MDBA expenditure review

A review of MDBA expenditure and cost sharing in New South Wales

A Final Report prepared for the Independent Pricing and Regulatory Tribunal

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Executive summary

In 2016, Aither delivered a review of past and proposed future expenditure for WaterNSW's rural bulk water services for the New South Wales Independent Pricing and Regulatory Tribunal (IPART). In connection to that review, IPART requested that the review team undertake a separate review of Murray-Darling Basin Authority (MDBA) expenditure and cost sharing and recovery in NSW (this report). The MDBA expenditures are not currently part of the regulatory framework in NSW and therefore not included in WaterNSW expenditure review processes. The main objectives and scope of this review were to:

1. document and explain the management and cost sharing arrangements for shared Murray-Darling Basin assets and programs in NSW

2. examine the planned expenditure for the shared assets or programs

3. assess whether cost-sharing arrangements are being followed correctly in NSW.

This report documents those arrangements and provides a high level review of the costs and cost-sharing in NSW.

Key findings and recommendations

Expenditure

The MDBA's planned capital expenditure is returning to historical levels following a period of reduced expenditure driven by reduced NSW government contributions. The planned expenditure (average $74 million, $2016-17) is below the long term average ($82.1 million, $2016-17). Variations in expenditure and key expenditure items have generally been explained by the MDBA.

The review has identified some issues with historical underspend, documentation in support of planned expenditures, and processes for developing, refining and approving capital expenditures. We note the findings and recommendations of recent reviews (in 2014 and 2016) that are in the process of being implemented. Those reviews found the programs to be prudent and efficient, however implementation of their recommendations (which is currently being progressed) is likely to have a bearing on prudence and efficiency. An additional broader issue includes the levels of service and service outcomes that are being sought, and whether these reflect customer needs. It was not clear to the reviewers how this is explicitly incorporated in the context of justifying planned expenditure. As is the lack of clear incentives for SCAs to seek out efficiencies.

However, overall, the MDBA was generally able to explain its processes for promoting efficiency and prudence and no glaring issues were identified. We have been advised that WaterNSW does not apply the same capital planning processes to MDBA shared assets as they do to non-RMO assets.[1] Therefore we do not have grounds for recommending any reduction to the pass through of expenditure consistent with the main WaterNSW expenditure review report (e.g. due to issues identified with Assetbank and asset renewals forecasting).

[1] For example, we understand the Assetbank approach to renewals forecasting is not applied for shared MDBA assets, however, consistent approaches are applied across the different assets in other areas, such as procurement and delivery of on-ground activities.

Based on the high level scope of this assignment and evidence reviewed, the review team does not have sufficient evidence to recommend specific reductions in the proposed expenditure for pass through to customers. We note that the previous reviews suggested the levels of expenditure are prudent and efficient. While this is the case, given the limited scope of this review, we cannot confirm this and our review should not be considered a definitive assessment that the MDBA's costs are or are not efficient. We have made a range of suggestions on ways to improve processes and the regulatory framework that should contribute to ensuring prudent and efficient expenditures, and support (and have reinforced) many of the recommendations made by prior reviews, which should be implemented.

Overall, the review team recommend that IPART argue the case to the NSW Government that the MDBA expenditures should be subject to regular periodic (not ad-hoc) independent and publicly reported review, in a similar manner to the rest of the rural water expenditures (including with consistently applied criteria and requirements for each review). This would provide much needed transparency and build confidence for customers. Whilst recognising the inter-jurisdictional complexities, given the nature of RMO assets and expenditure there appear to be few reasons why this should not be treated like any other regulated business or utility. In addition, the review team recommend IPART suggest to the NSW Government that it consider the need for and role of incentives for SCAs to out-perform historical levels of expenditure (particularly opex), in the context of any changes to the overall regulatory framework.

Cost sharing

Aither's assessment of DPI Water's implementation of cost sharing in NSW found that DPI Water processes are largely sound. However, a potential concern is that the DPI Water Model does not appear to calculate cost shares between states in precisely the same manner as the MDBA (for Category 1 and 2 assets). Whether this is material is unclear given the DPI Water Model yields a total state share very close to totals advised in writing by the MDBA, however this matter needs further investigation.

Aside from this issue, further findings include that: expenditures have been correctly sourced from the MDBA corporate budget however expenditures are aggregated differently between the DPI model and MDBA corporate plan; expenditures appear to be correctly assigned to WaterNSW and DPI Water although there is no clear reference source; IPART user share categories have been applied consistent with the 2010 determination.

Regarding cost-sharing, the review team recommend that IPART encourage the NSW Government to provide a greater degree of transparency around the cost sharing arrangements and processes within NSW. Action in support of this could include:

- Improve transparency of individual line items to provide greater confidence in allocation of expenditure to NSW cost sharing categories.
- Aggregate the DPI Water Model in the same manner as the MDBA corporate plan detailed budget in order to improve transparency and traceability of expenditure between the two sources.
- Develop an official statement of responsibilities – i.e.: explicitly articulate the specific functions that WaterNSW and DPI Water are responsible for contributing to in a document separate to the DPI Water Model.
- Develop guidelines for application of IPART's user share criteria – confirming the basis for expenditures in the DPI Water spreadsheet (or rather expenditures in general) to be assigned to each category.
- Document the agreed approach for determining the valley user share split, including considering if the precedent set by the 2010 determination remains appropriate into the future.

Overall

The maximum amounts that WaterNSW is seeking to recoup by pass through charges for the forthcoming determination period are presented in Table ES1 below. As stated above, based on the high level assessments undertaken, the review did not find sufficient grounds for recommending any specific changes to WaterNSW's proposed pass through charges in the forthcoming determination period.

Table ES1 WaterNSW proposed pass through charges for Murray and Murrumbidgee valley customers, $,000($2016-17)

	User share	Government share
2017-18	18,163	2,680
2018-19	13,914	4,442
2019-20	13,366	4,476
2020-21	13,366	4,476

Source: WaterNSW Rural Regulatory Pricing Proposal 2017-2021 & Hanlon, Gavin, OUT16/17793 *MDBA Joint Venture and DBBRC Costs - IPART Submission*. Letter to Mr David Harris. 17 May 2016.

IPART may consider applying a top-down or global efficiency target to WaterNSW directly for their MDBA expenditures (particularly for opex and assessed against historical) on the premise that all businesses in competitive markets need to continually improve their efficiency and this principle should apply to the MDBA expenditures.[2] IPART may also consider what approaches could be pursued to ensure the expenditures are subject to regulatory scrutiny, similar to how the rest of State Constructing Authority (SCA) expenditures are for non-shared assets. To this end we note that there are a number of factors to be considered. While the MDBA has additional processes on top of the SCA processes that help ensure efficiency, this is offset by the limited transparency around expenditure on MDB assets, and the reduced incentives and checks to only propose efficient and prudent expenditure. Further, the review team note there does not appear to be any genuine incentives for SCA's to seek out efficiencies in either the short or long term.

Review background, context and approach

IPART is conducting a review of the maximum prices that WaterNSW can charge for providing rural bulk water services to its customers from 1 July 2017. In 2016, the review team completed a review of WaterNSW expenditure associated with the 2017 determination. IPART requested that the review team undertake a separate review of shared assets and programs to help clarify the processes and arrangements associated and attempt to confirm the prudence and efficiency of expenditure.

This review was based on a number of information sources and methods, including: a review of publicly available MDBA information; meetings and discussions with MDBA staff; review of documentation provided by the MDBA, including budgets, corporate plans, and documentation about the processes associated with capital expenditure proposals and approvals, and; review of

[2] The review team acknowledge a 1% efficiency dividend was previously recommended (and the MDBA has advised it has been applied since 2015) for operations and maintenance expenditure only. This may or may not continue to be the appropriate level or coverage, and may need to be considered in the context of pursuing any chances to broader regulatory frameworks.

information provided by IPART, including the spreadsheet model that the NSW Government (DPI Water) uses to allocate the NSW share of MDBA costs within NSW.

Analysis was undertaken to assess the prudence and efficiency of the underlying MDBA costs, and the extent to which the cost-sharing arrangements in NSW are being followed correctly.

Results – overview of shared programs and processes; expenditure and cost sharing

Shared asset and program arrangements

Shared assets

The MDBA is responsible for management of the River Murray system, which encompasses the waterways, storages and physical assets of the River Murray in the southern MDB. Activities required to manage and operate the assets in the River Murray System are referred to as the River Murray Operations. RMO activities ensure the delivery of state water shares to New South Wales, Victoria and South Australia consistent with the MDB Agreement. The main RMO activities undertaken by the MDBA include overseeing the construction and maintenance of RMO infrastructure assets and overseeing operation of River Murray assets.

Shared activities

The MDBA is also responsible for a range of non-RMO related activities across the MDB. These programs are mostly related to measuring and mitigating the effects of water use on the environment, and include programs such as environmental watering programs, salinity management, environmental monitoring and evaluation, and pest fish management.

State Constucting Authorities

While the MDBA coordinates and directs operation, maintenance and renewal of shared assets and programs, the assets themselves remain under the ownership of the Commonwealth and State Governments under joint venture arrangements. State governments are responsible for the construction and maintenance of shared assets and implementation of programs. Direct delivery of these activities is undertaken by State Constructing Authorities (SCAs), who are appointed by the participating governments.

In NSW, WaterNSW is the SCA responsible for undertaking maintenance and operational functions for RMO assets and activities that provide shared water delivery functions for MDB states. NSW DPI Water undertakes significant works relating to salt interception schemes, river improvement, hydrometric and water quality monitoring, and land management.

Expenditure and cost sharing arrangements

SCAs develop expenditure proposals for the assets in their direct control, based on their knowledge of asset condition obtained via running the asset. Through an annual budgeting process coordinated by the MDBA, these proposals are assessed, prioritised, and refined, in collaboration with the SCAs. The MDBA coordinates Joint Venture committee processes that include SCA and state government representatives to further refine proposed expenditure, which may also be subject to business cases and other measures of assessment for large expenditure. Expenditure is included in the annual joint programs budget, and approved via the MDBA Corporate Plan by the MDB Ministerial Council.

This expenditure builds up the annual shared assets and activities budget, which goes into the MDBA annual corporate plan. This covers a four year horizon, but is updated annually (only the first year contains an approved budget, the outyears are forecasts for planning purposes). The MDBA corporate plan is ultimately approved by the MDB Ministerial Council, which is comprised of ministers from each of the Basin states and the Commonwealth.

The MDBA annual corporate plan advises the states (DPI Water in the NSW case) of their share of total MDBA costs, which are calculated based on detailed cost sharing rules established under the MDB Agreement. The NSW Government (DPI Water in this case) then undertakes a process to share the total NSW share of MDBA costs amongst the NSW Government and users in NSW, based on guidance and principles for cost recovery set by IPART, and direction from NSW Treasury. WaterNSW proposes pass through of costs to customers based on direction from DPI Water, and also delivers the works that are approved in the MDBA budget for NSW.

Results – assessment of planned MDBA expenditure

Planned and past expenditure

For the years 2016-17 to 2019-20, MDBA is proposing total (opex and capex) planned MDBA average annual expenditure of $96,420,000. There is a modest increase in the total from 2016-17 to 2017-18, which appears to be driven by River Management expenditure. Expenditure then trends downward to 2019-20. Expenditure trends are influenced by asset projects (renewal expenditure). Under the MDBA joint venture funding arrangements capital investments are funded in the year they occur. This leads to a 'lumpy' expenditure profile and corresponding jurisdiction contributions.

Expenditure trends

Total annual expenditure for River Murray Operations (including all opex and capex) represents the majority of the MDBA expenditures. This has been increasing since 2014-15 which has been driven mostly by an increase in capex (while opex levels are generally quite steady, within the RMO program opex is consistently larger than capex). Capital expenditure has risen from $5.8 million in 2014-15 to a projected average of $20.0 million from 2017-18 to 2019-20. The MDBA advised the review team that this is largely due to the NSW Government previously having cut their contributions, which have now been restored. This did not lead to observed impacts on service levels, but the MDBA have suggested it did increase risks to service levels, given the long lived nature of the assets.

Forecasts

Forecasts for the 'out years' provided in the 2015-16 budget appear consistent with the 2016-17 budget; the review team observe that the budget does not appear to be inflated in years 2017-18 to 2018-19. The only material change between the two forecasts appears to be for Murray Mouth Sand Pumping, which increased to $7 million in 2017-18; in the last budget it was forecast to be $6 million.

Changes in expenditure

The MDBA has explained that expenditure is reverting to a more sustainable level of expenditure. The review team agree that expenditure is returning to trend, to close to a longer term average, albeit one that is somewhat lumpy. However the return to trend does not confirm the prudence or efficiency of the level. The change in total expenditure from 2016-17 is mostly due to increases in capital expenditure, with operational expenditure only increasing by a small amount.

Analysis of expenditure categories

Analysis of some specific expenditure items partly explain increases in the future planned expenditure. For example, the Murray Mouth dredging expenditures in the future are much greater than in the period 2011-12 for 2014-15, but have been further explained by the MDBA. The Salt Interception Schemes has less of an impact on overall expenditures in the future period than the river structures. The historic amounts for river structures are driven by reduced contributions from NSW rather than reduced need, although the review team were not able to verify asset needs. The trend for the future period for river structures is only half the historic peak observed for this category in 2011-12, which was driven by major capital works projects that occurred in that year.

Budgeted versus actual expenditure

Actual expenditures for the three years 2013-14 to 2015-16 are consistently less than budgeted, with actuals continuing to decline (rather than increase, which may occur in the presence of subsequent spending resulting from carryover). This suggests to the reviewers that approved budgets could be in excess of expenditure needs. However, the MDBA has assured the review team that carryover is not increasing and is required in order to complete agreed works. Given the limited scope of our review, we have simply accepted the MDBA's explanation for this at face value. We have checked whether the MDBA systematically overestimates requirements in outyears (and subsequently reduces these in the annual budget process). We found no clear or systematic evidence that this occurs.

Assessment of processes leading to planned expenditures

Overall, the review team found that the governance arrangements are complex as a result of the inter-jurisdictional institutional and MDBA organisational arrangements. Most of the processes are reasonable and there is some evidence of the MDBA working to ensure that only prudent and efficient expenditure is included in the budget. However there are substantial areas for improvement in the process required to provide greater confidence and assurance to end customers that costs are prudent and efficient and aligned with service levels that customers are willing to pay for.

To this end, in relation to expenditure proposals and build up we suggest that there may be benefit in there being:

- clearer requirements about when a business case is required – such as clearly established dollar value (or similar metrics) to trigger a requirement for a business case
- minimum requirements or standards for expenditure justification under the program, such as general requirements to clearly investigate the do nothing case and alternative options, or to cost proposals to a certain confidence level, to complete business cases with minimum requirements, or similar
- clearer roles and responsibilities for development and completion of business cases, including which agencies lead their development, and how these should be resourced (e.g. via SCA operational expenditure within the program, MDBA operating expenditure, or otherwise)
- a greater level of rigour around justifying proposals for operating expenditure, noting that the MDBA advised that significant changes in operating expenditures would be tested
- greater requirements placed upon SCAs to justify (including providing documentation for) expenditures that do not require a formal business case (noting the additional resources this may require).
    - Other than completing entries into the budget spreadsheet (or undertaking a business case for large expenditure), the reviewers did not cite any documentation explaining the planned expenditure, nor providing any justification or rationale for it.[3] This is a significant concern.

In relation to expenditure proposal assessment, refinement and prioritisation, enhancements could include:

- greater documentary requirements for planned expenditure , as noted in the previous subsection, as well as more detailed assessment reports of expenditure by independent reviewers that are made publicly available

[3] We understand that under the MDB Agreement Clauses 58, 59 and 60, SCAs are required to provide details of planned works including designs, specifications and cost estimates. However, we have not seen evidence that this is actually occurring (outside of the business cases for major expenditures) in support of the planned expenditures.

- modifying the committee structure so that there is a more formal and independent review of planned expenditures (based on better documented submission). We accept the need for SCAs to be involved in the process of building and refining a budget, but a greater degree of independent review (at a detailed level) than is currently provided would be beneficial
- placing codified requirements into the committee structures (e.g. Terms of Reference) or other governance processes to explicitly require that only demonstrably prudent and efficient expenditures are included in the annual corporate plan and budget
- codifying and documenting the role the MDBA plays in verifying the prudence and efficiency of planned expenditure – including through site inspections or other tasks (e.g. budget review), and documenting how expenditures have been revised as part of this process[4]
- considering modifications to the various agreements that give effect to SCA and MDBA roles, to explicitly require prudent and efficient asset expenditure (e.g. the asset agreement, MOUs, MDB Agreement, etc).

Results – assessment of cost-sharing

Table ES2 below provides an overview of how the overall MDBA costs for the years 2016-17 to 2019-20 are apportioned to WaterNSW customers in the Murray and Murrumbidgee valleys using the DPI Water Model.

Table ES2 Apportionment of MDBA total expenditure to user share in the Murray and Murrumbidgee valleys, 2016-17 to 2019-20, $,000 ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Total planned MDBA expenditure	92,332	99,631	97,552	96,164
Total NSW contribution to MDBA	28,413	30,880	29,727	29,659
WaterNSW share of NSW contribution	18,917	20,843	18,357	17,842
DPI Water share of NSW contribution	9,496	10,037	11,037	11,817
User share of WaterNSW contribution	16,685	18,163	13,915	13,366
Murray user share	*13,655*	*14,865*	*11,388*	*10,939*
Murrumbidgee users share	*3,029*	*3,298*	*2,526*	*2,427*

Source: MDBA Corporate Plan 2016 & NSW Murray-Darling Basin Authority Joint Programs Cost sharing, contributions and user cost recovery model 2016.

The review team's assessment primarily relied upon assessing a DPI Water spreadsheet model, as well as the detailed MDBA corporate plan budget (also in spreadsheet form; used for comparison and checking of inputs). The assessment was comprised of six seperate assessments, that relate to each

[4] We note that clause 61 does contain direction on efficient construction of works, and appears to include restrictions about funding entire asset replacement, or major improvements in asset function, but given this clause is tied to construction of works, it does not appear to limit or control what amounts are included in the budget, and therefore impact on contributions and subsequently any cost-recovery from users applied by state governments.

step that DPI Water takes in converting the overall total NSW contribution to the MDBA into valley based user share totals.

Overall, we were able to broadly follow the logic of the DPI Water spreadsheet. A number of discrepancies and areas of uncertainty were identified, however it was not readily possible to rectify these within the scope of the review. Given that the discrepencies are minor, it is unlikely that they are highly material particularly in relation to costs to be recovered from WaterNSW overall. Specific results of the assessments undertaken are:

- Expenditure totals are closely aligned with advice from MDBA, but there is some small variation. How expenditures are aggregated in the DPI Water model is unclear. Input data appears accurrately sourced, but aggregation is unclear.
- The DPI Water model does not appear to use cost shares calculated by the MDBA based on the MDB agreement for Category 1 and 2 assets. Given the total expenditure calculated roughly aligns, this discrepancy appears to be very minor, but warrants further investigation, which is complicated due to challenges in aligning budgets by line item, and was not possible within the scope of this review. Overall NSW contributions were similar between the spreadsheet and MDBA's calculations, with the DPI Water model calculating slightly lower contributions.
- The DPI Water Model assigns costs to WaterNSW and DPI Water consistent with the responsibilities outlined in the model.
- Categories used for allocating expenditures into user shares are consistent with the 2010 State Water price determination. The sample of expenditure from the DPI Water Model also appear to have been translated into the correct categories, and user share calculations executed as intended.
- Calculations for determining user share amounts in the model appear to work as intended with contribtions from each valley based on the proportions identifed in IPART's 2010 review of bulk water charges for State Water Corporation. The review team have not commented further on the appropriateness or robustness of this approach as it was not in the scope of this review.
- Finally, the review team found that the DPI Water Model outputs are aligned with the official advice that DPI Water provided to WaterNSW as part of the forthcoming price determination.

1. Introduction

1.1. Overview

IPART has requested that Aither's review team document and explain the management and cost sharing arrangements for shared Murray-Darling Basin assets and programs in NSW, including how expenditure is determined, spent, and recovered from government or users in NSW. It also requested an examination of the NSW component of future planned expenditure for the shared assets or programs, including providing a high-level view on prudence and efficiency, exploring any relationships or implications from the main WaterNSW expenditure review[5], and assessing whether cost-sharing arrangements are being followed correctly in NSW.

1.2. Background

1.2.1. About WaterNSW

WaterNSW is the major supplier of raw water in NSW. It plans, develops, operates and maintains infrastructure to provide water supply that is reliable and, where provided to customers for drinking, safe.[6] WaterNSW manages and operates major infrastructure to deliver bulk water to approximately 6,300 licensed water users across 14 regulated river systems in rural NSW, as well as owning and operating 20 dams and more than 280 weirs and regulators that deliver water for town water supplies, industry, irrigation, stock and domestic use, riparian use and environmental flows.[7]

As part of its overall responsibilities, WaterNSW contributes to the operation and maintenance of shared Murray-Darling Basin infrastructure and assets, including shared storages, dams and weirs that enable the implementation and operation of the Murray-Darling Basin Agreement, including the sharing of waters between states. These assets largely relate to the MDBA's River Murray Operations (RMO) function. Other water utilities in other states (SA and Vic primarily) provide a similar role for other shared assets.

Further details on WaterNSW and its roles and responsibilities can be found in Section 1.2.2 of the WaterNSW rural bulk water services expenditure review report.[8]

1.2.2. About the MDBA

The Murray-Darling Basin Authority (MDBA, the Authority) is a Commonwealth statutory agency empowered by the *Water Act 2007* (Cwth) (the Act). The Authority also has functions under the *Murray-Darling Basin Agreement 2008* (MDB Agreement) which is Schedule 1 to the Act.

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5 See Aither 2017, WaterNSW rural bulk water services expenditure review.

