a range of detailed information covering:

- Description of WaterNSW's services and underling activities— down to the elementary activity level— in order to allocate costs to each of its services
- Detailed register of dedicated and shared assets and activities
- A clear and well-documented process— including specification of an appropriate causal allocator[58]— for allocating the costs of shared assets and/or activities between:
  - Services including specification of the appropriate causal allocator for each cost/activity (insurance, IT systems, other overheads etc.)[59].
  - Impactors of each service, where there are multiple impactors.

---

58 The ACCC notes that this process should document thee nature of each cost item, the categories of service to which the cost items are being attributed, the nature of the causal allocator(s) being used to allocate costs, the reasons for selecting the allocator(s), details of the numeric quantity or percentage of the allocator(s), whether the numeric quantity or percentage of the allocator(s) is likely to remain constant over time. ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p49

59 If costs increase with the number of megalitres delivered or customers connected, the causal allocator could be the number of megalitres delivered or customers connected. However it is likely that there are different causal allocators for each element of common costs, such as shared assets etc.

7.2 Potential information collection and billing systems changes required

While information collection and analysis is a key pre-condition to implementing the proposed cost sharing framework, there may be a number of changes required to WaterNSW systems and processes including:

- IT system changes to allow more detailed data to be gathered on some costs and the drivers for those costs, such as 'time writing', that may facilitate the allocation of direct and shared costs between WaterNSW's services.
- Commercial billing system changes to enable WaterNSW to levy charges on identified impactors in line with their contribution to WaterNSW costs, where it is efficient and cost-effective to do so (i.e. for those impactors that are not currently 'billed' customers). This is subject to any legislative, policy or regulatory changes that may be required (see section 7.3).

7.3 Potential legislative, policy or regulatory changes required

Implementing the proposed cost sharing framework may also require changes to the legislative, policy or regulatory arrangements. For example, changes may be required to:

- Enable WaterNSW to levy charges on identified impactors in line with their contribution to WaterNSW costs, where it is efficient and cost-effective to do so (i.e. for those impactors that are not currently 'billed' customers).[60] One option which already exists is to seek capital contributions from a range of impactors where significant investment is required (e.g. the agreed funding arrangements for the upgrade of the Chaffey Dam).
- Where it is not feasible for Water NSW to levy charges directly on these impactors, identify or develop alternative mechanisms for the NSW Government to recover cost from these impactors.

An assessment of the necessary legislative, policy or regulatory changes to implement the proposed cost sharing framework is beyond the scope of this review.

60 As discussed in Chapter 4, the NSW Government should only bear costs on behalf of impactors where it is not efficient and cost-effective to identify the specific impactor, identify the proportion of forward-looking costs that current and future impactors may contribute to the costs of providing WaterNSW's services, and/or levy WaterNSW's charge on the impactors (say due to policy, regulatory or commercial billing barriers).

7.4 Targeted consultation and stakeholder engagement

IPART has previously noted that while the 'impactor pays' principle should be applied to allocate bulk water costs, this process requires a significant level of judgement and that stakeholders have exhibited a high level of concern about the treatment of compliance capital costs.[61]

We agree with this observation and have noted that there continues to be significant diversity in the views of WaterNSW's stakeholders as to the appropriate proportion of efficient costs that should be recovered from current and future billed users of these services relative to the NSW Government (on behalf of past users or other current and future 'unbilled' users).

For the proposed cost sharing framework to be both a long-term and sustainable approach, it will be critical to engage closely with a range of stakeholders on the issues raised in this report, including:

- The services provided by WaterNSW for regulatory price setting purposes, the users of those services and the nature of their use.
- The specific activities that underpin the cost categories and drivers articulated in the WaterNSW proposal and the application of the proposed framework to these specific activities.
- Application of the principles to allocate costs between services, including the allocation of common costs, which may require consultation on the appropriate causal allocators. The ACCC's Pricing Principles report notes that a regulated business' "methodology for allocating costs to different services must be sufficiently detailed so that the regulator could replicate the operator's methodology"[62]. It is likely that the level of detail required and the manner and format it is provided to IPART should be the subject of consultation.[63]

---

61 IPART, Department of Land and Water Conservation bulk water prices from 1 October 2001 – Final Report, October 2001, pp 31–32.

62 ACCC, Pricing principles for price approvals and determinations under the Water Charge (Infrastructure) Rules 2010, 2011, p49

63 We note that other regulators such as the AER have undertaken consultation on the cost sharing framework —including issuing cost allocation guidelines and seeking stakeholder submission— and undertake a regular review of the regulated businesses' compliance with these guidelines. https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/cost-allocation-method

8 Recommended cost shares for the 2017 Determination

The last step in our approach is to recommend cost shares for the 2017 Determination that balances the need to move towards a long-term sustainable framework to cost sharing based on sound and well-accepted economic principles, but recognises the constraints on addressing the preconditions necessary to implement the proposed framework ahead of the 2017 Determination.

