



Australian Government



Inspector-
General of
Water
Compliance

Audit of the management of overland flow harvesting in the Lower Balonne

Inspector-General of Water Compliance

June 2023

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Summary

Water Resource Plans (WRPs) are one of the key instruments for implementing the Murray-Darling Basin Plan 2012 (the Basin Plan). They set out how much water can be taken from the system at a local scale and ensure that state water management rules meet the Basin Plan objectives.

The Inspector-General of Water Compliance (IGWC) is a regulatory role with audit powers under section 73L of the *Water Act 2007* Cth (the Water Act). These powers allow the IGWC to assess the extent of compliance with water resource plans and/or the Basin Plan and provide assurance that systems and processes for measuring and monitoring ongoing compliance are adequate and effective.

This audit of the Condamine-Balonne WRP focussed on the management of overland flow harvesting in the Lower Balonne catchment. The objective of the audit was to assess whether the Department of Regional Development, Manufacturing and Water (DRDMW) is meeting Basin Plan and the Condamine-Balonne WRP requirements enshrined in the Water Plan (Condamine and Balonne) 2019 (Water Plan) in relation to overland flow licencing and authorisation, and the rules in Chapter 6 and 9 of the Condamine and Balonne Water Management Protocol (Water Management Protocol) on monitoring, measurement and management of flow events. Where there are obligations for entitlement holders, the audit scope included DRDMW's oversight of entitlement holder compliance and did not include individual entitlement holder compliance.

The IGWC appointed OCM and Alluvium to conduct this audit under section 73L of the Water Act. It aligns with the 2021-22 priorities of the IGWC including on effective approaches to water compliance (priority 1) and water metering and measurement (priority 2) detailed in Appendix B.

Audit criteria were developed to assess parts of the WRP that warrant examination to ascertain whether requirements relating to overland flow have been met during the audit period.

There are 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain. The taking of water under the authority of these overland flow water licences is permitted only during announced periods. In the audit period there were three flow events where access was announced. The flow events occurred in February to March 2020, March to April 2021 and November 2021 to January 2022.

Conclusion

This audit confirmed that DRDMW are meeting requirements of the Condamine-Balonne WRP in relation to overland flow licencing and authorisation, monitoring, measurement, and management of flow events.

Audit testing identified that DRDMW have documented guidance for most key activities including management of flow events where access is announced and on-site audits. DRDMW also have several key systems that support their regulatory functions, including the Water Licencing System, Compliance Information Register and Management, Excel spreadsheets, satellite imagery software called Planet and digital tablets for on-site auditing.

The audit report has however identified six weaknesses in systems and processes that may reduce the effectiveness of compliance arrangements. While these weaknesses do not constitute non-compliance with the Condamine-Balonne WRP, recommendations have been made so that DRDMW can address these weaknesses and provide greater confidence to the public and the IGWC that compliance arrangements effectively contribute to meeting Basin Plan outcomes and ensuring that there continues to be compliance with the water resource plan.

Table 1. Summary of findings

Criteria	Finding	Recommendation
Criterion 3	1. DRDMW lack documented guidance for some key compliance activities.	Recommendation 1 – Develop documented guidance around key compliance activities.
	2. DRDMW did not conduct a sufficient number of on-site audits for pre and post flow events.	Recommendation 2 – Commit to a minimum number of on-site audits for pre and post flow events.
	3. DRDMW audit activities for mid and post-flow events were reduced or delayed due to weather limitations.	Recommendation 3 – Implement alternative audit strategies to combat limitations to onsite audits due to weather conditions.
Criterion 4	4. Entitlement holders did not always transfer data to DRDMW within the required timeframe.	Recommendation 4 – Ensure that the requirement to report measured take within a specified period is consistent and enforceable.
	5. DRDMW did not sufficiently verify self-reported measured take data.	Recommendation 5 – Verify self-reported measured take.
Criterion 5	6. DRDMW did not provide entitlement holders with clear written instructions on the requirement to notify them on completion of a new water storage, or the alteration of an existing storage used to store water taken under the authority of a water allocation.	Recommendation 6 – Provide entitlement holders with clear written instructions for notification of changes to storages.

Background

Water Resource Plans

The Basin Plan requires Water Resource Plans (WRPs) to be developed by the state governments and are accredited by the commonwealth minister. In Queensland, WRPs are enacted by state instruments including Water Plans and Management Protocols.

Water Resource Plans (WRPs) are the key instrument for implementing the Basin Plan. They set out how much water can be taken from the system at a local scale and ensure that state water management rules meet the Basin Plan objectives. Meeting the obligations of the WRP is key to ensuring that sustainable diversion limits are not exceeded over time.

The Inspector-General of Water Compliance (IGWC) is a regulatory role with audit powers under section 73L of the Water Act. These powers allow the IGWC to assess the extent of compliance with water resource plans and/or the Basin Plan and provide assurance that systems and processes for measuring and monitoring ongoing compliance are adequate and effective.



Condamine-Balonne WRP

The Condamine Balonne WRP was accredited by the Commonwealth Water Minister in September 2019 and sets out the water management arrangements for surface water and groundwater resources to share water for consumptive use and meet environmental and water quality objectives in the Condamine Balonne. It is the key instrument for implementing the Basin Plan in the Condamine Balonne.

The WRP, as accredited under the Water Act, includes relevant parts of the Water Plan (Condamine and Balonne) 2019 (Water Plan) in relation to overland flow licencing and authorisation, and the rules in Chapter 6 and 9 of the Condamine and Balonne Water Management Protocol (Water Management Protocol) on monitoring, measurement, and management of flow events, as issued under state law. The Condamine-Balonne WRP area is in south-west Queensland. It stretches from the headwaters of the Condamine near Killarney, and headwaters of the Maranoa, near Carnarvon Gorge, into the floodplains of the Lower Balonne (see Figure 1).

