



Australian Government



Review of metering in the Riverland regulated surface water system

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The Murray–Darling Basin Authority pays respect to the Traditional Owners and their Nations of the Murray–Darling Basin. We acknowledge their deep cultural, social, environmental, spiritual and economic connection to their lands and waters.

The guidance and support received from the Murray Lower Darling Rivers Indigenous Nations, the Northern Basin Aboriginal Nations and our many Traditional Owner friends and colleagues is very much valued and appreciated.

Aboriginal people should be aware that this publication may contain images, names or quotations of deceased persons.

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Executive Summary

Background

Water metering was identified as an area of focus for the Murray-Darling Basin Authority's (MDBA) 2019/20 compliance program due to the critical role it plays in ensuring compliance with water licence conditions and the sustainable diversion limits (SDLs). Accordingly, the MDBA is conducting a series of reviews to assess the systems and procedures used by Basin states to ensure the accuracy of water metering and measurement, and the integrity of the water take data reported to the MDBA each year (in accordance with section 71 of the *Water Act 2007*). These reviews have been designed to help improve transparency and provide assurance around how water take information is collected and reported by Basin states.

South Australia has a State-wide policy that all licensed water use must be metered unless valid exemptions apply,¹ with all non-urban water meters being privately owned. For this review the MDBA focused on surface water metering and measurement in the Riverland region. The Riverland region is an area stretching from the South Australian border to Blanchetown. It has a population of approximately 40,000 people, with major centres at Renmark, Berri, Loxton, Waikerie and Barmera. Cropping in the region is completely dependent on surface water irrigation as the rainfall average of around 250mm per year is insufficient for crop production.² The water is supplied from the River Murray and the region produces the most citrus, almonds and dried apricots in the country, as well as almost 60% of Australia's wine grapes. The region is South Australia's largest and most productive irrigation district.

This review assesses the current meter reading system the SA Department for Environment and Water (DEW) has in place which requires all water licence holders in the Riverland region, apart from those with State exemptions, to self-report their water meter readings.

The review also considered the systems and procedures around the new metering requirements introduced in South Australia from July 1st 2019³. These requirements include: that new or replacement meters for non-urban water use must be pattern approved and validated following installation by a certified meter validator; and that testing and maintenance must be conducted by a qualified meter installer or validator holding a certificate issued by Irrigation Australia.

The MDBA conducted this review under section 13.10⁴ of the Basin Plan, and Section 173(1)⁵ of the *Water Act 2007 (Cwlth)*, and in accordance with the MDBA's 2019-20 Annual Audit Work Program.

¹ South Australian Licensed Water Use Metering Policy (Approved by the Minister for Environment and Water June 2019) website <https://www.environment.sa.gov.au/topics/water/water-licences-and-permits/metering-water-use>

² Primary Industries and Regions SA website https://pir.sa.gov.au/aghistory/natural_resources/water_resources_ag_dev/murray-darling_basin/irrigation_development_and_management_in_the_sa_riverland

³ Sections 1-7 of the *South Australian Licensed Water Use Metering Specification* approved by the Minister for Environment and Water June 2019

⁴ Under s13.10 of the Basin Plan, the Authority has the power to undertake periodic audits to assess the extent of compliance with the Basin Plan.

⁵ Section 173(1) of the *Water Act 2007 (Cwlth)* provides the Authority with the power to do anything that is necessary or convenient to perform its functions (which are listed in s172). Those functions include measuring, monitoring and recording information about the Basin water resources, including water take (s172 (1) (v)).

Review Approach

In October 2019, MDBA officers travelled to the DEW regional office in Berri where metering information for the Riverland region is collected, stored and processed. MDBA officers met with DEW compliance and assessment staff to discuss DEW's processes and procedures for collecting and recording meter read data, as well as their approach to compliance and enforcement action when non-compliance is identified. DEW provided the MDBA with internal procedural documentation regarding its self-meter reading process as well as a walkthrough of the processes and procedures and a demonstration of the system it uses to store and collate meter read data. The MDBA then accompanied DEW regional office staff on a site visit for a demonstration of meter read audits in the Riverland region.

Following this, MDBA officers attended the DEW head office in Adelaide to gain an understanding of the procedures in place to collate and then report annual water usage data to the MDBA in accordance with Section 71 of the Water Act 2007.

The MDBA would like to thank DEW for its participation in this review, in particular the staff from the Berri office who took the time to facilitate the fieldwork component of this review.