6 WaterNSW Pricing Submission.

7 Ibid.

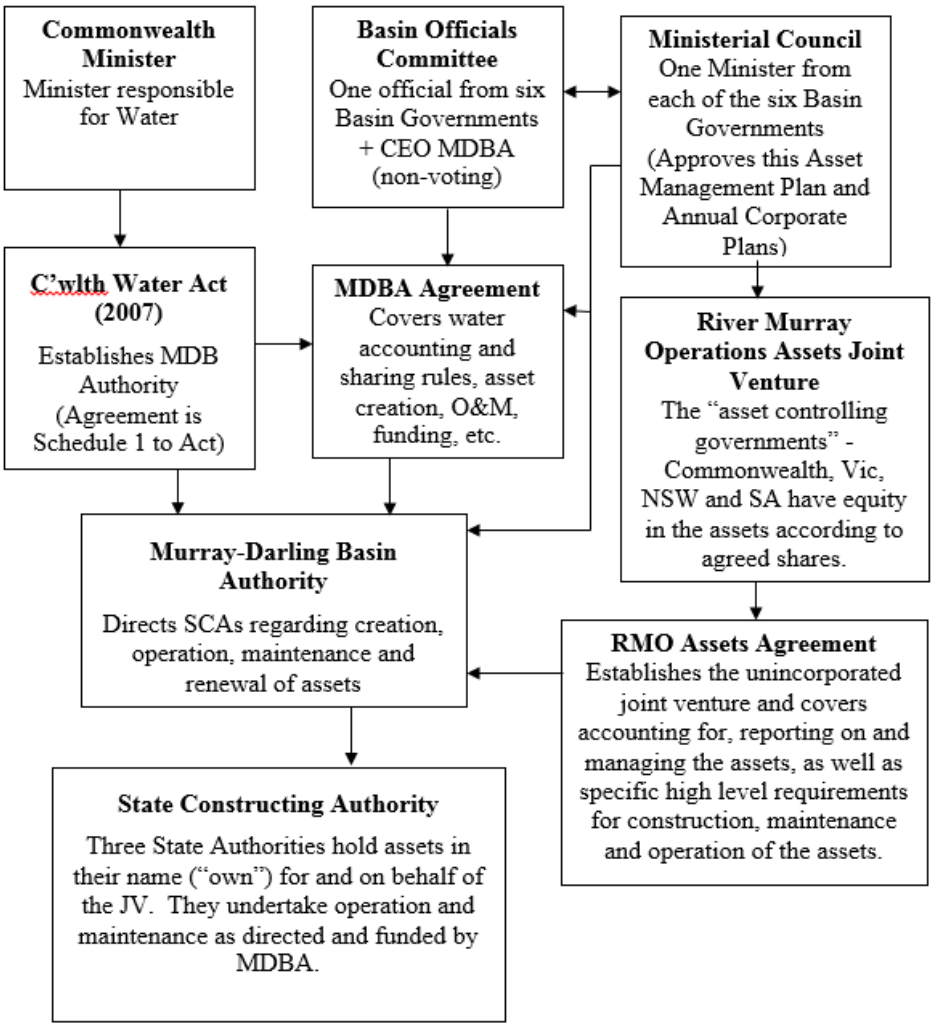
8 See https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Rural-Water/Prices-for-WaterNSW%E2%80%99s-Rural-Bulk-Water-Services-from-1-July-2017-formerly-State-Water-Corporation?qDh=2

The MDB Agreement outlines arrangements for managing MDB water resources between the Commonwealth Government and the Contracting governments.[9] Under the Act and the MDB Agreement, the MDBA is responsible for coordinating and managing cross-jurisdictional (shared) water resource management activities, water storages and delivery related activities in the southern MDB system. These activities related to running the River Murray System are collectively referred to as the River Murray Operations (RMO).

The governments of the Commonwealth, NSW, Victoria and South Australia (Contracting governments) have responsibility for the high-level decision-making in relation to the MDB via the Ministerial Council and the Basin Officials Committee (BOC). The MDBA is then responsible for coordinating the delivery of decisions made by these bodies, and delivery against the broader objectives and outcomes of the MDB Agreement.

The schematic below indicates the relationship between the Commonwealth Government, the Ministerial Council, the Basin Officials Committee, the Murray-Darling Basin Authority, the RMO Assets Joint Venture and the State Contracting Governments, in the context of the Water Act (2007), the Agreement, and the RMO Assets Agreement.

[9] Contracting states are defined under the Act as being any of the Governments of the Commonwealth, New South Wales, Victoria, South Australia, Queensland and the Australian Capital Territory. However, the governments of Queensland and the Australian Capital Territory are not involved in the River Murray Operations that are the subject of this review.



Source: Asset Management Plan, River Murray Operations Assets, MDBA (2014).

Figure 1 Major agency and agreement relationships related to shared assets

River Murray Operations (RMO)

The MDBA's role in delivering the RMO function includes:

- managing the Murray River system's built assets including dams, weirs, locks, environmental works, and salt interception schemes
- sharing water between states
- direct operation of shared assets to meet state's water needs.

In addition, MDBA also manages joint programs and activities that are directed towards managing the impacts of regulating the water in the River Murray system and other issues such as Natural Resource Management across the basin.

Costs for constructing, operating, and maintaining the assets and delivering shared programs under these arrangements are jointly paid for by signatory governments pursuant to the cost sharing arrangements set out in schedules to the MDB Agreement.

1.3. WaterNSW's proposed pass through of MDBA costs

The MDBA coordinates and manages cross-jurisdictional water resource management activities from a whole-of-system perspective on behalf of the States. The proportion of costs allocated to each State is defined under the terms of the MDB agreement, and paid by the relevant State government. The NSW Government pays the NSW share of costs to the MDBA.

WaterNSW is required to collect a certain proportion of the MDBA costs via charges from its customers on behalf of the NSW Government. The proportion that WaterNSW must collect from customers are determined by the NSW Government, not the MDBA. WaterNSW has identified this as an 'uncontrollable' charge in its Proposal.

For its 2017-2021 Pricing Proposal, WaterNSW has proposed that MDBA charges be recouped via an annual fixed charge on a $ per ML of entitlement basis to be collected from water users in the Murray and Murrumbidgee valleys.[10] The maximum amounts that WaterNSW is seeking to recoup by pass through charges for the forthcoming determination period are presented in Table 1 below. The way in which the total pass through costs are levied on customers by WaterNSW, such as the tariff structure, is not within scope of this review.[11]

Table 1 WaterNSW proposed pass through charges for Murray and Murrumbidgee valley customers, $,000 ($2016-17)

	User share	Government share
2017-18	18,163	2,680
2018-19	13,914	4,442
2019-20	13,366	4,476
2020-21	13,366	4,476

Source: WaterNSW Rural Regulatory Pricing Proposal 2017-2021 and Hanlon, Gavin, OUT16/17793 *MDBA Joint Venture and DBBRC Costs - IPART Submission*. Letter to Mr David Harris. 17 May 2016.

1.4. Review objectives and scope

1.4.1. Review purpose and objectives

The purpose of this review is to help clarify the processes and arrangements associated with shared expenditures in NSW, as well as conduct a high-level examination of MDBA costs proposed to be passed through to WaterNSW's customers, for the next WaterNSW price determination period. This involves three main tasks:

- describing the management and cost sharing arrangements for shared assets and programs in NSW, focusing on how expenditure is determined and spent, and recovered from government or users in NSW

[10] Ibid.

[11] We note WaterNSW has proposed a fixed annual charge associated with these costs for the next determination period, but these costs have previously been recovered via fixed and variable charges.

- examining the planned expenditure for the shared assets or programs, including providing a high-level view on its prudence and efficiency
- examining the application of agreed cost-sharing arrangements within NSW, including verifying that costs are being shared in accordance with the relevant regulatory frameworks.

IPART has requested Aither to make specific recommendations regarding the efficiency and prudence of the planned expenditure, but it should be noted that this report is not a comprehensive expenditure review. This review may help to provide greater transparency for stakeholders and customers affected by MDBA charges in New South Wales.

It is not within the scope of this report to:

- review or make comment on the appropriateness of the cost-sharing arrangements under the MDB Agreement, including the way in which costs are shared between signatories
- review or make comment on the appropriateness of the cost-sharing arrangements in New South Wales, including the basis for the cost-shares set or advised by IPART or the NSW Government.

1.5. Review approach and methods

This review was based on a number of sources of information and discussions, including:

- reviewing publicly available MDBA information for contextual and background information
- meetings and discussions with MDBA staff to understand processes and approaches
- documentation provided by the MDBA, including budgets, corporate plans, and documentation about the processes associated with capital expenditure proposals and approvals
- information provided by IPART, including the spreadsheet model that the NSW Government (DPI Water) uses to allocate the NSW share of MDBA costs within NSW
- a short written response to questions from WaterNSW.

Analysis undertaken to assess the prudence and efficiency of the underlying MDBA costs, and the extent to which the cost-sharing arrangements in NSW are being followed correctly, is outlined at the beginning of the relevant assessment report sections (Sections 4 and 5 respectively).

1.6. Report outline

The report is broadly structured as follows:

- This **Section 1** provides background on WaterNSW and MDBA, the objectives and scope of this review, and review methodology.
- **Section 2** describes the arrangements associated with shared assets and programs
- **Section 3** outlines the expenditure and cost sharing arrangements
- **Section 4** provides a high level review of the planned expenditure and underlying processes, as well as summarising relevant findings from other relevant reviews
- **Section 5** reviews how the NSW share of MDBA expenditure has been allocated in NSW for the next WaterNSW pricing period.

2. Shared asset and program arrangements

2.1. Overview

This section outlines the arrangements associated with MDBA shared assets and programs, including management of shared assets and delivery of joint programs (joint activities). These joint activities relate to those required for the MDBA's operation of the River Murray system, and other MDB-wide programs such as for Natural Resource Management,

2.2. MDBA assets and programs

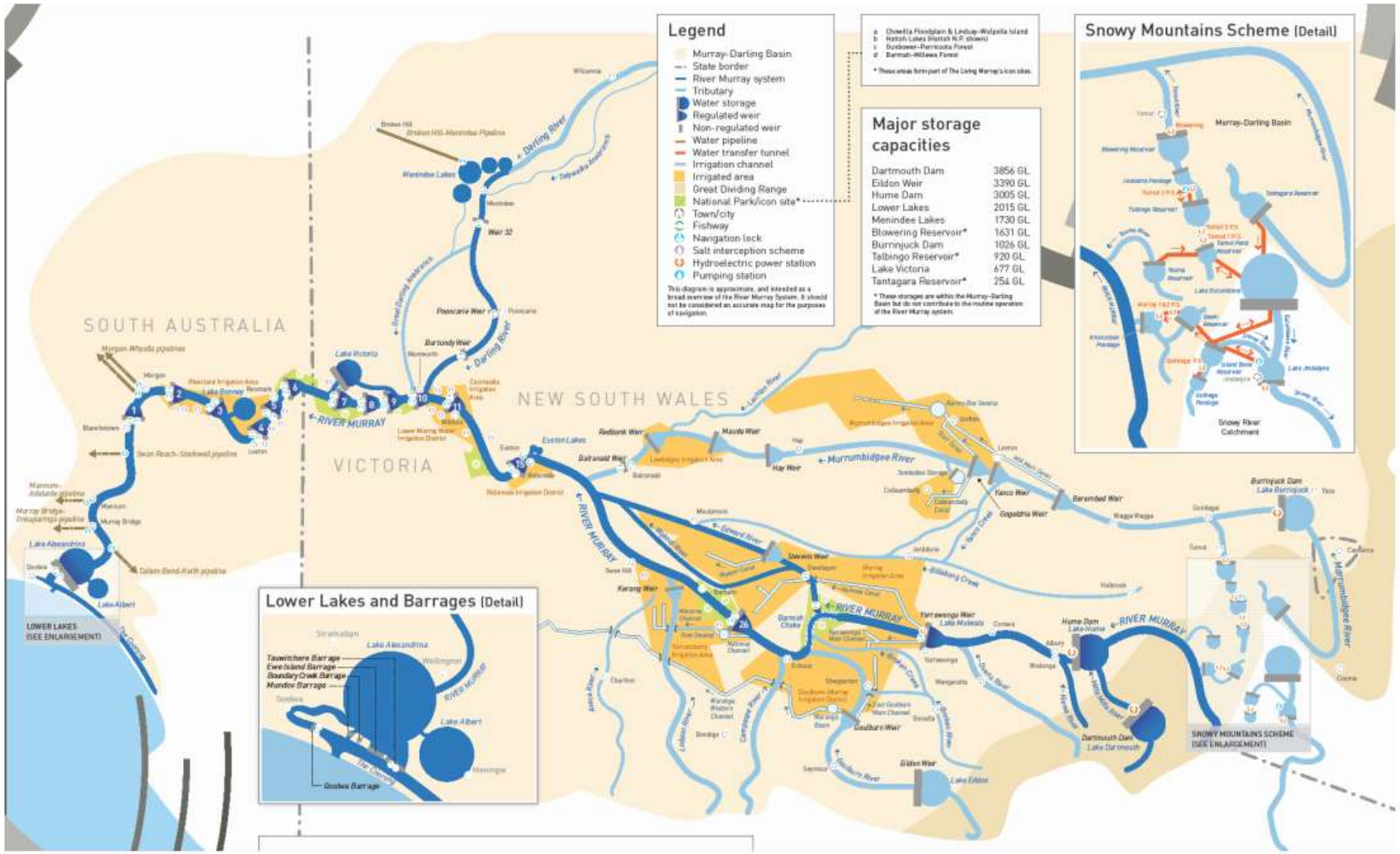
2.2.1. Shared assets

Under the MDB Agreement, the MDBA directs the operation, maintenance and renewal of shared assets in the River Murray system on behalf of controlling governments. The River Murray system encompasses the waterways, storages and physical assets of the River Murray in the southern MDB. The system is presented in Figure 2 and defined in the MDB Agreement as:

- the main course of the River Murray and all its effluents and anabranches
- tributaries entering the River Murray upstream of Albury
- Dartmouth Dam, Hume Dam, Yarrawonga Weir, Lake Victoria, and the weirs and locks along the River Murray, and Barrages at the Murray Mouth
- the Menindee Lakes storage[12]
- the Darling River downstream of Menindee Lakes.[13]

[12] The Menindee Lakes storage is not a MDBA asset, however 75 per cent of operation and maintenance costs are met by the MDBA, which maintains the right to direct releases when total storage within the Lakes is above defined trigger levels.

[13] MDBA 2016, *Running the River Murray*, MDBA, viewed 2 December 2016, <http://www.mdba.gov.au/river-information/running-river-murray>.



Source: Murray-Darling Basin Authority 2016.

Figure 2 River Murray System

Activities required to manage and operate the assets in the River Murray System are referred to as the River Murry Operations. RMO activities ensure the delivery of state water shares to New South Wales, Victoria and South Australia consistent with the Agreement. The main RMO activities undertaken by the MDBA include:

- overseeing the construction and maintenance of RMO infrastructure assets
- overseeing operation of River Murray assets

RMO assets are controlled through a joint venture between the three state governments and the Commonwealth. Ownership is retained by the state in which they are located, but are managed and operated by the MDBA on behalf of the Commonwealth, and the governments of NSW, Victoria and South Australia. In New South Wales, RMO assets are located in the Murray and Murrumbidgee valleys. As at June 2014, the RMO assets were valued at $2.6 billion, with a replacement cost of $4 billion.[14] RMO assets are divided into the following categories:

Category 1 assets

Category 1 assets are considered key water assets essential to system-wide water delivery and management. They include the major water storages (Hume and Dartmouth Dam, Lake Victoria and the Lower Lakes), the hydrometric network, and the Murray Mouth Barrages.

Category 2 (a & b) assets

Category 2 assets provide significant local benefits to NSW, Victoria or South Australia, as well as whole of river benefits. They are increasingly being used for the delivery of environmental water under the Basin Plan. Category 2 assets are made up of the locks and weirs originally built to facilitate navigation on the River Murray. These assets now also provide weir pools for the delivery of water allocations to local water users and also support local social and tourism values. For Category 2a assets (Locks 10 and 11) NSW and Victoria are the local beneficiaries, while South Australia is the local beneficiary for Category 2b assets (Locks 1-8).

Other RMO assets

RMO constructs, operates and maintains assets that provide local, site specific benefits. These include:

- salt interception schemes (SIS) – built to address the impacts of rising river salinity as upstream diversions increased
- river bank restoration and other management works to address the range of impacts on the environment of changed flow regimes, including cultural heritage impacts
- a number of environmental works built under the Living Murray (TLM) program such as channels, regulators, weirs and levees that enable large-scale environmental watering. In addition, the Sea-to-Hume fishways enable fish migration along 2,000km of the River Murray channel.

Assets with WaterNSW management involvement

The direct operation of the shared assets is generally assigned to the state that built the asset, with that state's designated State Constructing Authority (SCA) operating the asset (in NSW this is WaterNSW). Of the total shared assets, the following are managed by WaterNSW:

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[14] MDBA 2015. *Submission to the ACCC Review of the Water Charge Rules*. MDBA. Canberra.

- Hume Dam (Victoria also has responsibility for some land adjacent to the dam)
- Euston weir
- Wentworth weir
- Menindee lakes (various infrastructure; spillway, weirs, regulators)
- Koondrook-Perricoota
- the hydrometric data system in NSW

Responsibility for hydrometrics and river gauging functions and assets, was previously linked to DPI Water in NSW, but these functions are currently in the process of being transferred to WaterNSW. [15]

2.2.2. Joint programs

The MDBA is also responsible for natural resource management activities (or joint programs) across the MDB. These programs are related to measuring and mitigating the effects of water use on the environment, and include programs such as environmental watering programs, salinity management, environmental monitoring and evaluation, and pest fish management. Contributions for funding joint programs are made by New South Wales, Victoria and South Australia, as well as Queensland and the Australian Capital Territory.

Specific joint programs include:

- **The Living Murray (TLM) program:** TLM is comprised of physical structures for environmental water delivery (managed as part of the RMO) and management of a $500 million water portfolio to allow environmental watering of assets. Planning and delivery, monitoring and modelling of environmental watering through TLM is managed by MDBA as a joint program.
- **Environmental Monitoring and Evaluation:** the MDBA undertakes a monitoring and evaluation program to assess the outcomes of programs and activities undertaken in the MDB.
- **River Murray Health:** are a range of river heath related projects that include biological monitoring of the Murray and Mitta Mitta Rivers, small projects for managing pest fish, implementing native fish and river restoration projects and assessing flood plain developments for water quality risks.
- **Murray-Darling Freshwater Research Centre:** provides research and monitoring capacity in the southern MDB through the MDBA's core contribution.
- **Water Quality and Salinity Management:** implementation of the Basin Salinity Management Strategy, which is intended to meet certain salinity targets in the basin with an emphasis on joint works and measures.
- **Water Resources Core Modelling:** the MDBA provides technical advice and modelling support for water resource management in the basin.
- **Water Markets and interstate trade:** The MDBA facilitates interstate water trade under the MDB Agreement through water accounting. MDBA also contributes to the development and implementation of interstate water trade policy in the MDB.

[15] The review team were advised that this change is immaterial to the build up of costs associated with these assets in the MDBA budget, or their sharing as part of the MDBA cost sharing process. It may however impact on how costs are recovered from within NSW.

- **Secretariat Services:** the MDBA provides secretariat services to the Ministerial Council and the Basin Officials Committee and other high level committees established to support delivery of RMO and other joint programs.

2.3. State constructing authorities

While the MDBA coordinates and directs the operation, maintenance and renewal of shared assets and runs other programs on behalf of contracting governments, the assets themselves remain under the ownership of the Commonwealth and State Governments under joint venture arrangements.

The asset controlling governments are responsible for the construction and maintenance of shared assets and implementation of programs. Direct delivery of these activities is undertaken by State Constructing Authorities (SCAs), who are appointed by the participating governments. The powers of SCAs are conferred under section 52 of the MDB Agreement.

The SCAs for RMO shared assets and joint programs include:

- New South Wales – WaterNSW and NSW DPI Water
- Victoria – Goulburn-Murray Water
- South Australia – SA Water, as an agent for the Minister for the River Murray

The MDBA authorises and oversees this process to ensure that construction, operation and maintenance of assets is undertaken in accordance with the MDB Agreement, and other corporate governance documents such as risk management and asset management plans.

In New South Wales, WaterNSW plays the role of SCA and is responsible for undertaking maintenance and operational functions for RMO assets and activities that provide shared water delivery services or functions for MDB states. NSW DPI Water undertakes significant works relating to salt interception schemes, river improvement, hydrometric and water quality monitoring, and land management.

SCAs are responsible for putting forward expenditure proposals regarding the assets they operate. This process is coordinated and overseen by the MDBA and broadly involves SCAs putting forward bids for consideration based on works they believe need to occur on the assets to ensure successful ongoing service delivery. In New South Wales, the SCA expenditure proposals have not historically been subject to independent regulatory oversight, such as is undertaken by IPART for non-MDBA assets and related processes across the rest of New South Wales.

3. Expenditure and cost sharing arrangements

3.1. Overview

This section explains the processes and arrangements concerning how expenditures are identified, refined, approved, shared, and expended. In broad terms, SCAs generate expenditure proposals and forecasts, these are moderated or refined in collaboration with the MDBA, budgets are set and approved under MDBA governance arrangements, total costs are shared amongst the states based on the MDB Agreement, then state governments share their share of the MDBA costs within their state according to their own cost-sharing arrangements, with the SCAs responsible for carrying out the works that are approved as part of the process.

3.2. Expenditure and approvals

An overarching view of the process of developing and approving expenditure for MDB joint assets is, starting with the expenditures themselves, as follows

- State constructing authorities develop expenditure proposals for the assets in their direct control (see Section 2.2.1 above for NSW assets), based on their knowledge of asset condition obtained via running the asset.
- Through an annual budgeting process coordinated by the MDBA, these proposals are assessed, prioritised, and refined, in collaboration with the SCAs (noting proposals are made by all three states). The MDBA does undertake some due diligence, and attempts to ensure the prudence of proposals.
- MDBA coordinate and advise Joint Venture committees comprised of representatives from state governments and SCAs to further refine the proposed expenditure, which may also be subject to business cases for large expenditure.
- This expenditure builds up the annual budget, which goes into the MDBA corporate plan, which is ultimately approved by the MDB Ministerial Council.
- The Corporate plan advises the states (DPI Water in the NSW Government case) of their share of total MDBA costs, which are calculated based on detailed cost sharing rules established under the MDB Agreement.
- The NSW Government (DPI Water in this case) then undertakes a process to share the total NSW share of MDBA costs amongst the NSW government and users in NSW, based on existing cost sharing frameworks, and direction from NSW Treasury.
- WaterNSW proposes pass through of costs to customers based on direction from DPI Water, and also delivers the works that are approved in the MDBA budget for NSW.

