

T3PM Group Pty Ltd

INDEPENDENT PEER REVIEW

PREPARED FOR ESSENTIAL SERVICES COMMISSION OF SOUTH AUSTRALIA (ESCOSA)

Revision History

Date	Version	Created by	Description of change
6/11/2015	1.0	T3PM Group Pty Ltd	First Draft for Discussion

1. INTRODUCTION AND BASIS OF REVIEW

1.1. Introduction

- a. T3PM Group has been engaged by Essential Services Commission of South Australia (ESCOSA) to support ESCOSA to provide independent expert advice to assess SA Water's proposed use of the Adelaide Desalination Plant.
- b. This Report is part of T3PM Group's Consultancy Brief with ESCOSA to:
 - i. Undertake a **Peer Review of the Draft** and Final reports prepared by ESCOSA's contractor, Black & Veatch, ("B&V"), with a 1-week turnaround; and
 - ii. Identify issues and options for further consideration (by B&V and or ESCOSA).

1.2. Basis of Peer Review

- a. Consultancy Agreement between ESCOSA and B&V and in particular ESCOSA's Key Objectives to be achieved by B&V in its review SA Water's Regulatory Business Proposal and associated documentation.
- b. For completeness, we have extracted **ESCOSA's Key Objectives** i.e. B&V to advise ESCOSA whether SA Water's proposal for use of the ADP:
 - i. Is based on robust technical and related financial assumptions
 - ii. Considers options for the use and shutdown of the ADP (including a range of restart scenarios), associated technical implications, related costs and current contractual obligations and rights of SA Water and the ADP Operator under these scenarios; and
 - iii. And associated expenditure for the ADP during the second price determination period is prudent and efficient.

1.3. Key Documents

- a. Documents noted in ESCOSA's Consultancy Brief
- b. Documents noted in B&V's Draft Report dated 30 October 2015 at Section 3 (page 3 and 4 of the Draft Report).

1.4. Timeline & Program

- a. T3PM Group is required to undertake a Peer Review and provide a report within 1 week each of receipt of the B&V Draft Report and B&V Final Report.

2. PEER REVIEW COMMENTS ON B&V DRAFT REPORT

2.1. Comments on B&V Draft Report: Executive Summary

2.1.1. Recommendation to supplement B&V Draft Report

- a. B&V Draft Report Executive Summary would benefit from a Summary of Significant Issues identified by B&V through its review of SA Water's submissions to meet **ESCOSA's Key Objectives** (refer item 1.2 (b) of this Report).
- b. Most particularly B&V Executive Summary to cover advice on the following matters:
 - i. Is SA Water's proposed use of the ADP based on robust technical assumptions? If yes, what are the key underlying reasons assessed by B&V.
 - ii. Is SA Water's proposed use of the ADP based on robust financial assumptions? If yes, what is are the key underlying reasons assessed by B&V.
 - iii. Has SA Water considered the options for the use and shutdown of the ADP (including a range of restart scenarios), associated technical implications, related costs recognising the **current contractual obligations and rights of SA Water and the ADP Operator** (via the ADP O&M Contract) under these scenarios?

If yes, can B&V confirm the range of shut-down and re-start scenarios that have been considered in its analysis to come up with a specific advice. Attention is drawn to ADP Operating and Maintenance Contract section 21 (page 98 onwards) and provisions for shut-down and re-start durations.
 - iv. Recognising B&V's findings for items 2.1.1(b) (i), (ii) and (iii), B&V to advice ESCOSA if SA Water's proposed expenditure for the ADP during the second determination is prudent and efficient.
- c. **Peer Review notes that the B&V Draft Report, dated 30 October 2015 does not satisfactorily address ESCOSA's Objectives in the Executive Summary.**

2.1.2. Issue for further consideration

- a. B&V Report Executive Summary currently includes a Pull Quote "**B&V endorses SA Water's proposal....**". This comment is inconsistent with the findings from a detailed analysis by B&V (in their Draft Report).
- b. Peer Review recommends that this comment be replaced by:
 - i. Summary of Significant Issues to be addressed by SA Water ("Significant Issues") and or its advisers (Aurecon, others, as required); Satisfactory resolution of the Significant Issues should result in SA Water's Regulatory Business proposal(s) being considered technically or financially robust.
 - ii. **Important Note:** B&V comment "...endorses SA Water's proposal..." can result in many of the Significant Issues (in the various other sections of the B&V Draft Report) not being attended or being left unresolved.

