

Rural water cost sharing review

Draft Report

A Draft Report prepared for IPART

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A I T H E R

Contents

<i>Executive summary</i>	v
1. Introduction	1
1.1. Project objectives and scope	1
1.2. Background.....	1
1.3. Structure of this Draft Report.....	2
2. Approach to the review	4
2.1. Overview	4
2.2. Stage 1: Defining cost share review scenarios	6
2.3. Stage 2: Identifying evaluation questions	6
2.4. Stage 3: Establishing and assessing against principles for the review	7
2.5. Stage 4: Overall assessment and findings	9
2.6. Assessment limitations	9
3. Current cost sharing framework	10
3.1. IPART’s cost sharing framework	10
4. Issues identified with current cost sharing framework	18
4.1. Cost share framework principles	18
4.2. Industry reforms and transparency	19
4.3. Water Delivery and Other Operations activity code	20
4.4. Environmental Planning and Protection activity code	21
4.5. Dam safety compliance activity code	21
4.6. Flood operations activity code	22
4.7. Valley-by-valley approach	23
5. Cost allocation process	25
5.1. Activity-based cost sharing	25
5.2. Current cost sharing framework in practice	25
5.3. Findings related to the cost allocation processes.....	28
6. Scenario One: Clarifying activities and reviewing cost shares within the existing cost sharing framework	29
6.1. Clarifying descriptions of activities.....	29
6.2. Summary of recommended changes to cost share ratios	30
6.3. Assessment of WaterNSW activity codes	33
6.4. Assessment of WAMC activity codes	42
6.5. Impact of changes to ratios on total user share of efficient costs and prices.....	49

7. Scenario Two: Changes to the existing cost sharing framework.....	50
7.1. Summary of recommended changes to the existing cost sharing framework.....	50
7.2. Options for improving activity codes.....	52
7.3. Impact of changes to ratios on total user share of efficient costs and prices.....	56
8. Scenario Three: Alternative service-based cost sharing framework.....	57
8.1. Service-based cost allocation.....	57
8.2. Impact of changes to ratios on total user share of efficient costs.....	64
9. Assessment of the cost effectiveness of scenarios.....	67
9.1. Approach to assessing cost effectiveness.....	67
9.2. Assessment of the scenarios.....	68
9.3. Conclusions.....	71
9.4. Potential next steps.....	72
Appendix A – Assessment table.....	73

Tables

Table 1 Assessment of transparency and practicality.....	8
Table 2 Summary of environmental water and associated costs.....	15
Table 3 Observations about the clarity of activities.....	29
Table 4 Comparison of recommended changes to existing WaterNSW cost sharing ratios..	31
Table 5 Comparison of recommended changes to existing WAMC cost sharing ratios.....	32
Table 6 Comparison of percentage of recovery between current approach and Scenario One.....	49
Table 7 Revised list of WaterNSW activities and cost sharing ratios (Scenario Two).....	50
Table 8 Revised list of WAMC activities and cost sharing ratios.....	51
Table 9 Activities that could be treated separately within internal cost allocation processes	53
Table 10 Activity codes with cost shares influenced by flood mitigation dams.....	55
Table 11 Proposed WaterNSW services and definitions.....	58
Table 12 Proposed WAMC services and definitions.....	58
Table 13 Impactors and cost shares for WaterNSW’s proposed services.....	60
Table 14 Impactors and cost shares for WAMC’s proposed services.....	62
Table 15 Hypothetical allocation of activity codes to the proposed services.....	64
Table 16 Hypothetical allocation of WAMC activity codes to the proposed services.....	65
Table 17 Percentage of recovery from the different scenarios.....	66
Table 18 Summary of assessment of scenarios for improving the rural water cost sharing framework.....	68
Table 19 Assessment of activity codes for rural water services.....	73
Table 20 Assessment of activity codes for WAMC services.....	86

Figures

Figure 1 Rural Cost Share Review assessment framework	5
Figure 2 Different types of sub-user groups	14

Executive summary

Aither was engaged by the Independent Pricing and Regulatory Tribunal (IPART) to undertake a review of the rural cost share framework for WaterNSW's and Water Administration Ministerial Corporation's (WAMC) bulk water, planning and management functions. The review forms a major component of a broader review of the rural cost share framework being undertaken by IPART.

The monopoly services that are inside the scope of this review are:

- WaterNSW's rural bulk water services: predominantly infrastructure used to deliver bulk water to irrigators and other entitlement holders on regulated rivers across NSW.
- WAMC's water services: includes water planning and management services provided to holders of entitlements to take water from regulated rivers, unregulated rivers and groundwater sources across NSW. These services are currently delivered by WaterNSW, DOI-Water, and NRAR on behalf of WAMC.
- Services provided by WaterNSW and the NSW Government in relation to the Murray Darling Basin and Border Rivers Commission.

The objectives of the review were to:

- understand issues with the current activity-based cost share framework
- identify potential improvements to the current framework
- design and assess the merits of adopting an alternative (service-based) cost share framework.

Review findings

At a high-level, our review found that there does not appear to be a clear driver or evidence of the need for wholesale changes to the current cost sharing framework. We found that wholesale changes to the cost sharing framework are likely to be prohibitively expensive and are unlikely to deliver improvements in transparency, practicality and cost reflectiveness that are commensurate with the implementation costs. We have therefore recommended minor changes to the existing activity-based cost sharing framework that should have minimal implementation costs while seeking to improve the transparency, practicality and cost reflectiveness of the framework.

Our recommended changes to the cost sharing ratios are likely to result in a minor increase in the user share for cost recovery. The magnitude of the change in recovery will depend on the selection of the sharing ratio from within the recommended range for some activity codes.

Approach

The review was undertaken according to an assessment framework which was developed to deliver on IPART's objectives for the review.

Major information or documentation which informed the review included IPART's Issues Paper and stakeholder submissions to the issues paper; reports and cost allocation models developed during IPART's previous rural water pricing determinations; and, documentation and information provided during meetings and discussions with WaterNSW, DOI, NRAR and NSWIC.

Scenarios for improving the cost share framework

Aither developed and assessed three scenarios based on IPART's review objectives which represent different options for improving the cost share framework. The scenarios were:

- **Scenario 1:** Clarifying activities and reviewing cost shares within the existing activity-based cost sharing framework.
- **Scenario 2:** Changes to the existing activity-based cost sharing framework.
- **Scenario 3:** Wholesale change to the existing framework through adopting a service-based approach.

Review principles

The following principles guided our assessment of the individual WaterNSW and WAMC activities and services and the overall scenarios:

- **Transparent:** Ensure transparency in regard to the basis for undertaking the activity or service, its associated cost and the share of those costs between users and the NSW Government.
- **Practical:** Ensure that the cost sharing framework can be applied practically, is repeatable and consistent, and robust over time, including considering systems in place for measuring expenditure by activity. The cost sharing framework should not duplicate other processes or place unnecessary administrative burden upon agencies.
- **Cost reflective:** Improvements to the framework should reflect the application of the impactor pays approach (cost shares should be representative of the cost driver (impactor)). This approach is consistent with IPART's cost sharing approach.
- **Cost effective:** Any recommended changes to the cost sharing framework (at the aggregate scenario level) should be cost effective. One of the key aspects of the review is to ensure that the benefits of the improvements exceed the costs of implementing changes to the cost sharing framework.

Limitations

In undertaking this review, we have sought to apply IPART's specific definitions and preferred approaches for the cost sharing framework. The specification of these definitions and approaches is outside the scope of our review and will be considered by IPART as part of its broader consideration of its cost sharing framework. The key example of this is IPART's preference for the impactor-pays method for determining the cost sharing between users and government (as opposed to the beneficiary-pays method). Given this position, we have sought to apply IPART's definition of impactor-pays in our assessment of the cost sharing across each individual activity code.

Assessing cost sharing using the impactor pays principle involves a certain amount of unavoidable subjectivity. The subjectivity associated with the assessment is often compounded by a lack of information, and limited data to quantify the impacts of cost drivers on activities. While subjectivity is unavoidable in this process, we have attempted to clearly outline our rationale for decisions in an attempt to ensure that these subjective judgements are clear and unambiguous.

For a number of activities, we have proposed a range of potential sharing ratios. This is to deal with the uncertainty and subjectivity in determining the appropriate cost share for activities, and will provide IPART with the flexibility to exercise discretion in determining the appropriate level of cost sharing.

Results

Cost allocation processes

As part of this review, we sought information and documentation from WaterNSW and DOI describing how each organisation allocates actual costs incurred in relation to its bulk rural water and WAMC activities. While both organisations were able to describe the process for assigning expenditure to cost share activities in general terms, neither organisation was able to produce formal documentation (for example a cost allocation manual) detailing the process.

We acknowledge that the evolving water planning and management arrangements over recent years has created a challenging environment for documenting these processes. In Aither's view, producing formal documentation and definitions for WaterNSW's and WAMC's internal cost allocation processes represents an opportunity to improve transparency around the cost share framework. This will potentially help to address stakeholder concerns regarding transparency.

Scenario One

For Scenario One we sought to clarify the activities within the existing framework and review whether cost shares are reflective of the impactor pays principle. The recommended changes to the WaterNSW activities are based on the following key findings:

- **Water delivery and other operations.** Changes to this activity are based on a survey of operational staff, which revealed the coarse quantum of costs attributable to providing services for BLR and recreational users. The survey also revealed the costs of operating dams to release environmental water, and for navigational services (in the Murray Valley only).
- **Flood operations.** Changes to this activity are based on the rationale that downstream communities (by way of their consumption of water provided by local water utilities) are the primary impactor for flood operations activities, and should therefore meet the majority of flood operations costs. However, the two main causes of floods (dam failure and from rainfall) also have a bearing on cost sharing depending on what purpose the dam was built for.
- **Water quality monitoring.** Changes to this activity are based on the rationale that the drivers for WaterNSW's water quality program are to monitor for drinking water quality, regulatory requirements (including blue green algae, water chemistry and temperature), and dam safety.
- **Corrective maintenance, routine maintenance, asset management planning and renewals and replacement.** Changes to these activities are based on the rationale that these activities are primarily driven by the need to continue to provide a reliable service to users of the network. There may be some infrastructure that does not directly provide services to customers (for example, public access roads and bridges) however, these are likely to be less than 10 per cent.
- **Dam safety compliance.** Changes to this activity assume that the majority of the expenditure on dam safety compliance is likely to be required to provide services to current and future users (primarily downstream local water utilities (communities) and irrigation users). There are also other stakeholders that would be impacted by a potential dam failure (for example, downstream communities/properties that are not users, recreational users), therefore, it is appropriate to allocate a portion of the costs to government.
- **Environmental planning and protection.** Changes to this activity code assume the primary purpose of water management infrastructure is to provide more reliable and controllable water for water users, or protection from floods for downstream users and communities. Provision of these services has resulted in negative environmental and ecological consequences stemming from

reduced water availability for the environment and an altered flow regime. Thus, the primary impactor for this activity are users.

- **Corporate systems.** Changes to this activity code assume that the activity code is not necessarily an activity, but rather a type of cost incurred by WaterNSW to undertake its other core rural bulk water activities. In this way it can be understood as an overhead. In keeping with the treatment of other overheads, there should be some degree of allocation across both government and users.

The recommended changes to the WAMC activities are based on the following key findings:

- **W01 Surface water monitoring.** Changes to:
 - **W01-01 surface water quantity monitoring** assume that the information derived from this activity is primarily required to operate the river system for extractive uses.
 - **W01-03 Surface water quality monitoring** assume that the primary impactor for the surface water quality monitoring program are users, however, there are broader regional and inter-governmental agreements that may contribute to some extent.
 - **W01-04 Surface water algal monitoring** assume that blue green algae is naturally present in all water sources and blooms occur through a combination of factors. River regulation and extraction influence some of these factors, however, blooms are likely to still occur to a degree in the absence of extraction.
- **W02 Groundwater monitoring.** Changes to Groundwater data management and reporting (W02-03) assume that both water users and government and user expectations drive the level of costs associated with this activity.
- **W04 Water modelling and impact assessment.** Changes to surface water modelling (W04-01) assume that the primary driver is to facilitate long-term water sharing, as well as for broader NSW government processes and compliance with inter-state water sharing agreements.
- **W05 Water management implementation.** Changes to:
 - **W05-02 Blue-green algae management** are consistent with consideration of blue-green algae monitoring (W01-04) above.
 - **W05-03 Environmental water management** are consistent with our consideration of the WaterNSW Environmental Planning and Protection code which ties the primary impactor behind to the original purpose of the dam.
- **W06 Water management planning.** Changes to Development of water planning and regulatory framework (W06-06) assume that the primary driver of the cost is to provide regulations and rules for water access, suggesting the primary impactor is users. However, a component of this activity code appears to occur in response to broader requirements such as community concerns, legislation and the Basin Plan.
- **W07 Water management works.** Changes to Water management works (W07-01) assume that the works are undertaken to rectify or remediate damage caused by extractive use. We note that the works also protect life and property from the effects of flooding by maintaining a healthy river system suggesting some costs should also be shared with government.
- **W10 Business and customer services.** Business governance and support (W10-02) acknowledge that the activity provides broader corporate services support to agencies for the provision of WAMC functions (is an overhead). The allocation between government and user should then be informed by the overall allocation of costs between government and user across the WAMC activity codes.

Table ES1 Comparison of recommended changes to existing WaterNSW cost sharing ratios

Code	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
Water delivery and other operations	0	100	5	95
Flood operations	50	50	10-30	90-70
Water quality monitoring	50	50	10-30	90-70
Corrective maintenance	0	100	5	95
Routine maintenance	0	100	5	95
Asset management planning	0	100	5	95
Dam safety compliance	50	50	10-30	90-70
Dam safety compliance on pre-1997 capital projects	100	0	100	0
Environmental planning and protection	50	50	10-30	90-70
Corporate systems	0	100	20	80
Renewals and replacement	0	100	5	95

Table ES2 Comparison of recommended changes to existing WAMC cost sharing ratios

Code	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
<i>W01 Surface water monitoring</i>				
W01-01 Surface water quantity monitoring	30	70	0	100
W01-03 Surface water quality monitoring	50	50	30-50	50-70
W01-04 Surface water algal monitoring	50	50	50-70	50-30
<i>W02 Groundwater monitoring</i>				
W02-03 Groundwater data management and reporting	0	100	50	50
<i>W04 Water modelling & impact assessment</i>				
W04-01 Surface water modelling	50	50	10-30	90-70
<i>W05 Water management implementation</i>				
W05-02 Blue-green algae management	50	50	50-70	50-30
W05-03 Environmental water management	100	0	10-30	90-70
<i>W06 Water management planning</i>				
W06-06 Development of water planning and regulatory framework	25	75	10-30	90-70

Code	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
W07 Water management works				
W07-01 Water management works	50	50	10-30	90-70
W10 Business and customer services				
W10-02 Business governance and support	30	70	20	80

Impact of changes to ratios on total user share of efficient costs prices

Based on the recommended changes to the cost sharing ratios above, there is an impact on the relative level of costs for users and government. The actual impact is unknown as any changes to the sharing ratios will be forward looking and apply as part of future pricing determinations, however to provide a guide as to the general impact of the changes, we have applied the recommended changes to the average forecast expenditure from 2018-2021 across both the rural water activities and WAMC activities.

Table ES3 compares the percentage of recovery between users and government for the current approach and the high and low end of the ranges under Scenario One. The Scenario One – Low User information is based on applying the low end of the range for the user share (and high end for government) where a range is recommended, whereas the Scenario One – High User is based on applying the high end of the range for the user share (and low end for government) where a range is recommended.

Table ES3 Comparison of percentage of recovery between current approach and Scenario One

Cost share	Current sharing		Scenario 1 – Low User		Scenario 1 – High User	
	Govt (%)	User (%)	Govt (%)	User (%)	Govt (%)	User (%)
Rural water services – opex	11	89	10	90	6	94
Rural water services – capex	24	76	24	76	24	76
WAMC – opex	25	75	19	81	15	85
WAMC – capex	11	89	10	90	8	92

Scenario Two

Scenario Two is based on reviewing and identifying opportunities to improve the existing activity-based cost sharing framework that are likely to result in minimal system and resourcing costs. This analysis was based on the findings from our review of each individual activity code through Scenario One.

Potential improvements to the existing framework were identified in relation to:

- **Rationalising activities.** There are a number of activity codes that are replicated across both operating expenditure and capital expenditure, but have no allocated costs and are unlikely to ever be allocated costs, as the activity code is not reflective of the type of expenditure. The

allocation between the operating and capital expenditure for these activity codes is based on the capitalisation policies and therefore the duplication of these codes is unlikely to have a material impact on the agencies.

- **Better aligning activities.** There are a number of activity codes that appear to overlap. It may be appropriate to consolidate these activities, which could lead to the cost sharing framework being more reflective of the roles and responsibilities of respective water management agencies.
- **Removing activities from the framework.** Some activity codes do not represent activities, but rather categories of costs. These are generally overhead or indirect costs that do not represent actual activities that must be undertaken. An option to deal with this category of cost would be to treat these costs within the internal cost allocation processes for indirect and overhead costs.
- **Applying valley specific cost shares.** Some stakeholders called for a valley-based approach to cost sharing to account for the differences in cost drivers between valleys. One solution for dealing with the variation between valleys is to apply valley-specific cost shares for certain activities, where a clear need is able to be demonstrated.
- **Improving the granularity of activities.** It may be appropriate to further disaggregate the WAMC compliance management (W10-01) activity code into sub-components to account for increased focus and expenditure on compliance and enforcement following the establishment of the NRAR and the transfer of compliance functions from WaterNSW to NRAR in 2018.

Impact of changes to ratios on total user share of efficient costs and prices

The potential changes to the activity codes identified in Scenario Two are unlikely to have a material impact on the share of costs between users and government when compared to Scenario One. This is due to the fact that:

- some of the activity codes currently do not have any costs allocated to them
- the activity codes with potential overlap have similar, if not the same, user share ratios under Scenario One
- potential overhead costs have been recommended to be shared based on overall cost shares which is likely to be similar (although unlikely to be the exactly the same) as allocating the costs through internal cost allocation processes.

The key difference between the allocation of costs between the scenarios is the allocation of costs in those valleys that have been identified as being treated differently in Scenario Two. In each of these circumstances it results in a higher proportion of costs to be recovered from government in that valley. The users in those regions are likely to experience a greater impact to charges than under Scenario One.

Scenario Three

For Scenario Three we designed an alternative service-based cost sharing framework by mapping the existing WaterNSW and WAMC activities to proposed services for WaterNSW's bulk rural water and WAMC water planning and management functions. Table ES4 provides the proposed WaterNSW and WAMC services.

Table ES4 Proposed WaterNSW and WAMC services and user shares

Service	Description	User share
WaterNSW		
Water storage services	These include the storage of water held by entitlement holders (including environmental water managers).	95%
Water transportation services	These include the delivery of water to licensed water users (including consumptive entitlement holders, environmental water managers, and other parties such as stock and domestic users).	95%
Environmental services	These include releases of environmental flows in accordance with statutory obligations and operation, maintenance of environmental gauging stations, and environmental management such as the provision of fish passages.	100%
Metering and retail customer services	These include administration services, customer support, customer billing and compliance and maintaining and reading water meters for extractive customers and non-extractive customers.	100%
Information services	These include providing information on surface and groundwater quantity and quality.	80%
Non-routine services	These include costs associated with providing non-routine services, such as Fish River connections/disconnections.	(e.g. 100%)
Flood management and mitigation services	These include costs associated with managing the potential impacts of flooding.	80%*
Recreational services	This includes costs associated with providing recreational opportunities on waterways for water sports and recreational fishing.	0%

Service	Description	User share
WAMC		
Water management rulemaking and planning	These include costs associated with developing, assessing and recommending changes to water sharing/water resource plans and water management rules for the management of surface and groundwater resources. It also involves costs associated with facilitating the implementation (such as water availability decisions), monitoring and evaluation of water planning processes and other mechanisms or works required for implementation.	90%
Modelling and monitoring	These include modelling and monitoring of surface and groundwater data and information to inform water management planning, implementation, and compliance and enforcement decisions.	70%
Licensing and approvals (including customer service)	These include the costs associated with the administration of all water licensing information, and customer and billing management.	100%
Compliance and enforcement	These include the costs associated with ensuring that license holders comply with the regulatory framework for water and the enforcement of compliance actions where necessary.	100%

Note: * Hunter and Macquarie valleys have a ratio of 50:50 to reflect the flood mitigation objectives of the dams within their valleys.

Impact of changes to ratios on total user share of efficient costs and prices

The service-based approach requires an allocation of the current activity codes to the proposed services. This is complicated by the fact that there are a number of activity codes that are required to be undertaken for the service. Further to this, cost information is not currently captured in this format and therefore is unavailable from the agencies. Therefore, we developed a hypothetical example to demonstrate the practical application of the service-based approach given current data limitations.

We sought to compare the potential impacts against the outcomes of Scenario One in Table ES5. It can be seen that the overall sharing ratio for Scenario Three (based on the hypothetical example) is relatively similar to the outcomes of Scenario One.

Table ES5 Percentage of recovery from the different scenarios

Cost share	Scenario 1 – Low User		Scenario 1 – High User		Scenario 3	
	Govt (%)	User (%)	Govt (%)	User (%)	Govt (%)	User (%)
Rural water services – opex	9	91	6	94	10	90
Rural water services – capex	23	77	23	77	30	70

Cost share	Scenario 1 – Low User		Scenario 1 – High User		Scenario 3	
	Govt (%)	User (%)	Govt (%)	User (%)	Govt (%)	User (%)
WAMC – opex	20	80	15	85	15	85
WAMC – capex	11	89	8	92	24	76

Cost effectiveness of scenarios

A central aspect of the review was to ensure any potential overall improvements to the rural cost share framework are cost effective – that is the benefits of any changes to the cost sharing framework must exceed the costs of implementation. Aither qualitatively assessed the costs and benefits of the different scenarios to understand which options are likely to be the most cost-effective.

Table ES6 summarises our overall assessment of the cost effectiveness of the scenarios.

Table ES6 Summary of assessment of scenarios for improving the rural water cost sharing framework

Scenario	Description	Potential benefits	Potential costs
Scenario One	Clarifying activities and reviewing cost shares within the existing activity-based cost sharing framework.	<ul style="list-style-type: none"> • Practical to implement – this scenario can be implemented at very low cost and with little effort • Improved transparency of cost apportionment between users and the government • Enhanced transparency by further defining the basis and cost drivers for WaterNSW and WAMC activities, the costs, and share of costs • Consistency of cost sharing across WaterNSW and WAMC activities • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs are likely to be limited to staff labour to implement minor changes to WaterNSW and DOI’s accounting systems to reflect updated cost share ratios, activity code names and descriptions.</p> <p>We understand the cost of implementing this scenario to be minor.</p>
Scenario Two	Changes to the existing activity-based cost sharing framework.	<ul style="list-style-type: none"> • Improved transparency of cost apportionment between users and the government • Improved transparency of cost apportionment between users within and between valleys • Enhanced transparency by further defining the basis and cost drivers for WaterNSW and WAMC activities, the costs, and share of costs • Improvements in practicality due to reduced duplication and framework complexity • Consistency of cost sharing across WaterNSW and WAMC activities • Practical to implement • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs are likely to be limited to staff labour to implement minor changes to WaterNSW and DOI’s accounting systems to reflect updated cost share ratios as well as rationalisation/ separation of activities. There may also be some costs involved in implementing valley specific cost shares.</p> <p>In some cases, this could have a negative effect on cost effectiveness (where there are no costs allocated to certain codes) however, this rules out the change as the costs of implementing this scenario would still be minor.</p>

Scenario	Description	Potential benefits	Potential costs
<p>Scenario Three</p>	<p>Wholesale change to the existing framework through adopting a service-based approach.</p>	<ul style="list-style-type: none"> • Improved cost apportionment between users and the government • Improved cost apportionment between users within and between valleys • Enhanced transparency by further defining the basis for water planning and management services, the costs, and share of costs • Consistency of cost sharing across WaterNSW and WAMC services • Improvements in practicality due to reduced duplication and framework complexity • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs for implementing this change across WaterNSW and WAMC would involve further defining services, identifying customer segments, allocating costs to those segments and internal and external resourcing to redesign accounting systems and implement the solution. This would also involve training/education to ensure cost allocation is undertaken accurately.</p> <p>WaterNSW estimated between \$4 and \$5 million to implement this scenario. Further costs would be required for DOI's system.</p>

Overall conclusions

This review produced conclusions relevant to both IPART and broader stakeholders.