This chapter sets out options for IPART's consideration for the 2017 Determination. We recommend cost shares under either option be considered transitional pending IPART, WaterNSW and stakeholders addressing the necessary preconditions for implementing the proposed long-term cost sharing framework.

8.1 Options for IPART's consideration for the 2017 Determination

WaterNSW's proposal indicates its preference for a review of the cost allocation arrangements after the 2017 Determination processes to enable sufficient resources be allocated to the process and ensure proper consideration and consultation.[64]

As part of our current engagement Water NSW was unable to commit resources to support a detailed review of cost shares. Given this, we have recommended two options for IPART's consideration for the 2017 Determination:

1. Maintain the current cost shares pending further analysis and consultation over the course of the 2017 Determination period, with a view to implementing the proposed cost sharing framework in the next regulatory period.
2. Adopt an interim or transitional approach which seeks to move towards the proposed framework. This would require undertaking a targeted review of the cost shares for a subset of expenditure categories, which in our view, are most likely to be inconsistent with the proposed cost sharing framework and are material cost items.

The targeted review under Option 2 would aim to minimise the resources required from WaterNSW by focusing on a subset of expenditure categories which in our view, are most likely to be inconsistent with the proposed cost sharing framework and which may be the most material. However, it would require some WaterNSW involvement, for example, in providing specific information and reviewing some of the potential metrics that could be used to allocate shared costs.

64 WaterNSW proposal p71.

We therefore recommend that any cost shares derived under Option 2 be considered transitional pending IPART, WaterNSW and stakeholders addressing the necessary preconditions for implementing the proposed long-term cost sharing framework.

We have identified a number of areas of the existing cost sharing framework that are unlikely to be consistent with the proposed cost sharing framework and may be material. In broad terms, many of these issues relate to:

1. **Shared or common costs** where 100% of these common costs have been allocated to customers (i.e. billed users), despite there being services for which impactors are not currently billed, which means that:
   - Customers (i.e. billed users) are likely to have been paying more than the equivalent of the stand-alone costs of providing these services or undertaking these activities for these specific customers, assuming that the incremental costs are positive.[65]
   - Other current and future users or impactors (i.e. unbilled users) have been paying less than the incremental costs of providing these services or undertaking these activities for these specific users (i.e. unbilled users), assuming that the incremental costs are positive.[66] As outlined in section 5.6, one of the key economic cost allocation principles is ensuring that the costs allocated to each service or user are between the stand-alone and avoidable cost of providing services.
2. **Dam safety compliance costs** where:
   - The current allocation of 0% of dam safety compliance costs (pre-1997) to customers (i.e. billed users), is in our view likely to overstate the true legacy component of this expenditure[67] and understate the forward-looking nature of this expenditure, given some of any capital and operating expenditure associated with dam safety compliance (pre-1997) is likely to be required to provide services to current and future users. As noted in Chapter 5, equity concerns associated with the costs of complying with Government imposed standards and obligations should be addressed directly and transparently through targeted assistance (e.g. capital contributions by government), rather than through the cost sharing framework. However, we note that some of the

---

65 That is, the total common or joint costs are the sum of the stand-alone costs of providing services to customers (i.e. billed users) plus the incremental costs of providing of providing services to other users (e.g. unbilled users).

66 We consider it reasonable to assume that there is a positive incremental cost to these items. For example, it is likely that the costs of insurance such as public liability and building and other asset insurance would be lower if WaterNSW was not providing specific services or responsible for specific assets which are required to delivery services to other current and future users or impactors such as costs of dam safety related to flood mitigation (i.e. unbilled users).

67 i.e. it is unlikely that 100% of these costs are 'true' legacy costs.

impactors of the need to incur this expenditure may not be extractive users (i.e. the expenditure may be incurred for flood mitigation services).

- While this interpretation would represent a departure from the previous impactor pays methodology applied by IPART, Frontier understands that there is not likely to be significant remaining expenditure on bringing assets up to 1997 standards, so that in practice this is unlikely to have a major impact on costs assigned to users. However, if there is still significant project expenditure remaining in this pre-1997 category (i.e. the Keepit dam upgrade proposed for the 2017 period) it may be seen as equitable and with providing regulatory certainty if such projects are funded under the current arrangements of a 0% user share, as a transitional approach to the new framework.
- The current allocation of 50% of dam safety compliance costs (post-1997) to customers (i.e. billed users) is in our view likely to understate the contribution of users to the need for this forward-looking expenditure. However, some of the impactors of the need to incur this expenditure may not be extractive users (i.e. some of the expenditure may be incurred for flood mitigation services).

