WaterNSW (rural) 2017 Determination

Review of WaterNSW's responses to IPART's draft decisions on proposed expenditure

A Final Report prepared for the NSW Independent Pricing and Regulatory Tribunal

Thursday 11 May 2017

AITHER

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1. Introduction

1.1. Background

In March 2017, IPART released its Draft Report and Draft Determination of WaterNSW's rural water prices for the forthcoming expenditure period (beginning 1 July 2017). Aither was contracted by IPART to undertake a review of the prudency and efficiency of operational and capital expenditure set out in WaterNSW's pricing proposal. This expenditure review supported IPART's draft decisions regarding WaterNSW's prices, the recommendations of which were accepted by the Tribunal, and adopted for its Draft Determination with some minor adjustments.

WaterNSW has subsequently prepared a response to IPART's draft decisions on expenditure, and commissioned a consultant, Covaris, to examine some aspects of IPART's proposed expenditure reductions. Some of the matters challenged include reductions to operational and capital expenditure recommended by the review team in its expenditure review report published in February 2017.

IPART has sought targeted advice from the Aither led review team on specific issues relating to WaterNSW's expenditure to inform IPART's final decisions regarding WaterNSW's prices to apply from 1 July 2017.

1.2. Purpose and scope

To assist IPART in evaluating the arguments put forward by WaterNSW, it has engaged Aither, in collaboration with its partners for this engagement, WSP[1] and Oakley Greenwood (the review team) to review the arguments raised in WaterNSW's submission to IPART's Draft Report against Aither's recommended reduction to renewals capital expenditure and reduction in operating expenditure for the 20-year infrastructure strategy.

The scope of work involved reviewing WaterNSW's submission and supporting documentation (including a report by Covaris) as well as responses to further questions or requests for information made by the review team.

1.3. Summary of matters addressed in this report

WaterNSW's response to IPART's draft determination addresses a broad range of matters, only some of which relate to capital and operating expenditure proposals. Given this, this report does not address all the matters contained in WaterNSW's response to IPART's draft determination. The matters addressed in this report are:

- The lower level of operating expenditure that IPART has recommended for the WaterNSW 20 year infrastructure strategy
- WaterNSW's counter proposal regarding the level of expenditure that should be allowed for asset renewals.

Our response to these matters is contained in Section 2.

[1] WSP Australia Pty Ltd – formerly known as WSP | Parsons Brinckerhoff.

2. Response to matters raised by WaterNSW

This section provides the review team's response to substantive operating and capital expenditure related issues raised by WaterNSW (or Covaris) in its submission to IPART.

2.1. Overview

2.1.1. Operating expenditure

Regarding operating expenditure, one substantive issue has been raised by WaterNSW that the review team have considered. This is outlined by WaterNSW in Section 3.2 of its response. Our response to WaterNSW's comments is provided at Section 2.2 of this report.

2.1.2. Capital expenditure

Regarding capital expenditure, WaterNSW has stated it will be seeking reinstatement of $13 million in capital expenditure. This is in response to IPART's draft decision to reduce expenditure in the asset renewals expenditure per valley by $21 million. The amount of reinstatement sought is informed by a report by Covaris, which the review team have considered in detail (including supporting data or analyses) in preparing this report.

Our interpretation of the Covaris report is that the asset renewals reduction is being challenged based on three main issues, each of which may have contributed to divergent views about the reduction that should be made to the renewals program. These are the issues we have responded directly to in detail. Our interpretation of the Covaris report is that it claims that:

- the risk assessment process used by WaterNSW is robust
- the percentage reduction applied by the review team (25.6%) to 'per valley' renewal expenditure should be a lower value (14.5%)
- some valleys have high risk so there should be no reductions applied to those valleys at all.

In the sub-sections below (see Section 2.3) we examine and respond to each of these issues. We also respond in less detail to several other observations or comments made in the Covaris report that relate to the basis for the review team's recommendations on capital expenditure (Section 2.4).

2.2. 20 year infrastructure strategy (opex)

2.2.1. IPART's draft determination and background to its decision (including Aither report)

IPART has made two downward adjustments to WaterNSW's operating expenditure allowance for the 2017 Determination based on the findings of our expenditure review. One of these is associated with WaterNSW's proposal to undertake a 20 year infrastructure strategy. WaterNSW's original pricing proposal contained a proposal to spend approximately $3.8m over the regulatory period on a 20-year infrastructure strategy that was to be underpinned by the development of long-term strategies for each of its valleys.

At the time of the original review, WaterNSW informed the review team that it:

- had not undertaken such an assessment in any systemic way across all of their valleys, *however*
- had undertaken a similar piece of work for the Lachlan Valley in 2014, the costs of which were used as the basis for deriving the forecasts for its other valleys for the forthcoming regulatory period (after adjusting for the relative level of complexity in preparing strategies in different valleys as compared to the Lachlan Valley).