Conclusions relevant to IPART's functions

Aither's overall conclusions for each scenario are:

- **Scenario One** represents quick wins that could result in increased clarity about the current cost share framework. The updated cost share ratios are likely to deliver improved cost reflectivity in accordance with the impactor pays principle with a very small cost associated with updating the water agencies' cost allocation systems.
- **Scenario Two** represents more substantial changes that could result in significant improvements in terms of transparency, practicality and cost reflectiveness. Scenario Two could be implemented at relatively low cost, although there may be some practical issues that would need to be considered, such as how to consolidate cost shares between the WAMC and WaterNSW activity codes.
- **Scenario Three** could theoretically also deliver the benefits from scenarios one and two, however, with significant costs associated with implementation. This scenario would require wholesale changes to WaterNSW's, DOI and NRAR's cost accounting systems. While the service-based approach is designed to provide greater transparency, allocating activities to services would be a significant challenge, and could ultimately result in less transparency if not undertaken correctly.

There does not appear to be a clear driver or evidence of the need for wholesale changes to the current cost sharing framework. Furthermore, wholesale changes to the cost sharing framework presented in Scenario Three are likely to be prohibitively expensive, and are unlikely to deliver improvements in transparency, practicality and cost reflectiveness that are commensurate with the implementation costs. Given this, we consider that Scenarios One and Two are more appropriate options for the cost sharing framework.

Conclusions relevant to broader stakeholders

The stakeholder concerns raised through this process generally relate to:

- a lack of transparency regarding the activities and how costs are allocated
- whether impactor-pays is the most appropriate approach to determine the user share ratios, and
- an overall concern regarding the efficiency and prudence of costs to undertake the required activities.

Improvements to the cost share framework will clarify the costs that are involved in WaterNSW and WAMC services and help to address stakeholder concerns about transparency. However, they will do little to alleviate concerns about the appropriateness of the impactor pays approach and efficiency of costs. These stakeholder concerns are outside the scope of this review and should be addressed via alternative means.

One of the potential issues that has arisen is that the allocation of costs to a broad group of 'users' has a disconnect from the tariff structures that are used to recover the costs from customers. This is an issue where there is a particular group of customers that are the key impactors for an activity code and therefore the reason for the high user share. If the tariff structure is not targeted, it can result in

the recovery of these costs from some customer groups that are not the impactors for that activity. This could be addressed through either implementing a more cost reflective tariff structure (however we note that this also introduces implementation and customer impact issues) and greater education for the customer base.

Formally documenting and publishing WaterNSW and WAMC's cost allocation processes would generally help water customers to understand how costs are within the cost share framework. This may be a relatively easy win for WaterNSW and WAMC in relation to improving transparency.

Potential next steps

In response to these conclusions, Aither suggests that IPART and stakeholders to this review may wish to consider the following next steps:

- that subsequent to further testing with stakeholders to understand how these changes could be implemented, IPART advocate for the implementation of the changes set out in Scenario One or Two of this report for the forthcoming WAMC and WaterNSW pricing determinations
- that during the forthcoming WaterNSW and WAMC pricing determinations, IPART require the relevant agencies to report on their performance in applying their cost allocation processes. This will assist in providing confidence to stakeholders regarding the costs and transparency of the activity codes.
- that IPART consider requiring WaterNSW and WAMC to provide additional descriptions and information concerning the specific activities undertaken within the rural cost share activity codes for the forthcoming pricing determinations.¹ This will improve stakeholders' understanding of the different activity codes and what is undertaken by the agencies.
- that WaterNSW and WAMC formally document and publish information about their internal cost allocation processes for bulk rural water delivery, management and planning costs. This would provide additional transparency for customers regarding the costs that underpin their charges.
- that WaterNSW and WAMC consider more disaggregated tariff structures that are targeted towards particular customer groups that are the underlying impactors for activities. This suggestion is to develop a more cost-reflective tariff structure that minimises any cross-subsidies between customer groups within the 'user' category for cost sharing purposes. An example of this is different types of High Reliability tariffs to target cost recovery from a particular customer group (e.g. local water utilities) where they are the impactor behind the user share cost allocation.

¹ We note that IPART has different regulatory powers regarding WaterNSW and WAMC and therefore its approach to this suggested next step may differ between the different agencies.

1. Introduction

1.1. Project objectives and scope

Aither has been engaged by the Independent Pricing and Regulatory Tribunal (IPART) to undertake a review of the rural cost share framework for WaterNSW's and Water Administration Ministerial Corporation's (WAMC) bulk water, planning and management functions. The review forms a major component of a broader review of the rural cost share framework being undertaken by IPART.

The objectives of this review are to:

- understand issues with the current activity-based cost share framework
- identify potential improvements to the current framework
- design and assess the merits of adopting an alternative (service-based) cost share framework.

The monopoly services that are inside the scope of this review are:

- WaterNSW's rural bulk water services: predominantly infrastructure used to deliver bulk water to irrigators and other entitlement holders on regulated rivers across NSW.
- WAMC's water services: includes water planning and management services provided to holders of entitlements to take water from regulated rivers, unregulated rivers and groundwater sources across NSW. These services are currently delivered by WaterNSW, DOI-Water, and NRAR on behalf of WAMC.
- Services provided by WaterNSW and the NSW Government in relation to the Murray Darling Basin and Border Rivers Commission.

The scope of this review does not include an audit of internal WaterNSW and WAMC cost allocation processes used to comply with IPART's cost sharing framework.

1.2. Background

IPART determines prices for monopoly rural bulk water services for WaterNSW customers in regulated valleys and water management services for WAMC, which are undertaken by WaterNSW, DOI and NRAR and levied on regulated surface water, unregulated surface water and groundwater users.

Through the price determination process, IPART seeks to set prices that allow these entities to recover their customers' share of the efficient costs of providing the monopoly services. The costs that are not captured as the customers' share are allocated to the NSW Government.

The cost sharing arrangements between users and government are currently undertaken through an activity-based approach using the impactor pays principle. This cost sharing approach has not been comprehensively reviewed since 2001. IPART committed to undertaking a detailed review as part of the most recent WaterNSW 2017 Rural Bulk Water Services Pricing Determination, which included an initial review of the cost sharing framework.

As part of Aither's review of past and proposed expenditure for that 2017 pricing determination for WaterNSW's rural bulk water services for IPART, it reviewed the cost sharing and recovery

frameworks that were applied.² Aither's review found that while the processes were largely sound, there were inconsistencies in treatment across different entities which resulted in a lack of transparency and therefore confidence in the information. The review resulted in a number of recommendations:

- Improve transparency of individual line items to provide confidence in the cost sharing process
- Ensure consistency in aggregating of expenditure into groupings across different agencies
- Develop an official statement of responsibilities (outlining how the functions should be treated in the cost sharing model)
- Develop guidelines for the application of IPART's sharing criteria
- Document the agreed approach for determining the valley use share split.

During that same review, Frontier Economics was requested by IPART to review the cost sharing framework for WaterNSW's rural bulk water services.³ Through that assessment, Frontier Economics recommended that the application of the framework be based on the services provided by WaterNSW rather than the activities undertaken, as currently applies. This recommended change was designed to provide greater consistency and transparency in the cost sharing process, subsequently resulting in more informed decision-making.⁴

Due to the timeframes available, the recommendations from these two reviews were unable to be implemented for the previous pricing determination. As a result of this, IPART has commenced this review in to rural water cost sharing now in preparation for the next pricing determinations for both WAMC and WaterNSW. It is expected that any outcomes from this review will inform the next reviews for WAMC and WaterNSW.

1.3. Structure of this Draft Report

This report is structured as follows:

- **Chapter 1**, provides background to this review, including the review objectives and scope.
- **Chapter 2** outlines our approach to undertaking the review
- **Chapter 3** describes the current activity-based cost sharing framework
- **Chapter 4** describes stakeholder issues that were raised in relation to the framework
- **Chapter 5** describes WaterNSW and WAMC's processes for undertaking cost allocation
- **Chapter 6** presents our assessment of the descriptions and cost share ratios under the current cost share framework
- **Chapter 7** presents our assessment of opportunities for improvements that could potentially be made to the current cost share framework

² Aither 2017. *MDBA expenditure review: a review of MDBA expenditure and cost sharing in New South Wales*. p 55.

³ Frontier Economics 2016. *Review of WaterNSW Cost Shares*. p 3.

⁴ A critical component of this project is testing the applicability of a service-based approach to cost sharing, particularly for WAMC activities undertaken by WaterNSW, DOI and NRAR; each of whom are in the process of reshaping the split of activities and functions following recent institutional, policy and regulatory reforms in NSW.

- **Chapter 8** outlines an alternative service-based cost allocation framework, considers how it performs against IPART's cost sharing principles and the cost share ratios that could be applied to the services, and
- **Chapter 9** assesses the cost effectiveness (net benefit) of the three different scenarios for improving the rural cost share framework.

2. Approach to the review

This chapter outlines our approach to undertaking the rural cost shares review.

2.1. Overview

2.1.1. Assessment framework

Aither developed an assessment framework to guide the review based around the following elements:

- defined scenarios for review
- evaluation questions to be considered for each scenario
- principles to be used to assess the performance of the scenarios
- assessment of the benefits and costs of the different scenarios.

The information used to inform the review is described below, followed by an illustration of the assessment framework (Figure 1). The remaining sections explain each element of the assessment framework in greater detail.

2.1.2. Information used to inform the review

The review was based on a number of sources of information and stakeholder consultation, including:

- IPART's Issues Paper, stakeholder submissions to the issues paper and other publicly available information
- IPART's previous rural water pricing determinations (including consultant reports and the spreadsheet models that IPART uses to allocate costs between users and the government)
- meetings and discussions with WaterNSW, DOI, NRAR and NSWIC
- additional documentation and information provided by WaterNSW and DOI in response to Aither's questions.

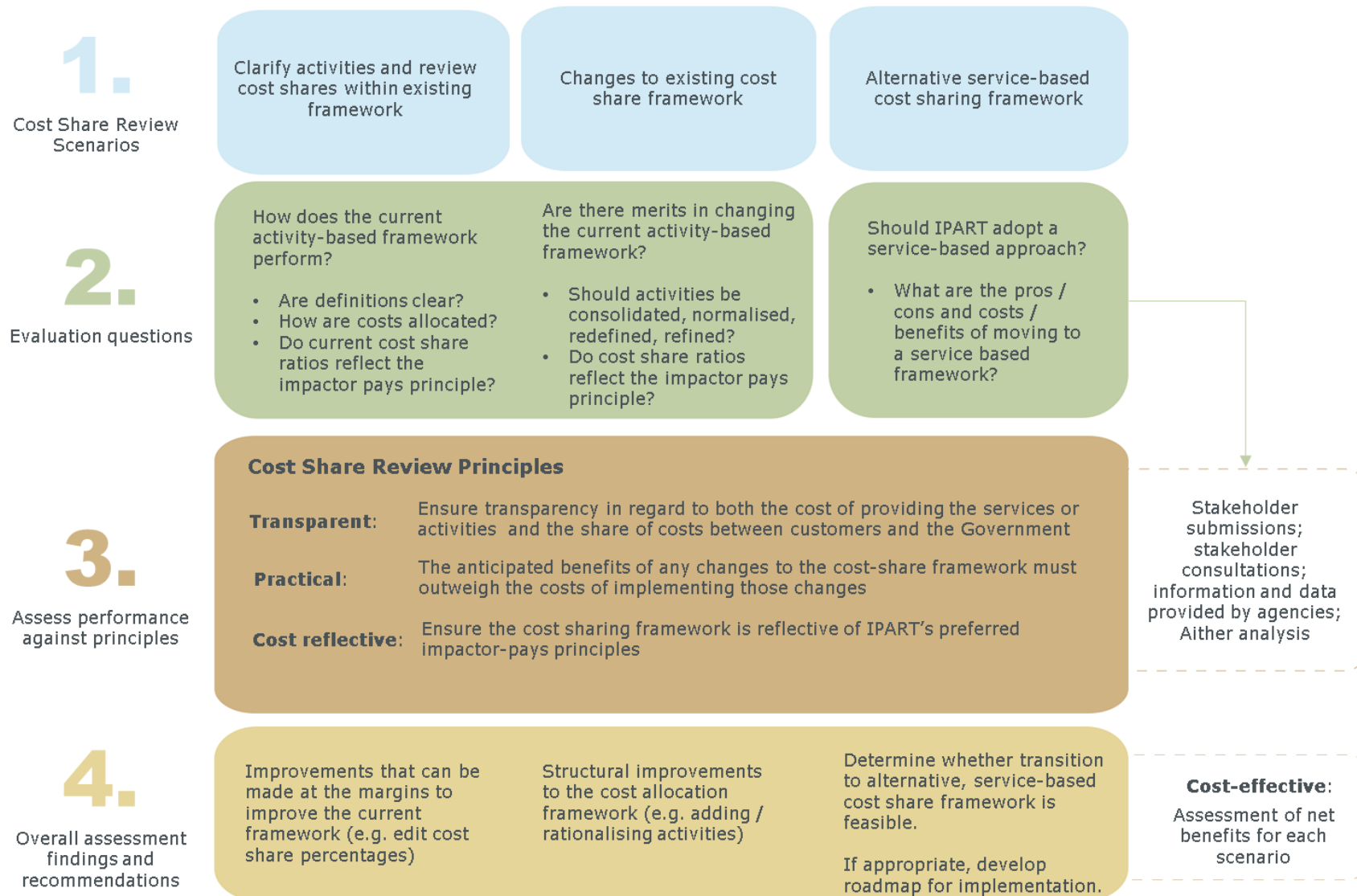


Figure 1 Rural Cost Share Review assessment framework

2.2. Stage 1: Defining cost share review scenarios

Aither developed three scenarios based on IPART's objectives for the review. These scenarios represent the different options for improving the cost share framework which were explored and assessed during the review. We considered the following:

- **Scenario 1:** Clarifying activities and reviewing cost shares within the existing activity-based cost sharing framework.

This scenario is based on clarifying activities within the existing framework and reviewing whether cost shares are reflective of the impactor pays principle.

- **Scenario 2:** Changes to the existing activity-based cost sharing framework.

This scenario is based on reviewing and identifying opportunities to improve the existing activity-based framework that are likely to result in minimal system and resourcing costs.

- **Scenario 3:** Wholesale change to the existing framework through adopting a service-based approach.

Scenario three is based on developing an alternative service-based cost sharing framework that seeks to allocate costs to services rather than activities and provide an allocation of costs between users and government based on the services provided.

2.3. Stage 2: Identifying evaluation questions

Aither designed a list of evaluation questions to uncover relevant information and data from stakeholders. The questions can be grouped according to three main overarching questions which are aligned to the scenarios:

- ***How does the current activity-based framework perform?*** These questions are focused at understanding the reason for the activities and what and who is causing the need to incur the cost.
- ***Are there merits in changing the current activity-based framework?*** These questions consider whether there are opportunities to consolidate, normalise, break apart, recreate or redefine the current activities undertaken by agencies.
- ***Should IPART adopt a service-based approach?*** These questions help to determine how a service-based approach could work, whether it would work in practice and what the potential pros and cons of the alternative approach could be.

The evaluation questions were provided to stakeholders and formed the basis of workshops, discussions, and further information requests to WaterNSW and WAMC. As part of our information request to WaterNSW, Aither also surveyed WaterNSW operational staff to gather information on the different bulk rural water activities that they undertake and the level of effort associated with each activity type. This information provided additional detail of the cost drivers behind some of WaterNSW's rural bulk water activities.

2.4. Stage 3: Establishing and assessing against principles for the review

During Stage 3 of the review, Aither assessed the activities in the existing activity-based framework and the potential services in a hypothetical service-based framework to identify potential improvements to the cost share framework. This involved:

1. identifying the principles for the review
2. assessing the activities and services against the principles
3. assessing the cost-reflectiveness of the allocation of costs for activities and services against the impactor-pays principles.

2.4.1. Identifying principles for the review

Principles were identified to guide the review, ensuring that the findings and recommendations result in improvements upon the current cost sharing framework (as defined by IPART) and are implementable. The following key principles have been used to assess the individual activity codes and services:

- **Transparent:** Ensure transparency in regard to the basis for undertaking the activity or service, its associated cost and the share of those costs between users and the NSW Government.
- **Practical:** Ensure that the cost sharing framework can be applied practically, is repeatable and consistent, and robust over time, including considering systems in place for measuring expenditure by activity. The cost sharing framework should not duplicate other processes or place unnecessary administrative burden upon agencies.

In addition to these key principles, we have also considered additional principles as part of the review, these include:

- **Cost reflectiveness:** Improvements to the framework should reflect the application of the impactor pays approach (cost shares should be representative of the cost driver (impactor)). This approach is consistent with IPART's cost sharing approach.
- **Cost effectiveness:** Any recommended changes to the cost sharing framework (at the aggregate scenario level) should be cost effective. One of the key aspects of the review is to ensure that the benefits of the improvements exceed the costs of implementing changes to the cost sharing framework.

Underpinning this approach, relevant objectives associated with implementing the National Water Initiative (NWI) include to provide greater certainty for investment and the environment. Given this, where there is considerable uncertainty for individual activity codes, we have sought to err on the side of certainty by adopting the existing sharing ratio. This provides a degree of certainty to industry participants and minimises unnecessary customer impacts.

2.4.2. Assessment of activities and services against principles

We considered WaterNSW's and WAMC's activities and services against the principles of transparency and practicality to determine whether there could be improvements in relation to each principle. For example, splitting apart a certain activity could be expected to result in improved

transparency, or alternatively, combining some activities may result in a more practical cost share framework.

Table 1 summarises the characteristics that we would expect to see for the principle to be fully satisfied which have been used to ensure the activities or services are assessed consistently.

Table 1 Assessment of transparency and practicality

Principle	Guidance
Transparent	<p>Definition: Ensure transparency in regard to the basis for undertaking the activity or service, its cost and the share of costs between customers and the NSW Government.</p> <p>Guiding characteristics:</p> <ul style="list-style-type: none"> • Activity descriptions are commonly understood between IPART and the agencies • Descriptions of the activities are clear and unambiguous • Stakeholders can understand how costs are allocated to activities • Stakeholders can understand how costs are shared between users and the government • The processes for allocating costs to the activity/service are repeatable and robust.
Practical	<p>Definition: Ensure that the cost sharing framework can be applied practically. The cost sharing framework does not duplicate other processes or place unnecessary administrative burden upon agencies.</p> <p>Guiding characteristics:</p> <ul style="list-style-type: none"> • As far as possible, costs can be allocated consistent with existing business systems • For cost allocation purposes, the activity is able to be appropriately identified from other activities • Minimal duplication of cost activities or services.

2.4.3. Applying IPART’s impactor-pays principle for cost sharing

IPART’s preferred approach for determining the user and government share is by applying the impactor pays principle. Under the impactor pays approach, costs for bulk rural water services should be met by those who create the need to incur the cost.⁵ Aither assessed the cost-reflectiveness of the allocation of costs for activities and services against IPART’s definition of the impactor pays principle. This assessment resulted in a judgement about the appropriate sharing of costs between users and government for each activity or service. Within this report we have applied the following terminology to distinguish between the relative contribution of impactors to cost shares:

- Sole – for cost shares where the impactor is 100 per cent users or government

⁵ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p 7.

- Minor – for the impactor whose contribution is less than 50 per cent
- Major – for the impactor whose contribution is greater than 50 per cent
- Joint – when the costs should be shared equally between government and users.

2.5. Stage 4: Overall assessment and findings

The final stage of the assessment involved considering the cost-effectiveness of the three scenarios (i.e. ensuring that the benefits of any changes outweigh the costs of implementation). The potential costs and benefits of each scenario were assessed qualitatively to understand which options are likely to be more cost-effective than others. The focus of the assessment was the costs and benefits to the agencies from implementing the changes, as this would ultimately impact on the charges that are passed on to users (and government). This assessment was undertaken at the scenario level of changes, rather than on an individual activity or service basis.

2.6. Assessment limitations

IPART's preferred approach to cost sharing is the impactor-pays method. This means that we have sought to apply IPART's definition of impactor-pays in our assessment of the cost sharing across activity codes. We have not extended our analysis to the consideration of the appropriateness of the impactor pays method for cost sharing.

It is important to note the unavoidable subjectivity involved in undertaking this assessment. As noted in IPART's previous pricing determinations and consultant reports^{6 7 8}, it is inevitable that a range of different opinions will arise when assessing activities or services against principles and assigning cost share ratios to activities, and therefore subjective judgements must be made. This judgement is often made difficult by a lack of information and ability to quantify the impacts of cost drivers on activities.

For example, determining cost share ratios based on the impactor pays principle involves a degree of subjectivity and requires knowledge of the underlying drivers. While subjectivity is unavoidable in this process, we have attempted to clearly outline our rationale for decisions in an attempt to ensure that these subjective judgements are clear and unambiguous. We have also employed guiding criteria (Table 1) to assess the activities or services consistently.

In some cases, the impactor is clearly either the users or government, however where this is not the case, there is likely to be subjectivity regarding the major impactor. Where this is the case, it will require subjective judgements based on the underlying information and guidance from IPART regarding its definition of the impactor-pays approach.

In cases where our assessment suggested that the user or government share should be greater than 50:50, we attempted to determine the materiality of the difference between the impactors to recommend a reasonable apportionment of the cost.

⁶ ACIL Consulting 2001, *Report to IPART: Review of Water Resource Management Expenditure in the NSW Department of Land and Water Conservation and State Water Business*, section 1.2.

⁷ CIE 2006, *Review of Cost Sharing Ratios*, p 27.

⁸ Synergies Economic Consulting 2016, *Final Report prepared for IPART: DPI Water Expenditure Review*, p 63.

3. Current cost sharing framework

This chapter outlines IPART's current framework for sharing costs between water users and the government, including IPART's preferred approach to allocating costs using the impactor pays principle. The process that agencies use to allocate costs in practice is also described.

3.1. IPART's cost sharing framework

3.1.1. Full cost recovery

IPART's position is that charges for monopoly water services should reflect the full efficient costs of providing those services.⁹ That is, costs for providing services should be fully recovered. However, there is also an economic case for sharing costs for bulk water and water planning and management (monopoly) services between water customers and other water users or segments of the community. In instances where monopoly water services also provide a public benefit (or where the services are provided to other user groups who cannot be charged – for example recreational users), the costs for providing those services should be paid for by the Government on behalf of the broader community.

IPART plays a role in setting the price of rural bulk water services, including by determining the share of WaterNSW's or WAMC's efficient costs that should be paid for by water customers, and the share that should be paid for by Government. To do this, IPART applies its cost sharing framework, which is based on the impactor pays principle and the exclusion of legacy costs.

Our approach to this review is based on the definitions and preferred approaches identified by IPART, therefore we have not sought to re-define these elements.

3.1.2. Impactor pays and beneficiary pays principles

The impactor pays and the beneficiary pays principles are both well-established approaches to determining the most appropriate parties to fund monopoly services.¹⁰ Under the impactor pays principle, costs are allocated to those who create the need to incur the cost.¹¹ Therefore, water customers generally face the costs of the services they receive, including costs incurred to comply with the environmental and other regulatory requirements in delivering those services (because in the absence of customers and their demands, such requirements would not need to be met). For example, if a dam is required solely to deliver bulk water to entitlement holders, and that dam triggers a regulatory requirement for WaterNSW to construct and operate fish ladders, then (under the impactor pays principle), water customers should pay for the prudent and efficient cost of WaterNSW complying with this environmental requirement.

In contrast, under the beneficiary pays principle, the parties who benefit from a service or activity are required to pay for the costs of providing that service or activity.¹² This approach requires the parties

⁹ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p 6.

¹⁰ IPART 2013. *Review of funding framework for Local Land Services NSW*. p 13.

¹¹ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p7.