3. Environmental services

- The current allocation of 50% of all environmental planning and protection services to the Government may overstate the allocation given extractive users can be seen as the primary impactors for these activities.
- The current user shares do not distinguish between the costs of providing planned environmental water (which we propose be allocated to consumptive users) and adaptive environmental water (which we propose be allocated to holders of environmental licences).
- The allocation of 100% of some expenditure items to users will under the current approach not reflect any costs attributable to non-billed users (e.g. basic landholder right holders) which should not be levied on billed users.

If IPART are minded to pursue a targeted review of the cost shares for a subset of expenditure categories (Option 2), in our view, this targeted review would involve the following issues for each of the expenditure items, including:

- The nature of the currently defined expenditure items— in terms of which service(s) requires this expenditure to be incurred (i.e. water storage and transportation services, flood mitigation services etc).
- The nature of the impactor(s)—in terms of who is driving the need for the service(s) and expenditure required to provide the service.
- The allocation of expenditure between the services and then impactors, including identification of direct costs and the most appropriate causal metric to allocate shared costs between services and impactors for each service – for

example, on whether the funding components,[68] share of water entitlements or capacity of the dam 'reserved' for water supply vs flood mitigation are appropriate causal allocators for asset management planning associated with dams.[69]

- Whether the impactor(s) is a currently billed customer.

In the absence of detailed information necessary to implement the proposed cost sharing framework Table 9 sets out two options for the 2017 Determination including maintaining the current cost shares pending further analysis and consultation over the course of the 2017 Determination period, and an interim or transitional approach where we have provided guidance on the likely direction of the current cost shares under the proposed cost sharing framework.

68 The WaterNSW proposal notes that $31.8m (out of the total cost of $50m) on the Chaffey Dam Upgrade and Augmentation (Stage 2) was for augmentation. The other $18m of the investment was for dam safety upgrades to minimise risk of extreme flooding. WaterNSW proposal, p92.

69 For example, the WaterNSW proposal notes that "many of the costs of operating a dam are relatively fixed regardless of size"; WaterNSW proposal, p30.

Table 9: Recommended cost sharing framework for the 2017 Determination

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
Operating expenditure				
Customer Support	Management and administration of the CSC's, customer education and support materials	100%	Activity appears to relate exclusively to providing services to billed customers	Likely to remain at 100%
Customer Billing	Customer enquiries, transaction and complaints services, invoicing, receipting, debtor management, system administration, postage to collect regulated revenue.	100%	Activity appears to relate exclusively to providing services to billed customers	Likely to remain at 100%
Metering and Compliance	Customer water ordering, customer water accounting management, compliance reporting, meter reading, system management and usage apportionment, licensing issues resolution.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Water delivery and Other Operations	Water release from dams to customers. Normal environment and system flows. Short-term and long-term demand forecasting and resource assessment. Works Approval and other compliance reporting.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Flood Operations	Flood operations/Flood training/Onsite works required by flood operations.	50%	It is possible that flood operations are undertaken primarily to protect the interests of downstream	May be small to moderate increase

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
			communities and landowners (i.e. impactors may not be exclusively extractive users)	
Hydrometric Monitoring	This service is purchased from DPI Water. It encompasses monitoring of water quality and flow characteristics of surface waters.	90%	Current share reflects IPART view in 2006 that hydrometric monitoring also plays some role in flood mitigation as well as water delivery to users It is possible it may also be required because of non-billed users/impactors	May be small reduction
Water Quality Monitoring	Storage water quality monitoring and reporting Fish River water quality management plan.	50%	Current share reflects CIE (2006) view that some costs are incurred to meet community expectations. In our view it is not appropriate to view government or community as an impactor where regulation, standards or community preferences change. The costs of meeting these standards arises because of current and future users of the service (i.e. if they were no current or future users of the service, would the cost be incurred?) Other regulatory frameworks recover the costs of providing services consistent with Government standards and obligations (i.e. community expectations from impactors (or end-users) of service. For example, IPART has ensured the costs associated with changes to electricity network reliability standards or the introduction of the carbon price are recovered from end-users, rather than shared by Government on behalf of community.	May be small to moderate increase
Corrective Maintenance	Breakdown maintenance of asset which provide services to customer and other water users.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed	May be small reduction