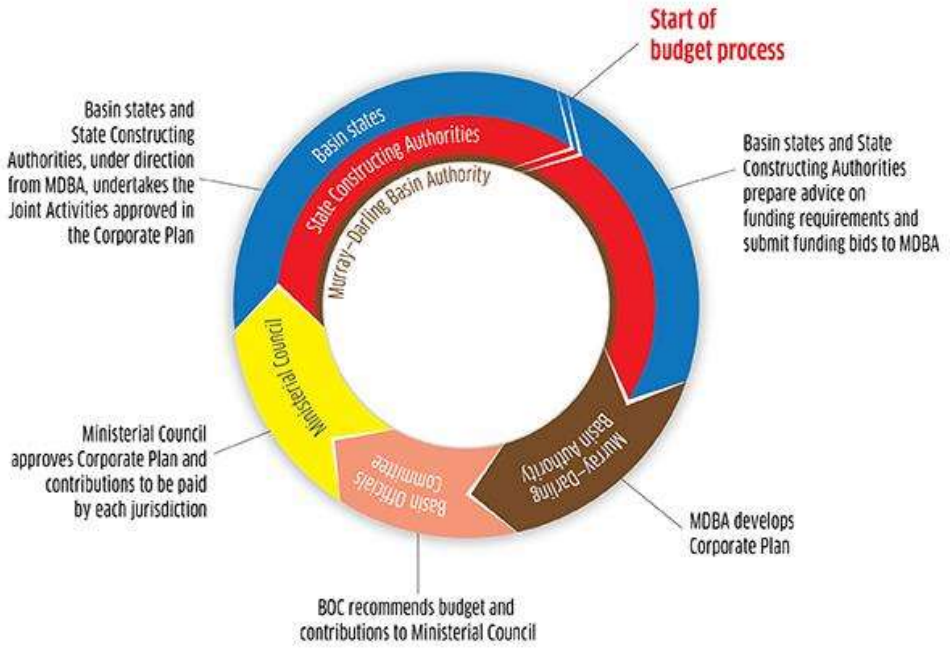
3.2.1. MDBA

The MDBA's budget for delivering joint activities is established in accordance with the provisions of the MDB Agreement. The process for planning and funding of MDBA joint activities involves input from the Basin states, SCAs and the MDBA, while the actual approval of budgets is by the Joint

Venture through the MDB Ministerial Council (which is advised by the Basin Officials Committee). Central to this process is preparation of the MDBA Corporate Plan, which covers a four year horizon, but is updated annually (only the first year contains an approved budget, the outyears are forecasts for planning purposes). The Corporate Plan must be approved by the MDB Ministerial Council and must include:

- the objectives of the Authority
- the Authority's planned activities for the planning period that relate to its functions under the Water Act 2007
- the budget for planned activities.

The MDBA Corporate Plan process for developing expenditure proposals and approvals is presented in Figure 3 below.



Source: MDBA 2016.

Figure 3 MDBA joint activities planning and funding cycle

The Corporate Plan applies to all joint activities, including RMO asset activities and joint programs. At the highest level, each year SCAs are responsible for developing estimates of the funding required to deliver joint activities and programs to the MDBA, which is based on an agreed Asset Management Plan. Based on advice from the MDBA, SCAs prepare funding bids that specify the activities that should be undertaken for the coming year to enable successful operation of assets, and how they should be completed.

The MDBA, through the Assets branch of the River Management division is responsible for assessing each proposal and prioritising them to produce a collated estimate of known and anticipated expenditure for the next financial year, and indicative expenditure for three successive years. Proposals are also scrutinised to ensure that expenditure is required based on the MDBA's knowledge of asset condition developed through asset inspections conducted on a yearly basis. If the total budget of works exceeds the funds available, the Assets branch also works closely with SCAs to further develop and refine proposals and costings. In overseeing development of the Corporate Plan, there is an incentive for MDBA to ensure the prudence of expenditure by ensuring that an appropriate workplan is maintained so that assets do not pose unacceptable risk to contracting governments, and that SCAs are not suggesting excessive expenditure.

Based on this process, the MDBA produces a draft Corporate Plan that determines the annual budget for the next financial year, and forecast estimates of expenditure for the three subsequent financial years. The Corporate Plan is submitted to the BOC. Upon ultimate approval of the Corporate Plan by the Ministerial Council, the MDBA notifies SCAs of their approved (or from time to time, rejected) proposals, and their allocated annual budget and three year forecast expenditure plans.

The BOC conducts a detailed review and submits the draft Corporate Plan to the MDB Ministerial Council, including advice concerning the required budget and nature of state contributions. The Ministerial Council then reviews and authorises the funding for the work in the final Corporate Plan. In authorising the funding for joint activities, Basin Ministers also agree and authorise the amounts to be contributed by each contracting government under the MDB Agreement. The Corporate Plan provides the total funding that each state is required to contribute for each year.

Once project expenditure has been authorised by the Ministerial Council, SCAs are responsible for the direct implementation and delivery of the project(s), with MDBA oversight. The SCA pays for the costs of project delivery directly, and is reimbursed by the MDBA for the actual costs incurred.

Sharing, and recovery of the state share of MDBA costs is a matter decided at the State level, with partner governments responsible for deciding the specific amounts, mechanisms, and time horizons for cost recovery. The specific arrangements for sharing costs and recovery by the NSW government are explained in Section 3.5.

3.3. MDBA cost sharing arrangements and process

The MDB Agreement enables the sharing of the MDBA costs between signatories to the agreement – this is what establishes the amount of total MDBA costs that must be met by each state. Detailed rules for how the costs are shared have been designed under delegation from Ministers, and have been refined over time including since the very early sharing of waters amongst the MDB states under the 1915 River Murray Water Agreement.

The 1915 River Murray Waters Agreement, provided for the costs of investigation and construction of assets to be shared equally between the Commonwealth, New South Wales, Victorian and South Australian governments. The subsequent costs of operation and maintenance of the assets was shared equally between the three states.[16]

A major step to reform occurred in 1994, when the Council of Australian Governments (COAG) agreed to a Water Reform Framework as part of its Competition Policy Reforms of the Australian economy.[17] The reform included a commitment towards consumption-based, full cost recovery pricing for water services. Specifically for the then Murray-Darling Basin Commission (MDBC), this included an agreement to provide arrangements so that funds to maintain, refurbish and upgrade water assets were available.

In 1998, the MDBC agreed to cost sharing arrangements that sought to apply these principles. This signalled a move away from equal sharing of costs to arrangements that better reflect the relative benefits that consumption of shared MDBA assets and activities provide to each state. The primary benefits of consumption were associated with assets that enable access to secure water supplies and

[16] Buckley and Smith 2014, *Review of Cost Shares for Joint Activities – Final Report*, Report for Basin Officials Committee, viewed 5 December 2016, <http://www.mdba.gov.au/publications/research-report/review-cost-shares-joint-activities>

[17] Ibid.

delivery of state water shares (i.e.: dams, weirs and regulators), together with activities that address the impact of increased river regulation.

For MDBA shared assets and activities, this reform resulted in cost sharing determined based on the relative benefit derived from services including:

- Access to secure water entitlements (as indicated by the long-term Cap equivalent volume for each state)
- Consumption of water (reflected through annual diversions)
- Environmental and resource management services including salinity mitigation
- Other services provided by the assets (such as navigation, recreation and tourism, regulated weir pools for water extraction and suppression of groundwater flows).

The principles have been applied to various categories of assets and programs, and agreed weightings applied.[18] When applied to the planned program of works and activities to be funded in each year, with the relevant shares of capped entitlements and 5 year average annual diversions, an overall cost share calculation for each state is derived.

3.3.1. Current cost sharing arrangements

Today, funding for MDBA joint activities is dependent on contributions from the Australian Government and each of the Basin states in accordance with agreed cost shares decided by the MDB Ministerial Council in 2006. The formulae for these cost shares are documented in Table 2. Shared assets and activities are divided into RMO programs and other activities.

RMO programs

For expenditure included under the RMO programs (such as for RMO assets and environmental works and measures), the Australian Government makes a 25 per cent contribution to the costs of the investigation and construction of works. The remaining cost (75 per cent) is shared between the basin states based on the cost share arrangements in Table 2. Costs for the ongoing operation and maintenance of assets are shared amongst the three states according to the same arrangements.

The costs for dredging of the Murray Mouth to maintain connectivity between the Murray and the sea during dry periods are shared equally between all four governments on a no-fault basis.[19]

Other activities

The costs of the other joint activities are shared equally between the Australian Government and the states of New South Wales, Victoria and South Australia once contributions by Queensland the ACT have been made.[20]

The corporate overheads associated with running the MDBA, such as human resources, finances, procurement, and insurances, are apportioned across MDBA activities in proportion to the number of

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[18] See Buckley and Smith 2014 for further detail regarding the specific application of cost sharing principles to specific assets and activities <http://www.mdba.gov.au/publications/research-report/review-cost-shares-joint-activities>.

[19] Ibid.

[20] MDBA Submission to the Australian Competition and Consumer Commission, June 2015, MDBA, Canberra.

staff involved in each function or activity (measured in Full Time Equivalent, FTE).[21] The joint programs receive a share of the total MDBA corporate overheads, which are further apportioned according to the specific RMO programs and other activities on a FTE basis. These costs are shared between Commonwealth and state governments according to the relevant principles for each program.

Table 2 Cost shares for joint activities

Activity	Cost type	Cwlth	NSW	Vic	SA
River Murray Operations (RMO) programs					
RMO Assets	O&M[1]	0%	For Category 1 assets, costs shared in proportions based on the cap equivalent of Murray Valley entitlements in each State and the five year average water use in the Murray Valley by each State. Category 2 asset costs are shared in proportions based on the cap equivalent of Murray Valley entitlements in each State and the share of local beneficiary for locks and weirs. Equal shares for salt interception schemes.		
	I&C[2]	25%	Balance of I&C cost shared on same basis as O&M. RMO administration costs treated as I&C.		
Murray Mouth dredging	I&C	Costs are shared equally between all four governments			
Environmental works and measures	O&M	0%	Equal shares between state governments		
	I&C	25%	Balance of I&C cost shared on same basis as O&M.		
Other activities					
Non-RMO programs		Contributions from Qld and ACT are negotiated based on their interest in each program(s). Once Qld and ACT costs apportioned, the balance is shared equally between the Commonwealth, NSW, Victoria and South Australia.			
Corporate overheads		Joint activities pay a share of MDBA corporate overheads, which is then split between programs on the basis of the FTEs employed in each program. These costs are then shared between jurisdictions in accordance with the relevant principles for each program.			

Source: MDBA Submission to the Australian Competition and Consumer Commission, June 2015, MDBA, Canberra.
Note: 1) Operations and maintenance. 2) Investigation and construction.

[21] Buckley and Smith 2014, *Review of Cost Shares for Joint Activities – Final Report*, Report for Basin Officials Committee, viewed 5 December 2016, <http://www.mdba.gov.au/publications/research-report/review-cost-shares-joint-activities>

The above cost share principles guide cost sharing between the Commonwealth and the States. Practically, these principles are applied by MDBA in its budget calculations to determine the amounts that each State must contribute. The percentages in Table 3 below are derived from the MDBA draft budget 2016-17, which are based on the MDB Agreement cost shares as reported in the 2014 Review of Cost Shares for Joint Activities – Final Report.[22]

Table 3 RMO programs cost share percentages 2016-17

Category	C'wlth	NSW	Vic	SA
Operations and maintenance (O&M)				
Category 1	0%	43.4%	40.1%	16.5%
Category 2a		46.9%	44.8%	8.3%
Category 2b		21.9%	19.8%	58.3%
Salinity		33.3%		
Murray Mouth dredging		33.3%		
Environmental works and measures		33.3%		
Total share		38.1%	35.7%	26.3%
Investigation and construction (I&C)				
Category 1	25%	32.5%	30.1%	12.4%
Category 2a		35.2%	33.6%	6.2%
Category 2b		16.5%	14.8%	43.7%
Salinity		25%		
Murray Mouth dredging		25%		
Environmental works and measures		25%		
RMO administration costs		28.3%	26.7%	20%
Total share		27.8%	26.5%	20.7%

Source: MDBA draft Budget 2016-17 – v3.3.

3.4. New South Wales cost recovery process

As noted above, the MDBA advises the state governments regarding what their total contributions are for each year, based on the cost-sharing rules under the MDB Agreement. Once these amounts are known, the state governments can then apply their respective cost-sharing arrangement in their state, and undertake recovery of the costs from the relevant parties.

State governments can recover some of their required contributions through water charges (placed upon users, including via water utilities), or through consolidated revenue (in effect socialising costs). Different approaches to cost recovery may be applied by each state government, and this is outside

[22] See <http://www.mdba.gov.au/publications/research-report/review-cost-shares-joint-activities>

the control of the MDBA. In NSW, DPI Water directs WaterNSW to recover some of the total MDBA costs from water users.

This process of cost sharing is overseen by DPI Water. DPI Water manages a cost sharing and cost-recovery spreadsheet model that allocates the NSW share of joint activities costs amongst different parties in NSW. It does this based on IPART guidance and principles for cost-recovery.[23] [24] For the MDBA the spreadsheet gives effect to these rules, by analysing each expenditure line item, its relevance to shared programs, and whether the expenditure relates to the delivery of WaterNSW or DPI Water functions. BRC cost sharing is determined within the same spreadsheet, based on a historical contribution of $1.1 million per annum, which must be maintained. While BRC costs are not within the scope of this review, steps relating to BRC costs within the DPI Water model have been included in the description below to reflect the overall intent of the spreadsheet model.

The spreadsheet produces cost sharing, contributions and user cost recovery calculations for MDBA joint activities (as well as the BRC) according to the following process:

1. **Identification of MDBA joint program activities relevant to NSW**. The MDBA Corporate Plan is reviewed to identify joint program activities costs that NSW must contribute to.

2. **Identification of NSW share in MDBA joint program activities**. For activities that NSW must contribute to, the agreed NSW contribution is applied. NSW contributes 25 per cent for non-RMO activities. For RMO activities, NSW contributes 25 per cent to investigation and construction costs and 33 per cent to operations and maintenance costs.[25]

3. **Allocation of identified MDBA costs based on function performed.** Each joint program cost is distributed to WaterNSW or DPI Water. WaterNSW holds responsibility for direct management of RMO assets. DPI Water is generally responsible for non-RMO programs and activities.

4. **Allocation of proposed NSW contribution to MBDA**. The total NSW contribution to MDBA is apportioned between WaterNSW and DPI Water, consistent with MDBA Corporate Plan.

5. **NSW contribution to BRC.** The total $1.1 million contribution to the BRC is based on historical contributions and split between Water NSW and DPI Water on historical splits.

6. **Summary of draft Allocation of NSW contributions to MDBA and BRC.**

7. **Identification of operational, maintenance and capital related activities.** For WaterNSW and DPI Water, the expenditures in the MDBA Corporate Plan are reviewed against the constructing authorities' responsibilities under the MDB Agreement and categorised as Operational, Capital or Maintenance.

8. **Calculation of User share and Government share**. Based on the inputs from the previous step, the expenditures from the MDBA Corporate Plan are multiplied by IPART's approved apportionment of user's share to determine the costs attributable to users and to government.

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[23] Hanlon, Gavin, OUT16/17793 *MDBA Joint Venture and DBBRC Costs - IPART Submission*. Letter to Mr David Harris. 17 May 2016.

[24] IPART 2016, *Water – Issues Paper*, IPART, Sydney. Table C.3, pp 149-150.

[25] Note that these values (25% and 33%) are currently in the DPI Model, but are not fixed – they are determined according to the rules set out in Table 2.

9. **WaterNSW allocation of User Charges across valleys**. IPART's cost sharing ratios are applied to expenditures to determine the percentage of NSW's contribution to be recovered by WaterNSW customers. These charges are applied to customers who benefit from MDBA shared activities in the Murray and Murrumbidgee Valleys based on the proportions used in the 2010 pricing determination. The apportionment of BRC costs amongst users is also presented below MDBA costs.

Once DPI Water has undertaken these calculations, it formally advises WaterNSW of the total annual (maximum) amounts it is required to collect from users.[26]

3.4.1. Pass through of costs to WaterNSW customers

Under the MDB Agreement, the NSW Government must contribute to the cost of managing, operating and renewing MDBA shared assets and programs. The NSW government directs WaterNSW (and DPI Water) to pass through a certain proportion of charges to its customers. DPI Water is responsible for determining and advising the charges that should be recovered by WaterNSW. [27] [28] At the time of writing, WaterNSW was still waiting to receive an official direction from the NSW Government to collect a certain proportion of the MDBA charges from customers.

WaterNSW then includes these charges in the cost information that it provides to IPART for its water pricing determination decision. This information is used to decide the maximum amount that can be charged on water users during the forthcoming determination period. In the case of WaterNSW, the cost is passed through to bulk water users in the form of a fixed or variable rate (or a combination of these) charged for the delivery of water and other transaction costs.

[26] Hanlon, Gavin, *OUT16/17793 MDBA Joint Venture and DBBRC Costs - IPART Submission*. Letter to Mr David Harris. 17 May 2016.

[27] Ibid.

[28] WaterNSW, *Pricing Proposal for Rural Bulk Water Charges*, June 2016.

4. Assessment of expenditure

4.1. Overview

This section provides a broad assessment of the efficiency and prudence of expenditure contained in the MDBA forward work program. It considers recent trends and drivers in expenditure, the processes leading to the expenditure proposed, the actual amount of annual expenditure planned for the period 2016-17 to 2019-20, and other issues related to the planned expenditure, including implications from the separate review of WaterNSW expenditure, as well as other reviews of MDBA expenditure. While IPART has requested Aither make recommendations about prudence and efficiency of expenditure, it should be noted that this is not a comprehensive expenditure review and this has limited our ability to fully confirm efficiency and prudence of the proposed expenditure.

4.2. Assessment approach and methods

Our general approach to assessing MDBA expenditure has been to undertake a high-level analysis of the MDBA's past, and planned expenditure (for 2016-17 and three out years) to understand:

- the nature and levels of the expenditure
- trends and changes over time and driving factors
- expenditure by asset type or category, including for major items (such as salt interception schemes, and Murray mouth dredging)
- history of actual versus budgeted expenditure.

We have also considered and assessed the processes around expenditure proposal development, refinement, assessment, and approval, with a view to understanding whether or not this should contribute to prudent and efficient outcomes.

Our assessment also summarises findings of recent separate reviews of MDBA processes or expenditure that were commissioned by the MDBA or Commonwealth Government, as well as findings or recommendations made by the Essential Services Commission in relation to GMW in Victoria. The purpose of this was to identify and reflect any findings that are relevant to our assessment, including ensuring the prudency and efficiency of expenditure.

4.3. Planned and past expenditure

This section provides a high level review of the historical and planned expenditure. Overall, we find that annual movements in operational expenditure are small and changes in capital expenditure requirements are generally well explained. The MDBA's planned capital expenditure exhibits a return to historical levels following a period of reduced expenditure which was necessitated by a reduction in NSW Government funding contributions.

4.3.1. Total future expenditure

Table 4 below presents total MDBA planned expenditure for 2016-17 and three following out years. For the years presented, average annual expenditure is $96,420,000. There is a modest increase in

total which appears to be driven by River Management expenditure from 2016-17 to 2017-18. Expenditure then trends downward to 2019-20.

Data presented in subsequent sections focuses on the River Murray expenditure rather than the total expenditure, as this is the area of most relevance to WaterNSW customers and contains the majority of expenditure.

Table 4 MDBA planned expenditure 2016-17 to 2019-20 ($'000) ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Planned expenditure – River Management	69,932	76,554	74,057	71,910
Planned expenditure – non-RM activities	22,400	23,077	23,495	24,254
Total planned expenditure	92,332	99,631	97,552	96,164

Note: Data in this table may differ from other figures or tables presented due to the reviewers being provided with a non-final version of the MDBA budget spreadsheets (which is the source for further analysis presented in subsequent sections).

Source: Joint Programs Annual Work Plan & Budget 2016-17 to 2019-20, Appendix 1: Detailed Joint Program Budget for 2016-17 to 2019-20, MDBA 2016 (Draft).

4.3.2. Future expenditure breakdown

Table 5 below provides a breakdown of the future expenditure by type. This suggests the increase from 2016-17 to 2017-18 is primarily driven by capital expenditure within river management.

Table 5 MDBA planned expenditure, River Management by expenditure type, 2016-17 to 2019-20 ($'000) ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Planned expenditure – River Management	***69,932***	***76,554***	***74,057***	***71,910***
Operating	43,984	42,910	44,992	44,563
Capital	12,647	18,504	15,936	14,421
Maintenance	11,077	12,873	10,817	10,567
Corporate overhead	2,223	2,267	2,312	2,359

Note: Data in this table may differ from other figures or tables presented due to the reviewers being provided with a non-final version of the MDBA budget spreadsheets (which is the source for further analysis presented in subsequent sections).

Source: Joint Programs Annual Work Plan & Budget 2016-17 to 2019-20.

An alternative breakdown of the expenditure is provided from the MDBA Annual Plan, as indicated in Figure 4 below, which again demonstrates the increase to 2017-18 followed by a gradual decline through to 2019-20.

Murray-Darling Basin Authority *Estimated resourcing position*						
		2015/16	**2016/17**	**2017/18**	**2018/19**	**2019/20**
		$'000	**$'000**	**$'000**	**$'000**	**$'000**
Joint funded activities		**Includes carryover ($10,874k)***				
Total Planned expenditure		**98,518**	**92,332**	**99,631**	**97,552**	**96,164**
Planned Expenditure - River Management		**77,436**	**69,932**	**76,554**	**74,057**	**71,910**
	River Management Operations	56,579	59,299	65,091	57,674	56,296
	Salt Interception Schemes	7,668	8,410	9,196	14,071	13,255
	Environmental Works and Measures (construction)	9,430				
	Fishways at Murray Mouth Barrages	1,580				
	RM share of Corporate overhead	2,179	2,223	2,267	2,312	2,359
Planned Expenditure - Non-RM activities		**21,082**	**22,400**	**23,077**	**23,495**	**24,254**
	TLM	13,761	13,701	14,119	14,553	15,044
	Other NRM	5,264	6,601	6,818	6,759	6,984
	Non-RM share of Corporate overhead	2,057	2,098	2,140	2,183	2,226
Available Resources						
Unallocated Underspends from prior years		9,803	9,803	-	-	-
2014-15 committed underspend		10,874	-	-	-	-
2014-15 genuine underspend[1]		6,268	4,838	-	-	-
EWMP funds		4,999	-	-	-	-
Net estimated underspend		**31,944**	**14,641**	**-**	**-**	**-**
Other Income						
	Hydropower generation	700	700	700	700	700
	Salinity costs recovery	976	976	976	2,376	1,056
	Land and Cottage rent	624	624	624	624	624
	MISC	640	630	610	610	610
	Grant for fishways at Murray Mouth Barrages	567	-	-	-	-
Total Other Income		**3,507**	**2,930**	**2,910**	**4,310**	**2,990**
Contributions from Jurisdictions						
	Australian Government	9,989	12,960	13,173	12,728	12,716
	NSW	24,699	28,454	30,963	29,852	29,828
	VIC	23,568	27,068	29,399	28,286	28,263
	SA	19,054	19,444	22,772	21,954	21,936
	QLD	100	102	104	106	108
	ACT	298	304	310	316	323
Total contributions from Jurisdiction		**77,708**	**88,332**	**96,721**	**93,242**	**93,174**
Total available resources		**113,159**	**105,903**	**99,631**	**97,552**	**96,164**
Estimated closing balance at 30 June		**14,641**	**13,571**	**13,571**	**13,571**	**13,571**

Note: The table represents planned expenditure at a point in time.