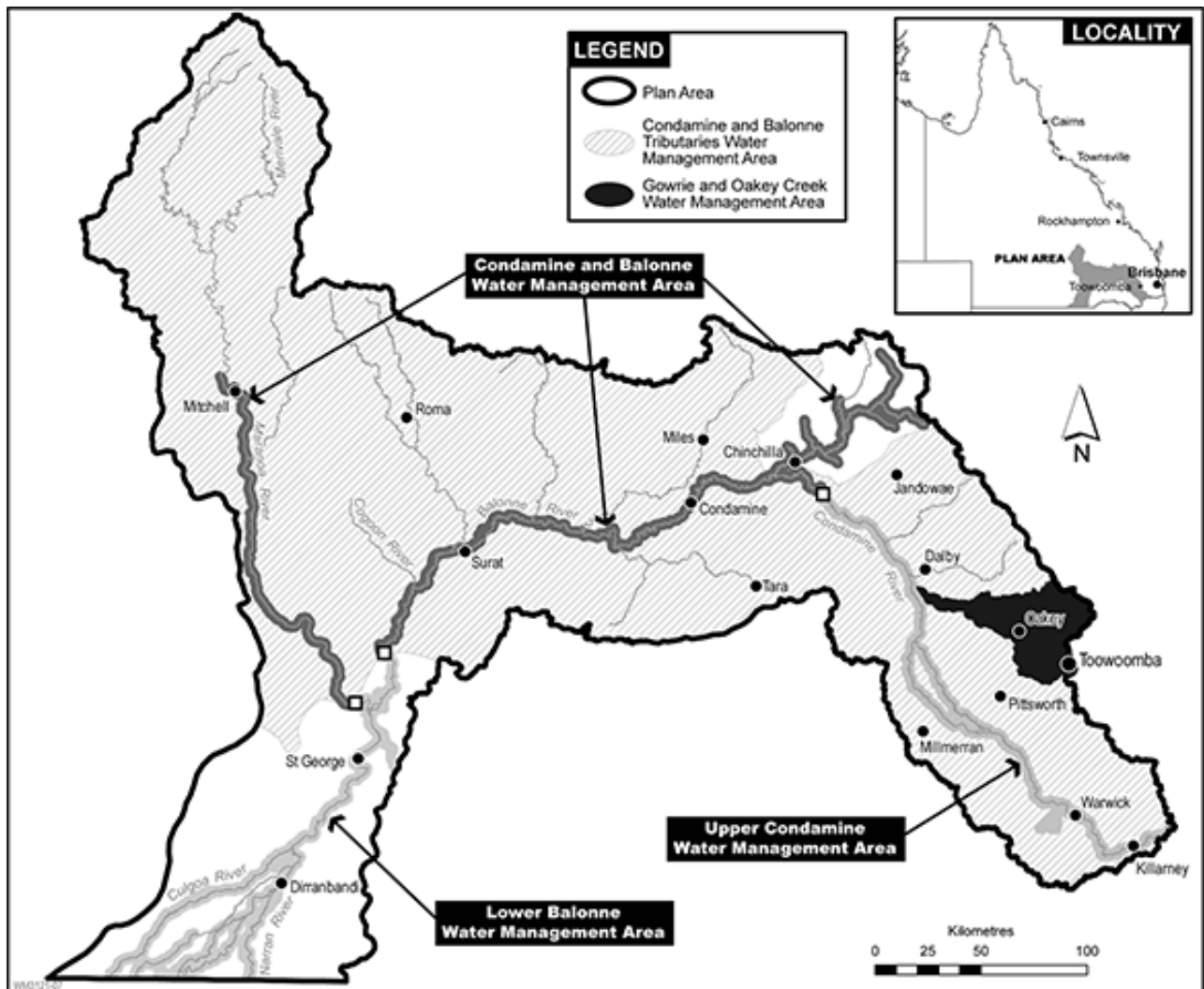


Figure 1. Condamine-Balonne WRP –water management areas (Source: Water Plan (Condamine and Balonne) 2019 - Schedule 3)

Lower Balonne

In the Lower Balonne, management of take through overland flow is regulated in accordance with the WRP and supporting instruments including the Water Plan and the Water Management Protocol. These rules deal with:

- water sharing, accounting, and data collection,
- water allocation dealing and seasonal water assignment for water allocations to take unsupplemented water and
- water licences to take overland flow water which is subject to an announced period.

The Lower Balonne water management area is in the south-west of the Condamine Balonne WRP area, including towns of St George, Dirranbandi and Hebel (see Figure 2). There are 19 water licences that authorise the take of overland flow from the Lower Balonne floodplain¹. These licences are located on the floodplains associated with the Balonne River downstream of St George and with the Lower Balonne distributary system.

Main industries of employment in the Balonne local government area in the 2016 census include beef cattle farming, hospitals, and cotton growing. Land use in the WRP area is dominated by cattle and sheep grazing on dryland pasture. Grain and cotton crops are a significant contributor to the regional economy and are grown using dryland and irrigated farming².

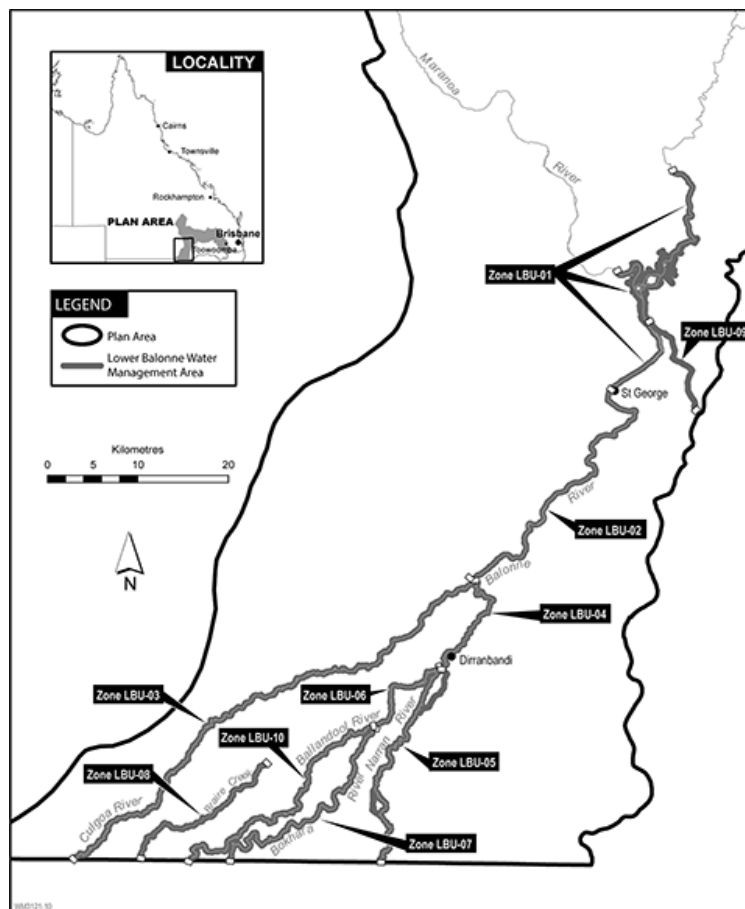


Figure 2. Lower Balonne water management area
(Source: Water Plan (Condamine and Balonne) 2019 - Schedule 3)