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
			users/impactors such as the maintenance required to provide flood mitigation services (i.e. downstream impactors who may not be exclusively billed extractive users).	
Routine Maintenance	Planned or condition based maintenance of assets which provide services to customers and other water users.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors such as the maintenance required to provide flood mitigation services (i.e. downstream impactors who may not be exclusively billed extractive users).	May be small reduction
Asset Management Planning	Asset planning and safety. Maintenance planning. Operational risk and incident management. Procurement/Dam safety/compliance operations.	100%	We consider it reasonable to assume that there is a positive incremental cost in providing these services/undertaking these activities for non-billed users/impactors, incl. the provision of flood mitigation services (such as to basic landholder water right holders and downstream communities). Further analysis and consultation will need to be undertaken to identify an appropriate set of causal allocators to share these costs between impactors – for example, on whether the funding components, share of water entitlements or capacity of the dam 'reserved' for water supply vs flood mitigation are appropriate causal allocators for asset management planning associated with dams. Allocating 100% of costs to customers (i.e. billed users) is likely to result in these customers paying more than the stand-alone costs of providing these services/undertaking these activities for customers (i.e. billed users/impactors.)	May be small to moderate reduction

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
Dam Safety Compliance Capital Projects Pre 1997	Dam surveillance/Dam safety inspections, reviews, audits and associated risk assessment.	0%	Current share reflects view that upgrading to 1997 standards should be funded by Govt as a 'legacy' issue. Allocating 0% of dam safety compliance costs (pre-1997) to customers (i.e. billed users) is unlikely to be consistent with the proposed cost sharing framework, given that not all of this expenditure is likely to be considered legacy costs. Against this, it may be seen as equitable and with providing regulatory certainty if any remaining projects in this category are funded under the current arrangements of a 0% user share.	May be moderate to material increase. However, consideration should be given to maintaining at 0% as transitional measure (until all pre-1997 expenditure is undertaken)
Dam Safety Compliance	Dam surveillance/Dam safety inspections, reviews, audits and associated risk assessment.	50%	Current share reflects view that upgrading of standards, while needed because of ongoing extractive use, also reflects community demands. In our view it is not appropriate to view government or community as an impactor where regulation, standards or community preferences. The costs of meeting these standards arises because of current and future use of the service (i.e. if they were not current or future users of the service, would the cost be incurred?) While dam safety is likely to provide benefits to other users (e.g. downstream communities), we consider it reasonable to assume that the majority of this expenditure on these post-1997 assets is likely to be required to provide services to current and future customers (i.e. billed users). Allocating 50% of dam safety compliance costs (post-1997) to customers (i.e. billed users) is unlikely to be consistent with the proposed cost	May be moderate increase

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
			sharing framework, unless a material proportion of these costs are related to the provision of flood mitigation services in which it may be appropriate for Government to meet some of these costs on behalf of unbilled impactors (i.e. downstream communities and landowners).	
Environmental Planning and Protection	Environmental management – strategic and specific planning and assessment, Fish passage, Carbon neutrality, Cold water pollution.	50%	The current allocation of 50% of all environmental water services to the Government is unlikely to reflect the proposed long-term framework given extractive users can be seen as the primary impactors for these activities.	May be moderate increase
Insurance	Insurance such as public liability and building and other asset insurance.	100%	We consider it reasonable to assume that there is a positive incremental cost in providing these services/undertaking these activities for non-billed users/impactors— in that the appropriate causal allocator may relate to the value and risks of the assets to be insured. For example, the assets related to the Chaffey Dam would presumably influence the costs of insurance, and there are a number of impactors driving the costs of the Chaffey dam including irrigators and local councils in the provision of water supply, and landowners and other downstream communities (many of which are unbilled impactors) in the provision of flood mitigation services. Given that non-billed users/impactors may influence the value and risks of the assets to be insured, allocating 100% of costs to customers (i.e. billed users) may result in these customers paying more than the stand-alone costs of providing these services/undertaking these activities for customers (i.e. billed users/impactors.)	May be small to moderate decrease

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
Capital expenditure				
Asset management Planning	Asset planning and safety Maintenance planning/ Asset condition auditing/Operational risk and incident management. Procurement, Dam safety, compliance Operations.	100%	We consider it reasonable to assume that there is a positive incremental cost in providing these services/undertaking these activities for non-billed users/impactors (including flood mitigation services). Allocating 100% of costs to customers (i.e. billed users) is likely to result in these customers paying more than the stand-alone costs of providing these services/undertaking these activities for customers (i.e. billed users/impactors).	May be small reduction
Routine Maintenance	Planned or condition based maintenance of assets which provide services to customers and other water users.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Dam Safety Compliance – Pre 1997 Construction	Dam surveillance, Dam safety inspections, reviews, audits and associated risk assessment.	0%	Current share reflects view that upgrading to 1997 standards should be funded by Gove as a 'legacy' issue. Allocating 0% of dam safety compliance costs (pre-1997) to customers (i.e. billed users) is unlikely to be consistent with the proposed cost sharing framework, given that not all of this expenditure is likely to be considered legacy costs. Equity concerns associated with the costs of complying with Government imposed standards and obligations should be addressed directly and transparently through targeted assistance, rather than through the cost sharing framework.	May be moderate to material increase. However, consideration should be given to maintaining at 0% as transitional measure (until all pre-1997 expenditure is undertaken)