Source: MDBA Annual work plan and budget 2016-17 to 2019-20.

Figure 4 MDBA estimated resourcing position and budget ($2016-17)

4.3.3. Changes over time – trends and drivers

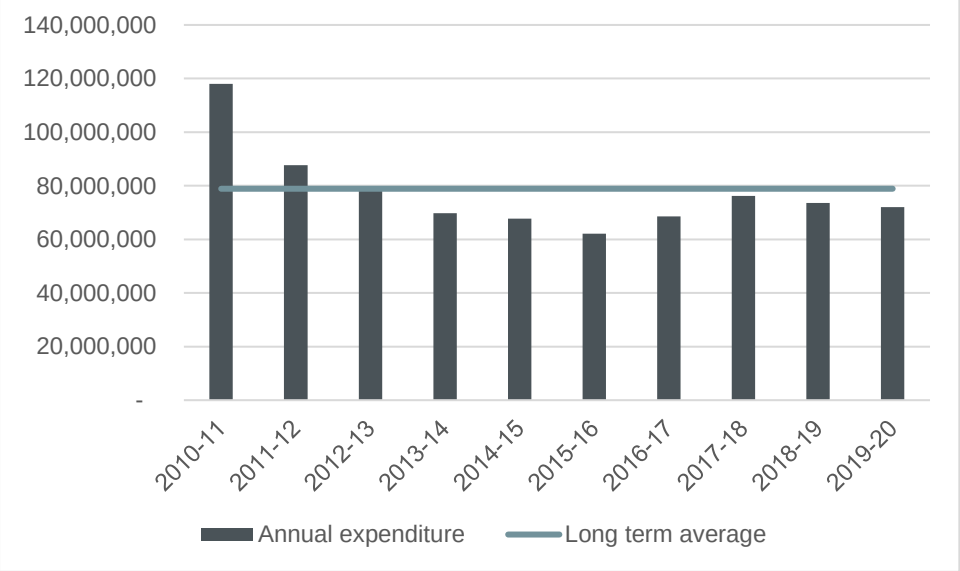
Expenditure trends

Total annual expenditure for River Murray Operations (including all opex and capex) has been increasing since 2014-15 (Figure 5), which has been driven mostly by an increase in Capex (Figure 6).

Capital expenditure has risen from $5.8 million in 2014-15 to a projected average of $20.0 million from 2017-18 to 2019-20 (See Figure 7). The MDBA advised the review team that this is largely due to NSW previously having reduced their MDBA contributions, which have now been restored. With these contributions restored, the MDBA suggest expenditure is now able to return to 'natural levels' required to maintain service levels.[29] This contention is supported by the 2011-12 MDBA Annual Report (page 2) which stated:

> *Other pressures on the MDBA's financial position have to do with revenue. In June 2012, the New South Wales Government announced that it would reduce its future funding contributions to the MDBA for the delivery of functions under the Murray–Darling Basin Agreement by $19.8 million in 2012–13. All other Basin state governments have committed to maintain their 2012–13 contributions as previously advised.*

This is also supported by annual reports and budget spreadsheets provided to the review team, going back several years, which set out the NSW contributions.

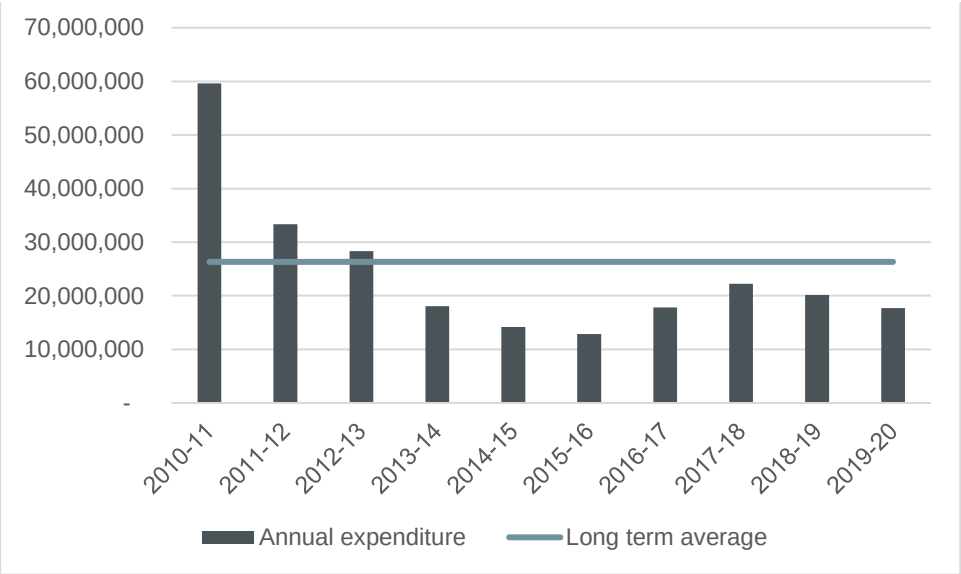


Note: Excludes non-RMO activities.

Source: Data sourced from various MDBA annual budget spreadsheets.

Figure 5 Total MDBA RMO expenditure 2010-11 to 2019-20 ($2016-17)

[29] The review team questioned whether this reduction had impacted service levels, and were advised by the MDBA that during this period there are no appreciable impacts to service levels, but primarily because the assets are generally very long lived. The MDBA viewed the reduced contributions as increasing risks to service levels.



Note: Excludes non-RMO activities.

Source: Data sourced from various MDBA annual budget spreadsheets.

Figure 6 Total MDBA RMO capital expenditure 2010-11 to 2019-20 ($2016-17)

Forecasts

Forecasts for the 'out years' provided in the 2015-16 budget appear consistent with the 2016-17 budget; the review team observe that the budget does not appear to be inflated in years 2017-18 to 2018-19. The only material change between the two forecasts appears to be for Murray Mouth Sand Pumping, which increased to $7 million in 2017-18; in the last budget it was forecast to be $6 million. Regarding this, the MDBA advised:

- The Murray Mouth sand pumping project involves dredging of the Murray Mouth to keep it open during periods of low flow.
- The budget was initially established at $6m based on escalated estimates from previous dredging operations and discussion with industry. The budget was revised up in subsequent budget processes based on established contract rates following a competitive tender process and evaluation of dredging progress.
- Dredging is based on a schedule of rates contract so the actual costs vary depending on the hours of operation and volume of sand pumped. The contract also includes price adjustments for fuel costs which drive a large part of the contractor's costs. The MDBA determined that this fuel cost risk better sits with the program rather than the contractor.

Changes in expenditure

The MDBA has explained that expenditure is reverting to a more sustainable level. The review team agree that expenditure is returning to trend, to close to a longer term average, albeit one that is somewhat lumpy. However the return to trend does not confirm the prudence or efficiency of the level.

As noted previously, the change in total expenditure from 2016-17 is mostly due to increases in capital expenditure, with operational expenditure only increasing by a small amount. Based on total expenditure, the average annual levels include (all in $2016-17):

- 2012-13 to 2019-20 – $71.0 million
- 2012-13 to 2013-14 and 2016-17 to 2019-20 – $82.1 million (long term average excluding years with reduced NSW contribution)

- 2017-18 to 2019-20 – $74.0 million (i.e. MDBA planned expenditure)
- 2012-13 to 2015-16 – $69.5 million (e.g. the past expenditure in years with lower NSW contributions)

Summary

- The MDBA is proposing between $72 million and $76 million in total expenditure on River Murray activities over the three years from 2017-18. Expenditure peaks in 2017-18 with this peak mostly driven by capital expenditure, however operational expenditure is the greatest proportion of the total expenditure.
- Total historic RMO expenditure was highest in 2010-11 ($118 million), and declined to its lowest point in 2014-15 ($67.7 million). The decline was mostly due to reduced contributions from NSW.
- Forecasts from earlier budgets appear relatively consistent with subsequent budgets. MDBA explanations against material changes appear reasonable.
- Planned expenditure (average $74 million) remains below the long term average of $82.1 million.
- The MDBA believe the planned future expenditure levels are sustainable and closer to 'normal' but the review team note this does not confirm prudence of efficiency of the proposed level.

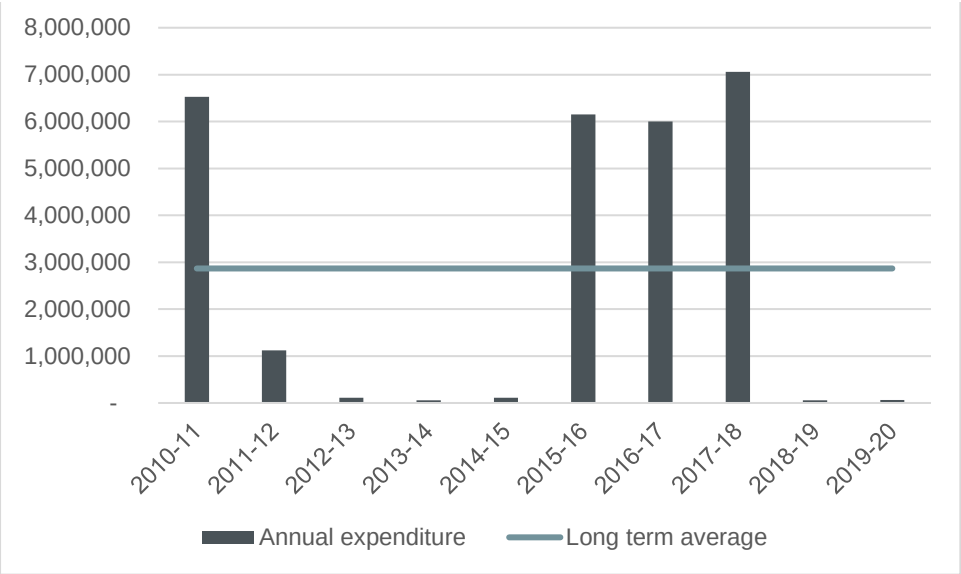
4.3.4. Analysis of expenditure categories and sub categories

To further understand drivers behind changes in expenditure, including historical expenditure and potential increases or variation in future expenditure, the review team assessed some of the major expenditure items.

Murray Mouth Sand Pumping

Murray Mouth sand pumping can be a significant expenditure item. This is required when sand accumulates in the Murray mouth restricting flows. Once this occurs dredging is required until a large flood flow event can scour the sand from the mouth. Dredging can keep the mouth open, but it cannot move sufficient sand alone to regain sufficient connectivity that dredging can be stopped until a large flood event occurs. The MDBA advised the review team that when the 2016-17 budget was prepared they were uncertain as to the timing of a sufficient flood event, which could mean having to wait up to three years as such an event depends on seasonal conditions and rainfall. As a result, a budget provision for the period was made. Further observations in relation to this item include that:

- Expenditure typically in the order of $65,000 per year ($nominal). The MDBA indicated that this provision is made each year for monitoring purposes to determine whether dredging is required.
- Expenditure averages $6.35 million over three years from 2015-16 ($nominal), before dropping back to the long term average from 2018-19. The MDBA advised that this is based on assumptions that dredging will not be required from 2018-19, however this is uncertain and is dependent on future river flows and rainfall conditions.
- Sand pumping is a relatively binary expenditure that is generally either very low (e.g. $50,000) or in the order of $6-7 million.



Source: Data sourced from various MDBA annual budget spreadsheets.

Figure 7 Murray Mouth Sand Pumping capital expenditure 2010-11 to 2019-20 ($2016-17)

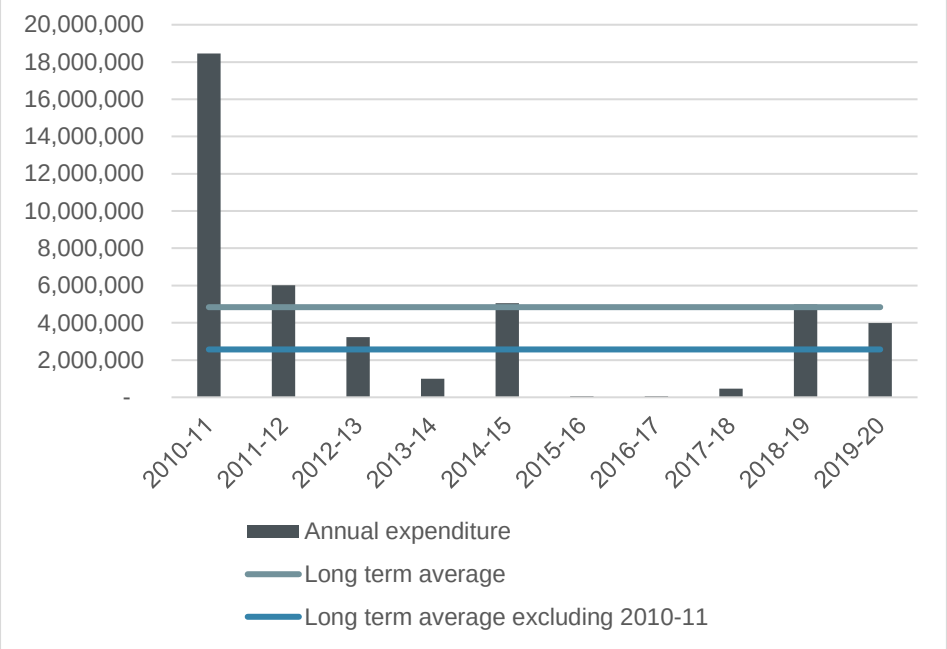
Salt Interception Schemes (SIS)

Capital expenditure for Salt Interception Schemes rises from an average of $64,000 per year to $5 million and $4 million in each of 2018-19 and 2019-20. In response to the review team's questions regarding this, the MDBA advised us that:

- There is a major project to replace the disposal main for the Mildura Merbein SIS. This capital project will see saline water from Victoria pumped under the River Murray to a disposal basin in Mourquong NSW.
- The project has had some stakeholder concerns given the disposal location will move from Wargan Basin in Victoria to Mourquong Basin in NSW. However, some of the previous impediments appear likely to be resolved, particularly with a salt harvester operating at Mourquong so there is additional regional development benefit from the investment.

Long term average expenditure is $3.8 million; 2010 appears to have been an outlier,[30] excluding this the average expenditure drops to $1.7 million.

[30] The MDBA advised that flooding in 2010 meant that many floodplain bores needed to be turned off. As a result operating expenditure was much lower due to electricity costs being lower.

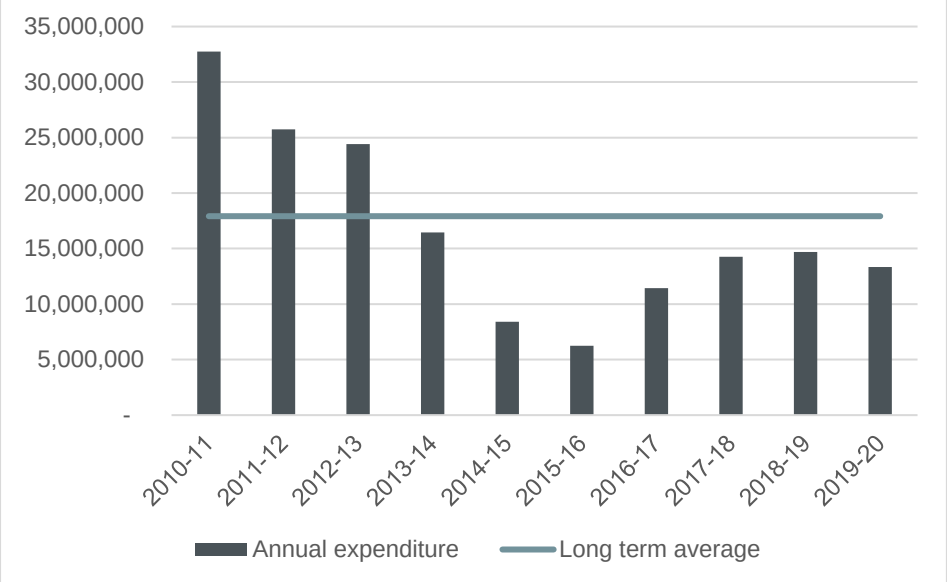


Source: Data sourced from various MDBA annual budget spreadsheets.

Figure 8 Salt Interception Schemes capital expenditure ($2016-17)

River structures

River structure expenditure appears to be relatively steady – besides a dip in 2014-15 and 2015-16, expenditure on River Structures is steady with some variation for individual structures. For example, the MDBA advised that Lake Victoria is forecast to remain at current levels of expenditure as a baseline, however due to a major capital works project programmed for 2018-19 and 2019-20, an additional $2 million per year is forecast for those years.



Source: Data sourced from various MDBA annual budget spreadsheets.

Figure 9 River structures capital expenditure 2010-11 to 2011-12 ($2016-17)

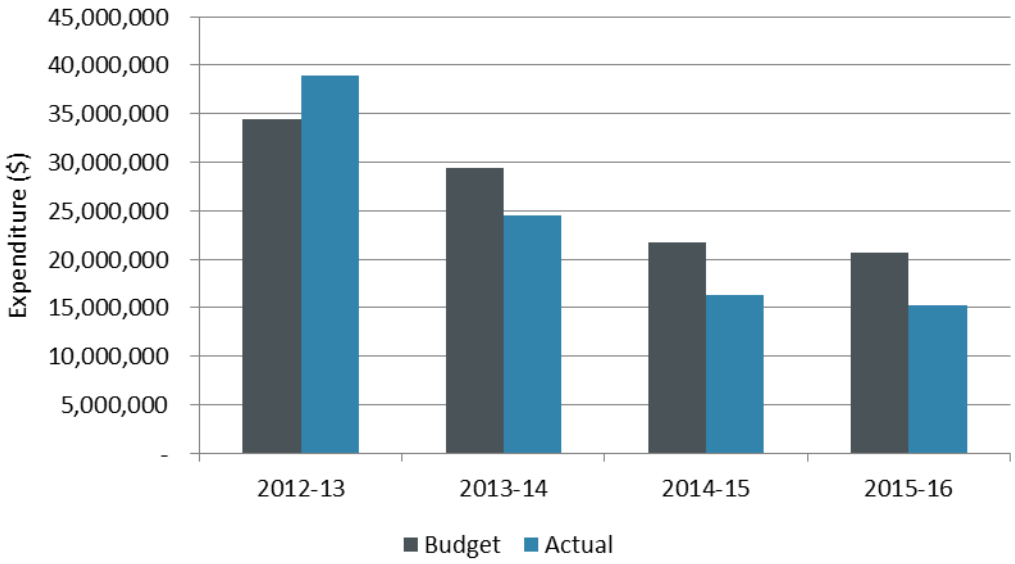
Summary

Some specific expenditure items partly explain increases in the future planned expenditure. For example, the Murray Mouth dredging expenditures in the future are much greater than in the period 2011-12 for 2014-15, but have been further explained by the MDBA. The SIS has less of an impact on overall expenditures in the future period than the river structures, which in 2017-18 is planned to be almost three times the 2014-15 amount, however the historic amounts are driven by the need to manage reduced contributions from NSW rather than reduced need, although the review team are not able to verify asset needs. The trend for the future period for river structures is still only half the historic peak observed for this category in 2011-12, noting that this year (2011-12) included major capital expenditure (on dam safety and environmental asset construction) as a result of a one off additional contribution by the Commonwealth Government.

4.3.5. Budgeted versus actual capital expenditure

The review team requested that the MDBA provide details of actual expenditure to inform an assessment of whether the planned levels of expenditure could be supported based on the actual levels of expenditure.

Analysis was completed for capital expenditure for the years 2012-13 to 2015-16 (these are the years the actual expenditure data was provided for). The data shows an overspend of around $5 million in 2012-13, but an underspend of around $5 million in all years from 2013-14 through 2015-16.



Source: MDBA River Murray Operation expenditure reports 2012-13 to 2015-16.

Note: Compares the Investigation & Construction expenditure category, which can be characterised as capex.

Figure 10 Capex expenditure budgeted and actual 2012-13 to 2015-16

In response to questions regarding the observed underspends, the MDBA commented that:

> *In order for SCAs to enter into contracts they require certainty that funding will be available from the Joint Venture. As our budget is only approved on a one year rolling basis by governments we need to include adequate budget in the current year to complete programmed works, particularly that which SCAs contract. MinCo has agreed that we may carryover any genuinely committed expenditure from one year to the next without further approval. As a result, we typically carry over several million dollars for works in progress at 30 June. When establishing the next year's program*

and budget which forms the basis of contributions from Governments (and water users) the carryover amounts are not included. This ensures we do not double up on contributions for any activity. We are not accumulating an increasing underspend but are rolling forward a fairly consistent amount. The graph of budget vs actual includes the carryover amounts. Where we have a genuine underspend (i.e. budget exceeds the actual cost of works) this funding stays in the joint Venture and is applied to the program. In doing so subsequent contributions from Governments are reduced.

The review team has accepted this response at face value as reasonable and has not been able to consider this issue in further detail within the scope and timeframe of this review.

We have checked whether the MDBA systematically overestimates requirements in outyears (and subsequently reduces these in the annual budget process). We found no clear or systematic evidence that this occurs.