2.2. Comments on other Sections of B&V's Draft Report

2.2.1. Comments on B&V Draft Report: Section 1. Introduction

- a. This Section will benefit by having a summary of ESCOSA's Key Objectives to be delivered by B&V Report. Refer section 1.2(b) of this report (as appropriate).
- b. Peer Review recommends that clarity on B&V's Role is important to be noted upfront so as to manage expectations and deliver high quality advice that meets ESCOSA's Key Objectives.

2.2.2. Comments on B&V Draft Report: Section 2. Approach and Methodology.

- a. B&V Draft Report notes that *"Primary documents which were the focus of our review included"*...
- b. Peer Review recommends that B&V Draft Report also focus its review on two (2) key documents, which are classified as secondary documents. These are:
 - i. ADP OPEX Model; and
 - ii. ADP Payment Model

The above 2 Documents (in conjunction with the ADP O&M Contract) are vital to make any informed and objective analysis to confirm the technical or financial robustness of SA Water's proposal.

[Note: B&V Draft Report has indicated at item 7, Table 4.1 that B&V has reviewed the ADP Operating model – this should be recognised upfront – as part of the primary documents].

2.2.3. Comments on B&V Draft Report: Section 3. Documents

- a. B&V to note that "Documents" refers to documents, electronic Information and spreadsheets or other approved technical and financial operating models.
- b. T3PM Group Peer Review notes that some "updated" documents were provided by SA Water or ESCOSA, during the course of the exercise. A comment by B&V (in its report) to acknowledge why updated document was provided e.g. was this to provide supplementary information requested by B&V or to correct errors identified by B&V during the review period.
- c. Peer Review notes that B&V Draft Report provides a comprehensive list of information and a good summary of key documents. This is very useful summary.

2.2.4. Comments on B&V Section 4.1

This Section of B&V Draft Report requires significant review and rework. Peer Review recommends that Section 4.1 of B&V Report be arranged in 2 parts:

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- a. **Part 1 focus on “technical and financial robustness” of the proposal to run ADP** – assessed purely on the basis of the review of the current ADP O&M Contract provisions and or (if required) a review of the Aurecon Asset Life Assessment/ Value and Asset Stewardship Report(s). B&V to provide a comment and if the proposal to run the ADP in new proposed modes (Hot Standby or Cold Standby) is technically sound. In addition, Peer Review notes the following:
- i. Even if the ADP were required to operate from a Business Continuity Standpoint there is no analysis in the B&V Draft Report to identify the most efficient way to Operate the ADP using the current O&M Contract and the current operating modes that are available in SA Water’s O&M Contract (reference B&V Scope Brief at item 1.2(b) of this Report)
 - e.g. Medium Term Shut-down of one of the 50 GL stream for 89 days (less than 90 days) at a time – [REDACTED]. Partially running the second 50 GL stream at reduced capacity of 30 to 60 MLD (2 trains of 30 MLD each) and preserving other 4 trains (e.g. on a Medium Shut-down) and then every 90 days undertaking a full-capacity run of the second stream to provide assurance of strategic security of supply from a climate-independent source.
 - SA Water’s O&M Contract schedules provide assurance that there is no degradation of the asset or the membranes during preservation and therefore there will be further significant savings in fixed (Membrane Replacement Costs) i.e. membranes may not be required to be replaced frequently and membrane replacement could be deferred with substantial savings. This would more than offset the cost of chemicals required for possible Medium Term or Long Term shut-down. B&V Draft Report to cover this scenario.
 - ii. B&V Draft Report does not provide clarity on the decision process guided by a proper scenario review (as required by the Key Objectives, by B&V) and cost-benefit review of the operating scenarios outside of the current SA Water ADP O&M Contract provisions. No analysis to identify or quantify the significant benefits by preserving super-duplex stainless steels and much deferred asset replacement costs for the train that is put in Medium or Long Term shut-down.
- b. **Part 2 focus on “other related matters” including SA Water’s operational resilience**, water security, etc. B&V may wish to consider the following aspects in the review:
- i. There was a significant investment by SA Water in the North-South interconnector project (\$403 million) to provide the operational connectivity between the northern and southern parts of the system and to upgrade many of the existing Water Treatment Plants. It is unclear as to why certain parts of the SA Water supply network are not able to be serviced by the North-South interconnector project?
 - ii. During 2012/14, SA Water also invested further significant capital to upgrade the Happy Valley Water Treatment Plant – particularly the filters and other significant mechanical, electrical and chlorination systems – both as part of the ADP as well as

many individual (separate) projects. The aim was to ensure the Happy Valley System could be more reliable and this would not require to run the ADP as a backup.