¹² IPART 2013. *Review of funding framework for Local Land Services NSW*. p 14.

who benefit from the activities and services (beneficiaries) to be identified along with the benefits that are derived from those activities and services. Costs are then apportioned to the beneficiaries according to the benefits that each beneficiary receives.^{13 14} Beneficiaries can include:

- Direct beneficiaries – who receive private benefits from the activity or service
- Indirect beneficiaries – who receive indirect (intangible) benefits from the activity or service.

IPART's preferred approach to determining the appropriate share of WaterNSW's and WAMC's costs to be paid by users and government is through the impactor pays principle.¹⁵ The impactor pays principle has been used by IPART to allocate costs since its 2001 Bulk Water Determination.^{16 17}

3.1.3. IPART's funding hierarchy

IPART applies a funding hierarchy across a range of services.¹⁸ The hierarchy states that costs should preferably be recovered through:

1. The party that created the need to incur the cost (the impactor)
2. The party that benefits (the beneficiary), if the impactor cannot be charged, then
3. The government, in instances where it is not feasible to charge either impactors or beneficiaries.¹⁹

Apportioning costs across impactors, beneficiaries and government is not meant to be mutually exclusive (as implied in the current test), but rather provide a logical order to determining cost shares. If the impactor can be clearly identified for all activities, there is no practical need to proceed to identify the beneficiary and so forth. For practical reasons in this review, any impactor or beneficiary that is not a WaterNSW or WAMC customer is assumed to be outside the scope of potential cost recovery and the cost allocated to Government.

3.1.4. Applying the impactor pays principle

As outlined in its Issues Paper for the review, IPART is of the opinion that water customers should only pay for the share of the efficient forward-looking costs that are required to service their water use.²⁰ Following on from this, IPART have identified two main occasions when water users should not be required to pay:

- in the case of unavoidable legacy costs; and,
- when there are costs that are created by other impactors.

¹³ Pirac Economics N.D. *Water Reform: Who pays for the environment?* p 8.

¹⁴ IPART 2013. *Review of funding framework for Local Land Services NSW.* p 13.

¹⁵ IPART 2018. *Review of Rural Cost Shares: Issues Paper.* p 6.

¹⁶ IPART 2016. *Review of prices for WaterNSW.* Appendix C – Cost Shares p. 142.

¹⁷ Frontier Economics 2016. *Review of WaterNSW Cost Shares.* p 5.

¹⁸ IPART 2013. *Review of funding framework for Local Land Services NSW.* p 13.

¹⁹ IPART 2018. *Review of Rural Cost Shares: Issues Paper.* p 10-11

²⁰ IPART 2018. *Review of Rural Cost Shares: Issues Paper.* p 11.

Unavoidable legacy costs

Legacy costs are costs that are caused by previous decisions which are unrelated to the efficient forward-looking costs of providing services to water users.²¹ These activities would be required regardless of any current or future demand for the regulated service. Legacy costs can include, for example, the costs of remediating past environmental damage that is not caused by current and future users.²² Considering the environmental damage example used in IPART's issues paper, it is foreseeable that environmental damage caused by past users may need to be remediated irrespective of whether extraction continued to occur. IPART's view is that cost associated with activities such as these should be considered as legacy costs, and should be recovered from the Government because the cost is not attributable to current or future users. Within IPART's cost sharing framework, legacy costs are excluded from the user share.

Costs created by other users

Users other than water customers may also contribute to WaterNSW's and WAMC's costs. For example, there may be additional costs that arise from providing services to recreational users or users with basic landholder rights.²³ IPART's position is that water customers should not be required to pay for the costs of providing services to other users.²⁴

Monopoly bulk rural water services also frequently include public good elements (as is the case, for example, of assets providing broader community services than bulk water delivery such as flood mitigation and flood management).²⁵ Where there are costs incurred to deliver broader community benefits, a government contribution may be necessary to meet those costs.²⁶ This is because the cost of providing the services to the public is additional to the costs of providing the direct monopoly services, and may not be provided at efficient levels without a government contribution.

However, it may not always be efficient or cost effective to:

- identify other impactors
- identify the proportion of forward-looking costs that other impactors should meet
- charge other impactors.

Where it is not possible to directly share these costs with other impactors, IPART's view is that they should be funded by the Government.²⁷ This involves forming a judgement about how much of the cost for the activity is attributable to other impactors and assigning this share of the costs to the Government.

3.1.5. User and government categories

The cost sharing framework is designed to allocate costs between users and government. Throughout the review we noted concerns about the level of user share for some activity codes. In our view, some

²¹ Ibid.

²² Ibid.

²³ Basic landholder rights are rights extended to owners or occupiers of land which is overlying an aquifer or has river, estuary or lake frontage to take water without a licence for domestic purposes or to water stock.

²⁴ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p 12.

²⁵ IPART 2016. *Review of prices for WaterNSW*. Appendix C – Cost Shares p. 142.

²⁶ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p 12.

²⁷ IPART 2018. *Review of Rural Cost Shares: Issues Paper*. p 14.

of these concerns could be alleviated in part through additional clarification and consideration of the range of different types of users that contribute to costs. The ‘users’ of WaterNSW and WAMC’s monopoly water services are customers including:²⁸

- private irrigators and irrigation companies
- environmental water holders
- local councils.

Throughout this report, references to ‘users’ refers to the above three types of users that are charged for services. There are some other users that fall outside this definition – basic landholder rights, recreational users, etc – which we have specifically identified where required. It is important not to limit consideration of ‘users’ to the narrower view of ‘customers’ such as irrigators and irrigation corporations.

Following on from this, it would appear that some user customer types are charged for the recovery of costs where they do not necessarily create the need for the cost. For example, local councils (through local water utility licences) may create specific costs driven by requirements for certain levels of water quality suitable for human consumption. Given that local councils are grouped together with irrigation and environmental users, there is an argument that these costs are potentially being recovered from irrigation and environmental users as well as local councils (see Figure 2).

We do not propose to further disaggregate the user cost share category (or assess whether there are actual cross-subsidies), but rather suggest that these potential cross-subsidy issues could be dealt with through the price determination process. For example, WaterNSW may wish to explore alternative tariff structures for different customer types to ensure its prices are more cost reflective. We have sought to identify where specific user groups are the predominant impactors for particular activities to allow for further disaggregation where desired (i.e. where the benefits of doing so outweigh the costs).

²⁸ WaterNSW 2016. *Pricing Proposal to the Independent Pricing and Regulatory Tribunal: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*. p 12.

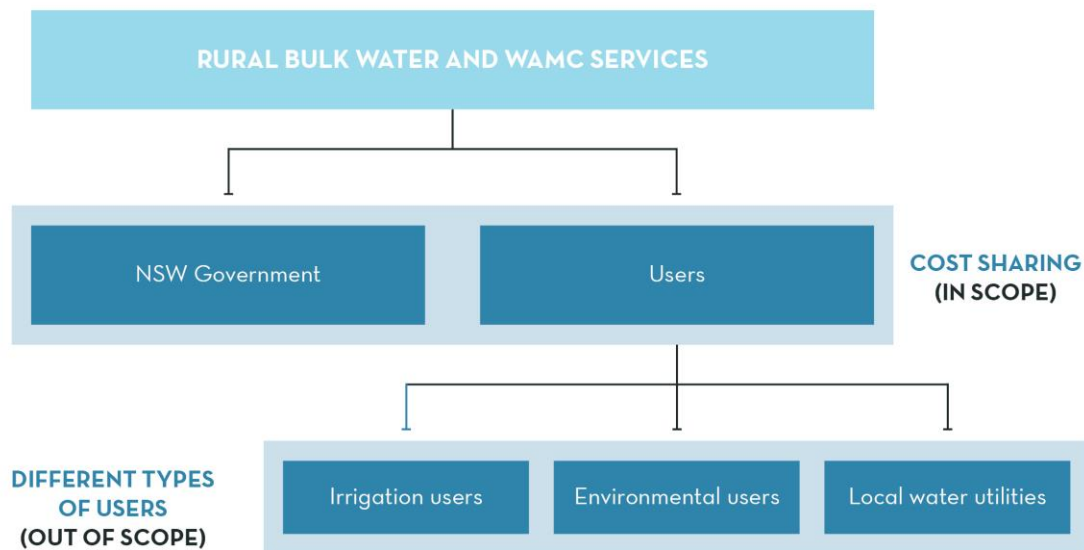


Figure 2 Different types of sub-user groups

3.1.6. Defining environmental water

During this review it was important to clarify environmental water and how the costs of delivering water to the environment are captured and allocated by the cost sharing framework. Specifically, stakeholders raised concerns that the costs of delivering environmental water are significant, and that the costs are currently being met by users. To explore this issue, it is necessary to first provide an overview of how water is used to achieve environmental outcomes in NSW.

The *Water Management Act 2000* contains water management principles that prioritise water for the environment (as well as water for critical human consumption and stock and domestic use through basic landholder rights (BLR)) over consumptive uses. These provisions are designed to ensure the baseline ecological function of the water source is maintained and restored to ensure sustainable water sharing and consumption over time.

The Water Management Act defines two classes of environmental water:²⁹

- Planned environmental water: water specifically allocated for use by the environment through the rules within a WSP. Planned environmental water refers to rules that govern the operation of the system.
- Licensed (held) environmental water: water allocated to water access licences (WAL) owned or managed by environmental water holders for environmental use. Held environmental water is used based on the same rules and regulations within the WSPs (and elsewhere) that govern other water licences of the same class (which may be used for irrigation) but is used for environmental purposes.

²⁹ NSW Department of Industry – Water 2018. *Review of transparency rules in NSW inland rivers*. p 12.

All WSPs contain planned environmental water, although the exact rules governing accrual and use may vary significantly. All WSPs also allow for held environmental water through the general regulation of water licences, however, there is not necessarily held environmental water in all systems and the amount held varies between systems.

Discussions with stakeholders revealed that environmental water can be further understood as either ‘non-discretionary’ or ‘discretionary’. This categorisation of environmental water is useful for conceptualising the different costs associated with environmental water delivery and is summarised in Table 2.³⁰ Aither has used these distinctions for the purpose of allocating costs using the impactor pays principle. Broadly speaking, non-discretionary environmental water is based on prescriptive rules and criteria within WSPs meaning costs are generally fixed and are embedded in the normal operation of the river system. The specific rules, criteria and volumes for planned environmental water vary across valleys. In comparison, discretionary water is associated with a specific environmental water account or WAL and can therefore be used more flexibly to achieve environmental outcomes, which means that the costs are variable based on the frequency and timing of watering activities.

Table 2 Summary of environmental water and associated costs

Category	Description	Costs of providing category of environmental water
<i>Non-discretionary</i>		
Non-discretionary planned environmental water	Non-discretionary planned environmental water, or ‘fixed rules’ water, involves fixed rules that prescribe ‘automatic’ water release actions (e.g. transparency/translucency releases) or specified system operations (e.g. limits on extraction) based on set criteria. ³¹	The costs for operating assets in accordance with the rules and triggers defined in the WSP cannot be split apart from the costs of delivering water to other users. Costs are embedded in the general operating costs for the valley, and are therefore not additional.
<i>Discretionary</i>		
Discretionary planned environmental water	Discretionary planned environmental water involves rules directing that water be set aside into bulk account/s (often referred to as an environmental water allowance (EWA) or environmental contingency allowance (ECA)) once certain conditions are met. Once accrued, delivery is decided by environmental water managers. ³² Discretionary planned environmental water is analogous to licenced water in that it can be flexibly ordered, however these accounts do not accrue usage charges (as a licence holder would) and are governed by specific rules.	In general, the costs for this class of environmental water are more readily separable and able to be allocated than non-discretionary planned environmental water. Asset operator undertakes planning and scheduling of environmental watering activities to meet environmental outcomes with stakeholders such as OEH and CEHW. Participation in regional planning processes such as the Environmental Water Advisory Groups (EWAGs) to advise on annual water plan and

³⁰ Discretionary and non-discretionary typically refers to planned environmental water only, however, we find that the distinction is useful across both planned and licenced water to articulate the general types of costs associated with delivering water for these uses.

³¹ NSW Department of Industry – Water 2018. *Review of translucency rules in NSW inland rivers*. p 12.

³² NSW Department of Industry – Water 2018. *Review of translucency rules in NSW inland rivers*. p 12.

Category	Description	Costs of providing category of environmental water
		<p>implementation of short-term watering events.</p> <p>Timing and frequency of watering events outside the traditional irrigation season can create additional maintenance costs for water delivery infrastructure.</p> <p>Discretionary planned environmental water does not accrue usage charges as licenced water does as there are no licences or explicit orders.</p>
Licenced (held) environmental water	<p>Licenced water is water allocated to an access licence consistent with rules for that licence type set out in the WSP, which is then used for environmental purposes by environmental water holders.</p> <p>The holder(s) of this type of environmental water is considered a user (customer) for the purposes of cost sharing, and faces fees and charges consistent with other licenced users.</p>	<p>The costs for this category of environmental water are generally the same as the costs associated with delivering water for other licenced users, however, there is some additional costs associated with participating in processes for planning and scheduling of environmental water activities.</p> <p>Environmental watering activities are typically scheduled alongside water delivery for other consumptive uses, however, they may fall outside the irrigation season.</p> <p>Timing and frequency of watering events outside the traditional irrigation season can create additional maintenance costs for water delivery infrastructure.</p> <p>Environmental water holders incur the same fees and charges as other licence holders of the same licence type.</p>

3.1.7. Murray-Darling Basin Authority and Border Rivers Commission costs

A review of the Murray-Darling Basin Authority (MDBA) expenditure and cost sharing in NSW was undertaken by Aither in 2017.³³ This review identified that the MDBA develops annual budgets that are ultimately approved by the MDB Ministerial Council.³⁴ The MDBA annual corporate plan advises each state as to their share of the total MDBA costs, which are calculated based on cost sharing rules established under the MDB Agreement.

The NSW Government then undertakes a process to share the total NSW share of MDBA costs amongst the NSW Government and users. This is based on the IPART approved cost sharing ratios. These costs are then advised to WaterNSW and DOI in order to pass through these costs to customers.

³³ Aither, *MDBA Expenditure Review: A Final Report prepared for IPART*, February 2017.

³⁴ This Council is comprised of ministers from each of the Basin states and the Commonwealth.

Given this, there is no explicit cost sharing ratio for MDBA and BRC costs, but rather it is an outcome of the type of expenditure that has been allocated to NSW and the cost sharing ratios that have been approved by IPART. We have therefore not made any recommendations in relation to the cost sharing for these costs.

3.1.8. Fish River Scheme and Lowbidgee

IPART has previously decided that all costs in relation to the Fish River Scheme and Lowbidgee will be solely recovered from users. This review has not sought to review that decision and has therefore accepted this 100 per cent share of costs to users for those two regions.

4. Issues identified with current cost sharing framework

The following section describes issues with the current cost share framework that were raised by stakeholders in submissions and during stakeholder engagement. Stakeholders revealed broader concerns about the cost share framework, such as the definitions of principles that are applied by the framework, as well as more specific concerns about the treatment of certain activity codes. We have described the most substantive of these issues below, along with our consideration of the issues in line with the scope of the review.

4.1. Cost share framework principles

4.1.1. Issues raised by stakeholders

Impactor pays principle

Submissions to IPART's Issues Paper revealed a lack of consensus regarding the suitability of key elements of the current cost sharing framework, such as the impactor pays principle. The suitability of the impactor pays principle is a significant issue as it forms the basis of allocating costs between users and the government. WaterNSW's submission to IPART stated that the:

'impactor pays approach is overall ill-suited to determining the cost share issue for regulatory driven expenditure on WaterNSW's pre-line-in-the-sand assets and in these circumstances the beneficiary pays approach may be more appropriate'.³⁵

WaterNSW made this assertion in the context of their infrastructure, which they contend was built by the NSW Government for a number of purposes such as securing urban drinking water, stock and domestic and irrigation water supply, and in some instances for flood mitigation. The driver behind WAMC and WaterNSW costs is a key consideration for allocating costs using the impactor pays approach.

Legacy costs

Some stakeholders raised concerns about the definition of legacy costs. For example, NSWIC reasoned that IPART's definition of legacy costs against the pre-1997 decision is less appropriate the more time elapsed since 1997, also suggesting broadening and clarification of legacy costs to 'include government policy that has created additional costs that have neither been demanded by extractive users nor been the result of extractive water users.'³⁶ The definition of legacy costs is potentially a significant issue that could have a material impact on the cost share ratios determined for each activity.

³⁵ WaterNSW 2018. *Submission to the Independent Pricing and Regulatory Tribunal: Review of Rural Water Cost Shares Issues Paper*. p 5.

³⁶ NSWIC 2018. *Submission: Independent Pricing and Regulatory Tribunal Review of Rural Water Cost Shares*. p 10.

4.1.2. Aither's consideration of this issue for the review

As outlined in section 3.1.2, IPART's preferred approach to cost sharing is to apply the impactor-pays principle. This means that we have sought to apply IPART's definition of impactor-pays in our assessment of the cost sharing across activity codes.

The consideration of whether impactor-pays, and IPART's definition of it, is the most appropriate method for determining the cost sharing is outside the scope of this review. Stakeholder issues in relation to this aspect should be directed to the broader review of the framework being undertaken by IPART.

In considering stakeholder issues about the definition of legacy costs we note that determining the definition of legacy costs is not within Aither's scope. Therefore, Aither's consideration of legacy costs throughout this review has been limited to applying IPART's definition. Stakeholder issues in relation to legacy costs should be directed to the broader review of the framework being undertaken by IPART.

4.2. Industry reforms and transparency

4.2.1. Issues raised by stakeholders

NSWIC highlighted the significant regulatory and institutional changes that have occurred since 2001, questioning the extent to which these changes are reflected in the current cost share framework activity code definitions. Related to this, NSWIC members also considered that there has been a lack of transparency in the way that the cost share percentages have changed from determination to determination and that it was difficult to understand the cost drivers when the rationale for changing the percentages is not provided.

NSWIC members also expressed concerns that they do not currently have clarity about how costs for certain activities are derived or will be shared in the future. For example, stakeholders raised concerns about the treatment of policy development and

'potential large-scale costs that may be imposed... through ongoing (unfunded) Basin Plan implementation and other matters'.³⁷

4.2.2. Aither's consideration of this issue for the review

The currency of the framework in terms of transparency is within the scope of this review. As part of our assessment, we have sought additional information from the agencies with regard to how the activity codes are implemented and the types of specific activities that underpin them. Descriptions of the WAMC and WaterNSW activities is provided in Appendix A. Further to this, throughout our assessment we have identified where transparency within the framework could be improved.

³⁷ NSW Irrigators Council 2018. *Submission: Independent Pricing and Regulatory Tribunal Review of Rural Water Cost Shares*. p 4.

4.3. Water Delivery and Other Operations activity code

4.3.1. Issues raised by stakeholders

The water delivery and other operations activity code relates to:

- 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, weirs and regulators.

WaterNSW incurs costs associated with operating infrastructure to comply with legislative and regulatory obligations which are embedded within WSPs. For example, in addition to delivering water for water users, WaterNSW operates its dams in accordance with the specific rules and criteria which protect and provide water for the environment (discretionary and non-discretionary planned environmental water) and to deliver water to fulfil basic landholder rights (BLR). Stakeholders cite concerns about the quantum of costs associated with the increased need to meet these requirements that are not related to delivering water for users. This is an issue as the current user share is set at 100 per cent.

WaterNSW also incurs costs to deliver water for environmental water holders (licenced water) and planned environmental water (discretionary and non-discretionary). WaterNSW works with environmental water holders and other stakeholders to plan and schedule environmental water releases which are undertaken according to annual and longer-term watering plans which consider water availability, climatic conditions, scientific research, ecological outcomes and stakeholder perspectives.³⁸ Stakeholders have cited concerns about the costs involved with planning and releasing water for environmental purposes. For example, WaterNSW's submission highlights that

*'provision of services to the environmental water holders is a major concern in relation to cost shares, that is, that they are paying for services provided to the environmental water holders.'*³⁹

4.3.2. Aither's consideration of this issue for the review

Consideration of the cost drivers contributing to the overall water delivery and other operations activity code is within the scope of this review, however it is important to note that these cost drivers do not necessarily equate to the impactors for the activity. To further understand the specific types of activities that are contained within the Water Delivery and Other Operations activity code, we undertook a survey of WaterNSW operational staff to gather information on the different activities that they undertook and the level of effort associated with each activity type. The findings from this survey are discussed in section 6.3.1. Following this we held further discussions with WaterNSW's operational staff involved in the planning and delivery of environmental water, as well as other stakeholders to better understand the drivers behind these activities.

³⁸ NSW Government Office of Environment and Heritage 2018. *What is water for the environment?* viewed July 2018 accessed online. <<https://www.environment.nsw.gov.au/topics/water/water-for-the-environment/about-water-for-the-environment/what-is-it>>.

³⁹ WaterNSW 2018. *Submission to the Independent Pricing and Regulatory Tribunal: Review of Rural Water Cost Shares Issues Paper*. p 8.

As identified above, we note that in understanding the day to day operations of WaterNSW's staff, the cost driver in the short term may not be the same as the overall impactor for a given activity. For example, BLR holders may hypothetically demand delivery of water to a certain location. Depending on the frequency and size of their demand, the BLR users may drive costs over the short term. However, it is important to consider why they are imposing those costs. Is it because regulation of a stream or river has altered flows such that water availability is affected? If so, it could be that there is another impactor who is responsible for the costs associated with fulfilling the BLR holders demand.

4.4. Environmental Planning and Protection activity code

4.4.1. Issues raised by stakeholders

The environmental planning and protection activity code relates to WaterNSW's environmental management activities, including strategic and specific planning and assessment, as well as fish passages, carbon neutrality, and cold-water pollution projects.

In relation to this activity code, stakeholders raised concerns about the increase in the cost of environmental regulation over time due to changing community expectations and environmental standards. Stakeholders suggested that the costs for meeting new environmental requirements should be treated as a legacy issue, with the cost for complying allocated to the government. The two primary examples of this include the provision of fish passages and measures to mitigate the effects of cold-water pollution, both of which constitute significant capital and ongoing operational expenditure and renewals programs. WaterNSW's submission states that expectations for environmental regulations have increased since the time the structures were originally built (i.e. without these structures).⁴⁰

4.4.2. Aither's consideration of this issue for the review

This issue is within the scope of this review. In considering this issue we have referred to IPART's definition of the impactor pays principle and of legacy costs. We also considered the positions put forward in previous reviews about the driver of environmental management investments being to rectify and restore environmental damage caused by extractive users. Our discussion of these issues is located in section 6.3.8.

4.5. Dam safety compliance activity code

4.5.1. Issues raised by stakeholders

WaterNSW undertakes dam surveillance and dam safety inspections, reviews, audits and risk assessments to ensure its dams comply with dam safety standards set by the NSW Dam Safety Committee.

IPART's decision to consider all expenditure related to decisions made before 1997 as legacy costs has implications for the treatment of dam safety compliance costs. While expenditure to comply with the current standards on pre-1997 assets is considered a legacy cost and is borne by the

⁴⁰ WaterNSW 2018. *Submission to the Independent Pricing and Regulatory Tribunal: Review of Rural Water Cost Shares Issues Paper* p 8.

government, the costs expenditure for assets built post-1997 is shared 50:50 between the user and the government. Therefore, WaterNSW allocates costs for dam safety compliance between two activity codes:

- Dam safety compliance
- Dam safety compliance on pre-1997 capital projects.

In its submission to IPART this review, WaterNSW put forward the following views:

- post-1997 dam safety compliance could be considered as a legacy cost due to the legacy nature of its assets (arising from the 'line-in-the-sand' approach), and
- capital costs associated with pre-1997 dam safety compliance should remain legacy costs.

4.5.2. Aither's consideration of this issue for the review

Consideration of the treatment of dam safety compliance costs is within the scope of this review. The differential treatment of dam safety compliance requires a slightly different approach to other activity codes. Given this, Aither has sought to answer the following questions:

- Whether the definition of pre- and post-1997 compliance requirements is being appropriately applied by WaterNSW
- Whether the cost share ratios for the two activity codes remain appropriate.

This is further discussed in sections 6.3.6 and 6.3.7.