¹ Business Queensland 2021, Water entitlement viewer (<https://qgsp.maps.arcgis.com/apps/MapSeries/index.html?appid=610e67fd52e24dbf9168ed812137ff5c>)

² MDBA 2021, Condamine Balonne regional fact sheet (<https://www.mdba.gov.au/sites/default/files/pubs/regional-fact-sheet-condamine-balonne.pdf>)

Audit Approach

Audit objective and scope

The objective of the audit was to assess whether DRDMW is meeting Basin Plan and the Condamine-Balonne WRP requirements documented and enshrined in the Water Plan (Condamine and Balonne) 2019 (Water Plan) in relation to overland flow licencing and authorisation, and rules in Chapter 6 and 9 of the Condamine and Balonne Water Management Protocol (Water Management Protocol) on monitoring, measurement, and management of flow events.

The IGWC appointed OCM and Alluvium to conduct this audit under section 73L of the Water Act 2007 (Cth). It aligns with the 2021-22 priorities of the IGWC including on effective approaches to water compliance (priority 1) and water metering and measurement (priority 2) detailed in Appendix B.

The audit scope covers the period from when the WRP commenced on 21 September 2019 through to 3 January 2022 and focusses on DRDMW's management of take through overland flow in the Lower Balonne catchment, specifically in accordance with the Water Plan and the Water Management Protocol.

DRDMW is the auditee; responsible for regulation of overland flow including licencing, monitoring, compliance oversight, and management of overland flow events. The audit assessed whether DRDMW is meeting Basin Plan and the Condamine-Balonne WRP implementation requirements, as set out in the Water Plan and Water Management Protocol.

This audit tested DRDMW's oversight of entitlement holder compliance with their obligations. To test oversight, we have sought to examine DRDMW's systems, processes, roles and responsibilities, analysis of risk, policies or guidance, documented decision making and reporting where relevant to the criteria.

The overland flow licence holders also have obligations to adhere to licence conditions and rules for take of water during an announced period. These obligations include the accurate measurement and transfer of data for water taken during an announced period and to notify the department regarding changes to infrastructure. Testing of individual licence holder compliance was not part of the audit scope.

The criteria were selected for audit as they are key provisions in relation to the regulation of overland flow in the Lower Balonne. A risk-based approach was undertaken to focus effort on the audit criteria. The audit criteria are set out in Table 2 below.

Table 2. Audit criteria

Criteria
Criterion 1: DRDMW have applied limitations on taking overland flow water to meet section 101 (1) of the <i>Water Act 2000</i> (Qld) as stated in section 37 of the Water Plan (Condamine and Balonne) 2019.
Criterion 2: DRDMW have applied the Part 10, Division 4, Subdivision 1, Water Plan (Condamine Balonne) 2019 requirements for determining the content and conditions of water licences to take overland flow water.
Criterion 3: DRDMW have arrangements in place to confirm that entitlement holders have complied with licence conditions and the rules for take of water during an announced period in line with sections 80-83 Condamine and Balonne Water Management Protocol 2019.
Criterion 4: DRDMW have arrangements in place to confirm that entitlement holders have measured, collected, and transferred data on take of overland flow water during an announced period in accordance with rules in section 84, Condamine and Balonne Water Management Protocol 2019.
Criterion 5: DRDMW have adequate arrangements in place for ensuring that entitlement holders have provided notification on the completion of a new storage or any change to an existing storage that is used to store water taken under the authority of a water allocation is in accordance with Section 85, Condamine and Balonne Water Management Protocol 2019.
Criterion 6: DRDMW have adequate compliance processes for monitoring compliance with licence conditions, Moratorium Notice and Water Plan requirements to prevent new works, or changes to existing works and ensuring that there has been no take of water through infrastructure which has been decommissioned.
Criterion 7: DRDMW met the flow event management rules in the Lower Balonne water management area as set out in Chapter 9, Condamine and Balonne Water Management Protocol 2019 during a flow event.

Audit methodology

The audit has been conducted in accordance with the standards issued by the Australian Auditing and Assurance Standards Board (AUASB), specifically the following Standards on Assurance Engagements (ASAE):

- ASAE 3000 for Assurance Engagements other than Audits or Reviews of Historical Financial Information
- ASAE 3100 for specific Compliance Assurance Engagements.

This is a limited assurance compliance audit with the purpose to assess compliance against legislative requirements, documented policies, or procedures to identify whether or not specific requirements have been met. Due to the limited assurance nature of this audit, it is possible that some deviations in implementation from WRP provisions may not be detected and should not be relied upon to comprehensively identify all weaknesses, improvements, or areas of non-compliance.

Audit procedures included:

- interviews with representatives from DRDMW including process owners, and users
- walk throughs of material activities, including sighting key systems
- document review, including overarching frameworks, procedures, guidelines, manuals, policies, and reports
- review of spreadsheets and data related water accounting, inflows, and compliance
- testing DRDMW compliance with requirements set out in the WRP, Water Plan and Management Protocol
- testing DRDMW oversight of entitlement holder requirements set out in the WRP, Water Plan and Management Protocol.

These procedures were carried out on a test basis to provide sufficient appropriate evidence to provide a limited assurance conclusion.

Compliance results

The audit assessed 7 criteria for non-compliance. Further detail of audit testing including reference to the supporting evidence is included in Appendix A.

Criterion 1: DRDMW have applied limitations on taking overland flow water to meet section 101 (1) of the *Water Act 2000* (Qld) as stated in section 37 of the Water Plan (Condamine and Balonne) 2019.

DRDMW have applied limitations on taking overland flow

DRDMW meet the requirements of section 37 in the Water Plan through the establishment of licences with conditions that limit take and prohibit changes to the associated certified works for taking overland flow water that would increase the volume of take. DRDMW's oversight of licence holder compliance with these conditions is addressed against criteria 3, 4, 5 and 6.

Criterion 2: DRDMW have applied the Part 10, Division 4, Subdivision 1, Water Plan (Condamine Balonne) 2019 requirements for determining the content and conditions of water licences to take overland flow water.