It is recommended that B&V Draft Report cover the issue of why the ADP now required to run - despite the upgrade to the Happy Valley system?

2.2.5. Comments on B&V Draft Report (Table 4.1)

- a. Items 2 and 3 of the B&V comments. Peer Review seeks confirmation from B&V as to the relevance of these to the Key Objectives of this exercise.
- b. Item 4 B&V comments. Peer Review recommends B&V to review its comments at Item 4 recognising the various findings from this Peer Review report.
- c. Item 5 B&V comments require a review (change) to incorporate the factual position from the O&M Contract.

[Note: it would be prudent to point out that Aurecon Asset Stewardship Report has excluded any consideration of the current SA Water's O&M Contract provisions. The ADP O&M Contract and Contract Schedules provide significant cost benefit to SA Water and have major obligations on the Operator to underwrite the risks associated with Asset Life, Asset Maintenance upkeep. The ADP O&M Contract also requires long-term plant operation efficiency to be maintained despite Short, Medium, Long or Very Long-term shut-downs and provide 100% extension to Asset Life and Membrane life during preservation – an important point that is not picked up by Aurecon.]

This matter should be escalated in the Executive Summary of the B&V Draft Report.

- d. Item 6 & 7 B&V Comments. Peer Review recommends that B&V Draft Report review the cost savings considering alternate scenario – the annual cost savings would be much higher.
- e. Item 8 B&V Comments. Recognising that the current O&M Contract does not have any Hot Standby or Cold Standby provisions, Peer Review recommends B&V Draft Report to advice on how B&V has determined there will be lower wear and tear? What categories of assets have been considered in this assessment by B&V? How were the costs determined?
- f. Item 9, B&V Comments. Peer Review recommends B&V's confirmation on why this comment is important to the overall assessment.
- g. Item 11 and 12 B&V Comments. Peer Review notes that the incidents of 2013 and 2014 (with regards to Happy Valley WTP). Peer Review understands that a number of projects have been undertaken by SA Water since 2011 to upgrade to Happy Valley WTP to provide improved water quality and security of supply and it would not be unreasonable to expect a reduced need to run the (expensive) ADP in the long run.

Peer Review also understands that incidents at Happy Valley WTP in 2013, 2014 were expected during the planned upgrade of the Happy Valley WTP and it provided an excellent opportunity to test the ADP to take-on full supply at short notice. Once the

Happy Valley WTP Filter Upgrades (and many other upgrade projects including new pumps for turn-down capacity, Happy Valley Chlorine Upgrade project, Happy Valley SCADA Upgrade project, etc. have been completed at significant capital expenditure it would seem unreasonable to quote those (past) incidents (prior to upgrade) to justify continued running the ADP now.

Peer Review recommends that B&V Draft Report query this important matter to make an objective assessment of “Other Reasons” that are quoted in SA Water’s regulatory submission - to justify ongoing operation of the ADP. Questions that are relevant and require to be addressed by B&V Draft Report include “Why is Happy Valley not able to meet reliable and secure supply – despite the significant upgrades?”

- h. Item 13, B&V Comments. Operational difficulty and re-commissioning capabilities.

Peer Review recommends there are specific provisions in the ADP O&M Contract that can be referenced by B&V Draft Report that can bring the ADP back to full capacity within a pre-agreed period following a [REDACTED]

- i. Peer Review recommends that this operating mode (from the O&M Contract) be assessed by B&V Draft Report to test that it provides greater value to SA Water and its customers – than deviating from the O&M contract – and introducing new (un-proven and un-contracted) Hot Standby or Cold Standby operating modes.