Based on the information provided at the time, the review proposed that a 30% downward adjustment be made to WaterNSW's proposed costs. The review team believed that developing such strategies was prudent. However, we were not convinced that WaterNSW had proposed costs that were efficient, based on the evidence provided.

The review team stated at the time that it had based this conclusion on the following observations:

1. *WaterNSW does not appear to have reflected any synergies in undertaking similar tasks across different valleys over the regulatory period. In saying this, we are referring to the extent to which WaterNSW has reduced its forecast costs over time as more valleys are undertaken and the lessons from those valleys are translated into the activities undertaken in other valleys,*
2. *The coarseness (or lack of specificity) regarding how individual components of the forecasts have been derived indicates to us that these estimates may be very preliminary in nature, thus increasing our uncertainty with regard to the robustness of these forecasts, and*
3. *If Peel, North Coast and South Coast, which are the low complexity valleys that skew the overall average cost down, are removed from the analysis, the average cost per valley is significant, at around $400k over the regulatory period. Based on our experience, this would appear to be at the absolute top end of the reasonable range, which in turn means it is unlikely to reflect WaterNSW's "expected" costs.*

IPART has adopted the review team's recommendation in its draft decision.

2.2.2. WaterNSW response to the draft determination

WaterNSW has taken issue with IPART's draft decision. In support, it has provided a specific rebuttal of each of the review team's points articulated in Section 2.2.1 above – the responses are contained in Table 1 of WaterNSW's response to IPART's draft decision. WaterNSW has not suggested any alternative expenditure amount, and so the review team assume it is seeking to reinstate their initial proposal.

2.2.3. Review team's response

Information considered

In responding to WaterNSW, the review team has considered WaterNSW's rebuttal as articulated in Table 1 of its online submission, and has also reviewed the analysis and supporting information from the original expenditure review.

Analysis and discussion

WaterNSW – Point 1

WaterNSW's states:[2]

> *The reason that the costs of the 20-year infrastructure strategy have been designed around individual valleys is that the work has to be valley specific and is not capable of being synergised with other valleys. The strategies require:*
>
> - *significant series of cycles of customer consultation to be undertaken within each valley based on customer levels of service preferences. A major component of this is developing a new valley customer specific long-term strategic capital and operating options and assessing customers willingness to pay*
>
> - *significant hydrological and pricing modelling to be undertaken in respect of each valley. This includes complex water modelling, identifying potential structures within the valleys, estimating the costs of the structures and how these costs translate to prices for customers within the valley.*
>
> *Although some process lessons may be identified, these do not outweigh the substantive new individual work that needs to be performed for each valley. Moreover, there are substantive idiosyncrasies within each valley due to legacy issues from previous organisational, regulatory and Government decisions, some which are very complex as IPART has experienced from its review of the North and South Coast during this determination process.*

Review team response – Point 1

We note that WaterNSW acknowledged that "*some process lessons may be identified*". This aligns with our statement that as more valleys are undertaken the lessons from those valleys should be translated into the activities undertaken in other valleys (with a consequent reduction in costs given a proposed level of service).

Take the customer consultation process mentioned by WaterNSW as an example. Based on WaterNSW's comments, customer consultation will be undertaken in each valley. Whilst WaterNSW's uses this as an example of work that "has to be valley specific and is not capable of being synergised with other valleys", by the review team's estimation, there will be a material level of upfront costs associated with developing the framework and supporting material and information required to undertake customer consultation in the first valley[3] that in turn would be able to be re-used to support the customer consultation in other valleys.

Therefore, to suggest that WaterNSW would not benefit from some economies of scale stemming from the completion of customer consultation across a large number of valleys over a relative short space of time would require an assumption that there is not one single transferable skill, piece of information, model, presentation or form that could be leveraged off from one valley to the next. This would only be likely if WaterNSW was proposing to:

- utilise a completely different consultation approach in each of its valleys (which would almost certainly be inefficient), or

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[2] Page 4-5 of WaterNSW's response.

[3] This is not to say that there will not be some incremental costs that are directly related to the number of valleys undertaken.

- engage a completely different service provider (or internal staff member) to undertake consultation in each of its valleys (which again, would almost certainly be inefficient).

Another example is the "pricing modelling" that WaterNSW states will be undertaken for each valley. Whilst clearly the inputs and results of the modelling will be different across valleys, to suggest that the costs of undertaking the price modelling for the first valley are exactly the same as for all future valleys (after adjusting for the relative level of complexity), indicates that the pricing model needs to be either:

- completely re-built for each valley, by a completely new staff member or consultant (which in itself would be inefficient); or
- that the modelling approach/methodology is completely different for each and every valley (which to our mind is extremely unlikely).

Absent this, in our view, there clearly will be transferable skills, pieces of information, or most likely a model that could be leveraged off from one valley to the next, thus leading to a reduction in the costs of undertaking these studies in future valleys relative to the first valley.