4.4. Assessment of processes leading to planned expenditures

Here we consider the processes involved in developing, refining, and approving the planned expenditures. This is a process overseen by the MDBA but which the SCAs substantively contribute to and are involved in. The following three sub sections articulate our assessment of a continuum of process from SCA expenditure proposal, through to Ministerial Council MDBA budget approval, with the purpose of highlighting if and how this process contributes to ensuring prudent and efficient expenditure.

Overall, we found that the governance arrangements are complex as a result of the inter-jurisdictional institutional and MDBA organisational arrangements. Most of the processes are reasonable and there is some evidence of the MDBA working to ensure that only prudent and efficient expenditure is included in the budget. However there are substantial areas for improvement in the process required to provide greater confidence and assurance to customers that costs are prudent and efficient and aligned with service levels that customers are willing to pay for.

4.4.1. Expenditure proposals and build up

As described in Section 3.2, the MDBA has explained that the expenditure proposals originate from SCAs. SCAs submit their proposed expenditure through an annual budgeting process run by the MDBA. The MDBA obtains proposals from the SCAs by having them complete entries into an annual budget spreadsheet, which contains the first out year that formal approval is sought for, in addition to the three subsequent years which are suggested to be completed for planning purposes only (and are subsequently revised in following years before being formally approved).

The review team reviewed several annual MDBA budgets that the SCAs had inserted their proposed expenditures into. While somewhat complex, once understood these spreadsheets identify proposed expenditures against specific assets, with information on asset type and location, and responsible SCA included. It is generally possible to identify what expenditure has been proposed by whom for what asset and when. However, there is very limited information in the spreadsheets (or supporting documentation) to establish what the different expenditures are for, or how amounts have been estimated (with the exception of business cases for major expenditures). The budgets themselves do not provide any confirmation of the prudence or efficiency of the expenditures being proposed by the SCAs. To a significant extent, the MDBA is reliant on the SCAs to put forward expenditure that is prudent, and also reliant on the SCAs to insert appropriate (i.e. efficient) estimates into the annual budget.

The review team understands that for some items, particularly operational expenditure, many of the individual line items are rolled forward from previous years (as completed by the SCA), with minor adjustments potentially made by the SCA in the process. For capital expenditure the amounts vary much more from year to year, with insertion of new proposals or completion of projects. The review team would expect that proposed capital expenditures undergo some form of options assessment, most likely through a business case process. Upon questioning regarding this, we were advised that business cases may be developed but are not necessarily required (and not required for all expenditures). The review team was advised that business cases will generally only be prepared for larger or higher value items (potentially greater than several hundred thousand dollars or over $1 million), and may be prepared by the SCA itself, or in collaboration with the MDBA.

Sample business cases

As noted above, the review team would expect some form of options assessment to be completed for major expenditures. The review team requested examples of business cases to ascertain the level of rigour that might be applied to assessing the need for larger expenditures. Our summary of each of the sample business cases reviewed is included Appendix A. In summary, outcomes of reviewing these business cases includes:

Of the documentation provided, three of the four constitute a form of options assessment expected of a business case. The fourth document was minutes from the Hume Dam Steering Committee established to oversee major project delivery for Hume Dam.

- **Electrical Switchboard Replacement Business Case:** clearly identified and provides evidence of the problem to be addressed through investment and considers several options.
- **Torrumbarry Weir – Electrical Control System Upgrade:** summary of work undertaken to justify project need. From the documentation sighted, it is evident the project is prudent but the documentation does not confirm that the expenditure would be efficient.
- **Hume Dam Flood Security Upgrade project Steering Committee (minutes):** The minutes suggest that the project is in very early stages of problem identification and justification, however indicate intention to base the project justification on strong grounds including multiple studies and full business case.
- **Hume Dam business case – southern training wall remedial works:** identified a clear need for expenditure and justified expenditure in terms of risk of asset failure and expense of the project. Assessment considered several options and included a Triple Bottom Line Cost/Benefit Assessment.

The review team found that from the limited sample sighted, when completed, some of the business cases for major expenditures under the river management program appear to be undertaken consistent with generally accepted industry practices. Others were reasonable but did not contain any discussion of different realistic options to meet the need. If business cases are undertaken to acceptable standards, this should contribute to at least the major capital expenditure proposals being prudent, with some minor doubt over efficiency. However, the extent to which business cases have been completed for all large expenditure is unclear, and at best inconsistent. Similarly, the requirement for business cases to be completed for large expenditure appears to be inconsistently applied. Further, from the business cases reviewed, there appears to be some variation in the standard and rigour applied to the preparation of business case between SCAs, which is a significant issue for the overall program having implications for state shares of costs.

Assessment

The annual budgeting process, including the submission of ‘bids’ for expenditure by the SCAs in itself does not seem to be an inappropriate process for initial identification of required expenditures, given it

relies on the entities that are most directly engaging with the asset to put forward proposals for maintenance or augmentation.

However, in order for this step of the process to help deliver prudent (and efficient) expenditures, it relies (to a significant extent) on the SCAs to have robustly assessed proposed expenditures themselves (or in collaboration with the MDBA), before inserting them into the budget. As is outlined below, the MDBA does undertake an additional step to help ensure prudence and efficiency, however, ideally expenditures would be confirmed as being prudent by some form of justification process (artefacts in this process could include strategic assessment, project charter, project initiation document, business case) before being inserted into either the budget for which approval is being sought, or the forward plan.

Given this, this step in the process is primarily a reflection on the SCAs, including their asset management practices (for assessing asset condition and determining the need for maintenance and remediation), as well as their expenditure justification/options assessment/business case processes. But it also reflects any requirements (or lack thereof) to complete business cases (or options assessments) placed upon SCAs by the MDBA or associated agreements (e.g. Joint Venture arrangements, or other contracting or governance arrangements). To this end, we suggest that there may be benefit in there being:

- clearer requirements about when a business case is required – such as clearly established dollar value (or similar metrics) to trigger a requirement for a business case
- minimum requirements or standards for expenditure justification under the program, such as general requirements to clearly investigate the do nothing case and alternative options, or to cost proposals to a certain confidence level, to complete business cases with minimum requirements, or similar
- clearer roles and responsibilities for development and completion of business cases, including which agencies lead their development, and how these should be resourced (e.g. via SCA operational expenditure within the program, MDBA operating expenditure, or otherwise)
- a greater level of rigour around justifying proposals for operating expenditure[31]
- greater incentives for SCA's to seek out efficiency improvements in the delivery of MDBA projects and programs
- greater requirements placed upon SCAs to justify (including providing documentation for) expenditures that do not require a formal business case (noting the additional resources this may require)
    - other than completing entries into the budget spreadsheet (or undertaking a business case for large expenditure), the reviewers did not cite any documentation explaining the proposed expenditure, nor providing any justification or rationale for it.[32]

An additional broader issue that these matters point to includes the levels of service and service outcomes that are being sought, and whether these reflect customer needs. This is an important component of justifying planned expenditure, and it is not clear to the reviewers how this is currently assessed (or indeed if it forms part of expenditure proposals at all).

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[31] Noting that the MDBA advised that current justification of operating expenditure is focussed towards scrutiny of cyclic maintenance and renewals programs as expenditure and staffing levels are currently stable. The MDBA advised that significant changes in operating expenditures would be tested.

[32] We understand that under the MDB Agreement Clauses 58, 59 and 60, SCAs have to provide details of planned works including designs, specifications and cost estimates. However, we have not seen evidence that this is actually occurring (outside of the business cases for major expenditures) in support of the proposed expenditures.

4.4.2. Expenditure proposal assessment, refinement, and prioritisation

As part of the annual budgeting process, the MDBA assesses the expenditures put forward by the SCAs in the budget spreadsheet. Through the process of building up this budget it may, in collaboration with SCAs, then refine (up or down) or prioritise the expenditures. As part of this process the MDBA may also apply its own knowledge of the assets to help determine if the expenditures are required. The overall assessment process includes committee based coordination and review at different levels, including representatives of different agencies or organisations.

In order to assess this part of the process, the review team asked the MDBA to explain the process, and identify instances where expenditures had been modified by the MDBA, or by committees or other governance processes, before the budget was ultimately submitted for approval.

In reviewing the 2016-17 budget, the review team identified two specific instances highlighted in the 2016-17 budget, these included:

- At Menindee lakes, WaterNSW had proposed $250,000 for cathodic protection works. The MDBA rejected this proposal on the basis that NSW is responsible for construction at this asset with the MDBA only reimburses operating expenditure.
- Also at Menindee Lakes, WaterNSW had proposed $300,000, which was subsequently reduced to $0 by the MDBA (presumably based on the same justification).

While these examples highlight the process having removed expenditures, it appears these were based on a misunderstanding (or lack of understanding) of the Joint Venture arrangements, rather than an assessment of the prudence or efficiency of the expenditures (i.e. they were not able to be legitimately cost shared based on the agreement, rather than able to be included but determined to be imprudent or inefficient). However, this is not to say that other adjustments have not or are not made by the MDBA to proposals (as further described below).

A specific example was provided by the MDBA associated with Victorian expenditure proposals. This included a range of adjustments made in the annual budget spreadsheet, modifying (or proposing to modify) the original proposed expenditures put forward by the SCA. In this example, Goulburn-Murray Water was putting forward modifications, presumably in response to requests from the MDBA or through the committee structures (which are described below), to attempt to refine or reduce expenditures. In this example, it was evident that a wide range of adjustments were proposed across a variety of the Victorian assets. These included deferrals, updates due to new information, removal due to duplication, adjustments due to timing or optimisation of different works, removals due to project completions, and a variety of other adjustments for different reasons documented in comments against each adjustment.

The MDBA also provided example information from the Review of Joint Activities Taskforce[33] around review of budget, savings measures and program adjustments/deferrals to deal with jurisdiction funding limitations. This documentation provided evidence of both additions, and removals of expenditure items in the draft budget. As noted by the MDBA some of this was to account for reduced contributions, but the process also highlighted opportunities for deferring expenditures. The example provided showed overall budget reductions in 2015-16 and 2016-17, and increases in 2017-18 and 2018-19. This was based on around $1.09 million of identified savings, and $7.21 million of deferrals, both associated with river management activities.

An additional element of refinement the review team were advised of involves the MDBA completing inspections of shared assets through the course of the year. The review team understand that this

[33] RoJAT is a subcommittee of the Basin Officials Committee that has dealt with budget matters in recent years.

may provide an additional opportunity for verification of planned expenditures, because the MDBA can gain a degree of independent and first hand assessment of asset condition. Whilst we were advised of this process, we were not provided with any specific documentation or other evidence of the results of the process (such as where an expenditure proposal had been excluded, deferred, or reprioritised following an MDBA inspection).

Committee structures

The MDBA provided the review team with the Terms of Reference for two of the relevant committees that have responsibility for developing and refining budgets. This included the Joint Programs Budget Committee, and the River Murray Operations Committee. The JPBC is directly responsible for budget preparation and refinement, it reports to the Basin Officials Committee (BOC), and its role is to:

- provide advice on the assessment of business cases for capital items in the Joint Programs
- provide advice on the draft Annual Work Plans and Budgets for the Joint Programs
- work with the MDBA and the RMOC to prepare each year's Joint Programs Budget.

Membership consists of a chair nominated by the Chair of BOC and a representative from each Basin jurisdiction. The MDBA may attend meetings to provide advice and draft budget proposals for the Committee, and provide secretariat support. Other representation may occur at the discretion of the Budget Committee.

The RMOC has a number of responsibilities relevant to the budget build up and expenditure refinement, including:

- oversighting preparation of annual and out-year budgets for River Murray Operations
- providing advice to the relevant Contracting Governments, through Basin Officials Committee, on:
  - proposals for future asset construction and planned maintenance;
  - proposals for the future development of River Murray Operations;
- providing advice to the MDBA on:
  - preparation of Corporate Plans in relation to River Murray Operations
  - preparation of the Asset Management Plan and any amendments to the Asset Management Plan

The RMOC comprises one senior representative from each of the Contracting Governments of New South Wales, Victoria and South Australia, a single representative from the Commonwealth, and one representative from each SCA.

The review team were unable to view specific papers or similar documentation from these committees to illustrate any further specific budget adjustments or refinements made, and for what reasons (the MDBA citing Commonwealth document classification issues as the reason for being unable to provide these to the review team). Evidence of inputs and outputs from these committees (e.g. evidence of the budget having been modified and for what reasons) could potentially provide greater confidence that these committees are helping to ensure prudent and efficient expenditure outcomes.

Assessment

On face value the committee structures would appear to provide a reasonably appropriate overarching process for assessing and refining budgets, but we note the potential for the RMOC to not necessarily provide an independent view of the planned expenditure given the SCAs sit on that Committee. This would place more emphasis on the role of the JPBC, but this committee may not

interrogate the budget or associated processes at the same level of detail. We expect that the SCAs may be involved in the RMOC to help explain expenditures. However, if more information was provided for the planned expenditures inserted into the budget, the JPBC (or an alternative oversight arrangements) could potentially be comprised of more independent reviewers and have a genuinely independent review role.

It is not explicitly clear to the review team how prioritisation of expenditures occurs given funding constraints or limitations, but we assume that the JPBC and/or RMOC provide this function as part of ongoing deliberations through the course of preparing the budget, or by delegating this to MDBA officers. It is clear from budget adjustments undertaken that expenditure has been modified in the face of funding limitations, but this does not confirm prudent and efficient expenditures.[34]

We note that neither the JPBC nor the RMOC Terms of Reference contain any specific requirement for either of those committees to ensure the expenditures contained in the annual budget are prudent and efficient.[35] They are also not explicit regarding what the budgets must achieve (e.g. maintaining agreed service levels while minimising lifecycle costs of maintaining assets).[36] Clause 74 of the MDB Agreement requires the preparation of the annual budgets for joint programs, but does not specify any requirements regarding prudence and efficiency or similar outcomes for joint program budgets.[37]

While we accept that the budget refinement process appears to have a number of checks and balances in it, and in practice appears to work for the parties involved, as it currently stands it does not provide confidence that only prudent and efficient expenditures will be included in the annual budget submitted to Ministerial Council for approval, nor that **actual** expenditure will be prudent and efficient. To this end, enhancements could include:

- greater documentary requirements for planned expenditure, as noted in the previous subsection, as well as more detailed assessment reports of expenditure by independent reviewers that are made publicly available
- modifying the committee structure so that there is a more formal and independent review of planned expenditures (based on better documented submission). We accept the need for SCAs to be involved in the process of building and refining a budget, but a greater degree of independent review (at a detailed level) than is currently provided would be beneficial
- placing more specific codified requirements into the committee structures (e.g. Terms of Reference) or other governance processes to explicitly require that only demonstrably prudent and efficient expenditures are included in the annual corporate plan and budget

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[34] The review team did not see any evidence that the reduced contributions from NSW around 2014-15 had an impact on service levels. In response the MDBA commented that: *reduced expenditures were managed by reducing maintenance and capital investments, which over a relatively short period for such long lived assets did not give rise to a reduced service level. However if sustained asset condition would deteriorate and eventually service would be compromised. Inherently the risk of an asset failure or impact to service increased as a result of deferring maintenance.*

[35] The RMOC does have a requirement to: “carry out its functions as efficiently as possible, consistent with prudent commercial best practice”, but this does not appear to set requirements regarding the expenditures put forward in the annual budget it is responsible for overseeing.

[36] We understand obligations of the SCAs in managing assets are defined in a number of places, including the MDB Agreement, the ‘asset agreement’, an MoU between WNSW (then State Water) and MDBA, and annual budget notifications, which in combination may constitute a definition of service level requirements.

[37] Clause 61 of the MDB Agreement does contain direction regarding efficient construction of works.

- codifying and documenting the role the MDBA plays in verifying the prudence and efficiency of planned expenditure – including through site inspections or other tasks (e.g. budget review), and documenting how expenditures have been revised as part of this process[38]
- considering modifications to the various agreements that give effect to SCA and MDBA roles, to explicitly require prudent and efficient asset expenditure (e.g. the asset agreement, MOUs, MDB Agreement)
- considering incentives for SCAs to achieve efficiencies over time with respect to actual expenditure (See for example discussion at Section 4.7.3).

4.4.3. Expenditure approvals

As noted above the JPBC and RMOC provide oversight and advice to the budget development process. The MDBA is responsible for directly developing the budget and the corporate plan, with input from SCAs. The expenditures are formally approved through the approval of the Corporate Plan by the Ministerial Council. As outlined in Clause 9.(c) of the MDB Agreement, the Ministerial Council has a function that requires it to:

> *approve the annual corporate plan and budget, and asset management plan, prepared by the Authority for the purposes of this Agreement*

Following its approval, budget notification letters are then sent to the contributing governments, advising them of their share of the budget. SCAs are then empowered to deliver the elements of the plan.

As part of this review, the review team have not been able to sight any papers provided to the Ministerial Council, or the approvals of the budget. Whilst this is the case, we do not expect that the Ministerial Council would consider detailed aspects of the budget (such as the potential for revisions) and would take advice from committees under it (such as BOC and RMOC) that the budget proposed was appropriate.

The review team did sight the detailed budgets, in addition to the letters sent to contributing governments, which appears to suggest that no further modifications were made between finalising the budget at the committee levels, and approval by the Ministerial Council.

SCA Approvals from the MDBA for major expenditure

We understand from the MDBA, that an additional approval step is applied to SCAs for major expenditures. SCAs must seek the approval of the MDBA before awarding any contract for a value in excess of $3.2 million. The MDB agreement outlines that this is $2 million, but the MDBA has advised this was increased by the Authority in accordance with Clause 60(2). We also understand that under the MDB Agreement Clauses 58, 59 and 60, SCAs have to provide details of planned works including designs, specifications and cost estimates. Approval is required from the MDBA under Clause 58 before construction can begin (for items over $3.2 million).

[38] We note that clause 61 does contain direction on efficient construction of works, and appears to include restrictions about funding entire asset replacement, or major improvements in asset function, but given this clause is tied to construction of works, it does not appear to limit or control what amounts are included in the budget, and therefore impact on contributions and subsequently any cost-recovery from users applied by state governments.

Assessment

It appears appropriate that a budget of the size, and shared nature of the joint programs budget be approved by Ministerial Council, especially given this expenditure will be subsequently recovered from each contributing government.

While Clause 9.(c) of the MDB Agreement confers the power on the Ministerial Council to approve the annual corporate plan and budget (and asset management plan), it has no requirement for the Ministerial Council to ensure the expenditure is prudent and efficient. As noted in the previous sub section, this is not an explicit requirement of the committees under Ministerial Council that build the budget either, so to the extent the Ministerial Council accepts the advice of committees that sit underneath it, it is not necessarily the case that the budgets are prudent and efficient. While it may be assumed that each Minister would be seeking to ensure their state contributions were minimised (assuming there was no risk to service levels), in reality it is unlikely that this Council would interrogate budgets and return them for revision, especially as Ministers would not be well placed to make judgements about specific planned expenditures (information on which would not be available to them).

The requirement placed upon SCAs to seek approval from the MDBA before construction occurs (for high value projects) also appears an appropriate additional check and balance. However, it appears that this step does not guard against the potential for imprudent or inefficient expenditures being contained in the budget and then recovered from states (and water users in the NSW case). So whilst this has the potential to prevent certain works from occurring (if they don't meet the requirements of Clause 61), it does not appear to prevent imprudent or inefficient expenditures from being recovered from states or water users.

To address these issues the MDB Agreement could be modified to ensure Ministerial Council has a requirement to only approve a budget that contains demonstrably prudent and efficient expenditures.[39] In reality this would have to be addressed by Committees beneath it, as was articulated in the previous section. Overall, it is likely that more could be gained from improving approaches to, or requirements within, the expenditure proposal and budget refinement stages, rather than the ultimate approval stage. However, including this requirement would ensure the ultimate decision makers have a clear responsibility for prudent and efficient outcomes. Approval of the budget could also be linked to what it is actually required to achieve in terms of outcomes, such as having requirement to achieve agreed (and clearly defined) service levels at least cost.

4.5. Approach to asset management for joint programs

The review team understand that the approach to asset management for the shared assets has been a topic of consideration for prior reviews, and that an efficient approach to asset management for shared assets is a subject the SCAs and MDBA are aware of, and have been working to address. Some of the key issues here include the potential for duplication (e.g. multiple asset management plans and processes) and clarity about roles and responsibility, or accountability. These issues are important for expenditure, as asset assessment and condition information drives proposals for maintenance and remediation. They are also important from an operational expenditure perspective, especially if there is duplication of effort between agencies.

[39] The review team acknowledge that it would likely be difficult to amend the MDB Agreement. Given this, more wholesale changes could be pursued, or changes such as those suggested here could potentially be addressed by mechanisms outside the agreement itself.

As part of this review, the review team were provided with some asset management documentation, but did not attempt to review the topic of asset management in a substantive way, noting that a substantial and specific review was undertaken by GHD in 2016 (see Section 4.6.2). These included:

- the Memorandum of Understanding between the MDBA and State Water (now WaterNSW) which includes information regarding roles for asset management plans and registers, amongst other topics
- the asset agreement for River Murray Operations Assets, which is signed by the Commonwealth and the relevant state governments, and sets out how the assets are to be managed between the MDBA and SCAs or state governments. It includes a requirement for the MDBA to maintain an asset register for RMO assets.
- the MDBA Asset Management Plan for RMO Assets, which is a specific requirement of the MDB Agreement (Clause 53) and so is drafted in a way that meets the requirements of the Clause. To that end it describes the assets and the functionality they are required to provide.

We also understand the MDBA holds copies of the operations and maintenance manuals for the major storages. The MDBA advised that these provide a useful reference for checking on periodic maintenance items when they are brought in to the MDBA budget.

Asset management plan

The Asset Management Plan (AMP) was last updated in December 2014. It was prepared by the three SCAs along with MDBA. The AMP outlines the overall strategy for management of physical assets, along with other content typical of an AMP. The AMP identifies each major asset within various asset classes along with information on the asset such as routine O&M requirements and planning maintenance activities which is a useful feature.

The following statement is made early in the AMP which establishes that the intention for MDBA assets is not for excessive expenditure, or excessive under-expenditure, but what is adequate to maintain the service levels:

> *Defining the level of maintenance to be achieved at the MDBA assets is difficult to do explicitly. MDBA does not intend for "gold plated" maintenance, being the best no matter what the cost. On the other hand it does not desire to spend so little on the maintenance of the assets that they are notorious for breaking down, and not delivering as and when required. In an attempt to define a standard of maintenance the MDBA has a KPI that it will be in the top one third of asset owners.*

A more detailed review of MDBA's asset management practices was carried out in 2016 and is summarised in section 4.6.2.