Licences have been issued containing the required detail

Audit testing concluded that all 19 water licences to take overland flow water contain the required conditions including maximum rates and or volumetric limits.

No maximum rates or volumetric limit conditions determined during the audit period

Sections 49-52 of the Water Plan describe how a maximum rate and volumetric limit should be determined. During the audit period there was one licence issued however the maximum rate and volumetric limits were already determined under the Water Plan (Condamine and Balonne) 2004 and were not required to be recalculated under the Water Plan (Condamine and Balonne) 2019. DRDMW advised that for the licences in operation over the audit period with maximum rates and volumetric limits, these conditions were determined having regard to the infrastructure assessment, certified reports and consideration by a panel of water officers. Evidence of the process taken to determine these conditions under the Water Plan (Condamine and Balonne) 2004 was sighted.

Criterion 3: DRDMW have arrangements in place to confirm that entitlement holders have complied with licence conditions and the rules for take of water during an announced period in line with sections 80-83 Condamine and Balonne Water Management Protocol 2019.

DRDMW have systems and processes to confirm compliance

DRDMW have systems and processes to confirm compliance with licence conditions for taking overland flow in the Lower Balonne. Key systems include the Water Management System (WMS) for licencing, Compliance Information Register and Management (CIRaM), Excel based spreadsheets for accounting, monitoring inflows and managing announced periods, digital tablets for on-site audits and satellite imagery software called Planet for remote monitoring. The main processes are captured in the Lower Balonne Water Management Area Waterharvesting announced period guide and the Flow Event Management Plan for Lower Balonne (draft) that provides overall guidance for managing flow events in line with the WRP requirements. These include guidance for:

- monitoring and assessment
- engagement
- decision making
- auditing and surveillance
- compliance
- accounting and reporting.

The state-wide Compliance framework 2020-24, Compliance strategy 2020-24, annual compliance plans and Compliance Response Guidelines also contribute to the arrangements.

On-site audits are supported by technology

On-site audits are conducted with the aid of digital tablets and applications³ used for navigation, locating works and meters on properties, and collecting audit information. This is a new practice taken up during the audit period which DRDMW advised has improved their on-site audit operations and ability for water officers with limited levels of local knowledge to conduct the audits.

Criterion 4: DRDMW have arrangements in place to confirm that entitlement holders have measured, collected, and transferred data on take of overland flow water during an announced period in accordance with rules in section 84, Condamine and Balonne Water Management Protocol 2019.

There are arrangements for entitlement holders to measure their take of overland flow

DRDMW supplied evidence that meters were in place for 40 storages across the 19 licences, most of which were audited on-site in October to November 2019. DRDMW advised that overland flow storage meters were originally installed by DRDMW through a project in 2013. A standard for overland flow meters (water level stations) was added to the Queensland interim water meter standard for non-urban metering in February 2021.

The Water Regulation 2016 requires all water meters in the Lower Balonne be revalidated by 30 November 2022 to continue to be an approved meter to take water under a water licence or water allocation. In November 2021, DRDMW sent licence holders letters informing them of the requirement to revalidate their meters (supplied).

³ ArcGIS Collector and ArcGIS Survey123

There are arrangements for entitlement holders to collect and transfer their measured take data

DRDMW have arrangements for entitlement holders to collect and transfer data on take of overland flow water during and or following an announced period. The department request the data by email and entitlement holders complete a water harvesting meter read form. The form is usually completed as a hard copy, scanned and then returned via email. In some cases licence holders provided spreadsheets of take or returned a physical copy of the meter read form to the DRDMW St George office.

Criterion 5: DRDMW have arrangements in place for ensuring that entitlement holders have provided notification on the completion of a new storage or any change to an existing storage that is used to store water taken under the authority of a water allocation is in accordance with Section 85, Condamine and Balonne Water Management Protocol 2019.

While compliant, DRDMW should improve this process

Entitlement holders are required to notify the department of any changes to an existing storage under the Management Protocol⁴. This information is not however written in the entitlement holders Water Licence and the only reference on the DRDMW website is a redirection to their relevant water plan. Further detail is mentioned in Finding 6 of this audit report.

Criterion 6: DRDMW have compliance processes for monitoring compliance with licence conditions, Moratorium Notice and Water Plan requirements to prevent new works, or changes to existing works and ensuring that there has been no take of water through infrastructure which has been decommissioned.

No new works during audit period

An absence of new works would meet the requirements of the Moratorium Notice and Water Plan. The audit team was not provided with any evidence to confirm the advice and would have greater assurance if there were sufficient number of on-site audits or remote monitoring over this period.

Changes to existing works monitored

Licence conditions prohibit entitlement holders from making alterations to their works that would increase the volume of overland flow reaching the control points. DRDMW have oversight of this condition through on-site audits and remote monitoring. It is noted that the number of on-site audits was limited and the frequency of remote monitoring activities is unknown due to a lack of documentation⁵.

Take through decommissioned works monitored

DRDMW monitor decommissioned works by satellite imagery using a software application called Planet. There was a lack of documentation to determine how frequently the satellite imagery is used to check that no water is being diverted. There was one instance during the audit period where DRDMW identified take through a decommissioned work which was investigated using satellite imagery. In this case DRDMW followed the compliance response guidelines in the Flow event Management Plan and contacted the licence holder to cease take and entered the case into CIRaM. In this case DRDMW determined that the take was unintentional and caused by a levee bank failure. To resolve the issue the land owner reinstated the levee bank, and no further compliance action was taken.

4 Overland flow development is managed through the Water Plan and development approvals under the Planning Act 2016.

5 Remote monitoring activities were not recorded throughout the audit period except for the alleged noncompliance case related to a levee bank failure described under heading 'Take through decommissioned works monitored' on page 14

While compliant in relation to criterion 6, there was a lack of documented procedures for remote monitoring activities

Further details are covered in findings 1, 2 and 3 of this report.

Criterion 7: DRDMW met the flow event management rules in the Lower Balonne water management area as set out in Chapter 9, Condamine and Balonne Water Management Protocol 2019 during a flow event.

Flow event management rules were met

DRDMW supplied evidence from three flow events with announced access⁶. The evidence demonstrated they met the following requirements:

- Section 162 regarding determining the likelihood of a flow through event
- Section 163 regarding managing bifurcation weirs⁷
- Section 165 regarding limiting take under flow event management rules
- Section 169 regarding managing medium flows
- Section 170 regarding managing flow events to support Narran Lakes
- Section 172 regarding reduction in take of waterharvesting.