WaterNSW's comment that these lessons *"do not outweigh the substantive new individual work that needs to be performed for each valley*" is difficult to verify, as WaterNSW has not provided any specific information in support of what these new works are, or might be, in each valley. Moreover, given that the original forecasts for each valley were derived based on taking a starting revealed cost figure for the Lachlan Valley, and adjusting that figure for the relative complexity of each of the different valleys as compared to the Lachlan Valley, presumably this approach already accounts for the "*new individual work that needs to be performed for each valley*" as compared to the Lachlan Valley.

Overall, this argument does not dissuade us from our original view that WaterNSW has not reduced its forecast costs over time as more valley strategies are undertaken and the lessons from those valleys should be translated into the activities undertaken in other valleys (with a consequent reduction in costs).

WaterNSW – Point 2

WaterNSW states:[4]

> *As this is a new function to WaterNSW it is not unusual for there to be some coarseness to the forecasts. WaterNSW has not undertaken a program like this before which is complicated by the number of individual valleys and water systems for which this work needs to be performed. On that basis, the forecasts may well underestimate the effort required to undertake the tasks rather than overestimate them. We are disappointed that only a downward adjustment, rather than an upward adjustment was deemed necessary.*

Response – Point 2

We do not disagree with WaterNSW that "*as this is a new function to WaterNSW it is not unusual for there to be some coarseness to the forecasts*". Our comment regarding the "coarseness" of the forecasts should not be taken as a criticism of WaterNSW, but rather, it is a factual observation (that is implicitly also acknowledged by WaterNSW in its response), and this coarseness can not but increase "*our uncertainty with regard to the robustness of these forecasts*".

[4] Page 5 of WaterNSW's response.

Regarding WaterNSW's comment that they are disappointed that there is only a downward adjustment, we note that:

- no evidence was presented at the time indicating that there may be a downward bias in WaterNSW's forecasts – we assumed that they reflected WaterNSW's "expected" case – hence there was no underlying reason to simply adjust up the forecasts to account for such a bias, *whereas*
- our downward adjustment was driven by the synergies and potential lessons learned from undertaking multiple valleys over a relatively short period of time.

Overall, this argument does not dissuade us from our original view that the coarseness (or lack of specificity) regarding how individual components of the forecasts have been derived increases our uncertainty with regard to the robustness of these forecasts.

WaterNSW – Point 3

WaterNSW states:

> *At the time of putting together the expected costs, WaterNSW was only at the preliminary stages of the North Coast levels of service work. We have since progressed this work and we note that although there are fewer structures and entitlement holders in the North and South Coast, as these valleys are below cost recovery, the issues and possible options are from that perspective as complex or more complex than valleys which are at full cost recovery. This leads us to conclude that our estimates may have been overly conservative.*

Response – Point 3

As no quantifiable information has been provided, it is difficult for us to ascertain the magnitude of this conservatism, nor whether this is offset by changes in the expected costs required in other valleys.

2.2.4. Findings

While we reiterate that we agree with WaterNSW that it needs to develop long-term infrastructure (asset management) strategies for each valley, and that the costs will vary between valleys depending on the level of complexity, none of the arguments presented by WaterNSW dissuades us from our original position regarding the likely efficiency of these forecast costs.

2.3. Asset renewals reduction (capex)

2.3.1. IPART's draft determination and background to its decision (including Aither report)

IPART made an adjustment of $21 million for asset renewals based on recommendations made by the review team, a reduction of 25.6%. WaterNSW proposed expenditure on asset renewals on a 'per valley' basis is $82.2 million, which is the bulk of the 'maintaining capability' category totalling approximately $115.6 million, a significant portion of WaterNSW's overall capital expenditure proposal of $186.6 million. The balance of the maintaining capability category includes expenditure related to safety, SCADA and automation renewals[5].

The review team identified reductions totalling 25.6% due to:

[5] For clarity the 25.6% reduction was not applied to all maintaining capability/renewals expenditure but the general allocation of expenditure for renewals in each valley (total expenditure approximately $82.2 million)

- risk averse assessment process – leading to a reduction of $2.7 million
- change in scope or estimating inaccuracy – leading to a reduction of $2.9 million
- deferrals – leading to a reduction of $3.6 million
- carry over at end of regulatory period – leading to a reduction of $6.8 million.

In the original expenditure review report these matters were covered at Section 8.1.

Given this, the review team recommended total asset renewals expenditure across the 13 valleys of $61.14 million.

2.3.2. WaterNSW response to the draft determination

In its response, WaterNSW stated that it considers its overall capital expenditure proposal is valid; however, to assist in achieving a realistic outcome WaterNSW seeks reinstatement of $13 million of the $21 million cut to the asset renewal program. It provided a report by consultant Covaris in support of its position.

As noted in Section 2.1.2, the review team have identified three main issues raised in the Covaris report that may lead to a divergence of views on an appropriate level of reduction to asset renewals expenditure:

- the suggestion that the risk assessment process used by WaterNSW is robust – this relates to the recommended reduction of $2.7 million for the risk averse assessment process
- the suggestion that percentage reduction applied by the review team (25.6%) to 'per valley' renewal expenditure should be a lower value (14.5%) – this relates to the recommended reduction of $3.6 million for deferrals and may also relate to the carry over reduction of $6.8 million
- the suggestions that some valleys have high risk so there should be no reductions applied to those valleys at all.