Annuity calculator

The MDBA also provided the review team with a copy of an annuity calculator, which includes both:

- the asset replacement profile taken from the asset register and based on theoretical design life
- a planned maintenance regime for each site developed from operations and maintenance manuals and other program related material held by SCAs

Regarding this, the MDBA advised that:

> *both these data sets provide a useful check on the timing of projects being brought in to the program and the cost of works. Particularly for planned maintenance activities,*

the original baseline cost was established from data on previous occurrences (where those activities had been done before). It has since been escalated. It is not perfect but provides a reasonable guide to expected costs and allows comparison of similar activities across SCAs.

Clause 8.6 of each SCA's MoU states:

> *(B) The Plan will be in such form, approved by MDBA, as will assist the MDBA to develop:*
>
> > *(i) ….*
> >
> > *(ii) an asset renewals annuity based on a minimum period of 30 years*

The annuity calculator was not considered in detail due to the limited scope of this review. A brief review however, revealed:

- All calculations are directly driven by the assumed residual life; combined with an estimated complete replacement (replication) value- these two values determine what year the work is planned, with the totals in a given year summated as the expenditure required in that year.
- Estimated expenditure required is typically between $10 million and $20 million per annum; as low as $5 million and as high as $25 million over the first ten years
- Expenditure has some significant peaks due to major asset replacements being forecast in a particular year, for example:
  - $52 million in year 11
  - $75 million in year 13
  - $377 million in year 20
- The calculator arrives at an 'annuity' of $36.2 million per year
- The annuity calculated is skewed by a handful of larger works; a more extreme example being in year 20 with three assets at Hume Dam being forecast for complete replacement:
  - Embankment 1A concrete core wall - $216.8 million
  - Embankment 2B concrete core wall - $91.3 million
  - Embankment 4 concrete core wall - $34.1 million

Without going into detail about the likelihood of these major works being undertaken all at once, or at the level of expenditure implied, the review team notes there would be a significant amount of work required to determine what remedial works would be required or whether a total replacement would be necessary. It is considered unlikely that expenditure of this magnitude would be considered, with other lower expenditure options likely identified to meet the same need.

- Simply removing these three large asset replacements from the year 20 line item reduces the annuity to $26.5 million.

A scoping study carried out on behalf of the MDBA in 2016 concluded that some SCAs were using the annuity profile as a check, and not used as the basis to prepare any expenditure estimates or forecasts.

Summary

SCAs and MDBA do not appear to be directly using this model for forecasting purposes, instead arriving at the forecasts via other means (see for example Section 4.7.2). If this is the case, the review

team believe this appropriate, given the annuity calculator appears to be a very high level tool potentially not suitable for forecasting or justifying replacement expenditure. The model may be useful for various purposes – it does set an extreme upper bound on annual expenditure – but we observe that is appears to be skewed by several very large expenditure items based on complete replacements of assets when the estimated residual life reaches zero.

4.6. Findings of previous reviews and their implementation

Here we summarise some of the relevant findings of recent previously undertaken reviews that relate to expenditure under the RMO program, including matters that may contribute to ensuring the RMO program is prudent and efficient. These include a study into asset management practices, and a previously completed efficiency review undertaken for the Commonwealth government.

To provide further context to these reviews the MDBA commented that the study into asset management practices was undertaken to develop more detailed recommendations and actions, in response to recommendations from the efficiency review. Further, the MDBA stated that:

> *Governments have committed to implementing these and actions and work has commenced. Given the interaction of asset management systems managed by four separate SCAs with the MDBA coordination role implementation is a complex activity and will take some time but some initial improvements will be realised in the coming year.*

While the review team have (in part) assessed progress in implementation and reinforced implementation of various recommendations of these studies, we note the MDBA's desire for expectations to be tempered given the complexity of governance arrangements and inter-jurisdictional systems.

4.6.1. 2014 efficiency review of the RMO

In 2014, the Commonwealth Department of the Environment engaged a group of consultants to review the efficiency of the RMO program. The consultancies included an expenditure efficiency review, development of a Building Block model covering the Murray Darling Basin Authority's (MDBA's) River Murray Operations (RMO), and developing and applying a benchmarking approach to RMO costs.

The benchmarking study was not conclusive with regard to RMO costs and was suggested as not being reliable for recommending a specific level of expenditure. The review of costs was a review of RMO operating costs and renewals forecasts which generally found those costs to be efficient, except for contingency applied to infrastructure enhancement projects. A global 1% efficiency dividend was recommended.

While collectively, these studies suggested that the asset management practices of RMO were 'sound', several (and some significant) improvements to asset management practices were recommended, such as improvements to the RMO Asset Register, and the Asset Management Plan, as well as explicit definition of service standards (something also identified by GHD in 2016 and by this review). The specific recommendations made from the main review report were:

- A 1% ongoing efficiency target be applied to the expenditure
    - Cardno recommended a 1% per annum efficiency target be applied for operating costs, which totalled $2.8M over 4 years

- An industry-wide approach is adopted for benchmarking
  - Further development of a benchmarking approach or framework was suggested to be required in order to utilise a benchmarking approach
- Implement enhancements to the RMO asset register
  - This included a suggestion to introduce a criticality metric based on condition rating and consequence of failure to produce an asset risk score.
- Implement enhancements to the Asset Management Plan
  - This included improving aspects related to standards of service expected; summary financial information; renewals, planned maintenance and renewals annuity projections; high level statistics on the condition of assets; and a summary improvement action plan over a three-year horizon
  - The 2016 scoping study carried out by GHD (summarised further below) was commissioned in response to this recommendation
- Develop a consolidated set of explicit service standards
  - It was recommended that a more formal, consolidated specification of service standards and obligations should be developed for RMO assets
- Implement additional service standard and asset performance metrics
  - This included an acknowledgement of the opportunity to significantly lower costs through slightly lower levels of service, and that articulating current service standards and costs would help inform the Joint Venture's expectations for ongoing service.
- Provide budget and cost information to clearly separate recurrent operating costs from project expenditure, over multiple years.
  - This recommendation was partly tied to the building blocks approach which (if implemented) would require this separation, but was also suggested to be beneficial for other purposes (and is something this review team would also support)
- Improvements to cost forecasts
  - This included proposals to justify any real increases in cost relative to a base, and documentation of efforts to minimise increases. It also included a suggestion that increases should also be linked to a driver or drivers and service levels.
- Streamline expenditure governance processes
  - This included a suggestion that variations to budget should not require changes to the corporate plan, and also suggested there should be more certainty about expenditure on assets over the 4 year program.
- Improve consultation regarding RMO expenditure and activity plans.
  - This included a suggestion for wider and more formal consultation, focusing on interactions with SCAs, MDBA and customers, with SCAs leading consultation.

As part of this review, the review team was able to question the MDBA on some but not all of these matters.

Regarding the 1% efficiency dividend, the MDBA responded that:

> *The Synergies efficiency review recommended a 1% efficiency dividend without highlighting any particular element of the program. This was at a time when NSW was starting to reinstate its funding that was cut in 2012. As it is not sensible to simply*

apply a blanket 1% to each line item when some costs are not within our control (e.g. electricity costs for SIS) the equivalent total amount was applied to specific activities. This was then masked by the reintroduction of a number of deferred activities.

Regarding an industry-wide approach to benchmarking, the MDBA responded:

This is not being pursued at this time. Arranging for industry wide benchmarking on a regular basis would be a significant activity and not one MDBA could mandate to other organisations. The previous benchmarking by Synergies was done with similar organisations for which we could relatively easily obtain data. We believe there is greater merit in investing available resources in other areas to improve and demonstrate efficient program delivery.

Regarding enhancements to the RMO asset register, the MDBA responded:

A project to upgrade the RMO asset register form the current spreadsheet based form to a more robust system has commenced. This will provide a platform to capture and aggregate data on asset risk. A program to engage with SCAs to aggregate existing asset data and capture missing data will then proceed. This is a significant task and will take some time to complete. As a result asset data will need to be prioritised.

Regarding enhancements to the Asset Management Plan, the MDBA responded:

A review of the AMP is due for completion in May 2017. This will incorporate a number of the recommended improvements although in some instances the improvements will be subject to ongoing development with further updates of the AMP over time.

Regarding a consolidated set of explicit service standards, the MDBA responded:

A pilot to develop service standards for water assets (the greatest portion of the asset portfolio) and hydrometrics is proposed. This will be undertaken through the first half of 2017. This activity will be a precursor to being able to action a number of other recommendations.

Regarding an additional service standard and asset performance metrics, the MDBA responded:

Will be dependent on service standards being defined as above. I question whether costs can be significantly lowered through slightly lower levels of service.

Regarding the segregation of capex and opex, the MDBA responded:

This recommendation came from the reviewers who created a "building blocks" model of MDBA expenditure. From 2016-17 we have enabled functionality in our Finance system to enable this to be readily done. However, given the way the budget is created, reviewed by jurisdictions and then the program implemented by SCAs (who treat all MDBA expenditure as recurrent funds) we have elected not to change the way the budget is presented at this stage. I don't see that it would lead to a different outcome.

Regarding improvements to cost forecasts, MDBA responded:

Once work on service levels is further progressed the development of future budgets will be more explicitly aligned to delivering against these requirements. For

development of the 2017-18 budget which will occur in parallel to the initial work on service levels the MDBA will seek more comprehensive justification on any cost increases for recurring activities. The analysis of capital investments will continue to be done on a project by project basis with formal project governance arrangements implemented to monitor and ensure efficient project delivery.

Regarding streamlining expenditure governance processes, MDBA responded:

> *The current approach that requires amendment of the corporate plan to accommodate variations to budget is mandated by the MDB Agreement. Governments are reviewing the corporate planning approach to make sure it is efficient and robust but at this stage no changes to the Agreement have been proposed.*

Regarding improved consultation regarding RMO expenditure and activity plans, the MDBA responded:

> *The recommendation for greater consultation with customers has been noted by Governments but a decision on how best to implement this has not yet been taken. The frequency of annual budget process , costs being shared across such a broad customer base and the breadth of the program for such an integrated system make for a significant challenge in undertaking a formal consultation process as envisaged by the review both from a resource requirement and commitment form stakeholders to engage. This recommendation remains under consideration.*

Summary assessment

In relation to the 2014 efficiency review recommendations, the view of this review team is that:

- More explicit definition of service levels is still required, with governance arrangements for expenditure tied to those
- The separation of recurrent operating costs from project capital expenditure would be beneficial
- Improvements are still required to cost forecasting related processes
- Greater consultation would lead to improved understanding amongst stakeholders and should be pursued

4.6.2. Improvements to Asset Management Practice Scoping Study, GHD, 2016

This study, referred to in the summary of the annuities calculator, sought to identify or develop an effective and efficient management system (processes, governance, data, information systems, analysis tools) for the RMO program that is consistent, reliable and meets transparency and investment decision making requirements. The study was partially a follow on piece of work to an efficiency review carried out by Cardno in 2014. A practical low cost solution that leverages SCA data, systems and resources wherever possible was sought. To do this, a model framework for asset management was developed against which SCAs asset management practices were evaluated. The report includes findings that are relevant to both the MDBA and WaterNSW, and contains a number of findings which support concerns raised in Aither's main review of WaterNSW expenditure,[40] as well as concerns highlighted earlier in this report. For example, the GHD report highlighted that:

[40] Aither, 2017, *WaterNSW rural bulk water services expenditure review*.

- *Capital and planned maintenance processes for all SCAs are based on regular inspection regimes and condition assessments for major assets. Some SCAs have excellent guides for consistent condition assessment of some assets. The key gaps are a consistent approach to defining capital and planned maintenance, consistent capital and planned maintenance planning processes, and a more consistent basis to guide priorities and strategies for management of assets, including defined asset management objectives or Levels of Service, condition assessment and residual life determination.*
- *Project justifications are highly formalised for some SCAs and less for others or for typically smaller projects. Some projects do not have sufficient or consistent justifications meeting minimum requirements. In particular, risk assessments vary widely across SCAs with no clear alignment or ability to transform risk assessments to a consistent basis.*
- *Program collation, validation and prioritisation of SCA submissions range from informal processes based on engineering judgement by most SCAs, to formal business-wide processes by one SCA. There is no consistency across SCAs on prioritisation.*
- *All SCAs have major enterprise-wide information systems for financial management, resource management, asset / maintenance management and spatial services. There is variable use of these systems for RMO assets and programs, partially because of the large scale of other business operations compared to the RMO or because of the separation of RMO management from other business activities in some SCAs.*

The report included a 10 point work plan. The items of most relevance to assessments made in this report included:

- 1. Update Asset Management Policy
- 2. Update Governance Arrangements
- 3. Develop Asset Management Objectives and Asset Class Level of Service
- 4. Develop Project Consolidation and Prioritisation Process
- 6. Update of Asset Management Plan (AMP)
- 8. Update Project Justification Documents and Undertake Risk Assessment

A detailed assessment of WaterNSW processes was undertaken as part of the GHD study, which compared WaterNSW practices and policy for RMO assets against the model framework developed by the study authors, to guide recommendations on areas for improvement. That assessment is reproduced at Appendix B. Of most relevance to this assessment are observations made in the GHD review that:

- RMO assets had been managed outside of other WaterNSW assets including in relation to principles and policy
- The process for capital investment for RMO assets was not the same as for non RMO assets, having been driven by the MDBA annuity profile and condition inspection cycle. At the time it was proposed that WaterNSW processes include RMO assets in future.
- Planned maintenance for RMO assets was driven by condition assessment, failure history, operator request and engineering judgement
- It was proposed that project justification be improved, including a more formal justification process to be introduced with application of WaterNSW internal processes being applied to RMO in future.
- Cost estimation was not based on a formal estimating process

- WaterNSW was working towards bringing the RMO program under its Corporate Project Management Framework.

Summary assessment

As part of this review, the review team has stated concerns around project (expenditure) justification and cost estimation. These concerns are reinforced by the GHD study in relation to WaterNSW, and also by the main WaterNSW expenditure review completed by Aither.[41] When considering that the MDBA relies heavily on SCAs to propose prudent and efficient expenditures in the annual MDBA budget, the review team believes this is cause for concern.

While the above points focus on the WaterNSW related aspects, it is also clear from the GHD report that there is considerable work for the MDBA to do to be managing joint venture assets in the most effective manner. As noted at the beginning of this section, we understand the MDBA is progressing with implementation against recommendations that should help to address this.

4.6.3. Goulburn-Murray Water price review 2016

In 2016 the Essential Services Commission of Victoria (ESC) finalised their assessment of G-MW's pricing submission in accordance with the Water Charge (Infrastructure) Rules (WCIR) and Water Industry Regulatory Order (WIRO). The assessment followed a similar process to that underway by IPART for WaterNSW. A key outcome was that the ESC decided to adopt the longer term average MDBA contribution of $12 million rather than the $14.2 million originally proposed, stating that:

> *"We will address any material variation between this amount and the actual MDBA contribution at the time of the annual tariff approval as a forecast adjustment. Goulburn-Murray Water accepted this approach in its submission to the draft decision."*

In the Draft Decision the ESC noted that while G-MW were proposing an MDBA contribution of $14.2 million, the contribution in the past two years had been an average of $12 million. G-MW accepted this approach.

4.7. Assessment of other matters

Here we consider several additional issues related to expenditure outcomes and the potential to ensure that they are prudent and efficient.

4.7.1. Potential for duplication across RMO and non-RMO assets

WaterNSW manages certain shared assets under the RMO program, in addition to all the other non-shared assets in NSW (including rural and urban). The non-RMO rural assets were subject to review as part of a separate expenditure review report.[42] In discussions with IPART, it was suggested the review team consider the potential for duplication in expenditure (and its recovery) across the RMO and non-RMO assets. As a result the review team checked whether this is actually occurring.

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41 Aither, 2017, *WaterNSW rural bulk water services expenditure review*.

42 Aither, 2017, *WaterNSW rural bulk water services expenditure review.*

This was carried out by looking at the WaterNSW 'unsmoothed capital expenditure' spreadsheet which was provided as part of the main rural expenditure review. This spreadsheet lists the majority of asset renewals being planned by WaterNSW, and is the basis for the WaterNSW pricing submission for rural assets. This was checked for any assets or expenditure related to assets that are known to be part of the RMO program. The WaterNSW RMO assets are all listed in the MDBA annual budget, and also listed in Section 2 of this report.

Based on comparing these two sources, the review team could not find any evidence of duplication between the MDBA budget and the expenditure included within WaterNSW's main expenditure proposal (pricing submission). We note that this could potentially have occurred had the MDBA not rejected a capital proposal at Menindee Lakes (as outlined in Section 4.4.2).

4.7.2. Issues highlighted in main WaterNSW review with implications for MDBA expenditure

If the RMO assets under WaterNSW control were managed in the same way, using the same tools and techniques as the rest of the WaterNSW assets, then some of the concerns highlighted in the main expenditure review report may apply. This could include:

- The potential for the Assetbank, or similar asset replacement forecasting model to overstate risks associated with assets, or asset condition, and drive intervention sooner than may be optimal
- Potential concerns about the sources for and accuracy of cost estimates
- The potential for WaterNSW to not have adequately considered alternative options before proposing remediation or other substantive works to assets - often 'options' assessed were not realistic as they did not meet the required need and were excluded from analysis early on in the process whereas the chosen option could have been investigated in more detail to determine the most efficient solution.

As at the time of completion of this report, the review team had not had the opportunity to meet with WaterNSW to discuss its approach to management of the NSW RMO assets in detail. However, the review team asked WaterNSW to clarify how the RMO assets are managed as opposed to the non RMO assets. The WaterNSW response was as follows:

> *WaterNSW manages MDB assets in a similar way to the IPART/ACCC regulated valleys. Maintenance management is undertaken using a common Computerised Maintenance Management System (CMMS), with asset condition assessed using the same scale as for the rest of the business. The internal approval process is essentially the same as for the rest of the business.*
>
> *However, due to the accountability that the MDBA has in the management of risks for the entirety of the MDB system, MDBA plays an active role in the approval process for non-routine maintenance, including approval of candidate projects on an annual basis, as well as approval of expenditure to address 'emergent' issues within the year. As such the processes for 'asset planning' for the RMO assets do vary from the rest of the business to accommodate both the MDBA's role in risk management of RMO assets and the annual budget process.*
>
> *Hence, WaterNSW interacts with MDBA by putting forward its recommendations on asset management. MDBA then runs its own internal processes on these recommendations. WaterNSW is then subject to the outcomes of these processes.*

We note that the MDBA separately confirmed that WaterNSW do not appear to use specific tools or approaches the review team have previously highlighted concerns with (e.g. Assetbank). For

example, the MDBA did confirm with the review team that the Assetbank approach to annuities is not adopted for RMO assets:

> *With regard WNSW asset capital expenditure in the RMO program – The RMO budgeting process sees capital funded in the year it is undertaken. We do not (currently) have an annuity approach although the MDB Agreement does make provision for this.*
>
> *WNSW are required to bring forward specific projects for consideration in the budget development process. Projects are based on an assessment of specific asset condition, service requirements and risk and consideration of the asset residual life recorded in our asset register. The Assetbank approach has not been applied in preparing the RMO budget.*
>
> *Should WNSW propose such an approach for their part of the RMO program then the MDBA would need to evaluate its suitability before accepting the approach. I do not have sufficient detail on how WNSW apply it elsewhere in their program to comment on its suitability for and consistency with the RMO program. The Assetbank approach has not been proposed by WNSW for the RMO program.*

This comment provided by the MDBA appears consistent with the GHD review undertaken in 2016 that WaterNSW may not have been applying the same processes for the RMO assets as it does for the rest of its state wide processes (i.e. the rest of the rural assets).

Given both the WaterNSW and MDBA responses, we do not have evidence to conclude that any recommendations made regarding asset renewals in the main WaterNSW expenditure review report should also apply to NSW related expenditure proposals made as part of the RMO budgeting process. While this is the case, it is also important to note that two proposals were inserted into the 2016-17 budget that were invalid (the two Menindee proposals outlined in section 4.4.2).

Overall, it appears that the issues with the renewals approach used by WaterNSW identified by the review team in the main expenditure review[43] do not necessarily apply to RMO assets. Therefore, within the limited scope of this review, we do not have grounds for reducing the proposed budget in a manner consistent with the rest of the rural assets. We also note that it was not within our scope to assess the efficiency of other SCAs.

4.7.3. Observations on incentives for economic efficiency

Much discussion in this report regarding the issue of prudency and efficiency is around the processes and procedures underpinning the development of budgets. However, under the current arrangements, it is not clear to the review team that there are incentives actually placed on the SCA's to incur efficient costs both in the short-term and long-term.

From an economic efficiency perspective, the resources that are used to deliver the service in both the short and long term are of most concern (assuming customers have a willingness to pay for that service), not the budgets that are used to derive prices. For example, if the budget is too high relative to efficient levels, prices in that year will be slightly too high, thus leading to a small loss in allocative efficiency; and vice versa if the budgets are too low or if there is a positive carryover from previous years.

[43] See Section 3.4.2 and Appendix A of Aither, 2017, WaterNSW rural bulk water services expenditure review.

In the current framework, there appears to limited incentive for the SCA's to seek out efficiencies in either the short or long-term, as it is not clear how they are able to capture any of the benefits of achieving any of those efficiencies (nor are they financially penalised if they don't achieve efficiencies). If WaterNSW's costs increase, those cost increases are distributed across all States as the overall cost "pie" increases – this means it is difficult to argue that WaterNSW, as a Government agency, has an incentive to reduce its own costs, in order for those efficiencies to flow directly (1 for 1) through to NSW's customers and Government).

Given asymmetric information, only the SCA's will truly know whether they could actually deliver their services more efficiently, hence they are the party that needs to be incentivised (or face a financial "stick" for not achieving pre-set efficiencies). Given this, there could be a case for incentivising the SCA's to out-perform historical levels of expenditure (on opex in particular, although this may exclude certain one off opex costs). This provides an incentive for businesses to seek out efficiency improvements, gain a share of the benefit that accrues from those efficiency improvements, while delivering lower costs to customers in the longer-term. This approach, based on out-performing historical opex, means that there is no incentive for the SCA to over-inflate their forecasts because the incentive is not tied to a forecast. Such an approach may be most important where there is not detailed independent ex ante assessment of proposed expenditure.