⁶ The management report for the third flow event was not released in time for this audit.

⁷ DRDMW do not manage the weirs but still have a role in providing the Dumanesq-Barwon Borders Rivers Commission with information regarding flows

Findings

1. DRDMW lack documented guidance for some key compliance activities.

The IGWC found that while there are systems and guidance for water officers to confirm compliance, some key activities are not effectively covered by the guidance. The key activities include:

- remote monitoring pre-, mid-, and post-flow event
- verification of measured take data, including routine approaches and guidance for applying additional scrutiny where necessary;
- use of accounting spreadsheets; and
- use of flow event management spreadsheets.

The lack of guidance for remote monitoring may have also contributed to a lack of documented evidence of when remote monitoring was undertaken because it is not recorded unless there is an issue or alleged non-compliance.

Some aspects of managing flow events rely on the knowledge of existing water officers and lack documented guidance. There is a Lower Balonne Water Management Area Water harvesting Announced Period Guide and a Flow Event Management Plan for Lower Balonne Water Management Area (2020). However, these documents do not provide guidance for using the spreadsheets for monitoring inflows and considerations for announced periods. DRDMW advised that water officers learn this skillset through on the job training.

2. DRDMW did not conduct a sufficient number of on-site audits for pre and post flow events.

During the audit period there were three flow events where access was announced. The flow events occurred in February to March 2020, March to April 2021 and November 2021 to January 2022. DRDMW has a proactive monitoring program to audit compliance against regulatory requirements. On-site audits form an important part of that program to monitor compliance using a risk-based approach. Planning documentation states that DRDMW aim to conduct site audits at critical times including pre-flow, mid-flow and post-flow. This requirement is not defined in the WRP, therefore the audit assessment of insufficient quantity of on-site audits is made in relation to the effectiveness of the compliance regime and is identified as a weakness compared to best practice compliance.

Excerpt from DRDMW's audit planning documentation:

DNRME aims to conduct audits at critical times within the LBWMA. The timing of these audits is based around the occurrence of flow events. These times are:

- Pre-flow in Spring –aim is to ensure that water meters are correctly operating and that irrigators are aware of their water allocation conditions before the wet season when a water flow event is expected.
- Mid-flow generally in Summer –aim is to be present when the flow event is occurring and when water is being harvested by allocation holders to check compliance with water allocation conditions.
- Post-flow in Autumn –aim is to check final water meter readings after the flow event and to follow up on any compliance issues relevant to the recent water harvesting event.

During the audit period DRDMW supplied evidence that they undertook on-site compliance audits of overland flow as outlined in Table 3. The number of licences audited each time was estimated.

Table 3. Audit detail

Month and year of audit	Audit scope	Estimated % of licences
October to November 2019	Pre-flow, 37 meters audited (35 storage meters and 2 non-storage meters) (10 licences)	53%
February 2020	Mid-flow, surveillance of the flow announcements. 2 water meters audited (1 working, 1 not, unknown number of licences - estimated 1-2)	5-10%
October 2020	Post-flow and pre-flow, 17 devices/cells/storages audited across 9 licences. This was a post-flow audit for the February to March 2020 event and a pre-flow audit for the March to April 2021 event.	47%

In the audit period there were four other critical times that site audits for overland flow were not undertaken as set out in Table 4. It is noted that undertaking mid- and post-flow audits is challenging due to floods frequently cutting access to properties.

Table 4. On-site audits by event

Flow event	Pre-flow audit	Mid-flow audit	Post-flow audit
February to March 2020	✓	✓	✓
March to April 2021	✓	x	x
November 2021 to January 2022.	x	x	NA*

*Outside audit period

Without a sufficient number of on-site audits pre- and mid-flow, non-compliance issues such as nonoperational meters, incorrect validation of final meter reads, and illegal changes to storages may go undetected.



3. DRDMW audit activities for mid and post-flow events were reduced or delayed due to weather limitations.

The processes that are in place for conducting on-site audits of overland flow take are clear, well-structured, and supported by technology, however it was noted by the IGWC that these processes are subject to disruption from factors that are likely to characterise the event itself.

The audit found that while the DRDMW stated that it aims to conduct checks during and directly following an overland flow event, these are often cancelled or delayed due to access issues created by the floodwaters (or 'overland flow'). At the time of audit interviews with DRDMW, a post-flow audit of the November 2021 to January 2022 flow event was delayed some months due to this issue. As described above, the timing of post-event audits immediately following the event is critical to verify actual volume taken. DRDMW stated that some delays were incurred during the audit period due to limitations on staff movement due to the COVID19 pandemic.

The option to monitor using online satellite imagery was acknowledged by DRDMW as having limitations. Satellite imagery requires an unrestricted line of sight, which can be limited by cloud cover. It was stated that the restriction occurs, though the frequency was not known. While it is acknowledged that there is nothing that the DRDMW can control about cloud cover or flooded roads, the testing did not identify efforts to overcome the restrictions.

4. Entitlement holders did not always transfer data to DRDMW within the required timeframe.

Entitlement holders are required by the Management Protocol to supply their measured take data within five business days of the end of each announced period. DRDMW advised that there are sometimes delays to receiving this data within the required timeframe. DRDMW is unable to enforce compliance in this scenario as Division 4 of the Water Regulation 2016 only enables the chief executive to give a relevant person a notice requiring a meter reading within 30 days. The current approach to responding to delays in receiving measured take data is to contact the entitlement holder via email and phone until the information is received.

5. DRDMW did not sufficiently verify self-reported measured take data.

The IGWC found that there is no formal process to verify that measured take data (which is self-reported by entitlement holders) is transferred to DRDMW unaltered. The DRDMW representatives were able to describe the process of manually entering the data (received via email) into the water accounting Excel spreadsheet and inspecting for anomalies. If there is an anomaly or something looks wrong, they contact the entitlement holder to confirm the data. If the anomaly remains, the officer will undertake desktop analysis using satellite imagery in Planet to check if it matches reported take. There is no documented guidance for water officers to undertake this desktop analysis to verify take in cases of identified anomalies. The lack of routine verification using satellite imagery is also noted.

As discussed above, on-site audits and remote monitoring can contribute to verifying accuracy however the opportunity to assess these verification methods over the audit period has been limited as only one post-flow on-site audit was undertaken during the audit period (7 months after the flow event) and routine remote monitoring activities were not recorded. Alternative options to verify accuracy could include telemetry of data direct from measurement device to the regulator, or chain of custody systems accompanied by signed declaration (where false declaration would constitute an offence). DRDMW advised that additional scrutiny is applied to the data when storages are low and there is higher demand, however an approach to applying additional scrutiny is not supported by guidance.