2.3.3. Review team's response to issue

Information considered

The review team have considered:

- the WaterNSW response document
- the Covaris report (Attachment A to WaterNSW's response)
- written responses to questions and requests for information put to WaterNSW by the review team, including supporting data or analysis (spreadsheets supporting charts) undertaken by Covaris (where available)
- the original analysis and reporting in the review team's expenditure review report.

Analysis and discussion

WaterNSW / Covaris – Point 1 (Risk)

The review team recommended reductions relating to the risk assessment process which amounted to $2.7 million. Covaris (ref p.30) summarises the review team's concerns about WaterNSW's risk basis for forecasting work as follows:

- the choice of risk metrics selected for use by WaterNSW
- the lack of risk mitigation in the metrics, i.e. they are a function of consequence and likelihood but do not consider mitigating factors
- integrity of the data supplied to AssetBank and whether the provenance is consistent and a repeatable means of assessment.

It then set out to challenge these concerns.

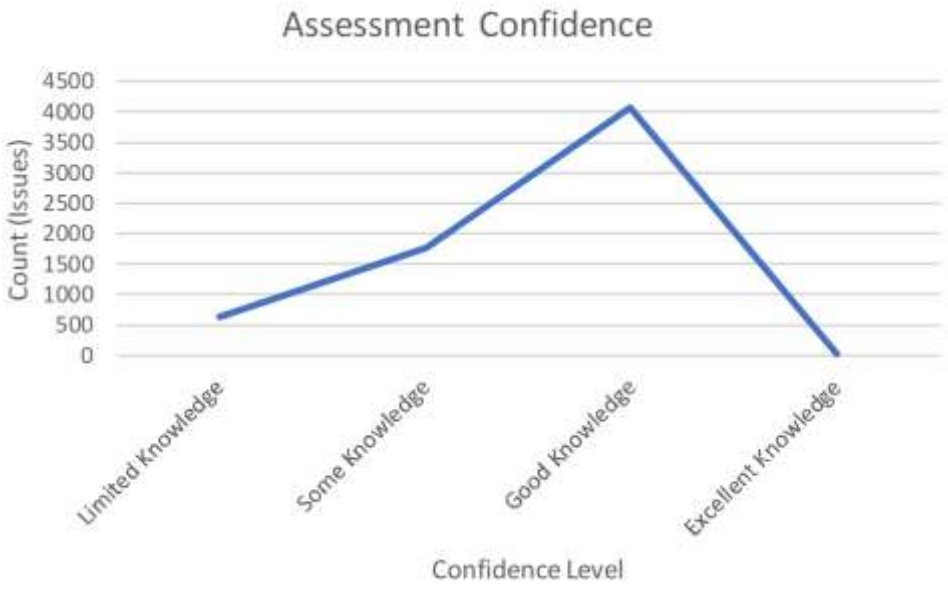
With respect to the first and third parts of the issue, choice of risk metrics and the integrity of data, Covaris listed the 11 items forming the WaterNSW risk metrics and provided a chart detailing the level of confidence of the risk scores in AssetBank. The chart is reproduced at Figure 1 below. Covaris concluded that the risk assessment process is robust and well supported by field inspections.

With respect to second point about risk mitigation, Covaris demonstrated that mitigation measures were used.

Review team response – Point 1 (Risk)

The review team has no issue with the risk metrics chosen by WaterNSW and notes that our report does not comment on these. We did say that the risk assessment relies on a coarse assessment of condition, explaining that it had only two categories that represented assets in poor condition.

Further, we note that WaterNSW estimates that category 5 Very Poor typically contains only 1% of an assets life and category 4 Poor typically contains 30% of an asset's life. We are of the view that this represents a coarse assessment.



Source: Figure 10 of Covaris report, page 31.

Figure 1 Extract from Covaris report (Covaris Figure 10)

Examining the confidence of asset risks presented in Figure 1, we note that approximately 37% by count are ranked as 'limited knowledge' or 'some knowledge'. WaterNSW does not appear to take these uncertainties into account when forecasting its required expenditures. It does hold workshops where its staff review the information held in AssetBank, but evidence presented to us suggests it does not appear to seek to clarify the quality of the information or to test for sensitivities to changes in the information. We disagree with Covaris that the assessment confidence demonstrates a robust risk assessment process, rather we are of the view that this does not lead to a robust risk assessment process.

The second part of the issue was the lack of risk mitigation in the metrics. Covaris appears to have assumed we meant a lack of mitigation factors and goes on to adequately demonstrate that risk mitigation is taken into account to slow the progress of damage (ref p. 32) although we note that this is not in a quantitative manner. We accept that WaterNSW does undertake mitigation measures, but understand from information provided to us by WaterNSW that mitigation measures are not undertaken for assets classified as Very poor.