Review Objective

The objective of this review was to assess the adequacy and effectiveness of recording and reporting arrangements that DEW has in place for ensuring that metered surface water take is accurately measured and reported; and provide confidence that the MDBA can rely on this data to support the determination of annual take and inform assessment of compliance with the South Australian Murray SDL.

Conclusion

Overall, the review has found that DEW generally has adequate systems in place to record and report metered surface water extraction, with a number of positive processes and controls. However, there are also a number of processes that could be improved to strengthen the integrity of the self-meter read system.

Positive processes and controls include:

- online self-reporting that allows photographs to be attached
- providing timely and detailed communication letters to water entitlement holders
- undertaking site visits where reports have not been provided or readings suggest anomalies

MDBA recommendations for improving the integrity and effectiveness of the self-meter read system include:

- making it a requirement to provide photographic evidence with self-reported readings
- Strengthening controls around access to data for s71 reporting

Overall rating

Satisfactory with room for improvement

Detailed Findings

Self-meter reading and reporting

Background

Meter Readings

All entitlement holders in South Australia must provide a meter reading unless an exemption has been approved by DEW.⁶ DEW use satellite photographs and onsite inspections to help determine whether exemptions should apply and periodically reassess whether exemptions should continue. Water entitlement holders deemed to be exempt receive a letter informing them of the reason that they are not required to install water meters for their property and reminding them to notify DEW should circumstances around their exemption change. DEW also have a process in place to review exemptions in accordance with notes provided in a workload register which includes annual reminders.

DEW sends all entitlement holders required to submit meter readings quarterly letters to remind them that a reading is due and when it is to be submitted. Entitlement holders can then either submit their reading online via a smart form found on the DEW 'Water Reporting' web page (<https://www.environment.sa.gov.au/topics/water/water-licences-and-permits/water-reporting>), or via telephone or email.

Most meter readings are submitted online and checked for obvious anomalies before being transferred directly into the Water Information Licensing Management Application (WILMA - the water register where water licensing information is captured). When submitting a reading online, entitlement holders have the option of uploading a photo of their meter to substantiate the meter reading.

A smaller number of meter readings are submitted either by phone or e-mail and are then manually entered by DEW staff into WILMA. Where a reading is submitted by phone or e-mail, the entitlement holder is given the option of receiving a water usage statement to verify that the information they provided has been accurately transcribed into their account, and to receive updated information on the amount that remains available on the account.

All meter readings are reviewed through a combination of automated and manual quality assurance processes.

⁶ These exemptions apply in limited low risk scenarios, as documented in Meter Implementation Plans published on DEW's website.

Finding 1: Photo evidence is not mandatory

Although entitlement holders have the option to provide a photo of their meter when submitting an online meter reading, it is not a mandatory requirement. The lack of validation in a self-reporting system increases the risk of water use being misreported, either accidentally, or deliberately.

Risk rating

Moderate

Recommendation

DEW should consider making it a mandatory requirement for all licence holders to submit photographic evidence when providing their meter reading. Strengthening the self-reporting process in this way is considered particularly relevant given the recent changes in South Australia the regulatory environment, with water users now required to report and balance their water accounts quarterly rather than annually.

South Australian response

South Australia does not agree to this recommendation for the following reasons. DEW also questions why this finding has been given a moderate risk rating, as opposed to a low risk rating, given the following.

At this time, South Australian customers have the ability to upload a photo when submitting a meter reading and are encouraged to do so. When the current online form was developed a deliberate decision was made to not make a photo mandatory as this could prevent people from submitting their meter reading, which is the primary intent of the form and the licence obligation needing to be met.

Notwithstanding this, South Australia has systems and processes in place to avoid misreporting including:

- a record of the number of digits applicable to the meter and processes to identify if digits have been omitted/added,*
- identification of backwards or obvious erroneous reads, which may include obtaining a photo from the customer to investigate,*
- requirements to submit photographs of the meter with validation certificates and five yearly inspections to enable compliance checking,*
- DEW staff verify all meter reads where excess usage has occurred or the readings are potentially erroneous,*
- compliance audits are performed to cross check/verify the accuracy of a sample of meter readings, and*
- where a licence holder fails to provide a meter reading, DEW records the meter reading and issues an expiation.*

The majority of licence holders in South Australia are compliant with their licensing obligations and our processes reflect this - DEW requiring mandatory photographs could undermine the trust built with customers and create undue requirements that are difficult to comply with. It is noted that photos are only used to verify reads where there is an anomaly (i.e. verification requirements are not met). In these instances, DEW can seek photo evidence or attend the property to verify the reading.