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
			Against this, it may be seen as equitable and with providing regulatory certainty if any remaining projects in this category are funded under the current arrangements of a 0% user share.	
Dam Safety Compliance	Dam surveillance, Dam safety inspections, reviews, audits and associated risk assessment.	50%	Current share reflects view that upgrading of standards, while needed because of ongoing extractive use, also reflects community demands. In our view it is not appropriate to view government as an impactor where regulation changes. While dam safety is likely to provide benefits to other users (e.g. downstream communities), we consider it reasonable to assume that the majority of this expenditure on these post-1997 assets is likely to be required to provide services to current and future customers (i.e. billed users). Allocating 50% of dam safety compliance costs (post-1997) to customers (i.e. billed users) is unlikely to be consistent with the proposed cost sharing framework.	May be moderate increase
Renewal and Replacement	Expected wear and tear and usage of water infrastructure.	90%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Structural and Other Enhancement	Discretionary expenditure endorsed by Customer Service Committees.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Corporate Systems	Responsible for the delivery of information services' major projects and improvement	100%	We consider it reasonable to assume that there is a positive incremental cost in providing these	May be small reduction

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
	initiatives. Some systems provide services to customers and stakeholders.		services/undertaking these activities for non-billed users/impactors. Allocating 100% of costs to customers (i.e. billed users) is likely to result in these customers paying more than the stand-alone costs of providing these services/undertaking these activities for customers (i.e. billed users/impactors.)	
Environment Planning and Protection	Environmental management – strategic and specific planning and assessment, Fish passage, Carbon neutrality, Cold water pollution.	50%	The current allocation of 50% of all environmental water services to the Government may overstate the allocation given extractive users can be seen as the primary impactors for these activities. However, the allocation of 100% of some expenditure items to users will under the current approach not reflect any costs attributable to non-billed users (e.g. basic landholder right holders) which should not be levied on billed users.	May be moderate increase
Flood operations	Flood operations, Flood training, Onsite works required for flood operations.	50%	It is possible that flood operations are undertaken primarily to protect the interests of downstream communities and landowners.	May be small to moderate increase
Office Accommodation Capital Projects	Office Accommodation, Dam Operational Facilities, Essential staff accommodation.	100%	We consider it reasonable to assume that there is a positive incremental cost in providing these services/undertaking these activities for non-billed users/impactors— in that the appropriate causal allocator may relate to the number and/or location of staff and nature of their activity. Given that non-billed users/impactors may influence the number and/or location of staff and nature of their activity, allocating 100% of costs to customers (i.e. billed users) is likely to result in these customers paying more than the stand-alone	May be small reduction

Cost driver	Cost driver description	Option 1: Retain current cost shares (consistent with WaterNSW proposal)	Frontier observation	Potential direction and magnitude of change in user share in transition to new framework (Option 2)
			costs of providing these services/undertaking these activities for customers (i.e. billed users/impactors.)	
Information Management Projects	Responsible for the delivery of information services' major projects and improvement initiatives. Some projects provide services to customers and stakeholders.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction
Water Delivery and other operations	Water released from dams to customers. Normal environment and system flows. Short-term and long-term demand forecasting and resource assessment. Works Approval and other compliance reporting. Use of SCADA and manual work required to release water form dams, weird and regulators.	100%	Activity appears to relate predominantly to providing services to billed users, but may potentially also relate to other non-billed users/impactors	May be small reduction

Source: WaterNSW Pricing Proposal; Frontier Economics analysis

8.2 Recommendation for the 2017 Determination

While there are opportunities to move towards our recommended long-term sustainable approach to cost sharing in the 2017 Determination, on balance, however, we recommend retaining the current cost shares until such time as a revised framework can be fully and appropriately implemented in line with the long-term sustainable approach to cost sharing that we have outlined in this report. Retaining the current cost shares for the 2017 Determination would:

- Minimise the risk of making changes in this determination which may be potentially reversed in the next determination following a detailed application of the proposed long-term framework.
- Ensure that stakeholder attention is focussed on the longer-term framework rather than diverted to an interim approach.
- Provide for completion of any remaining upgrades under the 1997 'line-in-the-sand' approach previously applied by IPART to other dam upgrades.