Our comment in section 3.4.2 of the original report,[6] was specifically about the advancement of works without due consideration of ways to mitigate risk, viz:

> *The review team notes that the risk assessment component of Assetbank relies on a coarse assessment of condition (only two categories represent assets in poor condition), and includes an advancement of works that are assessed as high risk without due consideration*

[6] Aither, *WaterNSW rural bulk water services expenditure review - Final Report*, February 2017.

of ways to mitigate or manage the risk. We consider the risk assessment process to be overly risk averse, which may lead to inefficient expenditure forecasts

It is our understanding that assets with a replacement value greater than $100,000 have their risk assessment advanced by 2 categories and assets with a replacement value greater than $10,000 have their risk assessment advanced by 1 category. Where this results in a risk assessment of 5 Very Poor, the asset is scheduled for remediation. We understand that mitigation is not generally considered for assets in Very Poor condition. During the review process WaterNSW produced a list of works that were 'brought forward' in this manner, which accounted for $2.7 million within the renewals program in the determination period. As the review team viewed this as not being prudent a reduction of $2.7 million was made.

Covaris then comments on mitigation through renewing paint schemes, stating that "it would be an accusation of gross negligence … to compromise paint schemes". We do not disagree with this statement. We note, however, that some degradation of paint schemes typically occurs before repainting is undertaken. We also note that WaterNSW risk assess degrading paint schemes by considering the consequence of failure of the painted asset rather than undertaking a cost benefit analysis of the cost of remediation versus the deferred cost of capital – that is, determining the optimal timing for the coating to take place based on whole of life costs. The former approach does not provide the optimal timing of the painting whereas the latter approach does. In our view, undertaking a risk assessment for a consequence of failure rather than for optimising life cycle costs does not provide a robust basis for forecast expenditures for paint schemes, as it does not identify the optimal timing for recoating to occur. This applies to other types of asset renewal expenditure proposed by WaterNSW.

WaterNSW / Covaris– Point 2 (reductions due to deferrals)

Covaris states that the percentage reduction applied by IPART (25.6%) to 'per valley' renewal expenditure should be a lower value (14.5%). It refers to a 13.7% reduction due to strategic deferrals less commitment of substitute projects, stating this is considered a function of the ACCC determination in 2014 which blocked significant projects. It concluded that 13.7% could be deducted from the review team's proposed adjustment of 25.6% making the adjustment 14.5%.

Review team response – Point 2 (reductions due to deferrals)

The review team disagrees with Covaris' assessment. Covaris appears to have assumed that the deferrals were determined from the original program of works proposed by WaterNSW (in 2010) whereas the historic level of deferrals determined by the review team is based on information provided by WaterNSW for the revised program of works post the ACCC Determination. That is, we examined the actual/forecast expenditure during the current regulatory period against what the final ACCC Determination allowed – WaterNSW is forecasting that it will have less expenditure than the ACCC Determination.

In any event, the review team did not apply a similar level of deferrals to that experienced in the current period (13.7%) but recommended an adjustment of 5% ($3.6 million) reflecting that WaterNSW have shown through improvements already made to its planning processes that the level of deferrals could be reduced to a much lower value.

WaterNSW / Covaris – Point 3 (high risk valleys)

Covaris states that some valleys have high risk so there should be no reductions applied to those valleys. In the executive summary of their report, Covaris sets out its recommended adjustment to WaterNSW's proposed expenditure on renewals in each valley, which is different from that recommended in the review team's expenditure review report. Covaris states that in nine of the valleys a 14.5% reduction should be made, while in the other five valleys Covaris concludes the risk profile is 'high' and that no reductions should be recommend at all. This results in an overall

recommended reduction of $7.89 million, compared to the review team's recommended reduction of $21.0 million.

Within the main body of the report Covaris did not provide reasons why these valleys with 'high' risk cannot take any reduction at all but in section 3.3.1 of their report, 'risk profiling per valley', Covaris concludes that some valleys cannot take a reduction. This section presents risk profiles of each valley, 13 charts in all, in support of this conclusion. We have examined the reasoning within section 3.3.1 of the Covaris report.

Review team response – Point 3 (high risk valleys)

We do not agree with Covaris' logic and conclusion contained within section 3.3.1 of its report. Our main issues are with the approach Covaris has used:

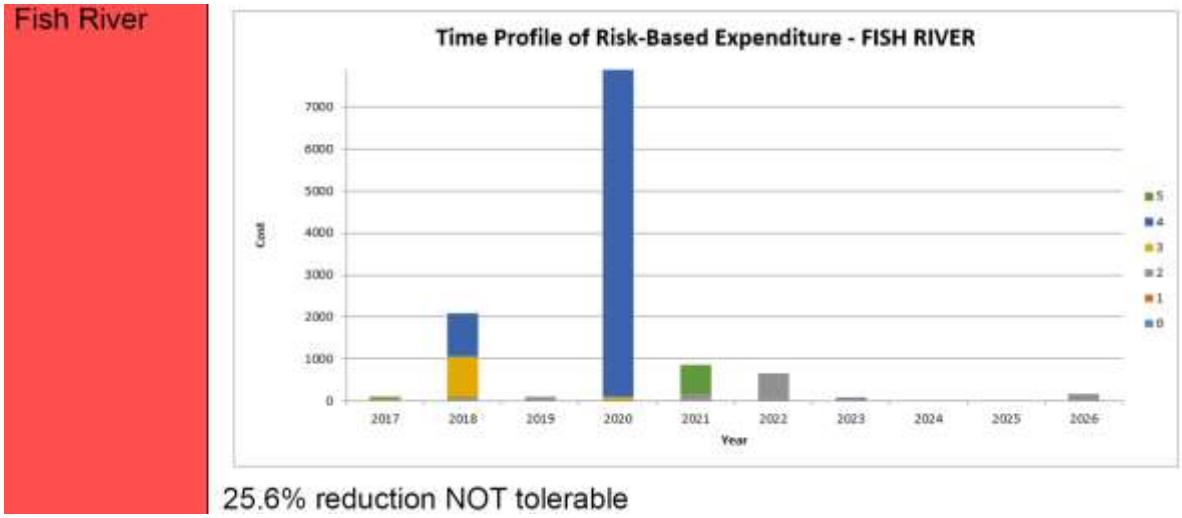
- outdated data is being used that for some valleys has little resemblance to the actual expenditure profile proposed by WaterNSW (outlined below – Covaris appears to have been provided with data from early 2016, which is different than what WaterNSW has proposed)
- the risk scores presented are assumed to represent the condition rating WaterNSW uses, the data (which is outdated in any case) indicates much of the expenditure is for assets in category 4 (poor) with up to 30% of life remaining
- the conclusion that some valleys can tolerate a 25.6% reduction is different to the executive summary which has only applied a 14.5% reduction in these same valleys. It is not clear what reduction is being recommended.

In order to undertake a closer examination the review team requested the data source for these charts. This was not provided, however we were told that the source of these charts is from WaterNSW's Strategic Asset Management Plan using data extracted from AssetBank in early 2016, which raised an obvious concern that it is outdated as WaterNSW has put together an expenditure plan that is different in aggregate value and has a different profile – this is demonstrated below.

A sample of the information relied upon by Covaris is reproduced in Figure 2 below. The Covaris report did not explicitly specify what categories 1 - 5 in the figure mean but we assume they are for WaterNSW's asset condition rating, under which a score of 5 represents 'very poor', which under WaterNSW's scoring system represents the last 1% of an asset's life, while a score of 4 is for 'poor', representing approximately 30% of a typical asset's life. With many of WaterNSW's assets having long lives (over 70 years), in our view the use of this expenditure profile with condition ratings does not support the argument that a 25.6% reduction is not tolerable.

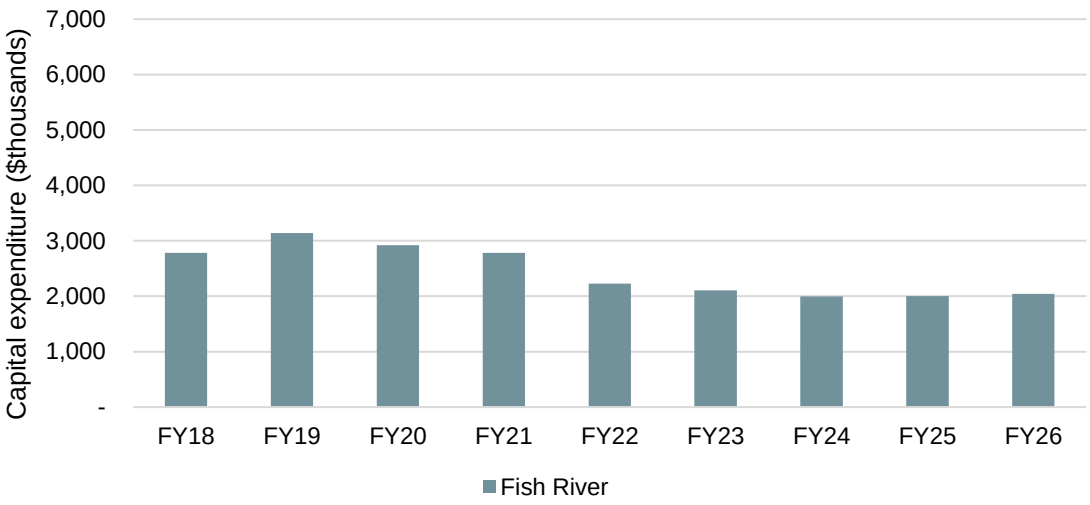
The profile of expenditure for Fish River shown in Figure 2 is different from that provided by WaterNSW to the review team as outlined in Figure 3: proposed expenditure of approximately $2.8 million in 2018, and $3.1 million, $2.9 million and $2.7 million in 2019, 2020 and 2021 respectively.