4.8. Overall findings and recommendations

The MDBA's planned capital expenditure is returning to historical levels following a period of reduced expenditure driven by reduced NSW government contributions. Planned expenditure (average $74 million) is below the long term average ($82.1 million).

The review team identified consistently lower levels of actual expenditure than budgeted in recent years. This would normally be grounds for concern. The review team accepted the MDBA's response that there is no underspend accumulating, but scope and timing mean this issue was not able to be investigated in further detail.

The review team are of the view that management oversight of the MDBA capital program is generally reasonable, but documentation developed and provided is not sufficient, and there is no independent oversight or assurance provided to the committees responsible for approving expenditures. There are a range of aspects of the process of developing, refining, and approving capital expenditure proposals that could be improved. In particular it remains unclear what requirements exist to optimise budgets in a way that is tied to particular outcomes and to ensure all expenditures are prudent and efficient. However, the review team have seen evidence that the MDBA is working to ensure costs put forward by SCAs are actually required and is working to optimise or reduce costs where possible.

As noted in Section 4.7.3, a potentially significant gap in the framework is whether the SCA's have incentives to incur efficient expenditure in any one year (productive efficiency) as well as to seek out ongoing efficiencies in the longer term (dynamic efficiency).

Various issues highlighted by this review have also been raised by others in previous reviews with actions in response still to be implemented by the MDBA. We note in particular the issue of needing service levels to be clearly defined, and for decisions around asset management and expenditure being designed to minimise lifecycle costs while meeting those levels of service. We also note that suggestions to improve cost forecasting have been made, and that any increases in spending levels should be justified with respect to a base and linked to a driver or drivers and service levels.

We have accepted WaterNSW and MDBA explanations regarding how WaterNSW manage the non-RMO assets, and do not currently have any evidence to suggest the main review findings should lead

to similar cuts to expenditure as were applied to the rural assets (e.g. reductions due to asset renewals forecasting processes).

Prudent and efficient level of expenditure

IPART has asked the review team to provide its views on the prudent and efficient level of expenditure. Forming a robust view on this would require a full and comprehensive expenditure review, including of all SCAs (rather than focusing on WaterNSW), which was beyond the scope of this engagement.

However, there is certain evidence available upon which to make judgements, and the review team have also questioned the MDBA about the overall level of the program. In response to questions regarding the prudent and efficient level of expenditure, the MDBA response was:

> *The Synergies review in 2014 concluded the program to be prudent and efficient. They looked in some detail at the SCA processes. I maintain that the correct level of expenditure is in the order of 70-80m p.a. depending on the capital investments in any year and some other large costs that are seasonally dependent such as Dredging at the Murray Mouth which when required is almost 10% of the program budget.*

The review team note that planned expenditure is somewhat consistent with historical averages when accounting for reduced NSW contributions, however that is no confirmation that past or proposed levels are efficient. While we note the previous efficiency review did not propose major cuts, it did recommend various changes to asset management practices and governance arrangements, only a small number of which appear to have been implemented. The review team have raised similar concerns to those raised by previous reviewers, and support the previous review recommendations being implemented, as many of those could have a significant bearing on the prudence and efficiency of expenditure. The review team have also highlighted a variety of ways in which processes or governance could be improved to increase the likelihood that expenditures are prudent and efficient.

4.8.1. Recommendations

The review team do not have enough evidence to recommend a reduction to planned expenditure that is then passed through to customers in NSW. However, this does not mean the MDBA's planned expenditure is prudent and efficient.

We recommend that IPART argue the case to the NSW Government that the MDBA expenditures should be subject to regular periodic (not ad-hoc) independent and publicly reported review, in a similar manner to the rest of the rural water expenditures.

- It may be possible to undertake this at the SCA level, or at the MDBA level (or both) noting there are some challenges given the institutional arrangements (but we believe these could be readily managed). This would provide much needed transparency and build confidence for customers.
- Given the nature of RMO assets and expenditure, there appears to be few reasons why this program should not be treated like any other regulated business or utility with all the same requirements that IPART (or the ESC in Victoria) place on regulated water businesses.

We also recommend that IPART suggest to the NSW Government that it consider the need for and role of incentives to out-perform historical levels of expenditure on opex.

- This would provide an incentive for businesses to seek out efficiency improvements, gain a share of the benefit that accrues from those efficiency improvements, while delivering lower costs to customers in the longer-term, and without providing an incentive to over-inflate forecasts because

the incentive is not tied to forecast, it is tied to historical. It may be possible to separate from this analysis, one-off expenditure items (or those that fluctuate based on exogenous factors).

5. Assessment of cost sharing in NSW

5.1. Overview

This section provides a high level assessment of the extent to which the arrangements for cost sharing and recovery described in Section 3 have been followed for the 2016-17 MDBA budget. It explains the assessment method, which included tracing costs from the MDBA Joint Program Budget for 2016-17 to 2019-20 through to the determination of pass through charges for WaterNSW, and provides the results of the assessment.

Overall, we found that the cost sharing spreadsheet that converts the MDBA budget into valley based costs to be recovered from customers appears to be working largely as intended. There are however a number of inconsistencies that are unexplained. These do not appear to have a material impact on the outcomes, however DPI Water's calculations of NSW contributions to category 1 and 2 expenses appear to be incorrect and this could have a material impact on the determination following further investigation. More broadly, greater transparency around the spreadsheet and associated processes would likely improve customer confidence in the outcomes.

5.1.1. NSW Cost shares 2016-17 to 2019-20

Table 6 below provides an overview of the how overall MDBA costs for the years 2016-17 to 2019-20 are apportioned to WaterNSW customers in the Murray and Murrumbidgee valleys using the DPI Water Model.

Table 6 Apportionment of MDBA total expenditure to user share in the Murray and Murrumbidgee valleys, 2016-17 to 2019-20, $,000 ($2016-17)

	2016-17	2017-18	2018-19	2019-20
Total planned MDBA expenditure	92,332	99,631	97,552	96,164
Total NSW contribution to MDBA	28,413	30,880	29,727	29,659
WaterNSW share of NSW contribution	18,917	20,843	18,357	17,842
DPI Water share of NSW contribution	9,496	10,037	11,037	11,817
User share of WaterNSW contribution	16,685	18,163	13,915	13,366
Murray user share	*13,655*	*14,865*	*11,388*	*10,939*
Murrumbidgee users share	*3,029*	*3,298*	*2,526*	*2,427*
Government share of WaterNSW contribution	**2,232**	**2,680**	**4,442**	**4,476**

Source: MDBA Corporate Plan 2016 & NSW Murray-Darling Basin Authority Joint Programs Cost sharing, contributions and user cost recovery model 2016.

5.2. Background to and overview of the DPI Water Model

Our assessment has primarily relied upon assessing a DPI Water spreadsheet model[44], as well as the detailed MDBA corporate plan budget (also in spreadsheet form; used for comparison and checking of inputs). In order to provide further context and improve understanding of the process and assessment, we provide the following overview of the DPI Water cost sharing and allocation model.

5.2.1. Background to and rationale for the model

The MDBA Corporate Plan budget includes expenditure items from all contributing SCAs – i.e. WaterNSW, Goulburn Murray-Water and SA Water, and categorises them based on asset location/type, and other variables used by the MDBA for various purposes.

In order for DPI Water to apportion the NSW share of total MDBA costs accurately within NSW, it needs to classify expenditure items in a way that allows the NSW cost-sharing framework to be applied. It does this using a cost sharing model (spreadsheet). In part, this is required because MDBA expenditures are not categorised in the same manner as expenditures are within the regulatory framework in NSW (such as how WaterNSW may normally categorise expenditure for the purposes of its pricing submissions to IPART).

DPI Water's spreadsheet model allows the total NSW state share to be 're-cut' in a way that allows the total NSW state share to be accurately split between WaterNSW and DPI Water, and subsequently split the WaterNSW component into user (vs government) and valley based shares (consistent with agreed NSW cost-sharing arrangements for WaterNSW). It also facilitates incorporation of the NSW contributions to the BRC (which are not within scope of this review). The resultant figures are passed on to WaterNSW for collection from customers, as outlined in their price submission.

5.2.2. Overview of the DPI Water model

The DPI Water model follows a series of sequential steps. These are outlined below, as explained by the DPI Water model itself.

- **Step 1**: Identification of relevant MDBA joint program activities
- **Step 2**: Identification of NSW share in MDBA joint program
- **Step 3**: Allocation of identified NSW share of MDBA cost to DPIW/WNSW based on function performed.
- **Step 4**: Allocation of proposed NSW contribution to MDBA (using 2015-16 dollars consistent with MDBA corporate plan).
- **Step 5**: Determination of NSW contribution to BRC
- **Step 6**: View Summary
- **Step 7a and 7b**: Identification of operational, maintenance and capital related activities for WaterNSW and DPI Water

[44] NSW Murray-Darling Basin Authority Joint Programs Cost sharing, contributions and user cost recovery model

- **Step 8**: Calculation of User share and Government share of NSW Government MDB contribution to be recovered from WaterNSW and DPI Water
- **Step 9**: WaterNSW Allocation of User Charges across Valleys.

5.3. Approach and method for the assessment

Our assessment was primarily based on review of the DPI Water model, including against the MDBA Corporate Plan budget, and rules set out by IPART. A series of high level assessments were designed around the steps in the DPI Water model. Aither's approach and method for each assessment are outlined below:

- **Assessment 1 – sourcing costs into DPI Water spreadsheet:** Aither assessed the input data for the DPI Water cost sharing and recovery model to ensure that it was correctly incorporated.
- **Assessment 2 – assess how the DPI Water spreadsheet identifies NSW related expenditure and applies state share rules:** Aither assessed how the expenditure amounts for line items in the DPI Water spreadsheet align with those in the MDBA Budget, including that it picks up the correct NSW related expenditure items, and applies the state shares correctly, as per the MDB agreement.
- **Assessment 3 – assessment of assignment of costs – DPI Water vs WaterNSW:** Aither reviewed how the model assigns expenditure line items to WaterNSW or DPI Water, consistent with the functions set out in the model.
- **Assessment 4 – Allocation of user shares:** Aither assessed whether DPI Water allocated the expenditure into user shares according to IPART's guidance accurately within the model.
- **Assessment 5 – Allocation of user share to valleys:** Aither reviewed how the total user share amounts calculated by the model are allocated to WaterNSW customers in the Murray and Murrumbidgee valleys, including the basis for these calculations.
- **Assessment 6 – assessment of spreadsheet outputs against advice provided to WaterNSW:** Aither conducted an assessment to ensure that the advice provided by DPI Water to WaterNSW for the forthcoming determination is aligned with the calculations of WaterNSW user shares in the DPI Water spreadsheet.

5.4. Assessment results

5.4.1. Assessment 1 – sourcing costs into DPI Water spreadsheet

Overview and purpose of relevant DPI model steps

DPI Water state that Step 1 of the DPI Model involves reviewing the MDBA joint program cost allocations identified in the MDBA Corporate Plan 2016-2017 to 2019-2020. Activities identified as relevant to NSW and corporate overheads are included in the DPI Water model, and DPI Water identifies if NSW is contributing towards the function.

Aither understands that this step involves inputting data obtained from the MDBA corporate plan. The data included in the DPI Water spreadsheet is sourced from the expenditure items in the detailed joint program budget included in Appendix 1 of the MDBA corporate plan (and potentially also from excel versions of the MDBA budget), but is arranged according to the specific functions that expenditure is contributing to.

Assessment approach

Aither assessed the input data for the DPI Water cost sharing and recovery model to ensure that it was correctly incorporated. Aither assessed capex and opex totals for each year in the 'Step 1. ID Line items' sheet in the DPI Water spreadsheet against the total planned expenditure totals for each year presented in Table 1 of the MDBA Corporate Plan budget.

Aither then examined a sample of RMO program opex and capex line items from the DPI Water model to check alignment with the line items in the MDBA Corporate Plan Budget. Aither also examined the MDBA 2016-17 Draft budget spreadsheet (which is an input into the MDBA Corporate Plan to understand how aggregate expenditure amounts for line items are built up.

Assessment results – sourcing costs into the DPI Water spreadsheet

The high level assessment of expenditure totals in the DPI Water Model revealed that the totals are closely aligned with advice from MDBA, but that there is some variation when comparing the DPI Water spreadsheet and the totals presented in the MDBA corporate plan budget (see Table 7).

While there is some small variation between the totals presented, Aither found that individual RMO program line items in the DPI Water model accurately reflect the expenditure line items included in the MDBA Corporate Plan budget. The expenditure line items in the DPI Water Model appear to be aggregated under different groupings and themes to the line items in the MDBA Corporate Plan budget. Despite differences in the way that expenditures have been presented between the two documents, it is still possible to identify the correct expenditure items in each.

In assessing the build-up of costs in the MDBA draft budget spreadsheets, Aither found that it is unclear how costs in the MDBA draft budget spreadsheets are aggregated to generate the line items contained in the MDBA Corporate Plan Budget and the DPI Water Model. This could in part be due to the fact that the MDBA categorises expenditures as 'Investigation and Construction' (I&C) and 'Operations and Maintenance' (O&M) whereas DPI Water categorises expenditure as Operating, Capital or Maintenance.

Overall, these findings indicate that the DPI Water model appears to be based on accurately sourced input data, however, it is not entirely clear how the costs have been aggregated and are built up to generate the total expenditure amounts in the DPI Water model. At the time of assessment, Aither is unsure of the significance of the difference in aggregation, given the resulting totals derived from the expenditure are very similar.

Table 7 Alignment of MDBA Budget total planned expenditure and DPI Water calculations ($,000s)

	2016-17	2017-18	2018-19	2019-20
MDBA corporate plan budget	92,332	99,631	97,552	96,164
DPI Water model	92,333	99,636	97,558	96,161
Variance	1	5	6	3

Source: DPI Water 2016 & MDBA 2016.

5.4.2. Assessment 2 – assess how the DPI Water spreadsheet identifies NSW related expenditure and applies state share rules

Overview and purpose of relevant DPI Water model steps

Step 2 – Identification of NSW share in MDBA joint program

The DPI Water model states that this step identifies the NSW share of the joint program activity, for RMO and non-RMO items and applies the relevant percentages for NSW.

Aither's understanding is that this step applies the MDBA cost-sharing rules for sharing the expenditure items between states. To an extent this repeats the state based cost sharing exercise undertaken by the MDBA (following the rules under the MDBA agreement). Different percentages are applied depending on the nature of the expenditure and whether it is RMO or non RMO.

Step 3 – Allocation of identified MDBA cost to DPIW/WNSW based on function performed Overview and purpose of this step

The DPI Water model states that this step allocates the expenditure between DPI Water and WaterNSW. This is based on:

- DPI Water having responsibility for Non-River Murray Joint activities (Water Markets, The Living Murray (TLM) Planning & Delivery, Modelling, Monitoring, River Health, Environmental Monitoring and Evaluation, MDFRC, Water Quality & Salinity Management, Secretariat services, Core Modelling) and RMO Functions (River Works, Salt interception schemes).
- WaterNSW is allocated responsibility for River Murray Operations (Water Assets, Asset management strategies (excluding SIS asset management, Environmental Works and Measures (EW&M), River Operations, Operation services and Hydrometrics)

Aither understands that this step allocates the expenditure between WaterNSW and DPI Water based on their respective areas of responsibility. It does this at the individual expenditure item level and then provides totals.

Step 4 – Allocation of proposed NSW contribution to MBDA (using 2015-16 dollars consistent with MDBA corporate plan)

Aither understands this step simply provides the total amounts for each of DPI Water and WaterNSW, and provides the ability cross check totals.

Assessment approach

Aither assessed how the expenditure amounts for line items in the DPI Water spreadsheet align with those in the MDBA Budget, including that it picks up the correct NSW related expenditure items, and applies the state shares correctly, as per the MDB agreement. A sample of expenditure items from the DPI model was examined to check that the appropriate formula was applied to determine the cost share as decided by the MDB Ministerial Council in 2006 (see Table 2).

Assessment results

As presented in Table 8 below, Aither's assessment found that the DPI Water Model does not appear to calculate cost shares using the same level of sophistication as the cost shares described in the documentation provided to Aither by the MDBA.

The MDBA determines state cost shares according to cost sharing principles decided by the Ministerial Council, which include access to water (cap equivalent), water use (diversions) and the

provision of local benefits.[45] Cost shares have been agreed based on specific asset and program categories, and may apply differently for the same asset or program depending on whether the cost is an operating and maintenance cost or capital cost. These parameters mean that a variety of different formulae are used by the MDBA to determine the costs payable by each state in the MDBA draft budget spreadsheet (see Table 3).

It appears that the DPI Water Model does not apply the various percentages elaborated in Table 3 which are based on the cost sharing principles under the MDA Agreement. In comparison to the MDBA, the DPI Water Model uses a simple percentage based formula to decide the costs payable by NSW. Capital costs are given a 25 per cent weighting whereas operating and maintenance costs are given a 33 per cent weighting. This is inconsistent with our understanding of the current inter-state cost sharing arrangements for Category 1 and 2 expenditures, however the documentation provided to Aither makes it difficult for us to determine exactly how the MDBA has determined the NSW total contributions presented in their corporate plan.

Aither notes that the cost share totals generated by the DPI Water Model are roughly the same as those generated by the MDBA (within a small degree of variation, see Table 9), which suggests that this finding may not be material at the aggregate level. However, if it is incorrect, then it will still be important to rectify at the line item level as it will affect subsequent calculations of cost shares within NSW.

Table 8 Cost share formulae applied in the DPI Water spreadsheet

Expenditure line item	Cost category	NSW cost share in MDBA draft budget (%)	DPI Water formula
Cat 1a Water Assets NSW – Hume Dam (NSW Component)	Opex	43.4%	33 per cent (WNSW)
Cat 1b Water Assets NSW – Menindee Lakes	Opex	43.4%	33 per cent (WNSW)
Operations Services – Hydrometric network - NSW river gauging	Opex	43.4%	33 per cent (WNSW)
EWMP Operate maintain Koondrook-Perricoota	Opex	33.3%	33 per cent (WNSW)
Environmental Structures Water Assets NSW - NSW Forest Water Management (Millewa)	Capex	25%	25 per cent (DPIW)
Cat 1a Water Assets NSW – Hume Dam (NSW Component)	Capex	32.5%	25 per cent (WNSW)
Cat 1b Water Assets SA – Lake Victoria (SA component)	Capex	32.5%	25 per cent (WNSW)
Cat 1a Water Assets Vic – Torrumbarry - Lock 26	Capex	32.5%	25 per cent (WNSW)
Murray Mouth Sand Pumping SA	Capex	Costs are shared equally between all four governments (25%)	25 per cent (WNSW)

[45] Buckley and Smith 2014, Review of Cost Shares for Joint Activities – Final Report, Report for Basin Officials Committee, viewed 5 December 2016, <http://www.mdba.gov.au/publications/research-report/review-cost-shares-joint-activities>

Table 9 NSW proportion of total MDBA costs calculations – MDBA annual budget vs DPI Water cost share model

	NSW proportion of total MDBA costs $'000	
	Source: MDBA annual budget	Source: DPI Water model
2016-17	28,454	28,413
2017-18	30,963	30,880
2018-19	29,852	29,727
2019-20	29,828	29,659

5.4.3. Assessment 3 – assessment of assignment of costs – DPI Water vs WaterNSW

Overview and purpose of relevant DPI Water model steps

This assessment relates to Steps 2 – 4 of the DPI Water Model as outlined in Section 5.4.2 above.

Aither reviewed the assignment of expenditure line items to WaterNSW or DPI Water based on their responsibilities as SCAs outlined in the DPI Water Model.[46] Aither examined a sample of expenditure line items from the 'Steps 2-4 NSW share in cost' sheet of the DPI spreadsheet to confirm that the cost was correctly assigned to either WaterNSW or DPI Water.

Assessment results

This assessment found that asset management and river operations related expenditure has been assigned to WaterNSW (Table 10). Non-RMO related expenditure, such as costs related to Natural Resource Management (NRM) programs, salinity management, and regulatory functions were assigned to NSW DPI Water. Aither's assessment suggests that the DPI Water Model assigns costs to WaterNSW and DPI Water consistent with the responsibilities outlined in the model.

As a general observation, the review team note that it can be difficult to clarify whether specific individual expenditure items are correctly assigned as we were not able to sight any authoritative documentation, outside the DPI Water Model, that clearly articulates the specific responsibilities of WaterNSW and DPI Water. There is an opportunity to improve the transparency of SCA responsibilities at the MDBA or NSW Government level.

[46] Another source that articulates this division includes the MDBA Annual Report 2014-15 that states that WaterNSW is responsible for RMO asset management and that DPI Water is responsible for other functions such as salinity and Natural Resource Management.

Table 10 DPI Water assignment of costs

Expenditure line item	Function	Cost assignment
Cat 1a Water Assets NSW – Hume Dam (NSW Component)	Asset management	WaterNSW
Cat 1b Water Assets NSW – Menindee Lakes	Asset management	WaterNSW
Operations Services – Hydrometric network – NSW river gauging	Asset management	WaterNSW
EWMP Operate maintain Koondrook-Perricoota	River operations	WaterNSW
Environmental Structures Water Assets NSW – NSW Forest Water Management (Millewa)	NRM	DPI Water
Cat 1a Water Assets NSW – Hume Dam (NSW Component)	Asset management	WaterNSW
Cat 1b Water Assets SA – Lake Victoria (SA component)	Asset management	WaterNSW
Cat 1a Water Assets Vic – Torrumbany - Lock 26	Asset management	WaterNSW
Murray Mouth Sand Pumping SA	Asset management	WaterNSW
Operate/Maintain existing SIS - SIS Mallee Cliffs	Salinity	DPI Water
Corporate Overhead - Non-RM Programs	Corporate Overhead	DPI Water
Secretariat	Committee support	DPI Water
TLM Site Condition Monitoring - Hatta Lakes	TLM Monitoring	DPI Water
Environmental Monitoring & Evaluation	NRM	DPI Water

5.4.4. Assessment 4 – Allocation of user shares

Overview and purpose of relevant DPI Water model steps

Step 7a and 7b: Identification of operational, maintenance and capital related activities (WaterNSW and DPI Water)

DPI Water states that these steps involve reviewing line items from MDBA Corporate Plan relevant to CA responsibilities. Step 7a relates to WaterNSW whereas Step 7b relates to DPI Water. Expenditures are divided into 'Operational', 'Capital' and 'Maintenance'.