4.6. Flood operations activity code

4.6.1. Issues raised by stakeholders

The flood operations activity code relates to costs involved in operating dams and infrastructure during times of flood, staff training and onsite works required to undertake flood operations.

WaterNSW raised concerns about the costs for flood operations, noting the distinction between flood mitigation and flood management services provided by its rural dams.⁴¹ Only two of WaterNSW's rural dams were built to fulfil a specific flood mitigation purpose (Burrendong Dam and Glenbawn Dam). This means that they have additional capacity to store water in times of flood. However, by the very nature of their structure, all of WaterNSW's rural dams provide a flood management service to downstream communities by controlling the volume and offsetting the timing of flood water entering the river valley. WaterNSW actively manages its dams during times of flood to reduce impacts on downstream communities. Although flood events may only occur sporadically in response to adverse weather conditions, WaterNSW infrastructure and dam operators need to be continuously prepared for their eventuality.

Stakeholders expressed that the distinction between flood mitigation and flood management could be potentially leading to an inappropriate allocation of cost between operational and capital expenditure for flood operations between Government and users (currently shared 50:50). This is because the

⁴¹ WaterNSW 2018. *Submission to the Independent Pricing and Regulatory Tribunal: Review of Rural Water Cost Shares Issues Paper*. p 7.

flood operations activity does not currently accommodate the different cost drivers of dams with flood mitigation or flood management purposes in different valleys. During discussions with WaterNSW it was noted that there may be a rationale for sharing a greater proportion of costs for flood mitigation with the government or other users. WaterNSW also called for the costs for flood mitigation and flood management to be treated on a valley by valley basis.

4.6.2. Aither's consideration of this issue for the review

This issue is within the scope of the review. In considering this issue Aither based its approach on the impactor pays principle and whether the dam was constructed to provide a flood mitigation versus flood management purpose (see section 6.3.2). We also considered the appropriateness of addressing flood mitigation on a disaggregated specific valley basis within the cost share framework to accommodate the varied nature of dams across different valleys (as being primarily for flood mitigation or flood management), as noted below.

4.7. Valley-by-valley approach

4.7.1. Issues raised by stakeholders

Some stakeholders recommended implementing different cost shares percentages on a valley-by-valley basis. These stakeholders stated that there are differences in cost drivers between valleys, for example, between coastal and inland and also because of the different services that must be provided to meet the needs of users and comply with WSPs. Therefore, stakeholders argued that applying the same percentage across all valleys does not properly account for the variation in the cost drivers observed in different valleys.

4.7.2. Aither's consideration of this issue for the review

Adopting a more granular, valley-by-valley approach to cost sharing will result in a more complex framework. Given this increased complexity, any changes to implement a valley-by-valley approach need to ensure that the benefits of doing so outweigh the increased complexity (and any costs associated with that).

Throughout this review, we have considered whether there is merit in adopting a valley-by-valley approach or whether a more simple, aggregated approach (as is currently applied) is more appropriate. For the most part, we consider that a simple, aggregated approach is the most appropriate approach, however there are some activity codes where a more specific valley basis may be more appropriate. Where this is the case, we have identified the particular valley and potential change to the sharing ratio.

Different costs across valleys

Another aspect of this issue is whether it is appropriate to have a different cost share ratio for the valley, or whether the difference in costs that will be attributed to the valley will address the issue being considered. For example, if there are greater requirements in one valley over another, this may not necessarily require a different user share, but rather it will result in a higher cost being attributed to that particular valley with the greater requirements.

Where we deem that determining an alternative cost share ratio for an activity at the individual valley level is appropriate, we have sought to establish a clear rationale based on differences in the

impactors across the valleys (e.g. through different requirements) and rather than differences in costs resulting from complying with the necessary requirements.

5. Cost allocation process

This section describes the current activity-based cost sharing framework, how cost allocation is undertaken by WaterNSW and WAMC, and our high-level findings in relation to cost allocation processes.

5.1. Activity-based cost sharing

The current activity-based cost sharing framework involves:

- Grouping forecast efficient operating and capital costs into a set of operating and capital expenditure activities:
 - WaterNSW's expenditure is currently grouped into 17 operating and 18 capital expenditure activities.
 - WAMC's expenditure is currently grouped into 34 operating and 34 capital expenditure activities.
- Applying pre-determined cost share ratios for each activity based on the application of IPART's cost sharing principles.
- During any price determination process, these cost share ratios are applied to forecast expenditure by activity for each year of the next determination period. Cost share ratios apply uniformly across all valleys (but costs across valleys vary). These cost shares are then aggregated to arrive at a total customer and Government share.
- The customer cost shares are used to set regulated prices for the monopoly services. The Government cost shares are effectively used to inform the level of subsidy provided to the businesses.

5.2. Current cost sharing framework in practice

As part of the review WaterNSW and DOI explained their internal processes for assigning costs to the activities they undertake. Aither has described each organisation's cost allocation processes with the intention of providing additional clarity about how costs are attributed to activities and whether the activities as they are currently defined continue to be relevant, rather than for the purpose of undertaking an audit of either organisation's compliance with the cost share framework.

WaterNSW's and DOI's process for assigning costs to activities, as communicated to Aither, is outlined below.

5.2.1. WaterNSW's approach to allocating costs

Types of costs

WaterNSW's costs can be broadly considered as:

- Direct costs – which are clearly attributable to a particular project activity and can be directly coded in that manner. Examples include time and materials required to deliver a project in a particular valley(s).
- Indirect costs – which are not directly attributable to a particular project or activity but are very closely related to its delivery. Indirect costs can be further understood as indirect operational costs and indirect corporate service costs.

Indirect operational costs include time and other costs attributable to administration, training and materials which are not specifically attributable to projects or assets, but are incurred by the operational teams working on those projects or assets.

Indirect corporate service costs relate to the provision of corporate services which are unable to be classified as direct costs. Where corporate service costs can be attributed directly to either an OPEX or CAPEX project, this should be done by the employee incurring the expense. For example, where a member of the legal team spends time working on a particular project, they will code their time directly to that project, and thereby their cost will be attributed directly to that project.

Process for allocating costs

WaterNSW captures direct costs and indirect costs using its financial management system (FMS). The FMS is supported by inputs from its timesheet programs, Time Management System (TMS), and KRONOS (a workforce management system) and its expense claims system.

WaterNSW applies the following process to allocate actual costs related to rural bulk water services between users and the Government:

1. Work is undertaken on a project basis. Before a project is created in the FMS, a number of strict expenditure controls must be satisfied. The project manager is required to obtain 'approval to spend' under the WaterNSW Standing Delegations. An 'approval to spend' is drafted by the project manager outlining the scope of the proposed project, the proposed expenditure, the proposed funding source and the justification for the proposed project. Under the approval to spend process, the project manager is required to consult with the business, including Executive Managers.
2. A project is created in the FMS after the project is approved. The project is mapped to an IPART activity code (such as 'Environmental Planning and Protection') and a price determination (such as Rural Valley Bulk Water). The project manager is responsible for selecting the correct classifications for the project in consultation with the finance team. The project classification must align with the project drivers identified in the approval to spend. For example, a project to construct a Fish Passage structure will be mapped to the 'Environmental Planning and Protection' IPART activity code. This mapping will be supported by an approval to spend document identifying environmental compliance as a key driver for the project.
3. Staff allocate their direct costs (time, materials, etc) to a project. Direct costs predominately relate to labour, materials, contractors' costs. Direct labour costs are captured in the FMS and are allocated to projects using WaterNSW's timesheet systems, TMS and KRONOS. Contractor costs and materials are captured and allocated to projects by raising a purchase order in the FMS. The project manager selects the appropriate project for the purchase order.

4. Indirect costs are pooled in overhead projects. The pooled overhead is then allocated across a number of 'direct' projects using a cost allocation methodology. Both determination specific overhead (relating to rural bulk water services) and general corporate overhead (which may relate to broader WaterNSW functions) are allocated to 'direct' projects using a cost allocation methodology. By allocating overhead to projects, WaterNSW is apportioning indirect costs between users and the government depending on the IPART activity code that is mapped to the projects which receive an allocation of overhead.
5. By mapping a project to an IPART activity code, the cost of the project (the actual cost rather than the forecast cost for pricing purposes) is allocated to users and the Government using the IPART determined cost share ratio.

WaterNSW has adopted a cost allocation process based on the activities that it undertakes across the entire business. This is an approach that allows the business to operate as one entity and not in segments based on different regulated services that it provides. Given this approach, the IPART cost sharing framework is considered a separate component that is used purely to determine the sharing between users and government for IPART pricing purposes – i.e. the framework is not used as a mechanism to drive efficiencies throughout the business.

5.2.2. DOI's approach to allocating costs

The majority of DOI's WAMC costs relate to operating expenditure as its activities relate to ongoing management activities rather than significant capital expenditure. DOI has systems to forecast expenditure and allocate actual expenditure to activities.

Forecasting operating and capital expenditure

DOI forecasts, records and reports on operating and capital expenditure by water management activities. As most of these activities are performed on a state-wide basis, costs are initially forecast for the whole state and then allocated to water sources (a combination of water type and location/valley) using a primary cost driver for each water management activity.

Allocating operating costs to activities

There are two key elements of the systems that track DOI's operating expenditure, which primarily relates to staff costs:

- a general ledger – which tracks expenditure by the nature of the cost and the organisational structure (i.e. the project team / business unit responsible for creating the cost)
- a project ledger or costing system – which tracks expenditure by the nature and funding source of the activities being undertaken.

The project ledger together with its associated processes and controls is the core system that tracks expenditures according to the relevant monopoly service activities. The project ledger records the cost of labour through the completion of daily timesheets by staff. These are costed into the project ledger at the staff's individual remuneration rate plus a factor for overhead recovery. DOI's non-remuneration costs (expenses additional to staff costs) are allocated to the relevant project. Labour and overhead standard cost variance analyses ensure that the costs in the project ledger are reflective of the actual costs as recorded in the general ledger.

The process for capturing and allocating costs is the same across valleys. As most activities are performed on a state-wide basis DOI has not adopted different processes in different valleys.

In terms of the allocation to WAMC activities, DOI noted that its activity-based accounting system is designed to capture expenditure related to the WAMC activity codes. The system consists of programs and underlying project tasks that are mapped to WAMC activities (as well as broader non-WAMC related activities). The WAMC activities are those activities considered as part of this review, while the non-WAMC activities include general policy development and planning, science and analysis activities unrelated to WAMC monopoly services. By capturing actual costs for programs and projects that are mapped to the WAMC activities, the costs can be allocated to users and the government using the relevant cost share ratios.

DOI noted that its staff receive training on the WAMC determination, the distinction between WAMC and non-WAMC activities, and the importance of correctly allocating their time. DOI also produces quarterly WAMC expenditure management reports for each activity which is used for internal reviews and budgeting. More information on financial systems, including the ring-fencing of expenditures related to the monopoly services is also contained in Section 4.8 of the 2015 pricing submission to IPART.

In addition to this, we note that Synergies Economic Consulting's final report to IPART for the 2016 DPI expenditure review found that the expenditure excluded all costs associated with supporting Ministerial or Parliamentary services and high-level policy development from its WAMC costs.⁴²

5.3. Findings related to the cost allocation processes

While both organisations were able to describe the process for assigning expenditure to cost share activities in general terms, neither organisation was able to produce formal documentation (for example a cost allocation manual) detailing the process. The lack of formal documentation around the cost allocation processes for WaterNSW and WAMC contributes to transparency issues.

It is important to note that a contributing factor to this has been the evolving landscape of NSW water planning and management arrangements over recent years, including:

- the merger in 2015 of the Sydney Catchment Authority and State Water Corporation into WaterNSW
- the transfer in 2016 of licensing, monitoring and customer facing functions from the (then) Department of Primary Industries (DPI) to WaterNSW
- the establishment in 2018 of the designated independent compliance agency, the Natural Resources Access Regulator (NRAR).

These events have resulted in the movement of water planning and management functions and supporting business systems and assets between the entities. Acknowledging the challenging operating environment that WaterNSW and DOI have had to contend with in recent years, in Aither's view, producing formal documentation and definitions for WaterNSW's and WAMC's internal cost allocation processes represents an opportunity to improve transparency around the cost share framework. This would help to address stakeholder concerns regarding transparency which have been raised over the course of the review.

⁴² Synergies Economic Consulting 2016. *DPI Water Expenditure Review*. p 31.

6. Scenario One: Clarifying activities and reviewing cost shares within the existing cost sharing framework

This chapter outlines our assessment of Scenario One. In this scenario we seek to clarify the activities within the existing framework and review whether cost shares are reflective of the impactor pays principle.

6.1. Clarifying descriptions of activities

During this review we considered opportunities to clarify the activities within the existing cost share framework. To do this, we asked WaterNSW and WAMC to provide definitions and information about the specific activities that feed into the activity codes.

On the whole, we consider that the definitions for activities are appropriate, however, there are opportunities for additional clarity concerning the description of activities in both frameworks. The WaterNSW activity codes could be improved by refining the definitions into complete sentences, consistent with the style adopted for the WAMC activity code definitions. Table 3 presents potential areas for clarification of activities within the current framework.

We suggest that the activity codes be published alongside their definitions to assist customers in understanding the framework.

Table 3 Observations about the clarity of activities

Activity	Observations
WaterNSW	
Water delivery and other operations	Stakeholder feedback indicates that there is a general lack of understanding about what the activities this activity code represents.
Flood operations	No costs have been allocated to this activity in the past, therefore it is difficult to understand how costs are allocated to this activity.
Hydrometric monitoring	The assumption under the 2017-21 determination was that this function would be purchased from DPI Water, however, the hydrometric network has since transferred to WaterNSW. The current description does not reflect this, or provide an adequate activity description. DOI's pricing submission states that hydrometric monitoring involves monitoring the availability and condition of surface water by measuring water level, stream flow, rainfall and key water quality indicators. ⁴³ The water quality aspect of this definition is a source of confusion with the water quality monitoring code.

⁴³ DPI Water 2015. *Pricing submission to IPART*. p 100.

Activity	Observations
Water Quality Monitoring	WaterNSW's pricing proposal for the 2017-21 determination states that this activity encompasses a broad range of elements including algal monitoring, cold water pollution, water chemistry, dam surveillance and drinking water quality. ⁴⁴ These elements should be referenced in the activity description. These elements appear to be replicated in the WAMC surface water quality monitoring code (W01-01).
Corporate systems	This activity code relates to the delivery of a rolling capital program of ICT hardware renewals. This could be clarified within the description and the activity code name.
Environmental Planning and Protection	The activity code description should clearly state that this activity is concerned with managing and remediating damage and risks to the environment.
Dam Safety Compliance	The activity code description should clearly indicate that this activity is concerned with monitoring, understanding and reducing risks to the public from dam failure in line with dam safety regulations.
Dam Safety Compliance (pre-1997)	The activity code description should clearly indicate that this activity is concerned with monitoring, understanding and reducing risks to the public from dam failure in line with dam safety regulations. Lack of clear definition regarding the 1997 standards of service.
WAMC	
W08-01 Regulation systems management	The name for this activity code should reflect the fact that this activity is focused on the register for access licences, approvals, trading and environmental water. The current 'regulation systems management' may be confused with 'development of water planning and regulatory framework' (W06-06),
W08-03 Compliance management	Increased focus on compliance through industry reforms may require further disaggregation to enable stakeholders to understand the specific compliance and enforcement activities that they are funding.

6.2. Summary of recommended changes to cost share ratios

Table 4 and Table 5 provide a summary of recommended changes to the WaterNSW and WAMC cost share ratios compared to the existing cost shares. The discussion in the remainder of this section elaborates on the reasoning and rationale behind the cost share ratios which have been proposed. Rather than discussing the full list of WaterNSW and WAMC activities in detail, we have limited our discussion to instances where our assessment has resulted in any recommended changes to the current approach, or where additional explanation is warranted.

⁴⁴ WaterNSW 2016. *Pricing Proposal to the IPART: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*. p 100.

Table 4 Comparison of recommended changes to existing WaterNSW cost sharing ratios

Code ¹	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
Customer support (opex)	0	100	0	100
Customer Billing (opex)	0	100	0	100
Metering and compliance (opex)	0	100	0	100
Water delivery and other operations (capex and opex)	0	100	5	95
Flood operations (capex and opex)	50	50	10-30	90-70
Hydrometric Monitoring (capex and opex)	10	90	10	90
Water quality monitoring (capex and opex)	50	50	10-30	90-70
Direct insurances (capex and opex)	0	100	0	100
Corrective maintenance (capex and opex)	0	100	5	95
Routine maintenance (capex and opex)	0	100	5	95
Asset management planning (capex and opex)	0	100	5	95
Dam safety compliance (capex and opex)	50	50	10-30	90-70
Environmental planning and protection (capex and opex)	50	50	10-30	90-70
Corporate systems (capex and opex)	0	100	20	80
Irrigation Corporation District (IDC) rebates (capex and opex)	0	100	0	100
Renewals and replacement (capex and opex)	0	100	5	95
Risk Transfer product (only for valleys with 40:60 tariff structure) (opex)	0	100	0	100
Dam safety compliance on pre-1997 capital projects (capex)	100	0	100	0

Note: 1) Shaded activity codes reflect changes to the cost share ratio.

Table 5 Comparison of recommended changes to existing WAMC cost sharing ratios

Code ¹	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
W01 Surface water monitoring				
W01-01 Surface water quantity monitoring	30	70	0	100
W01-02 Surface water data management and reporting	50	50	50	50
W01-03 Surface water quality monitoring	50	50	30-50	50-70
W01-04 Surface water algal monitoring	50	50	50-70	50-30
W01-05 Surface water ecological monitoring	50	50	50	50
W02 Groundwater monitoring				
W02-01 Groundwater quantity monitoring	0	100	0	100
W02-02 Groundwater quality monitoring	0	100	0	100
W02-03 Groundwater data management and reporting	0	100	50	50
W03 Water take monitoring				
W03-01 Water take data collection	0	100	0	100
W03-02 Water take data management and reporting	0	100	0	100
W04 Water modelling & impact assessment				
W04-01 Surface water modelling	50	50	10-30	90-70
W03-02 Water take data management and reporting	0	100	0	100
W04-03 Water resource accounting	0	100	0	100
W05 Water management implementation				
W05-01 Systems operation and water availability management	0	100	0	100
W05-02 Blue-green algae management	50	50	50-70	50-30
W05-03 Environmental water management	100	0	10-30	90-70
W05-04 Water plan performance assessment and evaluation	50	50	50	50
W06 Water management planning				
W06-01 Water plan development (coastal)	30	70	30	70
W06-02 Water plan development (inland)	30	70	30	70
W06-03 Floodplain management plan development	100	0	100	0
W06-04 Drainage management plan development	100	0	100	0
W06-05 Regional planning and management strategies	30	70	30	70
W06-06 Development of water planning and	25	75	10-30	90-70

Code ¹	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
regulatory framework				
W06-07 Cross-border and national commitments	50	50	50	50
W07 Water management works				
W07-01 Water management works	50	50	10-30	90-70
W08 Water regulation management				
W08-01 Regulation systems management	0	100	0	100
W08-02 Consents management and licence conversion	0	100	0	100
W08-03 Compliance management	0	100	0	100
W08-99 Water consents overhead	0	100	0	100
W09 Water consents transactions				
W09-01 Water consents transactions	0	100	0	100
W10 Business and customer services				
W10-01 Customer management	0	100	0	100
W10-02 Business governance and support	30	70	20	80
W10-03 Billing management	0	100	0	100

Note: 1) Lightly shaded activity codes reflect changes to the cost share ratio.

6.3. Assessment of WaterNSW activity codes

This section provides our assessment of the activity codes and the key findings and recommendations. In assessing these activity codes, we note that there was limited public information on the definition of the activity codes and what specific activities should be captured within them. We have sought information from WaterNSW to establish these definitions for future reference.

6.3.1. Water delivery and other operations

The water delivery and other operations code relates to the activities that WaterNSW undertakes to operate its infrastructure. This includes:

- water releases from dams to deliver water to users (including for commercial uses such as irrigation, urban or town use, recreation and environmental water holders)
- water releases to comply with the requirements in WSPs (planned environmental water, water for BLR and other system flows)
- short-term and long-term demand forecasting and resource assessment
- Works Approval and other compliance reporting
- use of supervisory control and data acquisition (SCADA) systems and manual work required to release water from dams, weirs and regulators.

Costs for the water delivery and other operations activity code are currently allocated 100 per cent to users. During the review stakeholders raised concerns about the amount of costs associated with delivering water for other water users (who may not be customers or contributing to costs), specifically, providing water for:

- recreational users
- BLR holders
- planned environmental water
- navigational services (in the Murray Valley).

To assist with our analysis, we sought further information from WaterNSW in the form of a survey of operational staff to understand how much of their time was dedicated to different types of activities.

Recreational users

Based on this additional information, on average, 5 per cent of operators' time is spent on releasing water for recreational purposes. These recreational activities are driven by external users of the system and, therefore, can be understood as an additional cost to operating the system for water users. For this reason, it is not appropriate for these costs to be recovered from users. We recommend allocating 5 per cent of the cost for this activity code to Government to account for this.

Basic landholder rights

Basic landholder rights (BLR) grant landholders or occupiers the right to take water from an aquifer which is underlying their land or from a river, estuary or lake that fronts their property.⁴⁵ WaterNSW is required to ensure that there is sufficient water available for these BLR holders to utilise these rights.

For those properties that are near existing irrigation infrastructure, WaterNSW must ensure that water is available, however the incremental costs involved in providing this are minimal. However, there are some BLR holders that are not near existing irrigation infrastructure and they require special consideration from WaterNSW to ensure that they have access to the water. Through discussions with WaterNSW, there appears to be a higher expectation of reliable access to this water from those customers that may not have been evident in the past. This has therefore resulted in additional costs to WaterNSW through allowing for specific flows, and additional planning and consultation.

The valleys in which the BLR holders have additional costs are the Lachlan, Macquarie, Namoi, Border and Gwydir valleys. These valleys are generally smaller than other valleys that WaterNSW services. This means that the materiality of these costs to WaterNSW is relatively low and therefore for the purposes of Scenario 1, we recommend that the overall sharing ratio for the activity remain unchanged due to BLR holders. However, a more granular approach to the cost sharing ratio is discussed in Scenario 2 (see section 7.2.3).

Environmental purposes

We also considered the provision of water for environmental purposes in accordance with the impactor pays principle. An overview of the different types of environmental water and associated costs can be found in section 3.1.6, which aids in our interpretation of this issue.

⁴⁵ WaterNSW N.D. *Basic Water Rights*. Viewed 21 July 2018. <<https://www.waternsw.com.au/customer-service/water-licensing/basic-water-rights>>.

In terms of the costs of complying with environmental water requirements, based on feedback received we consider that:

- Costs for non-discretionary planned environmental (fixed rules) water are embedded in the general operational costs of managing the system according to the rules in WSPs, and do not create material additional costs for WaterNSW's customers.
- Discretionary environmental water (both planned and held environmental water) generates costs as a result of planning, scheduling of environmental watering events, as well as the flexible timing and frequency of watering events that may not coincide with other releases of water for other users.

While the above might suggest some marginal costs are associated with environmental purposes, for which some stakeholders may argue they should not meet, if IPART's definition of the impactor pays principle is to be implemented correctly, the costs of delivering water for environmental purposes is primarily driven by users. This is because the driver for planned environmental water is the provision of water to rectify or restore environmental damage due to extractive use, while licensed environmental water is considered a user (see section 3.1.5). It is important to note that environmental water holders are a category of user and contribute to the overall user share through the same licence related fees and charges that other water users meet.

If the difference in costs are not recovered appropriately from each of the different types of customers through the existing tariff structure, this should be addressed through the tariff structure itself rather than the cost sharing framework.

Navigational services

Under the Murray-Darling Agreement, WaterNSW is required to operate some of its infrastructure on the Murray River to provide for navigation of the river by water craft.⁴⁶The unique nature of the operation of Murray River infrastructure for this purpose may provide sufficient justification to apply a different user share to Murray valley. Altering the cost share for water delivery and other operations would be contingent on being able to effectively separate the magnitude of cost relating to providing the infrastructure for navigational purposes. Under Scenario One, we do not propose to have separate ratios for different valleys, however, a more granular approach to the cost sharing ratio is discussed in Scenario 2 (see section 7.2.3).