A problem with using outdated data is that WaterNSW is proposing to carry out capital expenditure on a completely different basis – in the case of Fish River the Covaris report indicates WaterNSW is not proposing much expenditure until 2020 while in reality WaterNSW is proposing expenditure well before then. While we sought from WaterNSW the data that makes up these charts it was not provided within the timeframe for our review, so we cannot assess whether the works proposed are identical or not – that is if different works are now proposed from what was proposed early in 2016, or the program has merely been 'smoothed' so there isn't as high peaks and troughs in expenditure.



Source: Covaris report, figure 13, p. 38.

Figure 2 Extract from Covaris report (Covaris Figure 13)



Source: WaterNSW, spreadsheet titled 'Up to date capex forecast.xlsx', worksheet 'FY18 to FY 21', row 14, provided 20 October 2016.
Note: Expenditure for FY17 not shown.

Figure 3 WaterNSW proposed capital expenditure within Fish River valley, renewals category

2.3.4. Findings

The review team does not agree with Covaris' conclusion that:

- the risk assessment process used by WaterNSW is robust
- the percentage reduction applied by the review team (25.6%) to 'per valley' renewal expenditure should be a lower value (14.5%)
- some valleys have high risk so there should be no reductions applied to those valleys at all.

Our recommendation is that the previously recommended reduction of $21 million should be applied.

2.4. Other matters (capex)

The Covaris report made a number of further comments on the WaterNSW pricing proposal or regarding Aither's draft report. We have provided a response to these in Table 1.

Table 1 Other matters

Covaris	Response
What the outer bound figure means is that the service life deterioration is modelled using a random failure Weibull distribution which equates to a Poisson distribution. If no other detailed modelling was applied, this would represent a reasonable basis for assessing asset renewal. (p.19)	Water assets rarely exhibit random failures and the selection of a random failure model for forecasting asset renewals is likely to be extremely conservative.
Based on experience in the current determination period, WaterNSW do not commit funds without detailed and extensive analysis and professional documentation. This ensures that projects which are undertaken represent the best option at the time and may therefore be considered prudent. (p.35)	While the capital approval process may ensure that actual expenditures made may be prudent, the forecasting process does not take into account any refinements in scope, prudent deferrals, or works packaging (amongst other matters) that could result in a lower forecast.
The figure of 9.6% of variance due to scope change or estimation accuracy may be challenged. The current pricing determination period found that WaterNSW could achieve savings of around 2.2% but then needed to cover additional costs due to other causes of 3.7%. Hence the variance due to changes in committed work is around 1.5%, significantly less than 9.6%. It is reasonable to believe that WaterNSW would tune its project portfolio and committed funds to keep this level of variance as close to zero as possible through normal budget control processes. (p.36)	The review team is unclear as to where the alternate values originate. The recommended adjustment is $7.9m (after deducting the 10% efficiency target allowance that WaterNSW has made) and is based on current period performance of 10% between forecast and outturn costs.

Covaris	Response
WaterNSW believes that in accordance with its pipeline model for the flow of capital work, business cases and detailed plans result in good time after work has been identified and entered the work list with a risk-based priority and preliminary estimate, and has been consolidated into a cost-effective program of work. In such case the business case results for the overall program and the detailed planning considers options analysis and final best price. In accordance with NSW Treasury practices quoted in this report, the best price should be ±10% of actual cost. Aither instead believes that at least in some cases for major projects, detailed planning and business cases should be to hand as part of a 4-year budget determination. There have been instances where Aither has relaxed this requirement and in other cases, where this requirement has led to an arbitrary cut in recommended budgets of around 25% per project. (p.42)	Covaris misses the point that forecasting is made on a different basis to actual expenditures. Since the actual expenditures are typically a result of refinements in scope, prudent deferrals, works packaging etc to those expenditures originally forecast, a systemic over-forecasting could be expected to occur. We expect that the expenditure forecasts made by WaterNSW should have taken into account the uncertainties in the data available at the time of forecasting, based on its historical information.
If the risks being managed by a proposed body of work which is recommended for funding reduction are manageable (i.e. risk levels 1 to 3), then:. (p.42)	We note that assets in categories 1 to 3 are classified as Very Good to Fair, and as such would not be expected to be in the expenditure forecasts.
If the risks being managed by a proposed body of work which is recommended for funding reduction are not manageable (ie risk levels 4 to 5), then: (p.43)	We note that Covaris has assumed that risks for assets in category 4 are not manageable. This is unlikely as this category typically represent about 30% of an asset's life. We understand that WaterNSW undertakes risk mitigation actions for these assets that would affect the timing of remediation actions.
Supporting the need to revisit the 25.6% factor was a review of the risk profile of proposed work per valley as understood from a 2016 release of AssetBank. This is an analysis of the same data provided to Aither albeit with specialist tools available to the current analysis. Some valleys simply cannot tolerate an arbitrary reduction which is applied evenly across the state since their individual risk profile is too high.	The second sentence of this statement may lead a reader to believe that the review team was provided with data underpinning the risk profiles that Covaris has presented in its report. This is incorrect. Aither was not provided with data underpinning the risk profiles shown (which were outdated in any case). Aither was provided with an extract of line items from AssetBank indicating the general purpose of the expenditure, dollar amount, and year proposed, but this did not include the risk score/condition rating for the asset. Aither requested this data from WaterNSW in the course of preparing this report but it was not provided.