6. DRDMW did not provide entitlement holders with clear written instructions on the requirement to notify them on completion of a new water storage, or the alteration of an existing storage used to store water taken under the authority of a water allocation.

Entitlement holders are required to notify the department of any changes to an existing storage under the Management Protocol. DRDMW stated that the entitlement holders are likely to be familiar with the DRDMW representatives due to ongoing communications via phone and email. Publicly available information on DRDMW's website and ongoing engagement activities are likely to contribute to the regulated community's awareness of the requirement to notify.

DRDMW advised that entitlement holders are likely to contact the department prior to making any changes to check requirements. No notifications of new or changed storages were received over the audit period⁸. DRDMW supplied evidence that they audited storages in October and November 2019 and found no non-compliance.

There is however a compliance risk that verbal exchanges regarding entitlement holder obligations is not communicated and or changes have been made without notifying DRDMW. This should include minor works that have not been detected and small changes over time due to maintenance including desilting. The configuration of storages remaining unchanged is essential for accurately measuring the volume of take.

⁸ DRDMW advised that no new works were developed on the Lower Balonne floodplain during the audit period.

Impacts

The impact of the findings are documented in Table 5.

Table 5. Summary of impacts

Criteria	Finding	Impact
Criterion 3	1. DRDMW lack documented guidance for some key compliance activities.	The lack of guidance leads to a risk of loss of capacity due to staff turnover, and inconsistent application of rules and lack of records.
Criterion 3	2. DRDMW did not conduct a sufficient number of on-site audits for pre and post flow events.	The lack of sufficient monitoring and audit leads to a risk that issues are not detected including nonoperational meters, changes to storages and noncompliance with licence conditions.
Criterion 3	3. DRDMW audit activities for mid and post-flow events were reduced or delayed due to weather limitations.	The reduced or delayed audit activities mid and post-flow events leads to a risk that issues are not detected including nonoperational meters, changes to storages and noncompliance with licence conditions.
Criterion 4	4. Entitlement holders did not always transfer data to DRDMW within the required timeframe.	Delays in receiving data may prevent DRDMW from checking compliance with conditions and publishing flow event reports in a timely manner.
Criterion 4	5. DRDMW did not sufficiently verify self-reported measured take data.	The lack of routine verification of take immediately post event reduces the assessment of compliance arrangements and leads to a risk of noncompliance not being detected.
Criterion 5	6. DRDMW did not provide entitlement holders with clear written instructions on the requirement to notify them on completion of a new water storage, or the alteration of an existing storage used to store water taken under the authority of a water allocation.	If entitlement holders are not providing DRDMW with updates on changes to new or altered structures as well as being a compliance issue, the overall measurement of take will be inaccurate.



Recommendations

Recommendation 1 – Develop documented guidance around key compliance activities

DRDMW should develop documented guidance for:

- a. remote monitoring of storage conditions pre-, mid-, and post-flow
- b. verification of measured take data, including routine approaches and guidance for applying additional scrutiny where necessary;
- c. use of accounting spreadsheets; and
- d. use of flow event management spreadsheets.

Having guidance in place for these key compliance activities would help to reduce the risk of loss of capacity or corporate knowledge due to staff turnover, inconsistent application of rules and gaps in implementation. Documentation of the monitoring, frequency and findings in line with guidance (developed in relation to a and b) would provide greater consistency, quality assurance, and auditability. Guidance (developed in relation to c and d) would also mitigate risks of inconsistent application of spreadsheets between officers or missing requirements during handover to different offices.

The guidance for use of the flow event management spreadsheet (developed in relation to d) should include a method for tracking the period elapsed between flow events to support implementation of trigger-based flow event management rules within Chapter 9 of the Water Management Protocol.

Recommendation 2 – Commit to a minimum number of on-site audits for pre and post flow events

DRDMW should:

- a. commit to undertaking pre-flow event and post-flow event on-site audits at a minimum

Undertaking sufficient on-site audits will address the risk that issues are not detected, including nonoperational meters, changes to storages, and noncompliance with licence conditions.

Recommendation 3 – Implement alternative audit strategies to combat limitations to onsite audits due to weather conditions

DRDMW should:

- a. ensure post-flow audits occur with minimal delay
- b. investigate alternate types of evidence (to on-site meter reads) to verify take immediately post event and develop a methodology.

Where on-site audits are not feasible or are delayed, remote monitoring approaches should be taken to ensure there is timely oversight during and following flow events. Monitoring and audit of measurement data is most critical immediately post event and when remote sensing would be of most value to verify the actual volume taken by licence holders during the event is compliant with the licence held.

Alternative audit strategies to investigate should include cloud-penetrating remote sensing, satellite imagery, aerial imagery for pre- and immediately post-event (whether by plane, drones, or helicopter flyovers).

Recommendation 4 – Ensure that the requirement to report measured take within a specified period is consistent and enforceable

DRDMW should:

- a. reconcile the current approach in the Management Protocol, which requires reporting 5 business days at the end of an announced period, with Division 4 of the Water Regulation 2016 which suggests from compliance perspective the threshold is 30 days from receiving a notice from the chief executive.
- b. revise the approach to include a time threshold, beyond which a notice requiring a meter reading within 30 days is sent. This would address the risk of extended delays in receiving data that may prevent DRDMW from checking compliance with conditions and publishing flow event reports. This would also enable a compliance response to be taken if appropriate.

Recommendation 5 – Verify self-reported measured take

DRDMW should:

- a. verify licence holder reported take (links to Recommendation 1b)
- b. develop a method to reduce the risk that meter read data is tampered with (meter read data is manually collected by licence holders and transferred to DRDMW)

Methods to investigate for recommendation 5b include a chain of custody method such as telemetry, or by requesting date-stamped photo evidence of the meter reads and storages in addition to supplying the meter read sheet.

This recommendation may align with initiatives to strengthen water measurement under the Queensland Rural Water Futures program.