Appendix A: Users of WaterNSW services

Irrigators/irrigation companies

Water NSW provides rural bulk water services to around 6300 private irrigators and irrigation companies in 14 regulated river systems.

These irrigation customers hold either High Security (HS) or General Security (GS) entitlements.

High Security water access entitlements are allocated water before general security entitlement holders and receive their full allocation of water each year (except in drought conditions). These entitlements are traditionally held by irrigators with permanent horticultural plantings

General Security entitlements provide the holder with an allocation of water that is subject to storage and demand circumstances, with no guarantee of supply.

Both types of entitlement holders pay a fixed charge on the basis of the volume of entitlements held and a variable charge for water supplied by Water NSW. The HS customers pay a higher fixed charge than GS customers, reflecting a HS reliability premium.

Local councils

Local council customers include Dubbo City Council. Albury City Council and Tamworth Regional Council. These councils hold high security licences to extract water to supply water to their urban customers (expressed as a specified volume per year), and pay fixed and variable bulk water charges to Water NSW.

Holders of basic landholder water rights

Under the *Water Management Act 2000* there are broadly three types of basic landholder rights in NSW (all of which will be discussed in more detail below). These extractive users are not licensed and thus do not pay for access to water provided by WaterNSW. However, they benefit from the provision of services such as water delivery operations, flood mitigation, water quality monitoring and asset management.

In addition, although they do not pay for access, holders of basic landholder water rights may take precedence over bill-paying customers in the delivery of water services. It has been suggested by some stakeholders that this may impose additional costs on WaterNSW, and subsequently, their customers. For example, in its submission, Lachlan Valley notes that "during severe drought such as was experienced in the Lachlan from 2003-2010, ensuring the delivery of water to basic

rights holders required significant resources from State Water at that time, both in managing the river and in communicating with landholders".[70]

Stock and domestic users

The *Water Management Act 2000* grants property owners the right to take water from a river, estuary or lake which fronts their land or from an aquifer which is underlying their land for domestic consumption and stock watering without the need for an access licence.[71] Domestic and stock rights only apply when the property directly fronts a body of water.

Water taken under a domestic and stock right may be used for normal household purposes around the house and garden and/or for drinking water for stock. However, a licence is required for water taken for commercial activities such as irrigation, mining, aquaculture, feedlots, piggeries, poultry farms, golf/sporting areas and snow making, and for the construction of a dam or a water bore.[72]

Native title rights

Under the *Water Management Act 2000*, anyone who holds native title with respect to water (as determined under the *Native Title Act 1993* (Cwlth)) can take and use water for a range of needs, including personal, domestic and non-commercial communal purposes such as manufacturing traditional artefacts, hunting, fishing and gathering, and recreation, cultural and ceremonial purposes.[73]

Harvestable rights

Rural landowners in NSW can build dams on minor streams that capture 10 per cent of the average regional rainfall run-off on land in Central and Eastern Divisions, and up to 100 per cent on land in the Western Division.

The maximum harvestable right dam capacity is the total dam capacity allowed under the harvestable right for a property and takes into account rainfall and variations in rainfall pattern.[74] Aa landowner who wishes to construct a dam larger than that will need to license the volume of water that exceeds the maximum harvestable right dam capacity unless it is taken under a basic landholder right.

---

70 Lachlan Valley Water INC, Submission to IPART on WaterNSW regulated charges 2017-2021.

71 DPI Water (2016), Domestic and stock rights, 11/11/2016, http://www.water.nsw.gov.au/water-licensing/basic-water-rights/domestic-and-stock.

72 DPI Water (2016), Domestic and stock rights, 11/11/2016, http://www.water.nsw.gov.au/water-licensing/basic-water-rights/domestic-and-stock.

73 DPI Water (2016), Native Title, 10/11/2016, http://www.water.nsw.gov.au/water-licensing/basic-water-rights/native-title.

74 DPI Water (2016), Harvestable rights- dams, 10/11/2016, http://www.water.nsw.gov.au/water-licensing/basic-water-rights/harvesting-runoff

8.2.2 Environmental water

Over time, the importance of allocating sufficient water to environmental uses has been reinforced with the establishment of water sharing plans (WSPs) and the National Water Initiative (NWI).