2.3. Other Key Comments on B&V Draft Report

2.3.1. SA Water’s O&M Contract

- a. In order to meet ESCOSA’s Key Objectives, it was expected that B&V Draft Report would include comments or advice following B&V’s review of SA Water’s O&M Contract – in particular the following specific matters (should be covered):
 - i. Current ADP O&M Contract and the specific contractual obligations and rights of SA Water and ADP Operator (reference item 1.2(b)(ii) of this Report;
 - ii. Options for the use and shutdown of the ADP (including a range of restart scenarios), associated technical implications under these scenarios (reference item 1.2(b)(ii) of this Report;
- b. Peer Review recommends that B&V Draft Report confirm B&V findings from a review pertaining to:
 - i. SA Water’s O&M Contract Provisions for Operating Modes ([REDACTED]) and the whole-of-life competitive costs in the O&M Contracts and why those provision cannot be utilised to generate the lowest cost and fastest possible re-start at all times;
 - [REDACTED] – these items are costed in the O&M Contract and Payment models and should result

in substantial savings including postponement of degradation in membrane or asset life.

- [REDACTED]
- ii. B&V Draft Report to identify how the potential costs for other new operating scenarios (viz. Cold Standby or Hot Standby) was assessed as there does not seem to be any provision for such operating modes (Cold Standby or Hot Standby) in SA Water's current O&M Contract or current O&M Contract Schedules.
 - It would be prudent and important for B&V to advise reasonableness of those costs;
 - How these have been derived and or assessed by SA Water (or its Consultant, Aurecon) and if the O&M Operator has been involved in these costs; and
 - B&V to advise if these new costs (associated with Cold Standby or Hot Standby) are assessed to be are higher or lower than that would be achieved – using the current O&M Contract Provisions [REDACTED].
- iii. Peer Review recommends that B&V Draft Report address the technical robustness (or Risks) of new proposed operating modes (viz. Cold Standby or Hot Standby), its impact on the whole-of-life costs and contractual arrangements currently in place in the current ADP O&M Contract.

3. ASSET STEWARDSHIP

3.1. Asset Stewardship

- a. Peer Review notes that asset stewardship is about responsibly managing an asset on behalf of the asset's owners.
- b. It is also about maintenance and upkeep of assets so that assets are in a better shape than that was handed to the O&M Operator.
- c. There are a number of obligations of the ADP O&M Operator to prepare, maintain and implement robust Management Plans and demonstrate compliance. Refer ADP O&M Contract Schedule page 16 (Section 2.4) and pages 133/134 (Schedule 15). Peer Review recommends that B&V Draft Report covers this matter appropriately.

3.2. Principles of Asset Stewardship

Key principles of Asset Stewardship are:

- a. **Governance and Senior Advisory group.** To guide development and improvement of policies and strategies to foster care of the facilities and to allocate resources strategically for ongoing upgrade and repairs, where required.
- b. **Linkage to Client's Strategic Objectives.** Demonstrate that the operational arrangements and outcomes and decision processes are linked to the Company's strategic goals, priorities and objectives.
- c. **Accountability at All Levels.** Engagement with the Operator and Operations resources to ensure and verify compliance with approved plans and procedures and ensure resources are trained/ available.
- d. **Strategic Asset Management Plans.** Ensure strategic asset management plans (incorporating operation, maintenance & repairs of the facility) to ensure the facility can deliver efficient operation, demonstrate full functionality and quality and ultimately protect public investment.
- e. **Operational Controls.** Robust processes to facilitate tracking of asset repair and maintenance, upgrade funding requests, expenditures verification that enhances the long-term value of the asset or facilities and delivers lowest whole-of-life costs.
- f. **Key performance measures.** Established, control, monitor and track key performance measures to ensure effectiveness of facilities operation, maintenance and repair programs.
- g. **Condition assessment.** Structured to focus critical parts of the asset, public health, and safety issues; and on building systems that are critical to a facility's performance. Aim should be to provide timely and accurate data for formulating maintenance and repair budgets and provide critical information for the ongoing management of facilities and utilisation of resources.
- h. **Integrated Approach to Technology Upgrades.** For information sharing and for performing automated facility condition assessments and to eliminate barriers to their deployment
- i. **Research and development.** Emphasis on learnings from deterioration/failure of key components – based on operational experience to date in order to develop quantitative data for planning and implementing cost-effective asset O&M program incorporating best standards of health, safety, environment and productivity. Most important to bring-in learnings from the O&M Operator's world-wide operation experience.
- j. **Training of staff.** To ensure highest level of skilled resources for informed decision making on issues related to the stewardship the assets & facilities and achieve lowest whole-of-life costs of facilities ownership

4. AURECON'S ASSET STEWARDSHIP REPORT

4.1. Peer Review Comments

- a. B&V Draft Report makes many important and valid observations on Aurecon's Asset Stewardship report.