Recommendation 6 – Provide entitlement holders with clear written instructions for notification of changes to storages

DRDMW should:

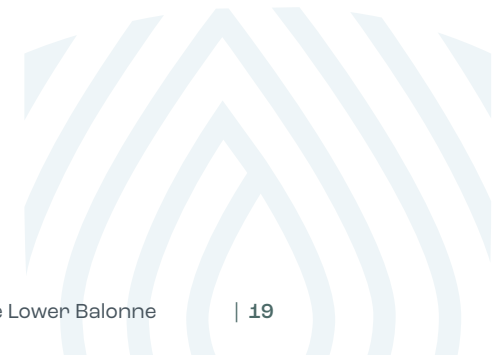
- a. review the level of information provided to educate entitlement holders on compliance requirements; and
- b. ensure entitlement holders are provided with clear written instructions on their requirement to notify on completion of a new water storage, or the alteration of an existing storage used to store water under the authority of a water allocation.

The information could be included in a variety of written communications, such as in a Water Licence, direct mailout and/or on the DRDMW website.

Appendix A: Test Results

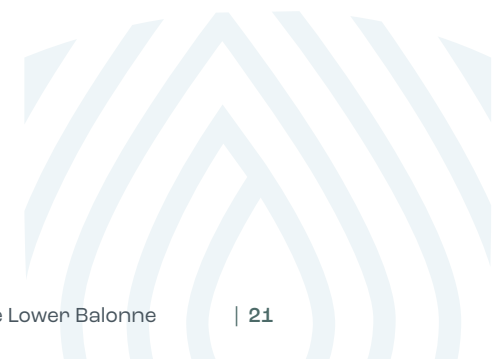
Compliance rating	Description
	The sample tested did not identify any instances of non-compliance
	The sample tested identified instances of non-compliance
NA	The requirement did not apply.

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
Criterion 1: Qld DRDMW have applied limitations on taking overland flow water to meet section 101 (1) of the Water Act 2000 (Qld) as stated in section 37 of the Water Plan (Condamine and Balonne) 2019.	37 Limitations on taking overland flow water—Act, s 101 (1) For section 101(1) of the Act, a person must not, under section 101(1)(b) of the Act, take overland flow water to which this plan applies unless the water— (a) is taken under a water entitlement or water permit; or (b) is taken for stock purposes or domestic purposes; or (c) is taken using notified existing overland flow works. Note— See also section 101(3) of the Act for when a person cannot be prevented from taking overland flow water that is contaminated agricultural run-off.		High	<p>In the Lower Balonne, limitations on taking overland flow water are established through water licences, which are a class of water access right that is attached to land.</p> <p>Copies of all 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain were supplied by DRDMW. All 19 licences were reviewed by the IGWC.</p> <p>DRDMW advised the IGWC that:</p> <p>most licences in this area were first established in 2010 in association with the ‘first generation’ water plan</p> <p>there has been little licensing activity during the audit period which included only one change which was a reconfiguration of the attached land parcels in 2019</p> <p>The IGWC confirmed that one licence was issued during the audit period (on the 4/12/2019). Audit testing concluded that DRDMW meet the requirements of section 37 in the Water Plan.</p>



Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 2: Qld DRDMW have applied the Part 10, Division 4, Subdivision 1, Water Plan (Condamine Balonne) 2019 requirements for determining the content and conditions of water licences to take overland flow water.</p>	<p>(1) A water licence to take overland flow water to which this plan applies must—</p> <p>(a) state the purpose for which the water may be taken as ‘any’; and</p> <p>(b) include at least 1 of the following— (i) the maximum rate at which the water may be taken under the water licence; (ii) the maximum storage capacity of works that may be used to store the water taken under the water licence; (iii) the average annual volume of water that may be taken under the water licence; (iv) the volumetric limit for the water licence.</p>		High	<p>As outlined above, copies of all 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain were supplied by DRDMW. All 19 licences were reviewed by the IGWC.</p> <p>All licences stated the purpose as ‘any’ in line with requirements. All licences contained the maximum rate at which the water may be taken under the water licence (i) and the volumetric limit for the water licence (iv). Audit testing concluded that DRDMW meet the requirements to state at least one of the required conditions.</p>
	<p>49 Working out maximum rate (1) This section applies for working out, for section 48(1)(b)(i), the maximum rate at which overland flow water may be taken. (2) The chief executive— (a) if a certified report for the works that will be used to take the overland flow water has been requested under section 54(4)(a)(iii)—must have regard to the certified report for the works given to the chief executive; and (b) may have regard to any other relevant information available to the chief executive. (3) If the chief executive works out the maximum rate having regard to the size of the pump that will be used to take the overland flow water, the maximum rate must not be greater than the rate stated in the Water Regulation 2016, schedule 7, column 3 for the pump size stated opposite in schedule 7, column 1 of that regulation.</p>		High	<p>As outlined above, copies of all 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain were supplied by DRDMW. Maximum rates are included in all of the licences (including the only licence issued in the audit period).</p> <p>DRDMW also supplied the following modelling reports:</p> <ul style="list-style-type: none"> – St George Model Results to Support Basin Plan Requirements, December 2018 – Lower Balonne Distributary Model Results to Support Basin Plan Requirements, December 2018 – Condamine-Balonne River Basin Model Volume 3 Distributary Calibration, January 2019 <p>The maximum rates and volumetric limit conditions were already determined under the Water Plan (Condamine and Balonne) 2004 and were not required to be recalculated under the Water Plan (Condamine and Balonne) 2019. DRDMW advised that for the licences in operation over the audit period with maximum rates and volumetric limits, these conditions were determined having regard to the infrastructure assessment, certified reports and consideration by a panel of water officers. Evidence of the process taken to determine these conditions under the Water Plan (Condamine and Balonne) 2004 was sighted.</p> <p>DRDMW advised that no modelling of changes to individual overland flow licences were undertaken in the audit period. The modelling reports were reviewed and demonstrated that the existing overland flow entitlements were maintained in the updated model.</p>
	<p>50 Working out maximum storage capacity</p>	NA	NA	<p>Maximum storage capacity is not a mandated licence condition and has not been applied as a condition on any of the 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain.</p>