3. Summary of recommendations

The review does not recommend any changes to the original review team recommendations made in our expenditure review report, as published in February 2017.

Specifically, in relation to the two substantive issues raised by WaterNSW we recommend no changes.

- There should be no change to the review team's original recommendations regarding the prudent and efficient level of operating expenditure. Our recommended level remains the same as that presented in our original expenditure review report.
    - The rationale for this is that none of the arguments and information provided by WaterNSW dissuades us from our original view.
- There should be no change to the review team's original recommendations regarding the prudent and efficient level of capital expenditure, including that associated with asset renewals
    - The rationale for this is that none of the information provided by WaterNSW (or analysis undertaken by Covaris) dissuades us from our original view that WaterNSW has over-estimated the level of prudent and efficient expenditure required to undertake renewal or replacement of assets.

Given the review team's recommendation that no changes be made, there are no implications for the overall recommendations on the prudent and efficient level of capital and operating expenditure.

3.1. Recommended level of capital and operating expenditure

For clarity, the recommended levels of operating and capital expenditure for the 2017 determination period are restated here.

3.1.1. Operating expenditure

Table 2 Proposed reductions and recommended level for WaterNSW's operating expenditure ($000's, $2016-17)

	2017-18	2018-19	2019-20	2020-21
WasterNSW proposed expenditure	40,442	38,731	38,282	37,481
Proposed reductions	(362.7)	(415.9)	(374.6)	(329.0)
Recommended operating expenditure	40,079	38,315	37,907	37,152

Source: Aither, WaterNSW rural bulk water services expenditure review - Final Report, February 2017.

3.1.2. Capital expenditure

The review team's recommended capital expenditure remains unchanged from the final expenditure review report published in February 2017 ($153.2 million). Since that report was issued some minor data discrepancies have been identified which have been addressed in the revised figures presented below (Table 3 and Table 4).

Table 3 WaterNSW proposed and recommended capital expenditure (All Valleys, Government and User Share basis, next determination period, $thousands, $2016-17)

	2017-18	2018-19	2019-20	2020-21	Total
WaterNSW proposed					
User Share	41,977	43,833	33,314	30,586	149,711
Government Share	17,427	15,219	2,149	2,044	36,838
Total	59,404	59,052	35,463	32,630	186,549
Review team recommended[7]					
User Share	35,395	35,409	24,891	22,957	**118,652**
Government Share	16,733	14,728	1,643	1,459	**34,563**
Total	52,128	50,137	26,534	24,417	**153,216**

Source: All data sourced from WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal, Regulated prices for the NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021, 2016, p.126. Reforecasts were provided by WaterNSW on 30 September 2016 and 11 October 2016.

[7] The total recommended capital expenditure has been changed to $153.216 million; it was $153.166 million in the February 2017 report. Further the split between User Share and Government Share has been adjusted slightly. This is due to two separate data discrepancies found.

Table 4 Recommended capital expenditure (By valley, User and Government Share, next determination period, $000s, $2016-17)

Valley	WaterNSW revised proposed expenditure	Recommended adjustments[8]	Recommended capital expenditure[8]
Border	1,137	(352)	785
Fish River	18,154	(3,845)	14,309
Gwydir	12,216	(2,088)	10,128
Lachlan	21,926	(4,558)	17,368
Lowbidgee	10,024	(1,588)	8,436
Macquarie	15,828	(3,719)	12,109
Murray	6,884	(773)	6,111
Murrumbidgee	42,872	(10,005)	32,867
Namoi	42,046	(3,067)	38,979
Peel	3,258	(520)	2,738
Total MDB Valleys	**174,345**	**(30,515)**	**143,830**
Hunter	8,826	(2,304)	6,523
North Coast	1,777	(281)	1,496
South Coast	1,601	(233)	1,367
Total Coastal Valleys	**12,204**	**(2,818)**	**9,386**
Total All Valleys	**186,549**	**(33,333)**	**153,216**

Source: All data sourced from WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal, Regulated prices for the NSW Rural Bulk Water Services from 1 July 2017 to 30 June 2021, 2016, p.126. Reforecasts were provided by WaterNSW on 30 September 2016 and 11 October 2016. Recommended adjustments are derived from the review team's recommended adjustments contained within this report.

[8] The total recommended capital expenditure has been changed to $153.216 million; it was $153.166 million in Aither's February 2017 report. Further the split between User Share and Government Share has been adjusted slightly. This is due to two separate data discrepancies found.

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