Peer Review recommends that key findings from the B&V Draft Report should be summarised as Significant Issues in the Executive Summary of the B&V Draft Report.

- b. **Peer Review recommends that B&V Draft Report review and address the following matters in B&V Draft Report:**

- i. Aurecon Asset Stewardship Report (page 16) excludes discussions or interviews with the ADP O&M Operator (AAPL). The O&M Operator has deep knowledge of particular issues that arise with the seawater and other environmental conditions associated with the ADP. It appears that Aurecon has conducted this report with little or no consultation with one of the most important stakeholder i.e. AAPL who has the care, custody of the ADP asset since 12 December 2012 and also has strong interest in the asset through a 20-year O&M Contract with SA Water.
- ii. ADP O&M Operator (AAPL) JV includes ACCIONA Agua, which has considerable background in the application of reverse osmosis technology in the desalination of sea water and brackish water – as demonstrated by their assertions from their website i.e. *Acciona more than 75 installations producing over 2.5 million cubic metres of drinking water. They were selected because of their extensive experience in desalination – particularly the entire life cycle of the asset and have very strong research and development credentials. Many of the technological innovations in desalination plants (globally) incorporate features that have been developed and optimised by ACCIONA Agua. It appears Aurecon Asset Stewardship report has not actively sought ADP O&M Operator (AAPLs) comments and feedback in the Asset Stewardship report and or in the proposal for possible new or altered Operating regimes.*
- iii. Aurecon's Asset Stewardship Report has not addressed key principles on Asset Stewardship (item 3.2 above) to achieve highest possible Asset Life, Reliability and Availability.
- iv. Aurecon Asset Stewardship Report proposes new Asset Management practices without reference to the Strategic Asset Management Plans currently in place and implemented by the ADP O&M Operator. Aurecon's Asset Stewardship report does not incorporate the current contractual obligations of the O&M Operator or some of the practical aspects or learnings from the ADP Plant. Aurecon's suggested approach for a Hot Standby or Cold Standby operation has major technical, financial, legal and contractual implications due to new (and un-tried) Operating Regimes that are vastly different from the current ADP O&M Contract provisions.
- v. **Peer Review recommends B&V Draft Report to appropriately address the above matters to achieve ESCOSA's Key Objectives (refer item 1.2 of this report).**

[Note: Aurecon has been involved with the ADP for nearly 8 years and has been involved in the formulation of the ADP O&M Contract Technical Requirements and Schedules and also is aware of the key obligations of the O&M Operator.]

- c. **B&V Draft Report notes that evidence and examples provided in the Aurecon Report does not support the conclusion that there will be recommissioning/restart issues as none of the desalination plants in the examples have been restarted from a cold standby mode of operation (Page 19). Tampa Bay example – Page 29. This is very important point picked-up by B&V Draft Report detailed findings.**

Peer Review recommends that a summary of these points should be reinforced as Significant Issue in the B&V Draft Report Executive Summary. Collectively, these points (picked-up by B&V assessment) question the technical robustness of the decision (by SA Water) to operate the ADP in new operating modes of Hot Standby or Cold Standby.

- d. B&V Draft Report notes **B&V’s discussion with authorised Australian distributor of Hydranautics (RO membranes)**, if the membranes are stored as per their protocol, there should not be any impact on warranty (page 27). B&V Draft Report also notes that the Membrane warranty documents **do not seem to contain** any clauses to support statements that membrane warranties reduce from 8 to 2 years (page 35).

Peer Review recommends that B&V Draft Report rely on the ADP O&M Contract provisions to bring out ‘objective’ statements on the above subjects - consistent with SA Water’s ADP O&M Contract Schedules & provisions:

- [REDACTED] By deviating from the ADP O&M Contract provisions (if Aurecon alternate proposal of Hot Standby or Cold Standby- it will introduce significant risks to SA Water in terms of membrane replacement costs.
- [REDACTED] By deviating from the ADP O&M Contract provisions, this would impose significant risks on SA Water.