Mandating photos would mean that over 13,000 customers across the State would be required to upload a photo with each meter reading, in case they are one of a handful that DEW need to verify.

Given that South Australia is currently undertaking a program to develop a new state water register and customer portal (the Water Management Solutions Program), which will see the review of all current forms, it is DEW's preference to keep this requirement optional and to seek photographic evidence only when required at this time.

Implementation due date: Not applicable

Finding 2: Lack of information provided on penalties

Water entitlement holders providing an online water meter read are reminded that it is an offence to provide a false reading, however there is no information provided on the severity of the penalty. Water entitlement holders may therefore not properly understand the consequences of inaccurate meter readings.

Risk rating

Low

Recommendation

The online water meter reading form used to submit meter readings should be updated to identify that water entitlement holders face a maximum penalty of up to \$20,000 under s214 of the Natural Resources Management Act 2004 where false or misleading information is provided.

South Australian response

South Australia agreed to this recommendation at the time of the MDBA's visit and it has been actioned. The online meter reading form, used to submit meter readings, now includes the following clause, which must be selected (agreed to) prior to submitting the form:

I declare that the information that has been provided on this document is true and correct. A person who furnishes information to the Minister or another authority under the *Natural Resources Management Act, 2004* that is false or misleading in a material particular is guilty of an offence. **Maximum penalty: \$20 000. ***

It is noted that all of South Australia's online water licensing forms include a mandatory declaration that the information being provided is true and correct.

For those customers who phone-in their meter readings, staff read the clause aloud to the person submitting the reading and confirm they understand.

Implementation due date: Actioned

Finding 3: Water usage statements not automatically provided

If a meter reading is submitted over the phone or via email, a water usage statement is not automatically provided to the user, as it is when the reading is submitted online. Data entry errors could occur at the time of input by DEW staff when receiving self-meter read data via phone or email, and provision of a statement allows confirmation by the user.

Risk rating

Low

Recommendation

DEW should consider making it standard practice to send water usage statements to users who submit their reading via phone or email so there is documented confirmation of the reading that has been supplied and accepted by DEW.

South Australian response

South Australia agreed to this recommendation at the time of the MDBA's visit and it has been actioned.

All customers have the option to receive a 'manual' water usage advice statement, by email, sms or by post, at their request. For those customers who phone-in their meter readings, staff read the clause listed above in finding 2 aloud to the person submitting the reading and confirm they understand. This places the responsibility on the water user to ensure the figures they have provided are correct at the time of submission.

With the customer portal which is being developed as part of the Water Management Solutions program (program to develop a new state water register), customers will be able to log in and access their water account themselves at any time.

Implementation due date: Actioned

DEW Compliance activities

Background

There are two main types of compliance activities undertaken by DEW to ensure accurate metering and water use reporting.

The first is a reactive program that is activated when meter readings have not been provided or where potential overuse is identified, for example as a result of unusual meter readings. As noted above, meter reading data is stored in the database WILMA. Automated formulas are used to filter the readings and identify accounts not in credit or accounts where water use may have been under reported.

When a meter reading is not provided by the due date, a letter is sent to the entitlement holder giving them a further 10 days to provide the reading. At the end of the 10 day extension period, a list is prepared of all outstanding meter readings, together with those where potential over use has been identified. The Assessment and Compliance team will then undertake site visits to obtain the outstanding meter readings, verify readings information provided and confirm that seals remain intact.

DEW also conducts a number of proactive meter inspections, usually informed by knowledge of local field officers. Through a combination of both reactive and proactive site visits, DEW aims to inspect at a minimum 10% of all meters per annum. All on-site field inspectors use a standardised checklist to ensure that all meter inspections undertaken are thorough and consistent.

From July 2019, all new and replacement meters must be AS4747 compliant. New meters will be subject to ongoing validation requirements at installation, and whenever there is a change to the meter which may affect meter accuracy.

Water entitlement holders are also required to undertake five yearly inspections of their meters and provide the inspection reports to DEW. This includes the submission of a checklist to confirm that the inspection has occurred and photographs to verify that seals remain intact at the time of inspection. This requirement commenced as of 1 July 2019 and therefore the first 5 yearly inspection report will be due after 1 July 2024.