Overall changes to the water deliver and other operations activity code

Based on the costs attributable to providing services for basic landholder rights and recreational users, in the event this scenario (1) was implemented, we recommend that a 5:95 cost sharing ratio between government and user to account for the minor costs attributable to providing services to recreational users. This results in:

- The user being a major impactor (95 per cent), and
- The government being a minor impactor (5 per cent).

6.3.2. Flood operations

This activity code relates to flood operations during flood events, ongoing flood training for WaterNSW staff and onsite works required to undertake flood operations. Costs related to the flood operations activity code are currently allocated equally between users and the government. The key focus for

⁴⁶ Murray Irrigation 2018. *Submission on the Rural Water Cost Share Review*. p 6.

WaterNSW is the protection of life and property for communities downstream of potential floods. This requires ongoing management and operation of infrastructure to ensure that WaterNSW can provide this protection. These downstream communities are generally serviced by local water utilities (who, as outlined in section 3.1.5, are defined as users).

We understand that there are two main causes of floods, which have a bearing on the allocation of the cost share between government and users:

- floods arising from dam failure
- floods arising from rainfall (i.e. naturally caused floods).

In the case of flood operations emanating from dam failure (or similar), the impactor of the cost is the users that require the dam to be built in the first instance, as the need to protect the community from this risk would not exist in the absence of the structure. Therefore, to the extent that flood operations costs are required to respond to or manage the risk posed to the community by dam failure, these should be allocated to users.

In terms of natural floods, that is, floods arising from rainfall, these events are naturally occurring and would occur in the absence of the regulated infrastructure, such as dams. Given that, there is no definitive impactor for these events and therefore, to the extent that flood operations costs are required to manage the risk posed through naturally occurring floods, these costs should be allocated government.

The proportion of the likelihood of the two drivers will determine the sharing ratio between users and government. We have estimated a range for cost sharing purposes:

- The user being a major impactor (70-90 per cent) with the range reflecting the risk of dam failure floods, and
- The government being a minor impactor (10-30 per cent) with the range reflecting the risk of naturally occurring floods.

A more granular consideration of the activity code is discussed in Scenario 2 (see section 7.2.3).

The review revealed that currently there are no costs allocated to this activity code. WaterNSW's reasoning for this was that it did not provide a forecast of expenditure for this item in the current determination. Therefore, WaterNSW does not currently receive regulated income for flood operations activities. However, staff informed us that the business is allocating costs to this activity code in the current period and will incorporate these costs in its forecasts for the next price determination.

6.3.3. Water quality monitoring

Water quality monitoring relates to the operation of a water quality monitoring and reporting program to track how WaterNSW is meeting required standards, including for the Fish River Scheme and at dams where WaterNSW is responsible for providing water for urban consumption. Costs are currently shared equally between the users and the government.

WaterNSW states that the drivers for its water quality monitoring program include ensuring WaterNSW meets required standards for:

- drinking water quality
- regulatory requirements (for parameters including blue green algae, water chemistry and temperature)

- dam safety (seepage water quality monitoring to assist in early identification of risks).⁴⁷

Each of these drivers contribute to the identification of impactors and cost allocation and are explored in turn below.

Drinking water quality monitoring is required to ensure water delivered to local water utilities complies with relevant drinking water standards, such as the Australian Drinking Water Guidelines. The users (local water utilities) are therefore considered to be the sole impactor for this element of the activity code.

WaterNSW is also required to undertake monitoring for blue green algae in the storages that it manages as a regulatory requirement associated with its Works Approvals. Blue green algae occurs naturally to some extent in all freshwater sources. Outbreaks (blooms) are caused by a combination of factors including water availability, temperature, light availability and nutrient loads. These factors are influenced by extraction and regulation of water resources and hence extractive water users should be considered as an impactor. However, given the natural occurrence of blue green algae, it is likely that outbreaks would continue to occur in the absence of water extraction and therefore, a minor government share may be appropriate in relation to blue green algae monitoring.

Monitoring for other regulatory reasons (temperature to monitor cold water pollution levels, and water chemistry to monitor other pollutants and ecological health) and dam safety can be linked to river regulation (construction of dams and reservoirs) and extraction. Without the presence of regulating structures and subsequent extraction by users, there would be less of a need for this monitoring to occur. Therefore, users should be allocated some of the cost for monitoring against these parameters as a major impactor.

In terms of required tasks for dam safety, we note that dam safety and its relative impactors is considered in more detail in section 6.3.6. This discussion highlights the uncertainty and subjectivity regarding the impactors behind dam safety and the recommendation for a range to be adopted whereby users are the major impactors and government is classed as the minor impactor.

The proportion of the likelihood of the two drivers will determine the sharing ratio between users and government. We have estimated a range for cost sharing purposes:

- The user being a major impactor (70-90 per cent), and
- The government being a minor impactor (10-30 per cent).

6.3.4. Corrective maintenance and routine maintenance

Corrective maintenance refers to maintenance where assets may break down, while routine maintenance refers to planned or condition-based maintenance of assets. Costs are currently allocated 100 per cent to users.

WaterNSW states that the intent of the maintenance activities is to 'contribute towards maintaining the capability of WaterNSW assets to deliver the appropriate level of service to our customers in an efficient, reliable, safe and environmentally responsible manner.'⁴⁸ In this way, the major impactor can be understood as water users, as the cost is incurred to ensure that services can be provided to them. During discussions with WaterNSW, staff identified that there were some assets (either owned by

⁴⁷ WaterNSW 2016. *Pricing Proposal to IPART: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*. p 100.

⁴⁸ WaterNSW 2016. *Pricing Proposal to IPART: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021*. p 101.

WaterNSW or on WaterNSW property), such as public access roads and bridges, that are required to be maintained which do not directly provide services to customers. WaterNSW was not able to distinguish how much of its maintenance program expenditure is directed towards these types of assets, however it estimated that it would be less than 10 per cent.

We acknowledge that there is a degree of external use of assets that require maintenance, however it is likely to be quite low. Given this, we recommend a minor change to the existing sharing ratios for these two activity codes to allocate five per cent of the costs to government. This results in:

- The user being a major impactor (95 per cent), and
- The government being a minor impactor (5 per cent).

6.3.5. Asset management planning

Asset management planning refers to planning required to maintain WaterNSW's infrastructure and other assets to deliver specified service standards. This includes asset planning and safety, maintenance planning, asset condition auditing, operational risk and incident management, procurement, compliance and operations. Costs are currently allocated 100 per cent to users.

Consistent with corrective and routine maintenance above (section 6.3.4), we consider the major impactor for this activity to be water users, as the activity is concerned with delivering continued levels of service to water customers to enable extraction. If WaterNSW's infrastructure did not exist and there was no subsequent demand for extractive use, there would not be a need to incur this cost. As with corrective and routine maintenance, there is a small proportion of assets (estimated to be less than 10 per cent) that do not directly provide services to customers and have some form of external use (such as public access roads and bridges) that are either owned by WaterNSW or on WaterNSW property. Given this, we also recommend a change to the existing sharing ratio for this activity code to allocate five per cent of the costs to government. This results in:

- The user being a major impactor (95 per cent), and
- The government being a minor impactor (5 per cent).

6.3.6. Dam safety compliance

This activity refers to dam surveillance/dam safety inspections, reviews, audits and associated risk assessment to comply with post-1997 safety standards for WaterNSW's dams. Costs are currently shared jointly between users and the government. As outlined previously, the timing of 1997 is based on IPART's previous decision to set a line-in-the-sand on WaterNSW assets in 1997 for pricing and cost recovery purposes and provide greater certainty to the business through a regulatory framework.

The primary objective of dam safety is to minimise the risk associated with dam failure. This risk is assessed by the probability of failure and the quantum of loss of life from the dam failure. This risk assessment is what determines the requirement for further compliance expenditure for WaterNSW. The assessment of risk is expected to change over time as conditions change and better information becomes available to WaterNSW. Examples of scenarios that can cause changes include:

- Increased population growth in downstream communities
- Improved flood modelling capabilities
- Changes in dam conditions

- Changes in regulations
- Knowledge from dam failures in other jurisdictions.

As with the Frontier Economics report⁴⁹, we consider that the majority of the expenditure on the dam safety compliance activity code is required as a result of current and future users (primarily downstream local water utilities (communities) and irrigation users). This is due to the dam being primarily built to service their extractive use. If there was no dam, there would not be a risk of dam failure, and therefore there would not be a need to meet dam safety requirements. Therefore, to the extent that the dams were constructed to service users, the cost of this activity should be allocated to users.

Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity based on the extent to which IPART considers the construction of the dams to be for users. We have estimated a range for cost sharing purposes:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the dam was constructed to meet users' needs, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the dam was constructed for flood mitigation purposes.

A more granular approach to this range is considered in Scenario 2 (see section 7.2.3).

6.3.7. Pre-1997 dam safety compliance

This activity refers to dam surveillance, dam safety inspections, reviews, audits and associated risk assessments to comply with pre-1997 safety standards on WaterNSW's assets. Costs are currently allocated 100 per cent to the government.

WaterNSW forecasts a significant capital program for dam safety compliance for pre-1997 assets in the near future. In reviewing this activity code, it was apparent that the pre-1997 levels of service provided by WaterNSW's infrastructure are difficult to define. This uncertainty is due to fact that at the time the infrastructure was built, specific dam safety regulations or standards did not exist. Given this, it is not possible to say with certainty that the costs that are captured within this activity code do not relate to ensuring the dams meet the 1997 standards.

Consistent with the IPART's decision to treat all costs associated with assets comply with pre-1997 service standards as legacy costs, we consider it appropriate to continue to allocate 100 per cent of these costs to the government. This recommendation is based on ensuring regulatory certainty from the line-in-the-sand decision in 1997. This results in the government being the sole impactor (100 per cent).

6.3.8. Environmental planning and protection

This activity code relates to environmental management activities, such as strategic and specific planning and assessments in relation to elements such as fish passages, carbon neutrality and cold-water pollution. Costs are currently jointly shared between users and the government.

⁴⁹ Frontier Economics 2017. *Review of WaterNSW Cost Shares*. p 58.

It is widely accepted that the primary purpose of water management infrastructure is to provide two key deliverables:

- more reliable and controllable water for water users
- protection from floods for downstream users and communities.

Provision of these services has resulted in less water being available for the environment and a flow regime that no longer mimics the natural regime, with associated negative environmental and ecological consequences. WaterNSW undertakes activities which aim to reduce or rectify environmental damage caused by providing these deliverables. Examples of this include the construction of fish passage structures and the installation of mid-storage offtakes to mitigate the effects of cold-water pollution on river ecosystems. Based on this, the respective impactors for these activities (reliable water supply and flood protection) can be considered as the impactors for the environmental planning and protection activity code. This is because in the absence of the infrastructure the environmental impacts would not have occurred and the cost would therefore be avoided. Therefore, we consider that impactors for this activity code can be apportioned in accordance with the original purpose of the infrastructure.

Following this, users are the primary impactor for environmental planning and protection activity code as they are an impactor for both water supply and flood protection. Government is also an impactor where it relates to flood protection. The extent to which the costs should be allocated to users depends on the driver for the dam and flood management and mitigation.

Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity based on the extent to which IPART considers the construction of the dams to be for users. We have estimated a range for cost sharing purposes:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the dam was constructed to meet users' needs, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the dam was constructed for flood mitigation purposes.

Box 1: Concerns about the effectiveness of environmental management investments

Through this review, some stakeholders have raised concerns about the effectiveness of some of WaterNSW's environmental management investments, suggesting they do not address the underlying environmental issues they are designed to address. Given this, some stakeholders have argued that users should not be required to pay for these investments.

Consideration of the effectiveness of the environmental management requirements that are imposed on WaterNSW is outside the scope of this review. The cost sharing framework is designed to allocate the share of costs between users and government, rather than comment on the effectiveness of specific activities. The key matter to resolve in this review is to understand the underlying intent behind those requirements in order to accurately identify the impactor of these activities.

Stakeholder concerns about the effectiveness of external requirements can be more appropriately addressed through other means such as during the relevant expenditure reviews, during which the prudence and efficiency of expenditures is determined. In relation to these types of requirements, IPART will assess the efficiency of the proposed expenditure to comply with requirements, however IPART is unlikely to second-guess the imposition of the requirement (the prudence of the requirement).

Other processes, such as regulatory impact statements, are more suitable to address the prudence of such requirements and whether they are effective and/or necessary. If it is deemed that these requirements are unnecessary, then they would no longer be required and no costs would be incurred.

6.3.9. Corporate systems

The corporate systems activity code relates to expenditure for the delivery of a rolling program of ICT hardware renewals which is being undertaken in the context of ongoing ICT improvement initiatives.⁵⁰ Based on discussions with WaterNSW, these corporate systems are required to enable WaterNSW to provide rural bulk water services. Costs are currently allocated 100 per cent to users.

This activity code is not necessarily an activity, but rather a type of cost incurred by WaterNSW in undertaking its activities. We note that other corporate overheads (that are not related to this capital upgrade) are allocated to (and recovered from) both government and users through WaterNSW's cost allocation process which is described in section 5.2.1. It would therefore seem reasonable that this specific corporate systems code would also have a degree of allocation across both government and users.

Given this, we propose to share the costs for this activity code based on the sharing of the overall costs between government and users. This is based on an estimate of the average split of costs between users and government across all activities. This results in:

- The user being a major impactor (80 per cent), and
- The government being a minor impactor (20 per cent).

6.3.10. Renewals and replacement

This activity relates to expenditure to renew or replace infrastructure and other assets as a result of expected wear and tear and usage of water infrastructure.

As discussed in the corrective and routine maintenance and asset management planning sections above (sections 6.3.4 and 6.3.5), the intent of undertaking renewals and replacement activities is to continue to provide appropriate levels of service to customers. In this way, the major impactor can be understood as users, as the cost is incurred to ensure that services can be provided to them. If there was no demand for users' extractive use, there would not be a need to incur renewals and replacement costs.

There is also a small proportion of assets (estimated by WaterNSW to be less than 10 per cent) that do not directly provide services to customers and have some form of external use (e.g. public access roads and bridges) that are either owned by WaterNSW or on WaterNSW property. Given this, we also recommend a minor change to the existing sharing ratio for this activity code to allocate five per cent of the costs to government. This is a reduction from the existing 10 per cent that is currently in place and results in:

- The user being a major impactor (95 per cent), and

⁵⁰ WaterNSW 2016. Pricing Proposal to IPART: Regulated prices for NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021. p 105.

- The government being a minor impactor (5 per cent).

6.3.11. Risk Transfer Product

IPART's Final Decision for the 2017 review of WaterNSW stated that WaterNSW faces revenue risk associated with unpredictable water sales and its current tariff structure. Given this, IPART incorporated a revenue volatility allowance to mitigate revenue volatility risk. The allowance is designed to enable WaterNSW to manage the risk associated with having a 40:60 fixed to variable price structure relative to an 80:20 fixed to variable price structure. This can either be undertaken through the purchase of a Risk Transfer Product (RTP) from a third-party, or self-insurance.

This results in customers paying a cost-reflective premium where prices are set to recover more than 20 per cent of revenue in a valley through usage charges, rather than revising the tariff structure to mitigate the revenue volatility risk.

This additional cost is driven by a desire from customers to have higher variable charges and the risk that this creates for WaterNSW. If WaterNSW had a tariff structure with a higher fixed charge and lower variable charge, the need for this cost would be reduced (or even removed). Given this, the costs for this activity code are recommended to be recovered solely from users. Consistent with the current approach, we recommend that those costs only be recovered from customers in those valleys with a 40:60 tariff structure.

6.4. Assessment of WAMC activity codes

Where appropriate, we have sought to discuss related activity codes together in order to focus the discussion on key issues. Our assessment of all WAMC activity codes is located in Appendix A.

6.4.1. W01 Surface water monitoring

Surface water monitoring encompasses the collection and provision of quantity, quality, algal and ecological information for monitoring, use, assessment and management of surface water.

W01-01 Surface water quantity monitoring

The surface water quantity monitoring activity code involves the provision of a surface water quantity monitoring system (hydrometric network) to capture and transmit height and/or flow data from surface water monitoring stations to the corporate database and the maintenance and operation of the stations. The costs for this activity are currently allocated 70 per cent to users.

The information derived from the surface water quantity monitoring network appears to be primarily required to operate the river system for extractive uses. The information supports water planning, management and regulation activities. On this basis we propose that the sole impactor for surface water quantity monitoring is users, as without water extraction there would not be a requirement to monitor water quantity. Therefore, we recommend that the users are the sole impactors (100 per cent).

W01-02 Surface water data management and reporting

The surface water data management and reporting activity code involves data management and reporting of surface water quantity, quality and biological information; including compilation, secure

storage, management and publishing of data to customers, stakeholders and the general public. The current cost share is jointly shared between users and the government.

The costs for water data management and reporting appear to be driven by two factors:

- users of the water source (who create the need for water to be shared, facilitated by water information, and who also use water information to inform their own water management and investment decisions), and
- government and community expectations regarding levels of necessary water resource information.

The extent to which the government and community water information requirements are additional to the level required to manage the water source is a key consideration in determining the appropriate cost share. Where water data management and reporting is undertaken primarily to meet community or government requirements adds significant cost, we would expect that the government share should be higher than the user share. However, if it is not significant, then it could be expected that the user share should be higher. In reviewing this activity, we have not been able to distinguish between the specific impact of these respective drivers. Given the uncertainty regarding the impact of these requirements, we have assumed that the additional requirements for data management and reporting should be shared between Government and users, resulting in:

- The user being a joint impactor (50 per cent), and
- The government being a joint impactor (50 per cent).

W01-03 Surface water quality monitoring

The surface water quality monitoring activity code involves the provision of a state-wide surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting. Costs are currently shared jointly between the government and users.

Aither understands that the surface water quality monitoring activity was previously delivered by (the now named) DOI, however, has since moved to WaterNSW. Based on the information available, the precise relationship between this activity code and the WaterNSW Water Quality Monitoring (considered in section 6.3.3), and the extent of any overlap is unclear. Nevertheless, it appears that the surface water quality monitoring (W01-03) code does not explicitly relate to drinking water requirements, whereas the WaterNSW Water Quality Monitoring does involve drinking water quality requirements.

DOI states that the surface water quality program is required to:

report on the suitability of surface water for activities such as the irrigation of crops, maintaining a healthy environment, recreational fishing, or sustaining the cultural and spiritual links of indigenous groups.⁵¹

Furthermore, DOI asserts that:

water quality is impacted by river regulation, water extraction and other drivers... water quality impacts, particularly temperature, turbidity, salinity and dissolved

⁵¹ DPI Water 2015. *DPI Water pricing submission to IPART*. p 128.

oxygen may override any target environmental outcomes that are planned for by flow management and water access rules.⁵²

Based on DOI's definition, the major impactor for the surface water quality monitoring program appears to be water users who created the original demand for extraction. In line with our treatment of the WaterNSW Water Quality Monitoring code, the extent of user contribution will be determined by the purpose of the regulating infrastructure (i.e. the dams) as being for irrigation or flood protection. In addition, the activity appears to also feed into a broader regional and Basin Plan reporting and target setting requirement which may necessitate a contribution from government, as the cost may be additional to the effort required to report on and manage the system from user impacts. Based on this rationale, we recommend a range for cost sharing purposes of:

- The user being a major impactor (50-70 per cent) with the range depending on the extent to which IPART considers the activity is driven by user requirements regarding water quality, and
- The government being a minor impactor (30-50 per cent) with the range depending on the extent to which IPART considers the monitoring activity is additional to the impact of users.

W01-04 Surface water algal monitoring

This activity encompasses the provision of a surface water algal monitoring program including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees. Surface water algal monitoring is currently shared jointly between the government and users.

This activity appears to be primarily related to monitoring for the risk of toxic blue-green algae blooms to prevent undue risks to recreational users and communities. We note that the WaterNSW Water Quality Monitoring activity code includes a component of monitoring for blue-green algae. Our understanding is that DOI only undertakes blue-green algae monitoring for those sites that it is responsible for managing.⁵³ WaterNSW is responsible for monitoring blue-green algae for the storages it manages. Blue-green algae occurs naturally to some extent in all freshwater sources. Outbreaks (blooms) are caused by a combination of factors including water availability, temperature, light availability and nutrient loads. Some of these factors are influenced by extractive water resources hence extractive water users should be considered as a minor impactor, and allocated some of the costs. Given the uncertainty regarding these drivers, we recommend a range for cost sharing purposes of:

- The user being a minor impactor (30-50 per cent) with the range depending on the extent to which IPART considers the blue-green algae is driven by user actions, and
- The government being a major impactor (50-70 per cent) with the range depending on the extent to which IPART considers the blue-green algae is naturally occurring.

W01-05 Surface water ecological condition monitoring

This activity involves the provision of a surface water ecological condition monitoring system to assess the health of water sources; including design and application based on the River Condition Index for rivers, flood plains and wetlands. Costs for surface water ecological monitoring are currently jointly shared between users and the government.

⁵² DPI Water 2015. *DPI Water pricing submission to IPART*. p 129.

⁵³ DPI Water 2015. *DPI Water pricing submission to IPART*. p 130.

There are six components of river condition information that are collected including hydrology, geomorphology, riparian, biota, disturbance and water quality.⁵⁴ We understand that the river condition information supports long-term reporting of river condition which is used to understand the impacts of water management activities. In applying the impactor pays approach, we consider that the activity is required as a result of river extraction, and thus users are an impactor. However, it is reasonable to assume at least some of this monitoring of the river's ecological condition would occur in the absence of users, and therefore government would be a contributing impactor, justifying some allocation of cost share to the government.

Based on the information available, we recommend that the current cost share ratios are maintained:

- The user being a joint impactor (50 per cent), and
- The government being a joint impactor (50 per cent).

6.4.2. W02 Groundwater monitoring

Groundwater monitoring involves the collection and provision of water level, pressure, flow and quality information for monitoring, use, assessment and management of groundwater. This overarching code includes the following sub-codes, all of which are currently allocated solely (100 per cent) to users.

- W02-01 Groundwater quantity monitoring
- W02-02 Groundwater quality monitoring
- W02-03 Groundwater data management and reporting.

Consistent with the existing sharing framework, in applying the impactor-pays approach we consider that groundwater quantity monitoring (W02-01) and groundwater quality monitoring (W02-02) are solely driven by the need to service demand for groundwater by users. If the demand for groundwater did not exist, then there would not be a need to undertake groundwater quantity or quality monitoring. Therefore, the current ratio should be maintained with users being the sole impactor (100 per cent).

In relation to the groundwater data management and reporting activity (W02-03), consistent with our consideration of surface water data management and reporting (W01-02), we consider that the costs for this activity should be shared between government and users:

- The user being a joint impactor (50 per cent), and
- The government being a joint impactor (50 per cent).

The reasons for this are outlined in section 6.4.1.

6.4.3. W03 Water take monitoring

Water take monitoring involves the provision of metering services, the collection of water take data and its recording on water allocation accounts for licence holders. This overarching code includes the following sub-codes, both of which are currently allocated solely (100 per cent) to users:

- W03-01 Water take data collection

⁵⁴ DPI Water 2015. *DPI Water pricing submission to IPART*. p 130.

- W03-02 Water take data management and reporting.

Water take data collection includes the operation and maintenance of government owned meters and the collection of data from these meters by either telemetry or site visits.⁵⁵ The measurement of water take is essential to protecting the integrity and value of water rights by preventing over extraction of the water resource. Consistent with the existing sharing framework, in applying the impactor-pays approach we consider that the need for water take data collection (W03-01) is driven by users and therefore we recommend that users are the sole impactors (100 per cent).

Water take data management and reporting (W03-02) relates to obtaining water take data from government and private meters, and storing and processing data for populating water allocation accounts, billing, water resource accounting and other uses. Based on this description, the sole impactor is users and therefore the current allocation of 100 per cent to users remains appropriate.

6.4.4. W04 Water modelling and impact assessment

Water modelling and impact assessment includes the development and use of water system models for water sharing and water management applications, resource impact and water balance assessments, and annual general-purpose water resource accounts for NSW water sources. This overarching code includes the following sub-codes:

- W04-01 Surface water modelling (currently jointly shared between users and the government)
- W04-02 Groundwater modelling (currently solely allocated to users)
- W04-03 Water resource accounting (currently solely allocated to users).