Peer Review notes that the above points must be ‘objective’ and refer to the ADP O&M Contract provisions to reinforce the significant cost savings to SA Water by deferring the membrane replacement – even if by [REDACTED]

Peer Review also recommends that the above point must be reinforced by B&V Draft Report as a Significant Issue – to be resolved by SA Water.

- e. B&V Draft Report notes that if [REDACTED] are conducted each year, then the plant is never truly in cold standby (which requires the plant to not be running for a period of one year or longer) page 19.

Peer Review recommends that this matter could be noted by B&V Draft Report as a Significant Issue – to be resolved by SA Water.

- f. UF Membrane Replacement: It is not clear if this should be treated as fixed cost (does this mean regardless of use, these membranes will be replaced at the end of a fixed period) (page 37). \$12.8m UF replacement cost mentioned on Page 78 of RBP.

Peer Review recommends further clarity on this issue so that B&V Draft Report assess the extent of UF Membrane replacement costs that will apply if the UF Membranes are kept in preservation state.

- g. **Peer Review notes that B&V Draft Report has identified [REDACTED] SA Water’s Regulatory Business Proposal is primarily based on Aurecon’s Asset Stewardship Report and as such the robustness of SA Water’s proposal requires careful review by B&V.**

5. ASSET LIFE ASSESSMENT AND VALUE

5.1. Asset Life Considerations

5.1.1. B&V Draft Report: Comments on Aurecon Asset Life Assessment & Value

B&V Draft Report at pages 34 and 35 has identified Significant Issues with Aurecon’s Asset Life Assessment report. Peer Review recommends that these Significant Issues be summarised in the Executive Summary of the B&V Draft Report. In addition:

- a. Peer Review recommends that B&V Draft Report review and address the following matters in B&V Draft Report:
 - i. Item 4.2.5 of Aurecon Report (page 21) “SA Water’s Risks”. Aurecon has identified risks – including accelerated loss in the asset value of key components of the desalination plant if the Cold Standby mode is used beyond 2 years. Peer Review recommends that B&V verify or benchmark the Aurecon statement recognising that Cold Standby mode is defined by Aurecon as:

Cold Standby is defined as the plant operational mode under which ADP is not producing and delivering any potable water to the drinking water distribution system for a period of one year or longer.

- ii. The Aurecon proposed Cold Standby is similar to SA Water’s O&M Contract negotiated position of [REDACTED] comprising a shut-down of more than 1 Year.

- iii. [REDACTED]

- [REDACTED]

- [REDACTED]
- █ [REDACTED]
- █ [REDACTED]
- b. Peer Review recommends that B&V Draft Report reviews the Routine Preventative Maintenance Costs of the UF and RO Membranes (refer Table on page 92 and page 96 of ADP O&M Contract Schedules). [REDACTED]
 - i. B&V Draft Report to review if some (greater than 75%) of this cost can be deferred or eliminated from the 2nd Regulatory Period by better utilisation of the [REDACTED] and by optimising the operation of the 2nd x 50 GL Separable Portion (eg by running 2 out of 5 trains – each train being 30 MLD).
 - ii. B&V Draft Report to review O&M Contract Schedules (page 31, last para, Actual Membrane Replacement Expenditure and also pages 115 and 116, clause 28 (b)) and [REDACTED]. As the global market for RO & UF membranes has become significantly competitive, there is huge opportunity to review [REDACTED] the potential significant cost savings by securing improved prices for RO & UF membranes – compared to the (indicative) prices at pages 92 and 96 of SA Water’s O&M Contract Schedules. This review is vital to ensure SA Water’s cost proposals are robust.
- c. Peer Review recommends that B&V Draft Report review and or comment if SA Water can utilise the market competitive pressures to further optimise Routine Preventative Maintenance Costs for other items in the Price Tables in the O&M Contract Schedule – [REDACTED].

5.2. Asset Value

5.2.1. *Membrane Sale Proceeds*

Peer Review recommends B&V Draft Report to address asset valuation criteria and analysis discussed in Aurecon's report to validate the financial robustness of SA Water's proposal.

Peer Review recommends that the Asset Value consideration should include proceeds from (old) Membrane Sales.

Refer SA Water's O&M Contract Clause 16.4 (page 84 and 85).

This payment to SA Water can be substantial where the ADP O&M Operator is able to salvage (sell) old membranes that are not entirely extinguished but rather can be used by other Operators for purification in a non-potable water use scenario.