Observation

DEW are yet to formalise checklists for on-site field inspectors to use when reading and inspecting meters AS4747 meters installed since 1 July 2019. While no new meters had been installed in the Riverland region at the time of this review, the MDBA notes that processes need to be developed and formalised for DEW on-site field officers to follow when carrying out inspection of AS4747 meters installed since 1 July 2019.

Section 71 reporting

Background

At the end of every water year, in accordance with section 71 of the *Water Act 2007*, Basin states must provide a report to the MDBA on the total amount of water taken and traded for that year. These reports form the foundation for ensuring that the sustainable diversion limits established under the Basin plan are being adhered to in effect from July 2019. Ensuring accuracy in the s71 reports relies not only on accurate metering and measuring of take, but also on accurate reporting.

Water use data is exported from WILMA via a standard output report. The standard report is updated nightly as new information is received. The raw water use data output from WILMA requires classification and aggregation to report as required by the MDBA in the s71 reporting spreadsheet. A number of steps are undertaken to sort the data into the correct categories and complete the necessary calculations for the reporting. Formulas are used to track calculations and verify accuracy of figures to feed into the report. Exceptions noted in the initial data are adjusted as and when meter reads are verified. The processes and calculations used to prepare the data for reporting are manually checked by a second staff member. The data once entered into the s71 reporting spreadsheet is also checked by a second staff member.

Finding 4: Lack of access control around the s71 data

The review noted that access to the spreadsheet for capturing s71 reporting data is available on the DEW intranet with no controls around editing rights. There is a risk, therefore, that data recorded could be unintentionally corrupted by DEW staff who are viewing the report. A corrupted file could impact the integrity of water use information reported to the MDBA.

Risk rating

Low

Recommendation

While the risk of accidental data corruption may be low, the MDBA recommends that spreadsheets used for the collection of s71 data should be saved as read-only with editing rights being password protected and provided only to authorised staff.

South Australian response

South Australia agrees to the MDBA's recommendation.

Access to the file where the s71 data is stored is restricted to members of the Water and River Murray Division within DEW. SA will password protect the spreadsheets, allowing edit privileges to only the required staff. This will be implemented for the 2019-20 water year reporting to be completed in the second half of 2020.

Implementation due date: 31 December 2020

Finding 5: Lack of sign off process for s71 reporting

The review noted that there are no processes in place or records maintained to evidence that data entered into the s71 reporting spreadsheet from WILMA has been accurately captured and reviewed.

Risk rating

Moderate

Recommendation

A process is needed to ensure that data entered into the spreadsheet for s71 reporting has been checked for accuracy and reconciled. This could include a sign off process that identifies a second person who has reviewed and checked the data and the date when the review was conducted.

South Australian response

SA agrees to the MDBA's recommendation.

The reporting calculations include a number of audit formulas to conduct self-checks of data accuracy. The processes and calculations used to prepare the data for reporting are manually checked by a second staff member. The data once entered into the s71 reporting spreadsheet is also checked by a second staff member.

SA is currently formalising a procedure for the preparation of s71 reporting figures, which will include documenting / signing off all validation checks to ensure data confidence.

Implementation due date: 31 August 2020

Appendix A – Map of the Riverland Region



Source: <http://www.visitloxton.com.au/SA-Riv%20RAA.pdf>

Note: The red box indicates the geographic area in the Riverland Region where fieldwork for this review was conducted.

Appendix B – Engagement Report Rating and Findings Rating

Engagement Report Rating

Report rating	Explanation
Satisfactory	Controls are adequate and effective in addressing key risks. No critical, high-rated or moderate-rated findings identified. Any findings identified have been assessed as low risk.
Satisfactory with room for improvement	Controls are largely adequate and effective in addressing key risks. No critical or high-rated findings identified. Any findings are moderate or low.
Requires improvement	Controls only partially addresses the key risks. Some high-rated and/or medium-rated findings were identified.
Unsatisfactory	Controls are ineffective in addressing the key risks. Most findings were rated as critical and/or high and urgent corrective actions are necessary.

Findings/Observations – Risk Ratings

Finding rating	Explanation
Low	The event is of low consequence. Remedial action (if noted) should be considered.
Moderate	The event may threaten an element of the organisation’s objectives. Remedial action should be implemented in the short to medium term.
High	The event may threaten the achievement of the organisation’s objectives. A high priority should be given to implementing remedial action.
Critical	The event represents a significant control weakness which could stop the achievement of the organisation’s objectives. Remedial action should be implemented as a matter of urgency.

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