With respect to surface water modelling (W04-01) the primary driver appears to be to as an input to water planning to facilitate sustainable long-term sharing of water between extractive users and the environment. On this basis, we consider that users are the major impactor, as they create the need for water sharing through extractive demand. Water modelling and impact assessment information is also used for broader NSW government processes and compliance with inter-state water sharing agreements, which are potentially a less significant secondary driver of this cost. Therefore, the government can be understood as a minor driver. Given the uncertainty as to the extent that the modelling is undertaken as a result of the extractive users or broader processes and agreements, we consider that a range is appropriate:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the extractive demand drives the need for surface water modelling, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the broader processes and compliance with agreements drives the need for surface water modelling.

We have not proposed any changes to the other codes.

6.4.5. W05 Water management implementation

This activity group relates to the implementation of procedures and systems to deliver the provisions of water management plans, blue-green algal management and environmental water management, the assessment and evaluation of these plans, and compliance with long-term extraction limits.

⁵⁵ DPI Water 2015. *DPI Water pricing submission to IPART*. p 138.

W05-02 Blue-green algae management

Blue-green algae management encompasses the provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans. Consistent with our previous consideration of blue-green algae monitoring (W01-04) in section 6.4.1 we propose a range for cost sharing purposes:

- The user being a minor impactor (30-50 per cent) with the range depending on the extent to which IPART considers the blue-green algae is driven by user actions, and
- The government being a major impactor (50-70 per cent) with the range depending on the extent to which IPART considers the blue-green algae is naturally occurring.

W05-03 Environmental water management

Environmental water management encompasses the development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes. Costs are currently solely allocated to government.

As with the WaterNSW Environmental Planning and Protection code, identifying the major impactor behind this activity is related to the original purpose of the dam. Without the dam being built (in most cases to fulfil extractive use or flood management or mitigation purposes), environmental water would not be required. Therefore, the extent to which the costs should be allocated to users depends on the purpose of the dam. If it was built for irrigation purposes, then it would be appropriate for the costs to be allocated to users. If the dam was built for flood management or mitigation, then there is a rationale for a higher government share. Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the dam was constructed to meet users' needs, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the dam was constructed for flood mitigation purposes.

6.4.6. W06 Water management planning

Water management and planning involves the development, review, amendment, and extension or replacement of water management plans, regional planning and management strategies, and development of the water planning and regulatory framework. This overarching code includes the following sub-codes:

- W06-03 Floodplain management plan development (currently 100 per cent government)
- W06-04 Drainage management plan development (currently 100 per cent government)
- W06-06 Development of water planning and regulatory framework (currently 75 per cent user).

The floodplain management plan development (W06-03) and drainage management plan development activity codes (W06-04) are based on broad approaches to land management planning and are not necessarily a direct result of water use. The primary driver of these activities is to protect the environment, communities and third parties from the impacts of development on flood plains and water quality issues associated with drainage systems. Given this, we consider the major impactor to be communities and the environment, and consider it appropriate to maintain the current ratio where the government is the sole impactor (100 per cent).

The development of water planning and regulatory framework (W06-06) activity appears to be driven by the need to have regulations and rules in place for water access, and therefore the major impactor can be understood as users. However, a component of this activity code appears to occur in response to broader requirements such as community concerns, legislation and the Basin Plan. Given the uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the planning is driven by extractive users, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the activity is driven by broader requirements.

6.4.7. W07 Water management works

This activity involves undertaking certain water management works to reduce the impacts arising from water use or to remediate water courses. This includes reducing erosion and salinity impacts and restoring riverbank stability. These activities are essential for maintaining a healthy river system and also protects life and property from the effects of flooding.

The primary driver of this cost is to rectify or remediate damage caused by extractive use, we consider that the major impactor for this activity is the user. However, we note that some of those environmental issues can be naturally occurring and the imperative to protect life and property from the effects of flooding by maintaining a healthy river system suggests that some costs should also be shared with government. Given uncertainty around the activity, we consider that a range is appropriate:

- The user being a major impactor (70-90 per cent) with the range depending on the extent to which IPART considers the extractive demand drives the need for water management works, and
- The government being a minor impactor (10-30 per cent) with the range depending on the extent to which IPART considers the environmental issues are naturally occurring and the degree to which flood protection impacts on the activities.

6.4.8. W10 Business and customer services

This activity group includes the customer, business and revenue collection services supporting the operation of the Office of Water. This overarching code includes the following sub-codes:

- W10-01 Customer management (currently 100 per cent user)
- W10-02 Business governance and support (currently 70 per cent user)
- W10-03 Billing management (currently 100 per cent user).

The customer management (W10-01) activity includes all customer liaison activities such as responding to public calls to licensing and compliance information lines and producing communication and education materials. The billing management (W10-03) involves the management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities. Consistent with the existing sharing framework, in considering the impactor-pays approach we note that if there was no extractive use, there would not be a need for these activities (W10-01 and W10-03) to be undertaken and therefore recommend that users are the sole impactors (100 per cent).

The business governance and support activity (W10-02) provides broader corporate services support to agencies for the provision of WAMC functions (for example, pricing submissions during the WAMC pricing determination for IPART). The allocation between government and user should then be informed by the overall allocation of costs between government and user across the WAMC activity codes (this is consistent with our assessment of the corporate systems activity code in section 6.3.9).

Given this, we propose that the business governance and support activity (W10-02) code is based on the overall cost share between users and government for the WAMC activity codes. This results in:

- The user being a major impactor (80 per cent), and
- The government being a minor impactor (20 per cent).

6.5. Impact of changes to ratios on total user share of efficient costs and prices

Based on the recommended changes to the cost sharing ratios above, there is an impact on the relative level of costs for users and government. The actual impact is unknown as any changes to the sharing ratios will be forward looking and apply as part of future pricing determinations, however to provide a guide as to the general impact of the changes, we have applied the recommended changes to the average forecast expenditure from 2018-2021 across both the rural water activities and WAMC activities.

Table 6 compares the percentage of recovery between users and government for the current approach and the high and low end of the ranges under Scenario One. The Scenario One – Low User information is based on applying the low end of the range for the user share (and high end for government) where a range is recommended, whereas the Scenario One – High User is based on applying the high end of the range for the user share (and low end for government) where a range is recommended.

Table 6 Comparison of percentage of recovery between current approach and Scenario One

Cost share	Current sharing		Scenario 1 – Low User		Scenario 1 – High User	
	Govt (%)	User (%)	Govt (%)	User (%)	Govt (%)	User (%)
Rural water services – opex	10	90	9	91	6	94
Rural water services – capex	22	78	23	77	23	77
WAMC – opex	25	75	20	80	15	85
WAMC – capex	11	89	10	90	8	92

The key driver for the changes in recovery from user and government relates to the change in sharing ratios for surface water quantity monitoring (W01-01), environmental water management (W05-03) and surface water modelling (04-01). These codes have a relatively high level of expenditure and involved a material change in the sharing ratios from government to user.

7. Scenario Two: Changes to the existing cost sharing framework

This chapter outlines our assessment of Scenario Two. As set out in section 2.2, this scenario is based on reviewing and identifying opportunities to improve the existing activity-based cost sharing framework that are likely to result in minimal system and resourcing costs. We will base these potential opportunities on our review of the existing activity codes (Appendix A).

7.1. Summary of recommended changes to the existing cost sharing framework

Table 7 and Table 8 provide a summary of recommended changes to the existing cost sharing framework activities.

The discussion in the remainder of this section elaborates on the reasoning and rationale behind the changes which have been proposed. Rather than discussing the full list of WaterNSW and WAMC activities in detail, we have limited our discussion to instances where our assessment has resulted in any recommended changes to the current approach, or where additional explanation is warranted. We have made note of where valley-specific ratios have been recommended.

Table 7 Revised list of WaterNSW activities and cost sharing ratios (Scenario Two)

Code	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
Customer support (opex)	0	100	0	100
Customer Billing (opex)	0	100	0	100
Metering and compliance (opex)	0	100	0	100
Water delivery and other operations ¹ (capex and opex)	0	100	5	95
Flood operations ² (capex and opex)	50	50	10-30	90-70
Hydrometric Monitoring (capex and opex)	10	90	10	90
Water quality monitoring (capex and opex)	50	50	10-30	90-70
Direct insurances (capex and opex)	0	100	0	100
Corrective maintenance (capex and opex)	0	100	5	95
Routine maintenance (capex and opex)	0	100	5	95
Asset management planning (capex and opex)	0	100	5	95
Dam safety compliance ² (capex and opex)	50	50	10-30	90-70
Environmental planning and protection ² (capex and opex)	50	50	10-30	90-70
Irrigation Corporation District (IDC) rebates (capex and opex)	0	100	0	100

Code	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
Renewals and replacement (capex and opex)	0	100	5	95
Risk Transfer product (only for valleys with 40:60 tariff structure) (opex)	0	100	0	100
Dam safety compliance on pre-1997 capital projects (capex)	100	0	100	0

Note: 1) Lachlan, Macquarie, Namoi, Border and Gwydir valleys have a ratio of 10:90 to reflect the fact that they are required to service basic landholder rights. Murray valley has a ratio of 10:90 to reflect the navigation requirements within the valley.
2) Hunter and Macquarie valleys have a ratio of 50:50 to reflect the flood mitigation objectives of the dams within their valleys.

Table 8 Revised list of WAMC activities and cost sharing ratios

Code ¹	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
W01 Surface water monitoring				
W01-01 Surface water quantity monitoring	30	70	0	100
W01-02 Surface water data management and reporting	50	50	50	50
W01-03 Surface water quality monitoring	50	50	30-50	70-50
W01-04 Surface water algal monitoring	50	50	50-70	50-30
W01-05 Surface water ecological monitoring	50	50	50	50
W02 Groundwater monitoring				
W02-01 Groundwater quantity monitoring	0	100	0	100
W02-02 Groundwater quality monitoring	0	100	0	100
W02-03 Groundwater data management and reporting	0	100	50	50
W03 Water take monitoring				
W03-01 Water take data collection	0	100	0	100
W03-02 Water take data management and reporting	0	100	0	100
W04 Water modelling & impact assessment				
W04-01 Surface water modelling	50	50	30	70
W04-02 Groundwater modelling	0	100	0	100
W04-03 Water resource accounting	0	100	0	100
W05 Water management implementation				
W05-01 Systems operation and water availability management	0	100	0	100
W05-02 Blue-green algae management	50	50	50-70	50-30

Code ¹	Existing		Recommended	
	Govt (%)	User (%)	Govt (%)	User (%)
W05-03 Environmental water management	100	0	10-30	90-70
W05-04 Water plan performance assessment and evaluation	50	50	50	50
W06 Water management planning				
W06-01 Water plan development (coastal)	30	70	30	70
W06-02 Water plan development (inland)	30	70	30	70
W06-03 Floodplain management plan development	100	0	100	0
W06-04 Drainage management plan development	100	0	100	0
W06-05 Regional planning and management strategies	30	70	30	70
W06-06 Development of water planning and regulatory framework	25	75	30	70
W06-07 Cross-border and national commitments	50	50	50	50
W07 Water management works				
W07-01 Water management works	50	50	10-30	90-70
W08 Water regulation management				
W08-01 Regulation systems management	0	100	0	100
W08-02 Consents management and licence conversion	0	100	0	100
W08-03 Compliance management	0	100	0	100
W09 Water consents transactions				
W09-01 Water consents transactions	0	100	0	100
W10 Business and customer services				
W10-01 Customer management	0	100	0	100
W10-03 Billing management	0	100	0	100

Note: 1) Note we have not updated code numbers.

7.2. Options for improving activity codes

7.2.1. Activities that could be rationalised

A number of the stakeholders commented throughout this review that there are too many activity codes within the cost sharing framework. One of the drivers for the overall number of activity codes is the replication of codes for both operating and capital expenditure. In particular the operating expenditure and capital expenditure codes are mirrored for all of the WAMC activity codes. This has occurred to a lesser degree for the WaterNSW activity codes, which have some variation between the operating expenditure and capital expenditure activities.

There are a number of activities with no allocated costs that are unlikely to ever be allocated costs, as the activity code is not reflective of the type of expenditure. For example, it would not be suitable to allocate capital expenditure to a maintenance activity code, as this is more accurately described as an operating expenditure. We note that the allocation between the operating and capital expenditure for these activity codes is based on the capitalisation policies and therefore the duplication of these codes is unlikely to have a material impact on the agencies. The main impact that it has is the perception regarding the number of activity codes, however in reality a number of the codes are effectively redundant.

Given that these activity codes are not currently being used, the removal of these activity codes actually has the potential to incur more costs (through removing the activity codes from the cost allocation process) than the benefits.

7.2.2. Activities that could be removed from the framework

There are some activity codes that do not represent activities, but rather categories of costs. These are generally overhead or indirect costs that do not represent actual activities that are required to be undertaken. An option to deal with this category of cost would be to treat these costs within the internal cost allocation processes for indirect and overhead costs rather than requiring a specific activity code within the cost sharing framework. This would not remove these costs from the cost sharing framework (as they would be re-allocated to activity codes within the framework) but it would result in a framework that is more focused on the activities actually being undertaken.

A summary of existing WaterNSW and WAMC activities that could be treated separately within internal cost allocation processes instead of the cost share frame work is provided in Table 9.

Table 9 Activities that could be treated separately within internal cost allocation processes

Activity code	Description	How could it be treated
WaterNSW		
Corporate Systems	The corporate systems activity code relates to expenditure for the delivery of a rolling program of ICT hardware renewals which is being undertaken in the context of ongoing ICT improvement initiatives. Based on discussions with WaterNSW, this activity is required to enable WaterNSW to provide rural bulk water services across all valleys.	It may be more appropriate to remove this as an activity code and treat the costs as an overhead within WaterNSW's cost allocation process.
WAMC		
Water Consents Overhead	The administrative overhead costs associated with water consent transactions, which are passed on to customers in the water management tariff.	This could potentially be treated as an overhead cost through cost allocation rather than as a separate activity code.
Business Governance and Support.	The business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART.	This could potentially be treated as an overhead cost through cost allocation rather than as a separate activity code.

7.2.3. Valley specific cost shares

During the review some stakeholders called for a valley-based approach to cost sharing to account for the differences in cost drivers between valleys. This is because there are different climatic conditions, customer structures, infrastructure and services that must be provided to meet the needs of users and to comply with WSPs. Therefore, stakeholders argued that applying the same percentage across all valleys does not properly account for the variation in the cost drivers observed in different valleys.

Based on the information available, we concluded that while adopting a valley-by-valley approach to cost sharing may lead to the cost share framework being more cost reflective, it would also be likely to add complexity. Overall, the improvements in cost reflexivity are unlikely to be commensurate with the additional complexity, and thus reduced transparency of the framework.

One solution for dealing with the variation between valleys is to apply valley-specific cost shares for certain activities, where a clear need is able to be demonstrated. The activities where a valley-based cost share may be appropriate are explored below. The valley-specific cost shares are restricted to WaterNSW activity codes as these are more responsive to variation in infrastructure and the specific provisions in the WSPs.

Basic Landholder Rights holders

As discussed in section 6.3.1, WaterNSW is required to ensure there is sufficient water available for BLR holders to utilise their rights. Some BLR holders in the Lachlan, Macquarie, Namoi, Border and Gwydir valleys receive higher levels of service than they would have in the absence of WaterNSW's infrastructure. Providing water to these BLR holders requires additional costs associated with planning and consultation. Based on the results of a survey of WaterNSW's operational staff, approximately 5 per cent of staff time related to this activity code in these valleys is dedicated to providing this service to those properties.

To account for the cost impact created by BLR holders in the Lachlan, Macquarie, Namoi, Border and Gwydir valleys, we propose that an additional 5 per cent of water delivery and other operations costs are shared with the government in these valleys.

This would result in the following sharing ratio for the water delivery and other operations activity code:

- The user being a major impactor (90 per cent) in the Lachlan, Macquarie, Namoi, Border and Gwydir valleys, and
- The government being a minor impactor (10 per cent) in those valleys.

Navigation services

As discussed in section 6.3.1, WaterNSW is required to operate some of its infrastructure on the Murray River to provide for navigation of the river by water craft. This is unique to the Murray Valley and justifies a reduced user share for the Murray valley to reflect the government as the main impactor. Based on information received through the survey, we consider that an additional 5 per cent allocation to government appears reasonable.

If a valley specific cost share was proposed for the Murray valley, it would apply to the activity codes that are associated with maintaining the river's suitability for navigation, namely:

- Water delivery and other operations
- Asset management planning

- Routine maintenance
- Corrective maintenance
- Renewals and replacements.

Valleys with flood mitigation dams

We note that WaterNSW owns two dams – Glenbawn (in the Hunter Valley) and Burrendong (in the Macquarie Valley) – that were constructed with explicit flood mitigation objectives. While all dams have a degree of flood management in terms of their purpose, the primary driver is to provide water supply to users. This flood mitigation objective is broader than the direct communities downstream and therefore considerations for flood and dam safety in relation to these valleys should take this into consideration.

Therefore, a higher government share could be applied in the Hunter and Macquarie for flood operations to reflect the explicit flood mitigation objectives of the dams within their valleys. The reasoning for the recommendation in Scenario 1 was that the activity was driven by floods caused by dam safety and rainfall events. Given that these two specific dams have been built for purposes that go beyond the users, we consider that a greater government share could be appropriate.

Consistent with the cost share ranges proposed in scenario one, we consider that an appropriate sharing ratio is between 10 and 30 per cent to government and 90 and 70 per cent to user, except for those valleys that have dams specifically constructed for flood mitigation (Hunter and Macquarie) which should be jointly allocated 50 per cent to government and 50 per cent to user.

As discussed in Scenario One, the flood mitigation purpose of the dams is also relevant to the cost shares for the following activities codes, for which the flood mitigation purpose of the dam has a material influence on the impactor for the activity code.

Table 10 Activity codes with cost shares influenced by flood mitigation dams

Activity	Scenario One cost share		Scenario Two cost share	
	Govt	Govt	Govt	User
Flood operations	10-30%	90-70%	50%	50%
Dam safety compliance	10-30%	90-70%	50%	50%
Environmental planning and protection	10-30%	90-70%	50%	50%

7.2.4. Activities that may require additional granularity

For the most part there is sufficient granularity in the WAMC activity codes. One area that may require additional granularity is in relation to the WAMC compliance management activity (W10-01). The establishment of the NRAR and the transfer of compliance functions from WaterNSW to NRAR in 2018 underline the NSW Government's greater focus on compliance and enforcement. Therefore, it is foreseeable that there will be a boost to compliance funding, and it may be appropriate to further disaggregate the compliance management activity code into sub-components. For example, it may be appropriate to separate compliance monitoring out from investigations and enforcement activities.

Likewise, it might make sense to separate community information and education activities which seek to drive voluntary compliance out from audits. Doing this may drive greater clarity about the costs than is currently provided by this activity code.

Implementation of NSW water reforms is still underway, with the exact details of the new requirements yet to be finalised. Therefore, it is difficult to recommend new activities for the cost sharing framework while there is still a level of uncertainty about the exact compliance functions that the NRAR will perform.

For the most part, any new compliance activities as a result of NRAR requirements should be allocated 100 per cent to users. This is consistent with the existing compliance activity code.

7.3. Impact of changes to ratios on total user share of efficient costs and prices

The potential changes to the activity codes identified in Scenario Two are unlikely to have a material impact on the share of costs between users and government when compared to Scenario One. This is due to the fact that:

- some of the activity codes currently do not have any costs allocated to them
- the activity codes with potential overlap have similar, if not the same, user share ratios under Scenario One
- potential overhead costs have been recommended to be shared based on overall cost shares which is likely to be similar (although unlikely to be the exactly the same) as allocating the costs through internal cost allocation processes.

The key difference between the allocation of costs between the scenarios is the allocation of costs in those valleys that have been identified as being treated differently in Scenario Two. In each of these circumstances it results in a higher proportion of costs to be recovered from government in that valley. The users in those regions are likely to experience a greater impact to charges than under Scenario One.

8. Scenario Three: Alternative service-based cost sharing framework

This chapter outlines our assessment of Scenario Three of our review. As set out in section 2.2, this scenario is based on designing an alternative service-based cost sharing framework and assessing the merits of this alternative framework. To test this scenario, WaterNSW and WAMC activities were mapped to proposed services based on our understanding of the definitions of service and activities to create an alternative cost sharing framework.

8.1. Service-based cost allocation

8.1.1. Why are we considering a service-based cost share framework?

Compared to the current activity-based approach, a service-based cost sharing approach involves defining and applying cost share ratios to services rather than activities.⁵⁶ To do this, it is first necessary to identify and define services and identify the impactor/s of those services. Applying a serviced-based cost sharing approach has the potential to facilitate more transparent and cost-reflective sharing of costs between water users and the government.⁵⁷

A service-based approach for WaterNSW bulk rural water costs was developed and suggested by Frontier Economics in its 2016 review of cost shares as part of the 2017 WaterNSW price review. IPART subsequently committed to considering whether there is merit in moving to an alternative service-based cost share framework in its Rural Cost Share Review Issues Paper.

8.1.2. Potential WaterNSW and WAMC services

WaterNSW and WAMC provide a broad range of functions that could be understood as services. To establish an alternative service-based cost share framework it is first necessary to identify the specific services that are provided.

Table 11 summarises the main services that are provided by WaterNSW, which are based on the services proposed by Frontier Economics and presented by IPART in its cost share issues paper.^{58 59} To identify WAMC services we consulted with DOI and NRAR. Table 12 summarises the main services that are provided by WAMC which have been delineated and defined through consultation with DOI/NRAR.

In identifying the potential services provided by WaterNSW and WAMC we have also sought to identify the WaterNSW and WAMC activities that are associated with delivering each service. To do this, we have mapped the existing activities to corresponding services. A number of the existing

⁵⁶ IPART 2018. Rural Cost Share Review Issues Paper. p 19.

⁵⁷ IPART 2018. Rural Cost Share Review Issues Paper. p 19.

⁵⁸ IPART 2018. Rural Cost Share Review Issues Paper. p 22.

⁵⁹ Frontier Economics 2016. *Review of WaterNSW Cost Shares*. pp 41-42.

activities are relevant to multiple services and therefore require additional allocation between these services.

The following table outlines the proposed services and their descriptions. How activity codes could be allocated to these services is outlined in section 8.2.1.

Table 11 Proposed WaterNSW services and definitions

WaterNSW service	Description
Water storage services	These include the storage of water held by entitlement holders (including environmental water managers).
Water transportation services	These include the delivery of water to licensed water users (including consumptive entitlement holders, environmental water managers, and other parties such as stock and domestic users).
Environmental services	These include releases of environmental flows in accordance with statutory obligations and operation, maintenance of environmental gauging stations, and environmental management such as the provision of fish passages.
Metering and retail customer services	These include administration services, customer support, customer billing and compliance and maintaining and reading water meters for extractive customers and non-extractive customers.
Information services	These include providing information on surface and groundwater quantity and quality.
Non-routine services	These include costs associated with providing non-routine services, such as Fish River connections/disconnections.
Flood management and mitigation services	These include costs associated with managing the potential impacts of flooding.
Recreational services	This includes costs associated with providing recreational opportunities on waterways for water sports and recreational fishing.

Note: 1) The user share listed refers to the recommended cost share ratios determined through our assessment of Scenario One. *Hunter and Macquarie valleys have a ratio of 50:50 to reflect the flood mitigation objectives of the dams within their valleys.

Source: IPART 2018. Based on Frontier Economics 2016. *Review of WaterNSW Cost Shares*. pp.41-42 and IPART analysis.

Table 12 Proposed WAMC services and definitions

WAMC service	Description
Water management rulemaking and planning	These include costs associated with developing, assessing and recommending changes to water sharing/water resource plans and water management rules for the management of surface and groundwater resources. It also involves costs associated with facilitating the implementation (such as water availability decisions), monitoring and evaluation of

	water planning processes and other mechanisms or works required for implementation.
Modelling and monitoring	These include modelling and monitoring of surface and groundwater data and information to inform water management planning, implementation, and compliance and enforcement decisions.
Licensing and approvals (including customer service)	These include the costs associated with the administration of all water licensing information, and customer and billing management.
Compliance and enforcement	These include the costs associated with ensuring that license holders comply with the regulatory framework for water and the enforcement of compliance actions where necessary.