Aither understands that these steps introduce the cost-share ratios accepted by IPART for WaterNSW related capital and operating expenditure. The model requires each MDBA corporate plan expenditure item that is relevant to NSW and is under WaterNSW or DPI Water responsibility (previously

identified) to be categorised as operational, capital or maintenance, in order for the correct user cost-share ratio to be applied.

Step 8: Calculation of User share and Government share of NSW Government MDB contribution to be recovered from SWC (WaterNSW)

DPI Water states that in this step, the model matches activity from MBDA Corporate Plan funding for the relevant year multiplied by IPART's apportionment of user's share. Where the user's share is not 100 per cent, the difference is the Government share. DPI Water's model notes suggest the approach is consistent with IPART's 2010 review of bulk water charges for State Water Corporation, setting out the ratios for sharing costs between users and Government, and that average user share allocations (based on the IPART 2010 pricing determination) have been calculated for catchment valleys.[47]

Aither understands this step calculates and apportions the expenditure into the IPART user share categories based on the two previous steps (Steps 7a and 7b). For each year, it provides the amount of expenditure against the IPART categories set out under capital or operating expenditure, for each of the MDBA corporate budget line items. The total amount of expenditure under each IPART category is calculated and then multiplied by the correct percentage (i.e.: 90 per cent) to give the user share for each category.

Assessment approach

Aither assessed whether DPI Water has allocated the expenditure into user shares according to IPART's guidance accurately.

Assessment results

Aither compared the categories used to determine user's share in the DPI Water Model against IPART's user's share ratios as set out in IPART's 2010 review of bulk water charges for State Water Corporation (see Appendix C). The results of this assessment found that the categories used in the DPI Water Model are consistent with IPART's user share categories.

Aither also examined how operating, maintenance or capital expenditures have been 'translated' into IPART's specific user's share categories in the DPI Water Model from their original categorisation. This involved examining how expenditure in the DPI Water Model is categorised in the first instance (as operating, maintenance or capital) and the description of the expenditure to understand if the categorisation according to IPART's criteria makes sense at a high level. Expenditures were identified in the MDBA draft budget 2016-17 to ascertain the nature of spending and understand whether the categorisation in the DPI Water Model conformed to the description. Table 11 provides the results from this assessment. Of the sample assessed, all expenditures appear to have been translated into IPART's user share criteria categorisation in a logical and consistent manner.

As a final check, Aither examined the percentages used in the DPI Water Model to calculate the user's share. The model totals the line items in each category to derive a total amount of expenditure per user share category. The total is then multiplied by IPART's user share percentages. Aither found that this has been applied consistently across the sample of expenditure items, and that the percentages used align with IPART's 2010 determination percentages (see Table 11).

[47] Aither understands that the average proportion may be calculated to provide a precedent that DPI Water bases distribution of costs across the Murray and Murrumbidgee valleys on.

Table 11 Assignment of user shares assessment results

Expenditure line item	DPI Water cost category	IPART Cost share category	IPART costs ratio	Ratio applied by DPI Water
Cat 1a Water Assets NSW - Hume Dam (NSW Component)	Operating	Water Delivery and & operations	100	100
Cat 1b Water Assets NSW - Menindee Lakes	Operating	Water Delivery and & operations	100	100
Operations Services – Hydrometric network – NSW river gauging	Operating	Hydrometric monitoring	90	90
EWMP Operate maintain Koondrook-Perricoota	Operating	Water Delivery and & Operations	100	100
Environmental Structures Water Assets NSW – NSW Forest Water Management (Millewa)	Capital	Office Accommodation Capital Projects	100	100
Cat 1a Water Assets NSW – Hume Dam (NSW Component)	Capital	Dam Safety Compliance	50	50
Cat 1b Water Assets SA – Lake Victoria (SA component)	Capital	Structural & Other Enhancement	100	100
Cat 1a Water Assets Vic – Torrumbarry - Lock 26	Capital	Structural & Other Enhancement	100	100
Murray Mouth Sand Pumping SA	Capital	River Channel Protection	50	50

5.4.5. Assessment 5 – Allocation of user share to valleys

Overview and purpose of relevant DPI Water model steps

Step 9: WNSW Allocation of User Charges across Valleys

DPI Water states that this step takes the user's share as identified in Step 8 and distributes it across valleys. The DPI Water model is designed to provide two options: (1) a full cost recovery option, and (2) the allocation across all valleys based on the previous IPART 2010. The full cost recovery option only allocates MDBA costs across the Murray and Murrumbidgee Valleys.

Aither's understanding is that this step provides a number of calculations, with the purpose as noted above, to determine the valley based splits based on two different options.

Assessment approach

In this assessment, Aither examined how the total user share and government share amounts calculated in Steps 7 and 8 of the DPI Water Model are allocated to WaterNSW customers in the Murray and Murrumbidgee valleys. This step calculates the valley splits for Murray and Murrumbidgee based on the averages from the 2010 IPART determination report for the years 2010-11 to 2013-14 using average proportions excluding other valleys.

Assessment results

The calculation performed by the DPI Water Model is explained below:

- The outputs from Step 8 of the model are the expenditure totals for each user share category. These totals are summed to derive an overall user share, and government share, of the WaterNSW costs for each of the years 2016-17 to 2019-20 (see line one of Table 11).
- The user share for the Murrumbidgee and Murray valleys is calculated by the model based on averages from the 2010 determination report for the years 2010-11 to 2013-14 using average proportions excluding other valleys (see Table 13). To do this, the WaterNSW share of cost amount in each valley is multiplied by the average proportions of user share allocation in that valley.
    - For example, in IPART's 2010 determination the total user share in the Murrumbidgee and Murray Valleys was $6,869,000
    - To derive the user share for each valley, the average user share value in each valley is divided by $6,869,000 to yield a proportion
    - For the Murray, which has a user share of $5,622,000, this yields a user share proportion of 82 per cent (see Table 13)
    - For the Murrumbidgee, which has a user share of $1,247,000, this yields a user share proportion of 18 per cent (see Table 13)
- The DPI Water Model multiplies WaterNSW's share of costs for each year 2016-17 to 2019-20 by the average user share proportions from the aforementioned calculation to derive the user share and the government share in each valley (see Table 12).

Aither remains unclear as to the appropriate source or point of truth regarding how the valley based split should be executed, and therefore cannot make comment as to whether these calculations are in accordance with regulatory obligations or other requirements. We can however state that the calculations executed by the DPI Water Model appear to work as they can be expected to.

Table 12 DPI Water Model calculation of user share (2016-17 determination)

(2016-17 $000)	*2016-17*	*2017-18*	*2018-19*	*2019-20*
Total WaterNSW share of MDBA costs	18,917	20,843	18,357	17,842
User share allocation of WaterNSW MDBA costs	16,685	18,163	13,915	13,366
Murray Valley	*13,665*	*14,865*	*11,388*	*10,939*
Murrumbidgee Valley	*3,029*	*3,298*	*2,526*	*2,427*
Government share WaterNSW MDBA costs	2,232	2,680	4,442	4,475
User share percentage	88.2%	87.1%	75.8%	74.9%

Table 13 DPI Water Model calculation of user share (2010 determination)

($000)	*2010-11*	*2011-12*	*2012-13*	*2013-14*	*Average*
Total State Water share of MDBA costs	11,526	12,842	14,029	12,492	
Murray Valley	*5,094*	*5,675*	*6,199*	*5,520*	*5,622*
Murrumbidgee Valley	*1,130*	*1,259*	*1,375*	*1,225*	*1,247*
Combined Murray and Murrumbidgee user share allocation of WaterNSW MDBA costs	6,392	7,121	7,779	6,926	6,869
Murray Valley user share proportion					82%
Murrumbidgee Valley user share proportion					18%

5.4.6. Assessment 6 – assessment of spreadsheet outputs against advice provided to WaterNSW

This assessment relates to the outputs from Step 9 of the DPI Water Model and the official advice that DPI Water provided to WaterNSW.

Aither conducted a final assessment to ensure that the advice provided by DPI Water to WaterNSW (17 May 2016) is aligned with the calculations of WaterNSW user shares in the DPI Water spreadsheet. This assessment involved comparing the WaterNSW share of funded activities using advice provided by DPI Water to WaterNSW with WaterNSW's share calculated from the DPI Water spreadsheet.

Assessment results

Aither conducted a final summary assessment of the totals form the DPI Water Model and the advice provided by DPI Water to WaterNSW (official DPI Water letter from Gavin Hanlon 17 May 2016) to ensure alignment. This assessment involved comparing the WaterNSW share of funded activities provided by DPI Water to WaterNSW with WaterNSW's share of costs calculated from the DPI Water spreadsheet.

Aither's assessment (see Table 14 below) found that the user shares advice provided to WaterNSW by DPI Water matches the outputs from the DPI Water spreadsheet.

Table 14 WaterNSW user share advice and calculation comparison

	2016/17	2017/18	2018/18	2019/20
DPI Water letter				
WaterNSW share of NSW MDBA costs	18,917	20,843	18,357	17,842
User share of NSW MDBA costs	16,685	18,163	13,915	13,366
DPI Water spreadsheet				
WaterNSW share of NSW MDBA costs	18,917	20,843	18,357	17,842
User share of NSW MDBA costs	16,685	18,163	13,915	13,366

5.5. Overall findings and recommendations

Aither's assessment of DPI Water's implementation of cost sharing in NSW found that DPI Water processes are largely sound. However, the review revealed that the DPI Water Model does not appear to calculate cost shares between states in precisely the same manner as the MDBA, particularly for Category 1 and 2 expenditures. However, this may not represent a material concern for IPART given that the DPI Water Model yields a total state share that is very close to the totals advised in writing by the MDBA.

Other findings are that:

- Expenditure has been correctly sourced from the MDBA Corporate budget by the DPI Water Model. However, differences in the way that expenditures are named or organised create undue complexity in tracing these expenditures through at the individual item level.
- Expenditures are aggregated differently between the DPI Water Model and the MDBA corporate plan (and annual budget spreadsheet). Within the scope of the review, we are unsure of the reason why this occurs. However, it is still possible to identify line items between the two sources.
- Expenditures appear to have been largely assigned to WaterNSW and DPI Water consistent with the functions articulated in the model (and the MDBA annual report). It was not possible to reference these functions against an authoritative MDBA or NSW Government source that clearly articulates the precise functions of each SCA.
- IPART user share categories are correctly applied in the DPI Water Model.
- User shares have been applied consistently with the 2010 determination, using the same proportions for each of the Murrumbidgee and Murray Valleys. However, it is unclear if this is the agreed and appropriate approach.

These findings point towards a general lack of transparency surrounding the process for converting the total NSW contribution amount into user share totals for the Murray and Murrumbidgee valleys. These findings do not point to any obvious errors in the way that user shares are determined, however, greater transparency around the process would improve confidence that the process is applied correctly.

5.5.1. Recommendations

Based on these findings, the review team makes the following recommendations:

- That IPART encourage the NSW Government to provide a greater degree of transparency around the cost sharing arrangements and processes within NSW. Action in support of this could include:
  - Improve transparency of individual line items to provide greater confidence in allocation of expenditure to NSW cost sharing categories
  - The DPI Water Model should aggregate expenditure in the same manner as the MDBA corporate plan detailed budget in order to improve transparency and traceability of expenditure between the two sources. While it is possible to identify individual items between the two documents, different names and groupings make the process harder to follow.
  - Develop an official statement of responsibilities – i.e.: explicitly articulate the specific functions that WaterNSW and DPI Water are responsible for contributing to in a document separate to the DPI Water Model.
  - Develop guidelines for application of IPART's user share criteria – confirming the basis for expenditures in the DPI Water spreadsheet (or rather expenditures in general) to be assigned to each category
  - Document the agreed approach for determining the valley user share split, including considering if the precedent set by the 2010 determination remains appropriate into the future.

Appendix A – Review of sample business cases

Electrical Switchboard Replacement Business Case - Murray Salt Interception Schemes – Woolpunda / Waikerie

This business case, prepared on behalf of SA Water by a consultant, appears to be well constructed. It clearly identifies and provides evidence of the problem to be addressed through the investment, and gives consideration to several options:

- Option 1 – Design life replacement
- Option 2 – Run to failure
- Option 3 – Upgrade
- Option 4 – Targeted replacement with and without connection to a SCADA (Supervisory Control and Data Acquisition) network.

In development of options, risk is considered. For example, the run to failure option might result in a capital workload that is challenging to accurately plan and budget. The assessment of options is rigorous and uses a Net Present Value (NPV) assessment to consider capex, opex savings and timing of options.

The assessment recommends the preferred option 4 by only considering connection to SCADA network for this option and not for options 1, 2 or 3. The review team considers that connection to the SCADA would not change the outcome of the assessment as the other 'no SCADA' options pointed towards the option 4a 'No SCADA' option.

The review team finds in general the document to be of the level of detail and rigour expected to justify an investment and provides confidence the investment proposed is being considered appropriately.

Torrumbarry Weir – Electrical Control System Upgrade

This final business case was prepared by G-MW using the same format as for other G-MW assets. The business case follows earlier work carried out, which was subject to a PAC review. By the time the business case was prepared detailed design had already been carried out. The business case document is more a summary of what had been carried out previously, including an options assessment which was part of the preliminary investigation and concept design phase.

The objective is made clear:

> *The objective of the project is to implement an effective reliable and modern electrical control & SCADA system for the Torrumbarry Weir in order to reduce the operating risks associated with operation of superseded electrical control equipment, now considered unsupported within the industry.*

The options considered (3) do not appear to be realistic with options 1 and 2 not meeting the stated need and not considered further. Nonetheless option 3 does meet the project objective. A more robust options assessment would have been to identify and evaluate different hardware/software options to

meet the project objective. This would identify additional features/benefits of different solutions and make an assessment of their worthiness on a cost-benefit basis. With options 1 and 2 eliminated the financial analysis focuses on construction costs only (labelled Opex in this instance) for the preferred option only.

Previous investigations and documentations may have considered the impact of the risks driving the investment on a quantitative basis but there is no evidence of this having been carried out in the documentation provided. The document as reviewed concludes old assets have to be replaced with new without consideration of what is the best replacement solution with options evaluated quantitatively. These steps may have been carried out subsequent to this document. It is evident the project is prudent but not that the expenditure would be efficient.

Hume Dam Flood Security Upgrade project Steering Committee

MDBA advised the review team that ongoing studies investigating the need for works to improve dam wall flood security are underway. The review team reviewed minutes from the Hume Dam Steering Committee (Meeting No. 25, 1 August 2016), established to oversight major project delivery for Hume Dam. The Steering Committee is made up of members from WaterNSW and MDBA.

The minutes suggest that this project is in very early stages of problem identification and justification. They indicate that the MDBA and WaterNSW are proposing to base any future justification for works on a comprehensive work program including:

- Consultant studies (dynamic analysis earthquake study and long term deformation study)
- Risk workshop
- Safety Case evaluation
- Consequence assessment reiview
    - Hydraulic model review
    - Loss of life review
    - Possible further other work
- Concept designs depending on the outcomes of the risk assessment and safety case
- Expert review.

Upon finalisation of investigations, a business case will be developed that explores options for the project.

Given that the results from the studies were not included in the minutes, the review team is unable to make any meaningful observations about the appropriateness of the justification for the project. However, the Steering Committee minutes do point towards an intention to base the project need on strong grounds.

Hume Dam business case – southern training wall remedial works

The review team conducted a high level review of the Hume Dam business case for remedial work to the southern training wall. MDBA advised that this was most recent ‘large construction’ undertaken by WaterNSW (the then State Water Corporation) warranting a business case or similar level of justification. The business case was prepared by MDBA in conjunction with WaterNSW.

The project arose following a portfolio risk assessment (PRA) carried out of five MDBA assets in 2007. The business case includes a problem definition; based on an assessment of major assets managed by MDBA, risks were identified at Hume Dam Southern Training Wall (STW). The assessment recommended that remedial works be undertaken to ensure that the STW meets ANCOLD and NSW DSC standards for existing dams.

There was a strong justification for the planned expenditure; the business case explores the impacts of a 'do nothing' scenario and provides a rationale for the work. Supporting the need for the works is alignment with MDBA Strategic Plan.

Several options were considered in addition to the preferred option which was judged to achieve the best balance between reducing the risks associated with the Hume Dam STW, minimising construction risks and cost effectiveness. The business case includes a description of critical considerations and constraints for the project, and provides a detailed risk assessment of the STW and associated consequences.

The assessment included a Triple Bottom Line Cost/Benefit Assessment, which is a simplistic qualitative assessment of other costs and benefits (comprising half a page).

Overall, the business case appears to be rigorous in identifying a clear need for the expenditure and in justifying it in terms of the level of risk, and the expense of the project.

Appendix B – WaterNSW SCA status assessment (2016)

Table 15 Summary SCA Current Status Assessment

Framework element	WaterNSW (former Statewater)
Principles	Principles not formalised or applied to RMO assets. Future state - RMO assets to be treated the same as internal assets. Current intention for Asset Management System to become certified to ISO55001 does not include RMO assets.
Policy	RMO assets managed outside current WaterNSW Policy. To be managed within Corporate Risk and Project Management Frameworks in future.
Governance	Responsibility delegated to experienced staff. Internal approval of program by RMO management. Oversight by MDBA.
Process - capital	RMO capital investment driven typically by MDBA long term program (reference to annuity profile) and condition inspection cycle, supported by site-based teams and with reference to Smart Asset. Strategic review of dam safety will include RMO assets. WaterNSW processes currently do not include RMO assets, but are proposed to be included.
Process – planned maintenance	Planned maintenance for RMO assets based on condition assessment, failure history, operator request and engineering judgement by experienced staff.
Asset objectives / levels of service definition	MOU details some requirements around time to respond to flow change requests and hydrometric data gathering reliability.
Condition assessment	Multi-criteria analysis considering Physical Condition, Function, Intervention/Monitoring, Wear And Tear, Failure Probability, Safety. Not clear how this is related to risk, LoS or prioritisation.
Risk assessment	Based on engineering judgement from experienced staff
Project justification	Project need identified and scope developed by experienced staff dedicated to RMO assets. Supporting documentation may be limited, or extensive, e.g. Upgrade of monitoring equipment report. More formal justification process to be introduced with application of WaterNSW internal processes being applied to RMO in future.
Program collation and validation	All projects reviewed by experienced staff dedicated to RMO assets and submitted to MDBA. More formal justification process to be introduced with application of WaterNSW internal processes being applied to RMO in future.
Program prioritisation	All projects submitted are required. To date no requirement/need to prioritise. If required, risk is assessed and ability to delay considered.
Categorisation	To date no requirement/need to categorise. Typically listed by location. MDBA programs identified separately

Framework element	WaterNSW (former Statewater)
Cost estimates	Best estimate, based on experience and judgement. Generally level of confidence ±25%. Typically irregular project scope and scale, and not able to test market before approval. Not a formal estimating process.
Risk ranking	All projects submitted. To date no requirement/need to rank.
Strategic objectives	Alignment with strategic objectives based on knowledge of RMO assets and MoU requirements.
Constraints and deliverability	Considerations of constraints and deliverability are based on judgement and typically not included in any supporting documentation
Review	All projects reviewed by experienced staff (dedicated responsibility) and submitted to MDBA. More formal review process to be introduced with application of WaterNSW internal processes being applied to RMO in future.
Approval	All projects signed off by CEO and submitted to MDBA.
Monitoring and reporting	Program monitored by experienced staff and regular reporting to MDBA. CMMS used to schedule and track maintenance.
Managing program change	Program change managed by experienced staff, with reallocation of funds/resources as required, along with consultation with MDBA.
Review and improvement	Program to be brought under Corporate Project Management Framework, including post project review.

Source: GHD 2016.

Appendix C – Comparison of IPART's User Share Criteria used in DPI Water Model

Table 8.1 IPART's decision on percentage user cost share of operating and capital expenditure

Activity	User share
Operating expenditure	
Customer Support	100%
Customer Billing	100%
Metering & Compliance	100%
Water delivery & Other Operations	100%
Flood Operations	50%
Hydrometric Monitoring	90%
Water Quality Monitoring	50%
Corrective Maintenance	100%
Routine Maintenance	100%
Asset Management Planning	100%
Dam Safety Compliance Capital Projects pre-1997	0%
Dam Safety Compliance	50%
Environmental Planning & Protection	50%
Insurance	100%
Capital expenditure	
Asset Management Planning	100%
Routine Maintenance	100%
Dam Safety Compliance - Pre 1997 Construction	0%
Dam Safety Compliance	50%
Renewal & Replacement	90%
Structural and Other Enhancement	100%
Corporate Systems	100%
Environment Planning and Protection	50%
Environment Planning and Protection	50%
Flood operations	50%
Office Accommodation Capital Projects	100%
Information Management Projects	100%
River Channel Protection Works	50%
Water Delivery and other operations	100%
Hydrometric Monitoring	100%

Note: Some activity codes have not been used to set prices for the 2010 Determination period.

Source: IPART 2010, *Review of bulk water charges for State Water Corporation*, IPART, viewed 14 December 2016, available online <https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Rural-Water/Review-of-Bulk-Water-Prices-to-be-charged-by-State-Water-Corporation-from-1-July-2010/18-Jun-2010-Determination/Determination-Review-of-bulk-water-charges-for-State-Water-Corporation-From-1-July-2010-to-30-June-2014-June-2010>.

Figure 11 IPART's 2010 decision on percentage user cost share of operating and capital expenditure

Table 16 IPART's user share

Activity	User share
Operating expenditure	
Customer support	100%
Customer Billing	100%
Metering & Compliance	100%
Water Delivery & other operations	100%
Flood Operations	50%
Hydrometric Monitoring	90%
Water Quality Monitoring	50%
Corrective Maintenance	100%
Routine Maintenance	100%
Asset Management Planning	100%
Dam Safety Compliance pre-1997	0%
Dam Safety Compliance	50%
Environmental Planning & Protection	50%
Insurance	100%
Capital expenditure	
Asset Management Planning	100%
Routine Maintenance	100%
Dam Safety Compliance pre-1997 Construction	0%
Dam Safety Compliance	50%
Renewal & Replacement	90%
Structural & Other Enhancement	100%
Corporate Systems	100%
Environment Planning & Protection	50%
Flood Operations	50%
Office Accommodation Capital Projects	100%
Information Management Projects	100%
River Channel Protection Works	50%
Water Delivery & other operations	100%
Hydrometric Monitoring	100%

Source: NSW Murray-Darling Basin Authority Joint Programs Cost sharing, contributions and user cost recovery model

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