In particular, the key water legislation in NSW- the *Water Management Act 2000* – recognises the need to allocate and provide water for the environmental health of our rivers and groundwater systems. The Act provides water for the environment in two ways:

- 'Planned' environmental water allocated within statutory water sharing plans.
- 'Adaptive' environmental water allocated to water licenses held for environmental use; and

Planned water for the environment

'Planned' environment water is allocated through water sharing plans (such as the Water Use Plan for the Macquarie River No 1 in the Box below) that establish rules for sharing water between the environment and different types of water use including town supply, rural domestic supply, stock watering, industry and irrigation, while ensuring that water is provided for the health of the system.[75]

WSPs are designed to ensure the plants and animals in streams experience all the different degrees of water flow necessary to sustain life. To do this, the plans for regulated rivers include rules on matters such as extraction limits, the timing of releases from storages, the volume of flows required at specific sites, and end-of-system flows. Planned environment water can also include an environmental contingency allowance (ECA) which is set aside in storages and can be called on for specific environmental purposes, such as flushing blue-green algal blooms, reducing salinity or supporting bird breeding or fish spawning events.

For unregulated rivers, environmental flow rules typically involve cease to pump rules and commence to pump rules.[76]

The costs associated with 'planned' water are not currently recovered from beneficiaries (the environment) but are subsumed into bulk water charges.

---

75 DPI Water (2016), Environmental Rules, viewed 11/11/16, available at http://www.water.nsw.gov.au/water-management/water-sharing/environmental-rules.

76 Cease to pump rules ensure that very low flows are protected by requiring users to stop taking water when flow declines below a set level.

Box 13: Riverbank Water Use Plan for the Macquarie River No 1.

(3) This plan authorises the use of water for environmental purposes that:

- **a.** Maintain the ecological character of the Macquarie Marshes Nature Reserve and the Wilgara Wetland Ramsar site;
- **b.** Enhance opportunities for native fish recruitment and dispersal in the Macquarie River and Macquarie Marshes;
- **c.** Ensure the successful completion of colonial waterbird breeding in the Macquarie Marshes;
- **d.** Alleviate severe unnaturally prolonged drought conditions in the Macquarie Marshes
- **e.** Provide for ecologically beneficial flooding of the distributaries known as Crooked Creek, Marra Creek, Gunningbar Creek and Duck Creek; and/or
- **f.** Achieve other ecological benefits as recommended by the Environmental Flows Reference Group established under Part 3, Clause 15, sub-clauses 23 and 24 of the Water Sharing Plan for the Macquarie and Cudgegong Regulated Rivers Water Source, 2003.

Source: Environment.nsw.gov.au

Adaptive water for the environment

In addition to planned environmental water, the *Water Management Act 2000* also allows water to be taken and used for the environment under specific water access licences, such as the Living Murray Program.[77] This is known as 'adaptive' water, as it is allocated periodically according to inflows and dam levels. The regulations for the use of licensed water are contained in water sharing plans and licence conditions and associated 'adaptive' environmental water-use plans.

The costs associated with 'adaptive' water flows are recovered via fixed and variable charges on environmental holders. Both the NSW and Commonwealth governments (through the Commonwealth Environmental Water Holder) have purchased water licences for environmental purposes.

8.2.3 Downstream communities

Communities that live downstream of dams operated by WaterNSW are users of WaterNSW's services. In particular, downstream communities benefit from WaterNSW's flood mitigation and asset management services aimed at ensuring the efficient operation of the dam.

However, while a large number of WaterNSW's users are located along the river valleys downstream of WaterNSW's dams and assets not all the downstream communities will be customers of WaterNSW. In these circumstances, while the

[77] DPI Water (2016), Environmental Rules, viewed 11/11/16, available at http://www.water.nsw.gov.au/water-management/water-sharing/environmental-rules.

communities downstream from WaterNSW may not be customers of WaterNSW, although they are users of services provided by WaterNSW.

Box 14: Downstream communities - Burrendong Dam

One of the largest inland dams in NSW, Burrendong Dam is situated on the Macquarie River, about 30 kilometres upstream from Wellington in Central West NSW. The dam was built after World War II to supply irrigation, stock and household needs in the Macquarie Valley, and environmental flows to the Macquarie Marshes. However, the dam also has a significant flood mitigation role, in addition to irrigation and the provision of stock and domestic supplies, with almost one third (489,00 ML) of the dam's total storage capacity (1,678,000 ML) designated and operated solely for flood mitigation, and the remaining 1,189,000 ML designated for irrigation, stock, domestic and environmental purposes).

Source: WaterNSW

8.2.1 Broader NSW/Australian communities

The broader Australian Community has a commitment towards the conservation of the environment and thus are users or beneficiaires of WaterNSW's services aimed at environmental sustainability. This is especially true for wetlands of national significance or Ramsar wetlands (which are of global significance, and as such, Australia must protect them under international treaties).