Note: Cost share ratios for WAMC individual activity codes are provided in Appendix A.

8.1.3. Allocating cost shares for services

To establish the alternative service-based cost share framework, it is necessary to determine what that appropriate sharing of the cost for the WaterNSW and WAMC services is between the users (impactors) of the services and the government.

To do this is necessary to understand the range of impactors who create the need to incur the cost of providing the WaterNSW and WAMC services. Frontier Economics' 2016 report is illustrative of the broad range of users, who may influence the costs of providing WaterNSW's services. This list of users formed the basis of our understanding of the users for WAMC's services.

Based on this list of users, we allocated costs to the impactors associated with each service, consistent with IPART's definition of the impactor pays principle. The impactors and proposed cost shares for WaterNSW's services are outlined in Table 13. The impactors and proposed cost shares for WAMC's services are outlined in Table 14.

Table 13 Impactors and cost shares for WaterNSW's proposed services

WaterNSW service	Description	Impactors	User share	Rationale
Water storage services	These include the storage of water held by entitlement holders (including environmental water managers).	Irrigators, environmental water holders, Local Councils, BLR holders, downstream communities, broader NSW/Australian community, recreational users	95%	Water storage services is primarily concerned with capturing and storing water for delivery to entitlement holders. However, there are other impactors who contribute to these costs including BLR, the broader community and recreational users from whom it is impractical to recover costs.
Water transportation services	These include the delivery of water to licensed water users (including consumptive entitlement holders, environmental water managers, and other parties such as stock and domestic users).	Irrigators, environmental water holders, Local Councils, BLR holders, downstream communities, broader NSW/Australian community, recreational users	95%	Water transportation services is primarily concerned with capturing and storing water for delivery to entitlement holders. However, there are other impactors who contribute to these costs including BLR, the broader community and recreational users from whom it is impractical to recover costs.
Environmental services	These include releases of environmental flows in accordance with statutory obligations and operation, maintenance of environmental gauging stations, and environmental management such as the provision of fish passages.	Irrigators, environmental water holders, Local Councils, BLR holders, downstream communities, broader NSW/Australian community, recreational users	100%	The primary impactor for environmental services is extractive users (irrigators, environmental water holders, Local Councils), without whom there would not be a requirement for environmental services to mitigate or manage environmental impacts from water usage. Other impactors such as BLR holders, downstream communities and recreational users also contribute to the requirement for environmental services, however, their usage is not likely to be additional to those created by extractive users.
Metering and retail customer services	These include administration services, customer support, customer billing and compliance and maintaining and	Irrigators, environmental water holders, Local Councils	100%	Metering and retail customer services are provided directly to entitlement holders, who create the need to incur the cost.

WaterNSW service	Description	Impactors	User share	Rationale
	reading water meters for extractive customers and non-extractive customers.			
Information services	These include providing information on surface and groundwater quantity and quality.	Irrigators, environmental water holders, broader NSW/Australian community	80%	The primary impactor is extractive users, however, there is a broader community driver for providing information to the Australian public.
Non-routine services	These include costs associated with providing non-routine services (e.g. Fish River connections/disconnections)	(e.g. irrigators, Local Councils)	(e.g. 100%)	The impactors would depend on the service that is being provided.
Flood management and mitigation services	These include costs associated with managing the potential impacts of flooding.	Downstream communities, Irrigators, Local Community, The Environment, recreational users	80%*	Consistent with our discussion of the flood operations activity code in section 5.1.2, WaterNSW provides flood management and mitigation services primarily due to downstream communities' (both the broader community as well as entitlement holders such as irrigators, EWH and LWU) needs for protection during flood events. Given that it may be possible to recover costs from downstream communities from the local water utilities that service them, we suggest a larger contribution from users. However, flood management and mitigation services also provide mitigate against damage to the environment as well as structures used by downstream communities who are not billed (BLR, recreational users). Therefore, there justification for a contribution from the government.
Recreational services	This includes costs associated with providing recreational opportunities on	Recreational users, local councils (who may pursue these services to	0%	Recreational services are provided for recreational users; however, these costs are likely to be marginal. At this point in

WaterNSW service	Description	Impactors	User share	Rationale
	waterways for water sports and recreational fishing.	provide opportunities to their local communities)		time there is insufficient information to distinguish the appropriate level of costs.

Note: * Hunter and Macquarie valleys have a ratio of 50:50 to reflect the flood mitigation objectives of the dams within their valleys.

Table 14 Impactors and cost shares for WAMC’s proposed services

WAMC service	Description	Impactors	User share	Rationale
Water management rulemaking and planning	These include costs associated with developing, assessing and recommending changes to water sharing/water resource plans and water management rules for the management of surface and groundwater resources. It also involves costs associated with facilitating the implementation (such as water availability decisions), monitoring and evaluation of water planning processes and other mechanisms or works required for implementation	Irrigators, Local Councils, environmental water holders, The Environment, BLR holders, recreational users, downstream communities, broader NSW, Australian community	90%	Water management rulemaking and planning is primarily driven by the need for water sharing between extractive users, the environment and BLR due to extractive users’ water use. However, there is a broader public good value derived from improved water security for BLR and the environment.
Modelling and monitoring	These include modelling and monitoring of surface and groundwater data and information to inform water management planning, implementation, and compliance and enforcement decisions.	Irrigators, Local Councils, environmental water holders, The Environment, BLR holders, recreational users, downstream communities, broader NSW, Australian community	70%	Modelling and monitoring of surface water and groundwater is primarily driven by the need for water sharing between extractive users, the environment and BLR holders due to extractive users’ water use. However, there are also likely to be broader community information requirements with respect to the nature and condition of water resources.
Licensing and approvals (including customer service)	These include the costs associated with the administration of all water licensing information, and customer and billing management.	Entitlement holders, including: irrigators, local councils, environmental water holders	100%	This service is provided directly to entitlement holders to facilitate administration of their property rights.

WAMC service	Description	Impactors	User share	Rationale
Compliance and enforcement	These include the costs associated with ensuring that license holders comply with the regulatory framework for water and the enforcement of compliance actions where necessary.	Entitlement holders, including: irrigators, local councils, environmental water holders	100%	Compliance and enforcement services are a requirement of a properly functioning water management system. These services are required to facilitate entitlement holders' water usage. While there may be some broader community benefits from knowing that resources are being managed according to the rules, this is not likely to be an additional cost.

8.2. Impact of changes to ratios on total user share of efficient costs

As outlined earlier, the service-based approach requires an allocation of the current activity codes to the proposed services. This is complicated by the fact that there are a number of activity codes that are required to be undertaken for the service. Further to this, cost information is not currently captured in this format and therefore is unavailable from the agencies. We have therefore developed a hypothetical example to demonstrate how the service-based approach could be applied.

8.2.1. Hypothetical example of allocating costs to service-based approach

This hypothetical example is for illustrative purposes only and is designed to demonstrate the practical application of the service-based approach given current data limitations. To undertake this exercise, we have sought to allocate costs for activity codes across the different services. For example, for Routine Maintenance we have allocated 50 per cent to Water Storage services, 45 per cent to Water Transportation services and 5 per cent to Recreational services.

In relation to the WAMC services, we have allocated costs based on the current grouping of activity codes. This is demonstrated in Table 16.

Table 15 Hypothetical allocation of activity codes to the proposed services

WaterNSW service	Mapped WaterNSW activity and user share ¹
Water storage services	<ul style="list-style-type: none"> • Water delivery and other operations (35%) • Asset management planning (50%) • Routine Maintenance (50%) • Corrective Maintenance (50%) • Renewals and replacement (50%)
Water transportation services	<ul style="list-style-type: none"> • Water delivery and other operations (30%) • Water quality monitoring (70%) • Routine Maintenance (45%) • Corrective Maintenance (45%) • Asset management planning (45%) • Renewals and replacement (45%)
Environmental services	<ul style="list-style-type: none"> • Water delivery and other operations (30%) • Environmental Planning and Protection (100%)
Metering and retail customer services	<ul style="list-style-type: none"> • Customer support (100%) • Customer billing (100%) • Metering and compliance (100%)
Information services	<ul style="list-style-type: none"> • Hydrometric monitoring (70%) • Corporate systems (100%)
Non-routine services	Dependent on particular service
Flood management and mitigation services	<ul style="list-style-type: none"> • Flood operations (100%) • Dam Safety Compliance (50%)

	<ul style="list-style-type: none"> • Dam Safety Compliance on pre-1997 capital projects – capital (100%) • Hydrometric monitoring (30%)
Recreational services	<ul style="list-style-type: none"> • Water delivery and other operations (5%) • Routine Maintenance (5%) • Corrective Maintenance (5%) • Asset management planning (5%) • Water quality monitoring (30%) • Renewals and replacement (5%)

Note: Direct insurance, Irrigation Corporation District rebates and the Risk Transfer Product activity codes have been excluded from the analysis. This is due to them not aligning with services and having no costs allocated to them.

Table 16 Hypothetical allocation of WAMC activity codes to the proposed services

WAMC service	Mapped WAMC activity ¹
Water management rulemaking and planning	<ul style="list-style-type: none"> • W06 – Water management planning • W05 – Water management implementation • W07 – Water management works
Modelling and monitoring	<ul style="list-style-type: none"> • W01 – Surface water monitoring • W02 – Groundwater monitoring • W03 – Water take monitoring • W04 – Water modelling and impact assessment
Licensing and approvals (including customer service)	<ul style="list-style-type: none"> • W08 – Water regulation management (except sub code W08-03) • W09 – Water consents transactions • W10 – Business and customer services
Compliance and enforcement	<ul style="list-style-type: none"> • W08 – Water regulation management (W08-03 Compliance management only)

Note: Cost share ratios for WAMC individual activity codes are provided in Appendix A.

8.2.2. Outcome of hypothetical allocation

We sought to compare the potential impacts of this scenario against the outcomes of Scenario One. The following table presents the outcome of that comparison. It can be seen that the overall sharing ratio for Scenario Three (based on the hypothetical example) is relatively similar to the outcomes of Scenario One.

Table 17 Percentage of recovery from the different scenarios⁶⁰

Cost share	Scenario 1 – Low User		Scenario 1 – High User		Scenario 3	
	Govt (%)	User (%)	Govt (%)	User (%)	Govt (%)	User (%)
Rural water services – opex	9	91	6	94	10	90
Rural water services – capex	23	77	23	77	30	70
WAMC – opex	20	80	15	85	15	85
WAMC – capex	11	89	8	92	24	76

⁶⁰ Fish River and Lowbidgee were excluded from Scenario 3 analysis due to their separate treatment from the activity codes. This results in a notionally lower allocation to users under Scenario 3.

9. Assessment of the cost effectiveness of scenarios

This chapter includes our overall assessment of the cost effectiveness of scenarios one, two and three based on the potential costs and benefits that could accrue through implementing the improvements to the cost share framework.

9.1. Approach to assessing cost effectiveness

A central aspect of the review is to ensure any potential overall improvements to the rural cost share framework are cost effective – that is the benefits of any changes to the cost sharing framework must exceed the costs of implementation. To determine which scenario is most likely to lead to cost effective improvements to the cost sharing framework Aither qualitatively assessed the costs and benefits of the different scenarios to understand which options are likely to be more cost-effective than others. In undertaking this assessment, we have referred to the principles adopted by the assessment framework for this review which are offer a useful frame for understanding the primary benefits that are being sought. These principles are:

- **Transparent:** Ensure transparency in regard to the basis for undertaking the activity or service, its associated cost and the share of those costs between users and the NSW Government.
- **Practical:** Ensure that the cost sharing framework can be applied practically, is repeatable and consistent, and robust over time, including considering systems in place for measuring expenditure by activity. The cost sharing framework should not duplicate other processes or place unnecessary administrative burden upon agencies.
- **Cost reflectiveness:** Improvements to the framework should reflect the application of the impactor pays approach (cost shares should be representative of the cost driver (impactor)). This approach is consistent with IPART's cost sharing approach.

We have also considered the NWI objectives for water pricing which are closely aligned with the principles for this review.

9.2. Assessment of the scenarios

Table 18 Summary of assessment of scenarios for improving the rural water cost sharing framework

Scenario	Description	Potential benefits	Potential costs
Scenario One	<p>Clarifying activities and reviewing cost shares within the existing activity-based cost sharing framework.</p> <p>This scenario is based on clarifying activities within the existing framework and reviewing whether cost shares are reflective of the impactor pays principle.</p>	<p>Benefits are likely to include:</p> <ul style="list-style-type: none"> • Practical to implement – this scenario can be implemented at very low cost and with little effort • Improved transparency of cost apportionment between users and the government • Enhanced transparency by further defining the basis and cost drivers for WaterNSW and WAMC activities, the costs, and share of costs • Consistency of cost sharing across WaterNSW and WAMC activities • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs are likely to be limited to staff labour to implement minor changes to WaterNSW and DOI's accounting systems to reflect updated cost share ratios, activity code names and descriptions.</p> <p>We understand the cost of implementing this scenario to be minor.</p>

Scenario	Description	Potential benefits	Potential costs
<p>Scenario Two</p>	<p>Changes to the existing activity-based cost sharing framework.</p> <p>This scenario is based on reviewing and identifying opportunities to improve the existing activity-based framework that are likely to result in minimal system and resourcing costs.</p>	<p>Benefits are likely to include:</p> <ul style="list-style-type: none"> • Improved transparency of cost apportionment between users and the government • Improved transparency of cost apportionment between users within and between valleys • Enhanced transparency by further defining the basis and cost drivers for WaterNSW and WAMC activities, the costs, and share of costs • Improvements in practicality due to reduced duplication and framework complexity • Consistency of cost sharing across WaterNSW and WAMC activities • Practical to implement • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs are likely to be limited to staff labour to implement minor changes to WaterNSW and DOI's accounting systems to reflect updated cost share ratios as well as rationalisation/separation of activities. There may also be some costs involved in implementing valley specific cost shares.</p> <p>In some cases, this could have a negative effect on cost effectiveness (where there are no costs allocated to certain codes) however, this rule out the change as the costs of implementing this scenario would still be minor.</p>

Scenario	Description	Potential benefits	Potential costs
<p>Scenario Three</p>	<p>Wholesale change to the existing framework through adopting a service-based approach.</p> <p>Scenario three is based on developing an alternative service-based cost sharing framework that seeks to allocate costs to services rather than activities and provide an allocation of costs between users and government based on the services provided.</p>	<p>Benefits are likely to include:</p> <ul style="list-style-type: none"> • Improved cost apportionment between users and the government • Improved cost apportionment between users within and between valleys • Enhanced transparency by further defining the basis for water planning and management services, the costs, and share of costs • Consistency of cost sharing across WaterNSW and WAMC services • Improvements in practicality due to reduced duplication and framework complexity • If coupled with tariff reform, the identification of users could also lead to more cost-reflective consumption-based pricing. 	<p>Costs for implementing this change across WaterNSW and WAMC would involve further defining services, identifying customer segments, allocating costs to those segments and internal and external resourcing to redesign accounting systems and implement the solution. This would also involve training/education to ensure cost allocation is undertaken accurately.</p> <p>WaterNSW estimated between \$4 and \$5 million to implement this scenario. Further costs would be required for DOI's system.</p>

9.3. Conclusions

This review has produced conclusions relevant to both the Tribunal and broader stakeholders.

9.3.1. Conclusions relevant to IPART's functions

Aither's overall conclusions for each scenario are:

- **Scenario One** represents quick wins that could result in increased clarity about the current cost share framework. The updated cost share ratios are likely to deliver improved cost reflectivity in accordance with the impactor pays principle with a very small cost associated with updating the water agencies' cost allocation systems.
- **Scenario Two** represents more substantial changes that could result in significant improvements in terms of transparency, practicality and cost reflectiveness. Scenario Two could be implemented at relatively low cost, although there may be some practical issues that would need to be considered, such as how to consolidate cost shares between the WAMC and WaterNSW activity codes.
- **Scenario Three** could theoretically also deliver the benefits from scenarios one and two, however, with significant costs associated with implementation. This scenario would require wholesale changes to WaterNSW's, DOI and NRAR's cost accounting systems. While the service-based approach is designed to provide greater transparency, allocating activities to services would be a significant challenge, and could ultimately result in less transparency if not undertaken correctly.

There does not appear to be a clear driver or evidence of the need for wholesale changes to the current cost sharing framework. Furthermore, wholesale changes to the cost sharing framework presented in Scenario Three are likely to be prohibitively expensive, and are unlikely to deliver improvements in transparency, practicality and cost reflectiveness that are commensurate with the implementation costs. Given this, we consider that Scenarios One and Two are more appropriate options for improving the cost sharing framework.

9.3.2. Conclusions relevant to broader stakeholders

The stakeholder concerns raised through this process generally relate to:

- a lack of transparency regarding the activities and how costs are allocated
- whether impactor-pays is the most appropriate approach to determine the user share ratios, and
- an overall concern regarding the efficiency and prudence of costs to undertake the required activities.

Improvements to the cost share framework will clarify the costs that are involved in WaterNSW and WAMC services and help to address stakeholder concerns about transparency. However, they will do little to alleviate concerns about the appropriateness of the impactor pays approach and efficiency of costs. These stakeholder concerns are outside the scope of this review and should be addressed via alternative means.

One of the potential issues that has arisen is that the allocation of costs to a broad group of 'users' has a disconnect from the tariff structures that are used to recover the costs from customers. This is an issue where there is a particular group of customers that are the key impactors for an activity code

and therefore the reason for the high user share. If the tariff structure is not targeted, it can result in the recovery of these costs from some customer groups that are not the impactors for that activity. This could be addressed through either implementing a more cost reflective tariff structure (however we note that this also introduces implementation and customer impact issues) and greater education for the customer base.

Formally documenting and publishing WaterNSW and WAMC's cost allocation processes would generally help water customers to understand how costs are within the cost share framework. This may be a relatively easy win for WaterNSW and WAMC in relation to improving transparency.

9.4. Potential next steps

In response to these conclusions, Aither suggests that IPART and stakeholders to this review may wish to consider the following next steps:

- that subsequent to further testing with stakeholders to understand how these changes could be implemented, IPART advocate for the implementation of the changes set out in Scenario One or Two of this report for the forthcoming WAMC and WaterNSW pricing determinations
- that during the forthcoming WaterNSW and WAMC pricing determinations, IPART require the relevant agencies to report on their performance in applying their cost allocation processes. This will assist in providing confidence to stakeholders regarding the costs and transparency of the activity codes.
- that IPART consider requiring WaterNSW and WAMC to provide additional descriptions and information concerning the specific activities undertaken within the rural cost share activity codes for the forthcoming pricing determinations.⁶¹ This will improve stakeholders' understanding of the different activity codes and what is undertaken by the agencies.
- that WaterNSW and WAMC formally document and publish information about their internal cost allocation processes for bulk rural water delivery, management and planning costs. This would provide additional transparency for customers regarding the costs that underpin their charges.
- that WaterNSW and WAMC consider more disaggregated tariff structures that are targeted towards particular customer groups that are the underlying impactors for activities. This suggested next step is to develop a more cost-reflective tariff structure that minimises any cross-subsidies between customer groups within the 'user' category for cost sharing purposes. An example of this is different types of High Reliability tariffs to target cost recovery from a particular customer group (e.g. local water utilities) where they are the impactor behind the user share cost allocation.

⁶¹ We note that IPART has different regulatory powers regarding WaterNSW and WAMC and therefore its approach to this suggested next step may differ between the different agencies.

Appendix A – Assessment table

Table 19 and Table 20 provide our assessment of each of the activity codes against the transparent and practical principles and our rationale for any changes to the cost sharing ratios.

Table 19 Assessment of activity codes for rural water services

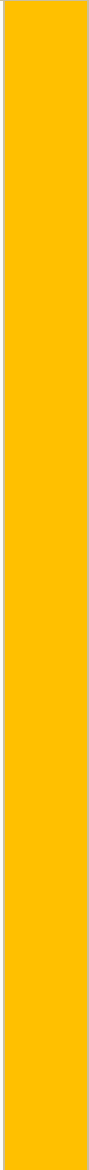

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Customer Support (opex)	Management and administration of the CAG's, customer education and support materials			0%	100%	0%	100%	Irrigators Local Water Utilities Environmental Water Holders	Customer support activities are required due to the existence of WaterNSW's customers. Without their extractive use, there would not be a need for customer support. There are no issues regarding whether it is transparent or practical.
Customer Billing (opex)	Customer enquiries, transaction and complaints services (Helpdesk), invoicing, receipting, debtor management, system administration, postage to collect regulated revenue.			0%	100%	0%	100%	Irrigators Local Water Utilities Environmental Water Holders	Customer billing activities are required so that WaterNSW can recover the cost of providing services to its customers. If there were no extractive users there would not be a need to undertake this activity. There are no issues regarding whether it is transparent or practical.

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Metering & Compliance (opex)	Customer water ordering, customer water accounting management, customer site surveillance, compliance reporting, meter reading, system management and usage apportionment, licensing issues resolution.			0%	100%	0%	100%	Irrigators Local Water Utilities Environmental Water Holders	Metering and compliance is required to fulfil customer water ordering, manage customer water accounts and ensure customers are compliant with their licences. Without extractive use, there would be no need to undertake this activity. There are no issues regarding whether it is transparent or practical.

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Water delivery and other operations (capex and opex)	Water release from dams to customers. Normal environment and system flows (includes supplementary flow management) 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.			0%	100%	5%	95%*	Irrigators Local Water Utilities Environmental Water Holders Recreational users BLR holders	<p>A survey of operational staff indicated this activity is primarily concerned with the delivery of water for extractive users. Costs are also driven by water delivered to facilitate environmental flows, recreational users and other system flows (such as delivery of water to BLR holders).</p> <p>Some BLR holders exist in the Lachlan, Macquarie, Namoi, Border and Gwydir valleys who receive higher levels of service than would be available without the presence of infrastructure. There is a rationale to share this additional cost with the government.</p> <p>The survey also suggested that recreational users generate some additional cost by requiring water to be delivered for recreational purposes. These costs should not be recovered from users.</p> <p>This grouping of activities impacts on the transparency to customers regarding the delivery of the activity code. It appears that many of the stakeholders do not understand what this activity code actually represents.</p>

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Flood Operations (capex and opex)	Flood operations/ Flood training/Onsite works required flood operations.			50%	50%	10-30%	90-70%	Irrigators Local Water Utilities The Environment Downstream communities BLR holders Recreational users	<p>This activity is driven by the protection of life and property downstream of potential floods. These downstream communities are generally serviced by local water utilities (who are defined as users).</p> <p>There are generally two drivers behind floods: dam failure or natural floods. The impactor behind flood operations emanating from dam failure (or similar) is the users that require the dam in the first instance. To the extent that floods would have naturally occurred and therefore require management from staff, this would necessitate a sharing of costs with the government.</p> <p>The proportion of the likelihood of the two drivers will determine the sharing ratio between users and government. We have estimated a range of 10-30% for government and 70-90% for users.</p> <p>We note that WaterNSW had not previously been allocating costs to this activity code, however it is currently doing so and these costs will feed into the next pricing determination.</p>

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Hydrometric Monitoring (capex and opex)	Monitors the availability and condition of surface water by measuring water level, stream flow, rainfall and key water quality indicators. We use this information to assist in managing the delivery of water.			10%	90%	10%	90%	Irrigators Local Water Utilities Broader Australian/ NSW community	<p>Hydrometric monitoring facilitates delivery of water to water users, however (as noted in previous determinations) it has also played a role in flood mitigation.</p> <p>It is therefore recommended that the existing cost sharing ratio be maintained.</p> <p>There is a lack of transparency between this activity code and surface water monitoring WAMC activity codes. It is not clear how the activity differs between the codes.</p>

<p>Water Quality Monitoring (capex and opex)</p>	<p>Storage water quality monitoring and reporting. Fish River water quality management plan.</p>			<p>50%</p>	<p>50%</p>	<p>10-30%</p>	<p>70-90%</p>	<p>Local Water Utilities Recreational users Broader Australian/NSW community Downstream communities</p>	<p>Drivers for water quality monitoring include ensuring WaterNSW meets required standards for drinking water quality, regulatory requirements (Blue Green Algae, water chemistry and temperature) and dam safety (seepage water quality).</p> <p>It is likely that drinking water monitoring would occur in the absence of extractive users (irrigators) as WaterNSW would still need to monitor contaminant levels to ensure water is safe for human consumption.</p> <p>Blue green algae is naturally present in freshwater, and to an extent outbreaks would still occur in the absence of water extraction (however, there is evidence to suggest that the duration and intensity of outbreaks has increased). Therefore, a government share may be appropriate.</p> <p>Monitoring for other regulatory reasons and dam safety can be linked to river regulation (construction of dams and reservoirs) and extraction, and thus should be shared with the user determined by the reason the infrastructure was built.</p> <p>Depending on the extent of these factors, a government contribution of between 10 and 30 per cent is likely to be appropriate.</p>
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Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
									There is a lack of transparency between this activity code and surface water quality monitoring WAMC activity codes. It is not clear how the activity differs between the codes. It may be appropriate to rationalise these activity codes.
Direct Insurances (capex and opex)	Insurance such as public liability and building and other asset insurance.			0%	100%	0%	100%	Irrigators Local Water Utilities Environmental Water Holder	This activity is driven by the need to insure WaterNSW's assets so that it can continue to provide services to users. If WaterNSW's assets did not exist, then the insurance would not be required. In providing this assessment, it is assumed that the insurance costs relate solely to the provision of rural water services. Where this is not the case, the ratio would need to be adjusted accordingly.
Corrective Maintenance (capex and opex)	Breakdown maintenance of assets which provide services to customers and other water users.			0%	100%	5%	95%	Irrigators Local Water Utilities Environmental Water Holders Broader community	Corrective maintenance would not be required if there were no assets and subsequent demand for extractive use. To the extent that assets are not directly related to users (for example, in the case of a public access road) cost should be shared with Government (based on discussions with WaterNSW this is estimated at 5%).