8.2.2 Recreational water users

Many of the dams operated by WaterNSW are popular recreational destinations, offering attractions for water sports and recreational fishers. As such, while tourism and recreational water users may not be direct customers of WaterNSW's services, recreational water users rely on the provision of services that ensure the environment around the dam remains sustainable. In addition, recreational water users may contribute to the cost associated with their use through other means, such as NSW Recreational Fishing Fee.[78]

[78] See DPI Water (2016), *Recreational Fishing Fee,* viewed 11/11/2016, http://www.dpi.nsw.gov.au/fishing/recreational/recreational-fishing-fee.

Appendix B: WaterNSW proposed cost share allocations

WaterNSW's proposed cost share allocations

Cost driver	Cost driver description	Customer share
Operating expenditure		
Customer Support	Management and administration of the CSC's, customer education and support materials	100%
Customer Billing	Customer enquiries, transaction and complaints services, invoicing, receipting, debtor management, system administration, postage to collect regulated revenue.	100%
Metering and Compliance	Customer water ordering, customer water accounting management, customer site surveillance, compliance reporting, meter reading, system management and usage apportionment, licensing issues resolution.	100%
Water delivery and Other Operations	Water release from dams to customers. Normal environment and system flows. Short-term and long-term demand forecasting and resource assessment. Works Approval and other compliance reporting. Use of SCADA and manual work required to release water from dams, weir and regulators.	100%
Flood Operations	Flood operations/Flood training/Onsite works required by flood operations.	50%
Hydrometric Monitoring	This service is purchased from DPI Water.	90%
Water Quality Monitoring	Storage water quality monitoring and reporting Fish River water quality management plan.	50%
Corrective Maintenance	Breakdown maintenance of asset which provide services to customer and other water users.	100%
Routine Maintenance	Planned or condition based maintenance of assets which provide services to customers and other water users.	100%
Asset Management Planning	Asset planning and safety. Maintenance planning. Asset condition auditing. Operational risk and incident management. Procurement/Dam safety/compliance operations.	100%
Dam Safety Compliance Capital Projects Pre 1997	Dam surveillance/Dam safety inspections, reviews, audits and associated risk assessment.	0%
Dam Safety Compliance	Dam surveillance/Dam safety inspections, reviews, audits and associated risk assessment.	50%

Environmental Planning and Protection	Environmental management – strategic and specific planning and assessment, Fish passage, Carbon neutrality, Cold water pollution.	50%
Insurance	Insurance such as public liability and building and other asset insurance.	100%
Capital expenditure		
Asset management Planning	Asset planning and safety Maintenance planning/ Asset condition auditing/Operational risk and incident management. Procurement, Dam safety, compliance Operations.	100%
Routine Maintenance	Planned or condition based maintenance of assets which provide services to customers and other water users.	100%
Dam Safety Compliance – Pre 1997 Construction	Dam surveillance, Dam safety inspections, reviews, audits and associated risk assessment.	0%
Dam Safety Compliance	Dam surveillance, Dam safety inspections, reviews, audits and associated risk assessment.	50%
Renewal and Replacement	Expected wear and tea and usage of water infrastructure.	90%
Structural and Other Enhancement	Discretionary expenditure endorsed by Customer Service Committees.	100%
Corporate Systems	Responsible for the delivery of information services' major projects and improvement initiatives. Some systems provide services to customers and stakeholders.	100%
Environment Planning and Protection	Environmental management – strategic and specific planning and assessment, Fish passage, Carbon neutrality, Cold water pollution.	50%
Flood operations	Flood operations, Flood training, Onsite works required for flood operations.	50%
Office Accommodation Capital Projects	Office Accommodation, Dam Operational Facilities, Essential staff accommodation.	100%
Information Management Projects	Responsible for the delivery of information services' major projects and improvement initiatives. Some projects provide services to customers and stakeholders.	100%
Water Delivery and other operations	Water released from dams to customers. Normal environment and system flows. Short-term and long-term demand forecasting and resource assessment. Works Approval and other compliance reporting. Use of SCADA and manual work required to release water form dams, weird and regulators.	100%

Source: WaterNSW Pricing Proposal

FRONTIER ECONOMICS
BRISBANE | MELBOURNE | SINGAPORE | SYDNEY
Frontier Economics Pty Ltd 395 Collins Street Melbourne Victoria 3000
Tel: +61 (0)3 9620 4488 Fax: +61 (0)3 9620 4499 www.frontier-economics.com.au
ACN: 087 553 124 ABN: 13 087 553 124