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Routine Maintenance (capex and opex)	Planned or condition-based maintenance of assets which provide services to customers and other water users.			0%	100%	5%	95%	Irrigators Local Water Utilities	Routine maintenance would not be required if there was no demand for extractive use. To the extent that assets are not directly related to users (for example, in the case of a public access road) cost should be shared with Government (based on discussions with WaterNSW this is estimated at 5%).
Asset Management Planning (capex and opex)	Asset planning and safety/Maintenance planning/Asset condition auditing/Operational risk and incident management. Procurement/Dam safety/compliance/Operations			0%	100%	5%	95%	Irrigators Local Water Utilities	Asset Management Planning would not be required if there was no demand for extractive use. To the extent that assets are not directly related to users (for example, in the case of a public access road) cost should be shared with Government (based on discussions with WaterNSW this is estimated at 5%).

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Dam Safety Compliance (capex and opex)	Dam surveillance/Dam safety inspections, reviews, audits and associated risk assessment			50%	50%	10-30%	90-70%	Irrigators Local Water Utilities Downstream communities	<p>Dam safety compliance costs are primarily driven by the existence of a dam. Without a dam, there would be no need to meet safety compliance requirements.</p> <p>Therefore, to the extent that the dams were constructed to service users, the cost of this activity should be allocated to users. We note that dams in Hunter and Macquarie valleys were explicitly constructed with a view to flood mitigation and therefore could be considered for a higher government share.</p> <p>Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity. The user share to be adopted is based on the extent to which IPART considers the construction of the dams to be for users.</p> <p>The key issue for transparency is the lack of clear definition of 1997 standards. This creates some uncertainty regarding the allocation of costs between this activity code and the pre-1997 activity code.</p>

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Environmental Planning and Protection (capex and opex)	Environmental management - strategic and specific planning and assessment, Fish passage, Carbon neutrality Cold water pollution.			50%	50%	10-30%	90-70%	Irrigators Local water utilities Downstream communities	<p>The primary purpose of water management infrastructure is to provide two key services – more reliable and controllable water for users, or protection from floods for downstream users and communities.</p> <p>Given this combination of services, we consider that there are multiple impactors. Based on our assessment of other activity codes, we found that users should be the major impactor for this activity code. The extent to which the costs should be allocated to users depends on the driver for the dam and flood management and mitigation.</p> <p>Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity. The user share to be adopted is based on the extent to which IPART considers the construction of the dams to be for users.</p>

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Corporate Systems (capex and opex)	Responsible for the delivery of information services, major projects and improvement initiatives. Some systems provide services to customers and stakeholders.			0%	100%	20%	80%	Irrigators Local water utilities Environmental Water Holders Broader community	<p>This activity code does not necessarily relate to an activity, but rather a type of cost. It is required to undertake each of the other activities that are required by users and government.</p> <p>As a way of allocating these support costs, we have sought to allocate the costs based on the weighted average between user and government for the remaining activity codes. This essentially applies the impactor pays approach across each of the other activities to the Corporate Systems activity code.</p> <p>Given this, it may be more appropriate to remove this as an activity code and treat the costs as they would be within WaterNSW's cost allocation process (this is considered in Scenario Two).</p>
Irrigation Corporation District (ICD) rebates (capex and opex)	This is a rebate paid to ICDs based on avoided cost incurred in relation to activity 'customer billing and 'metering and compliance'			0%	100%	0%	100%	Irrigation corporations	<p>This activity code is based on avoided costs in relation to customer-related activities that are undertaken by irrigation corporations. Therefore, the rebates associated with this activity code should continue to be solely allocated to users.</p>

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Renewals and Replacement (capex and opex)	Expected wear and tear and usage of water infrastructure			10%	90%	5%	95%	Irrigators Local water utilities Environmental Water Holders Recreation users	Renewals and replacement activities would not be required if there was no demand for extractive use. To the extent that assets are not directly related to users (for example, in the case of a public access road) cost should be shared with Government. Based on discussions with WaterNSW this is estimated at 5%.
Risk Transfer Product (opex)	Cost of insurance product to manage revenue volatility arising from tariff structure			0%	100%	0%	100%	Irrigators Local water utilities	This activity code is based on obtaining an insurance product to account for the revenue risk associated with a high variable usage tariff structure. If there was no extractive use (or high variable usage tariff structure), there would not be a need for this activity to be undertaken. Given this, it is appropriate to have it solely allocated to users within those valleys with a high variable usage tariff structure.

Activity Code	Description	Transp.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Govt	User	Govt	User		
Dam Safety Compliance (pre-1997) (capex)	Dam surveillance, Dam safety inspections, reviews, audits and associated risk assessment based on 1997 standards of service			100%	0%	100%	0%		<p>We consider that for regulatory certainty, the existing cost sharing ratio should be maintained.</p> <p>The key issue regarding transparency and practicality for the activity code is the lack of clear definition regarding the 1997 standards of service. This lack of transparency makes it difficult to accurately determine what expenditure relates to this activity code versus the other dam safety compliance activity code (post 1997).</p>

Table 20 Assessment of activity codes for WAMC services

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W01 Surface water monitoring									
W01-01 Surface water quantity monitoring	The provision of a surface water quantity monitoring system; including design, station calibration, data collection, processing, encoding, quality assurance and archiving from the networks of water monitoring stations; the delivery of near real time height and/or flow data from all telemetered stations to the corporate database; and the maintenance and operation of surface water monitoring stations.			30%	70%	0%	100%	Irrigators Local councils Environmental Water Holders	Water quantity monitoring is primarily required due to extraction. If there were no extraction, there would not be a requirement for monitoring. There is a potential lack of transparency between this activity code and hydrometric monitoring for WaterNSW activity code. It is not clear how the activity differs between the codes. It may be appropriate to rationalise these activity codes.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W01-02 Surface water data management and reporting	The data management and reporting of surface water quantity, quality and biological information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.			50%	50%	50%	50%	Irrigators Local councils Broader Australian/NSW community	Surface water data management and reporting is a direct result of users (there would be no need to report on water quantity data if there wasn't a need to share water as a result of extraction), however, there are also public expectations to disseminate this information. The extent to which this reporting requirement is additional to the level required for management of the water source is a key consideration.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W01-03 Surface water quality monitoring	The provision of a surface water quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting.			50%	50%	30-50%	50-70%	Local water utilities Recreational users Downstream communities BLR holders	<p>Surface water quality monitoring is primarily driven by the need to meet certain quality standards for downstream users (e.g. local water utilities). Broader drivers for the activity include recreational and other communities, therefore we consider that some sharing of costs with government is appropriate. This is consistent with the consideration of water quality under WaterNSW activity codes.</p> <p>There is a potential lack of transparency between this activity code and hydrometric monitoring for WaterNSW activity code. It is not clear how the activity differs between the codes. It may be appropriate to rationalise these activity codes.</p>

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W01-04 Surface water algal monitoring	The provision of a surface water algal monitoring program; including design, sample collection, laboratory analysis, algal identification and enumeration to accepted standards, and result encoding for provision to regional coordinating committees.			50%	50%	50-70%	50-30%	Broader Australian/NSW community Recreational users Downstream communities The Environment	Blue-green algae occurs naturally in freshwater sources. Blue-green algae blooms can present undue health risks to recreational users and communities. Blooms are caused by a combination of factors, some of which are caused by extractive users. Given uncertainty about the extent that different factors influence blue green algae blooms and the public good aspect of monitoring for potentially toxic blue green algae outbreaks, which may occur in the absence of extraction, we recommend a range of between 50 and 70 per cent allocation to be allocated to the government.
W01-05 Surface water ecological condition monitoring	The provision of a surface water ecological condition monitoring system to assess the health of water sources; including design and application based on the River Condition Index for rivers, flood plains and wetlands.			50%	50%	50%	50%	Irrigators Local water utilities The Environment Broader Australian/NSW community Recreation users	We consider that while there is likely to be ecological condition monitoring as a result of users extracting water from the system, it is reasonable to assume that some of this type of monitoring would occur in the absence of users. Given this, we recommend maintaining the existing sharing ratio of 50:50.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W02 Groundwater modelling									
W02-01 Groundwater quantity monitoring	The provision of a groundwater level, pressure and flow monitoring system; including design, site calibration, data collection, entry, audit, quality assurance, archiving, and information provision; and the maintenance and operation of groundwater monitoring bores.			0%	100%	0%	100%	Irrigators Local water utilities	This activity is incurred to service groundwater users. If the demand from water users did not exist, there would not be a need to incur this cost. Therefore, the current allocation of 100 per cent user is appropriate.
W02-02 Groundwater quality monitoring	The provision of a groundwater quality monitoring program; including design, sample collection, laboratory testing and analysis, test result quality assurance to accepted standards, and test result encoding to make it available for data management and reporting			0%	100%	0%	100%	Irrigators Local water utilities	This activity is incurred to service groundwater users. If the demand from water users did not exist, there would not be a need to incur this cost. Therefore, the current allocation of 100 per cent user is appropriate.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W02-03 Groundwater data management and reporting	The data management and reporting of groundwater quantity and quality information; including compilation, secure storage, management and publishing of data to customers, stakeholders and the general public.			0%	100%	50%	50%	Irrigators Local water utilities Broader Australian/NSW community	Consistent with W01-02, reporting is a direct result of users, as there would be no need to report on water quantity data if there was no extraction. However, there are also public expectations to report this information. The extent to which this reporting requirement is additional to the level required for management of the water source is a key consideration. Due to the additionality in the reporting of the data to stakeholders and the general public, costs should be shared between government and user.
W03 Water take monitoring									
W03-01 Water take data collection	The electronic and manual collection, transmission and initial recording of water take data from licence holders for unregulated and groundwater sources; and the operation and maintenance of government owned meter and telemetry facilities.			0%	100%	0%	100%	Irrigators Local water utilities Environmental Water Holders	This activity is driven by the need to measure water take for water sharing/ compliance/ metering. This is primarily an activity directly related to facilitating extraction by water users. It also feeds into water planning and management activities. If extraction did not exist there would not be need to measure water take.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W03-02 Water take data management and reporting	The data management and reporting of water take for unregulated and groundwater sources including compilation, secure storage, management and publishing of data to authorised parties.			0%	100%	0%	100%	Irrigators Local water utilities Environmental Water Holders Broader Australian/NSW community	Water take data management and reporting (W03-02) relates to obtaining water take data from government and private meters, and storing and processing data for populating water allocation accounts, billing, water resource accounting and other uses. Based on this description, the sole impactor is users. Therefore, the current allocation of 100 per cent users is appropriate.
W04 Water modelling and impact statement									

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W04-01 Surface water modelling	The development, upgrade and application of surface water resource management models for use in water planning and to assess performance in terms of statutory requirements, interstate agreements, regional water supply optimisation and third-party impacts on NSW stakeholders.			50%	50%	10-30%	70-90%	Irrigators Local water utilities Environmental Water Holders Broader Australian/NSW community	<p>The primary driver appears to be as an input to water planning to facilitate sustainable long-term sharing of water between extractive users and the environment. On this basis, we consider that users are the major impactor, as they drive the need for water sharing through extractive demand.</p> <p>Water modelling and impact assessment information is also used for broader NSW government processes and compliance with inter-state water sharing agreements, which are potentially a less significant secondary driver of this cost.</p> <p>Given the uncertainty as to the extent that the modelling is undertaken as a result of the extractive users or broader processes and agreements, we consider that a range is appropriate. We therefore recommend a range of 70-90 per cent allocation to users.</p>
W04-02 Groundwater modelling	The development, upgrade and use of groundwater resource management models for water sharing and management applications, and for resource impact and balance assessments.			0%	100%	0%	100%	Irrigators Local water utilities	The activity arises directly as a result of groundwater users' extraction; therefore, the sole impactors are groundwater users.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W04-03 Water resource accounting	The development and update of water resource accounts and information on NSW water sources, for use by external stakeholders, and for internal water planning, management and evaluation processes.			0%	100%	0%	100%	Irrigators Local water utilities	These resource accounting costs are a direct result of the users of the network. Without extraction it is unlikely that water resource accounting would occur. Therefore, this activity should be solely allocated to users.
W05 Water management implementation									
W05-01 Systems operation and water availability management	The preparation and implementation of the procedures and systems required to deliver the provisions of water management plans; and operational oversight to ensure plan compliance, the available water determinations and the assessment of compliance with long term extraction limits.			0%	100%	0%	100%	Irrigators Local water utilities	Water management plans are developed to protect the water resource from over-extraction from users. If there were no users, it is unlikely this activity would occur; therefore, the cost share should remain allocated solely to users.
W05-02 Blue-green algae management	The provision of an algal risk management system; including oversight, coordination and training, the issue of algal alerts and the development of algal risk management plans.			50%	50%	50-70%	50-30%	Broader Australian/NSW community Recreational users Downstream communities The Environment	We have applied a sharing ratio that is consistent with the impactors for blue-green algae monitoring (W01-04). As discussed alongside that activity code, this is due to uncertainty about the extent that different factors influence blue green algae blooms and the public good aspect of managing blue green algae outbreaks, which may still occur in the absence of extraction.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W05-03 Environmental water management	The development and collaborative governance of environmental flow strategies and assessments; and the use of environmental water to achieve environmental outcomes.			100%	0%	10-30%	90-70%	Irrigators Local water utilities	As with the Environmental Planning and Protection code, identifying the major impactor behind this activity is related to the original purpose of the dam. Without the dam being built (in most cases to fulfil extractive use or flood management or mitigation purposes), environmental flows or through environmental water licences would not be required. Therefore, the extent to which the costs should be allocated to users depends on the purpose of the dam for and flood management and mitigation. Given this uncertainty and subjectivity, we propose a range of potential sharing ratios for this activity. The user share to be adopted is based on the extent to which IPART considers the construction of the dams to be for users. This is opposite to the current cost sharing ratio where 100 per cent of the costs are allocated to government.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W05-04 Water plan performance assessment and evaluation	The assessment, audit and evaluation of the water management plans' appropriateness, efficiency and effectiveness in achieving economic, social and environmental objectives.			50%	50%	50%	50%	Irrigators Local water utilities Broader Australian/NSW community	The major impactor behind the water management plans is the users, however the additionality of the performance assessment and evaluation is driven by government in wanting to ensure that the activities are driving appropriate objectives. Given this additionality, we have maintained the joint sharing of the costs between government and users.
W06 Water management planning									
W06-01 Water plan development (coastal)	The development, review, amendment, and extension or replacement of water management plans, and the consultation activities associated with developing these plans for the coastal water sources.			30%	70%	30%	70%	Irrigators Local water utilities Broader Australian/NSW community	The development of water plans is primarily driven by users (all types of users) and therefore should be predominantly recovered from users. In our view there is some broader considerations in terms of policy objectives that likely drive some of the costs and therefore some costs should be shared with government. Given this, the current sharing is considered appropriate.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W06-02 Water plan development (inland)	The development, review, amendment, and extension or replacement of water management plans; the development of additional planning instruments to comply with the Commonwealth Water Act; and the consultation activities associated with developing these plans for the inland water sources.			30%	70%	30%	70%	Irrigators Local water utilities Broader Australian/NSW community	The development of water plans is primarily driven by users (all types of users) and therefore should be predominantly recovered from users. In our view there is some broader considerations in terms of policy objectives that likely drive some of the costs and therefore some costs should be shared with government. Given this, the current sharing is considered appropriate.
W06-03 Floodplain management plan development	The development, review, amendment, and extension or replacement of Floodplain Management Plans, in collaboration with the Office of Environment and Heritage.			100%	0%	100%	0%	The Environment Downstream communities Broader Australian/NSW community	Floodplain management seek to ensure the orderly passage of floodwater and balance the need to protect communities and ecological and cultural assets. The primary driver of these activities appears to be to protect the environment, communities and third parties from the impacts of development on floodplains (which could occur from a range of parties that may not necessarily be users), rather than being in response to the specific consumption of the water resource. Therefore, we consider the sole impactor to be the broader community and propose to maintain the full allocation of costs to the government.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W06-04 Drainage management plan development	The development, review, amendment, and extension or replacement of Drainage Management Plans, to address water quality problems associated with drainage systems.			100%	0%	100%	0%	The Environment Downstream communities Broader Australian/NSW community	As above, the primary driver of these activities appears to manage water quality issues associated with drainage systems, rather than being in response to the specific consumption of the water resource. Given the broad nature of the activities, we propose to maintain the full allocation of costs to the government.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W06-05 Regional planning and management strategies	The review of planning instruments, and the development evaluation, review and stakeholder engagement of planning and management strategies for water sharing and water plans (where the water market alone will not provide for economic or urban growth).			30%	70%	30%	70%	Irrigation Local water utilities The Environment Downstream communities Broader Australian/NSW community	<p>This activity is driven by the recognition of the inter-connectedness and interdependent nature of different water sources and the need to develop strategies for making water available to support continued urban and economic growth.</p> <p>This activity appears to be driven by the need to meet current and future user water needs, however, it also involves a component of high-level strategic planning that goes above and beyond the requirements of direct users. Given the broader regional economic development driver of this activity, which is additional to the cost created by users there should be some allocation of costs to government. We consider that the maintaining the existing sharing ratio is appropriate.</p>

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W06-06 Development of water planning and regulatory framework	The development of the operational and regulatory requirements and rules for water access.			25%	75%	10-30%	70-90%	Irrigation Local water utilities The Environment Downstream communities Broader Australian/NSW community	<p>This activity appears to be primarily driven by the need to have regulations and rules in place to govern water access, and therefore the primary impactor can be understood as users. However, a component of this activity code appears to occur in response to broader requirements such as community concerns, legislation and the Basin Plan.</p> <p>As with other activity codes, there is uncertainty as to the extent to which this activity code is driven by the users or the broader requirements, given this we consider a range to be appropriate. We recommend a range of 70-90 per cent to be allocated to users.</p>
W06-07 Cross-border and national commitments	The development of interstate water sharing arrangements and the implementation of operational programs to meet national and interstate commitments.			50%	50%	50%	50%	Irrigation Local water utilities Broader Australian/NSW community	<p>Similar to the data management and reporting activity codes, the initial requirement for water sharing is driven by users, however the cross-border and national commitments are additional requirements not necessarily driven by users. Therefore, a continued sharing of the activity between government and user is appropriate.</p>
W07 Water management works									

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W07-01 Water management works	The undertaking of water management works to reduce the impacts arising from water use or remediate water courses.			50%	50%	30-10%	70-90%	Irrigation Local water utilities Broader Australian/NSW community	Given the primary driver of this cost is to rectify or remediate damage caused by extractive use, we consider that the major impactor for this activity is the user. However, the imperative to protect life and property from the effects of flooding by maintaining a healthy river system suggests that some costs should also be shared with government. Given uncertainty around the extent to which the flood protection aspect of this cost, we propose a range for the user share of between 70 and 90 per cent. In relation to the transparency of the activity code, based on the existing descriptions, there is the potential for overlap with the Environmental Protection and Planning activity code.
W08 Water regulation management									

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W08-01 Regulation systems management	The management, operation, development and maintenance of the register for access licences, approvals, trading and environmental water.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	This activity code is driven by the need for a water register to enable users to be able to hold licences, have approvals and undertake transactions. Therefore, the sole impactor is water users, as if there wasn't extraction there would be no need to administer the water register for this purpose. Given this, we consider it appropriate to maintain the 100% user share.
W08-02 Consents management and licence conversion	The transcribing of water sharing provisions into licence conditions and the conversion of licences to the Water Management Act.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	This activity code is driven by the users through the subsequent sharing and licence conditions that arise through the use of water in the system. If there was no water extraction, it is unlikely that this cost would arise. Given this, we consider it appropriate to continue with it being solely user share.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W08-03 Compliance management	The on-ground and remote monitoring activities (including investigations and taking statutory actions) to ensure compliance with legislation, including licence and approval conditions.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	<p>The driver behind this activity is to ensure water users water take and use is compliant with regulations. Without water take there would not be a need to incur this cost.</p> <p>There are potential issues regarding transparent and practicality given the likely increased focus on compliance through the industry reforms. Given these reforms, this activity code may require further disaggregation to enable stakeholders to understand the activities that they are funding.</p>
W08-99 Water consents overhead	The administrative overhead costs associated with water consent transactions, which are passed on to customers in the water management tariff.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	<p>Water consents transactions relates to the cost associated with administering customers' licencing information and processing approvals. The cost is incurred as a direct result of customers' demand for licencing and approvals services. Therefore, users are the sole impactor for water consent transactions.</p> <p>Water consents overheads does not relate to an activity, but rather a type of cost for that activity. This could potentially be treated through cost allocation rather than as a separate activity code.</p>

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W09 Water consents transactions									
W09-01 Water consents transactions	Transactions undertaken on a fee for service basis; including dealings, assessments, change of conditions and new applications for water licence and graphs.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	Water consents transactions relates to the cost associated with administering customers' licencing information and processing approvals. The cost is incurred as a direct result of customers' demand for licencing and approvals services. Therefore, users are the sole impactor for water consent transactions.
W10 Business and customer services									
W10-01 Customer management	All customer liaison activities; including responding to calls to licencing and compliance information lines; and producing communication and education materials such as website content and participation in customer forums.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	Water users are the sole impactor for customer management activities. In the absence of water users there would not be any need for customer management activities.

Activity Code	Description	Trans.	Prac.	Current Cost Share Ratios		Recommended Cost Share Ratios		Impactor	Rationale
				Gov't	User	Gov't	User		
W10-02 Business governance and support	The business systems and processes that support organisation-wide activities; including asset management, annual reporting and pricing submissions to IPART.			30%	70%	20%	80%	Irrigators Local water utilities Environmental Water Holders Broader community	This activity code does not necessarily relate to an activity, but rather a type of cost. Given this, it may be more appropriate to remove this as an activity code and treat the costs as they would be within the internal cost allocation process. As a way of allocating these support costs, we have sought to allocate the costs based on the weighted average between user and government for the remaining activity codes.
W10-03 Billing management	The management of billing requirements and subcontracted billing, revenue collection and debtor management service delivery, and responding to queries on billing activities.			0%	100%	0%	100%	Irrigation Local water utilities Environmental Water Holders	Water users are the sole impactor for billing management as the activity is undertaken as a direct result of water take.

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