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	51 Working out average annual volume	NA	NA	Average annual volume is not a mandated licence condition and has not been applied as a condition on any of the 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain. DRDMW advised that the annual volume may be used to test any potential changes to the water licence to ensure the volume is not increased. This information is stored in the supplied accounting spreadsheet.
	52 Working out volumetric limit (1) This section applies for working out, for section 48(1)(b)(iv), the volumetric limit for the water licence. (2) If an average annual volume, worked out under section 51, is a condition of the water licence, the chief executive must have regard to that average annual volume.		High	<p>Volumetric limits are included in all the 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain (including the only licence issued in the audit period). DRDMW advised that volumetric limits are informed by the annual average volume that informs the modelling.</p> <p>As described above for maximum rates, the volumetric limits were already determined under the Water Plan (Condamine and Balonne) 2004 and were not required to be recalculated under the Water Plan (Condamine and Balonne) 2019. DRDMW advised that for the licences in operation over the audit period with a volumetric limit condition, this was determined having regard to the infrastructure assessment, certified reports and consideration by a panel of water officers. Evidence of the process taken to determine these conditions under the Water Plan (Condamine and Balonne) 2004 was sighted.</p>



Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 3: Qld DRDWM have arrangements in place to confirm that entitlement holders have complied with licence conditions and the rules for take of water during an announced period in line with sections 80-83 Condamine and Balonne Water Management Protocol 2019.</p>	<p>Overall arrangements to confirm licence holders compliance:</p> <ul style="list-style-type: none"> – Compliance frameworks and policies – Roles and responsibilities – Procedures and guidance – Key systems – Analysis of risk – Documented decision making and reporting. <p>80 Maximum volume of water taken during announced periods</p> <p>The maximum volume of water that may be taken under the authority of a waterharvesting entitlement during an announced period must not exceed a volume that is in proportion to—</p> <p>(a) the duration of the announced period notified under section 79; and</p> <p>(b) the rate of take specified on the waterharvesting entitlement.</p>		High	<p>This section describes the overall arrangements for DRDMW to confirm entitlement holders have complied with licence conditions (including that the volume taken does not exceed a volume in proportion to the duration of the announced period and the rate of take specified on the licence).</p> <p>Compliance frameworks and policies</p> <p>The IGWC reviewed the Compliance framework 2020-24, Compliance strategy 2020-24 and the Compliance Plan 2021-22. The Compliance Plan includes compliance principles to guide the compliance approach for Queensland’s water resources and sets targets for the year and supporting activities that will contribute to achieving the desired outcomes. For example, a target for 2021-22 is that ‘100% of meter readings received are audited for compliance against authorised water take’ and the supporting activity is ‘desktop audits conducted of self-read meter readings. The outcome is ‘Support for those doing the right thing and addressing those that are not.’ This evidence demonstrates that DRDMW have an overall framework for compliance that includes a risk-based approaches across the state.</p> <p>Roles and responsibilities</p> <p>The responsibility of regulating overland flow in the Lower Balonne water management area sits primarily with the South Region Water Management Team of DRDMW. Most of the responsibilities relevant to this audit sit with water officers based in the St George office who have strong local knowledge of the area they regulate. There is also oversight of responsibilities by the Manager of the South Region Water Management Team. Some functions (e.g., on-site audits) are also supported by resources based in other DRDMW offices such as Toowoomba, Warwick or Goondiwindi as required. The structure of the South Region Water Management Team is documented in the organisation chart (supplied). Responsibilities attributed to the chief executive in the provisions are formally delegated to various levels of officers. The Water Act Delegation (NO. 2) 2021 (supplied) delegates the powers of the chief executive under the water plans to level 1 officers and water management protocols to levels 1-6 officers.</p> <p>Procedures and guidance</p> <p>The IGWC reviewed the Flow Event Management Plan for Lower Balonne Water Management Area (2020) and the Lower Balonne Water Management Area Waterharvesting announced period guide (2019). The Flow Event Management Plan for the Lower Balonne Water Management Area (draft, 2020) provides guidance in how DRDMW aim to ensure flows are managed in accordance with the requirements of the Condamine and Balonne Water Plan 2019, associated documents and other relevant statutory provisions, policies and guidelines. The plan identifies critical risks to effective flow management and identify mitigating activities. The specific activities and actions to be undertaken and the allocation of roles and responsibilities is also included.</p>

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
				<p>The overall processes that are repeated as required throughout a flow event include:</p> <ol style="list-style-type: none"> 1. Monitoring and assessment (of flows) 2. Engagement (with water users) 3. Decision (regarding announced access for waterharvesting) 4. Auditing and surveillance (checking the actual take of water is authorised) 5. Compliance (response to identified potential breaches) 6. Accounting (of individual water take and water balance assessment) 7. Reporting (including the flow event report) <p>Other state-wide guidance documents include a guide for using Compliance Information Register and Management in water services and Compliance Response Guidelines.</p> <p>Key systems</p> <p>Compliance Information Register and Management (CIRaM) is a case management system that DRDMW use for state-wide audit, incident, and offence information. The IGWC sighted the system and reviewed a guidance document for using CIRaM in water services. The IGWC also reviewed data exported from CIRaM related to overland flow in the Lower Balonne from the audit period. Any suspected overuse is recorded in CIRaM and formal evidence gathering is undertaken. A Compliance Response Assessment Report is prepared including a recommended compliance response.</p> <p>Water Management System (WMS) is the main location for recording data relating to licences, water take and new licence applications. The program is used to store data relating to an application and create a standardised licence document based on those inputs.</p> <p>The inflow summary Excel spreadsheet is used to for ongoing monitoring of flows.</p> <p>The announced period considerations Excel spreadsheet is used to support water officers in making announcements in line with the requirements.</p> <p>The water accounting spreadsheet is used to keep records of permitted take and reported take.</p> <p>Tablets are used to support on-site audits by accessing apps, ArcGIS Collector and ArcGIS Survey123. Supporting evidence includes the user guide for the water compliance field information app (supplied). These systems support navigation of properties, locating works and meters on properties and collecting audit information.</p>

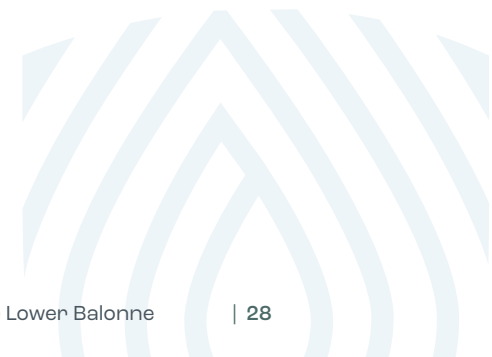
Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
				<p>Analysis of risk</p> <p>Analysis of risk is part of DRDMW operations which was supported by the evidence supplied including:</p> <ul style="list-style-type: none"> – Flow event management plan for the Lower Balonne – CIRaM prioritisation process – Determining priorities and focus areas for the Compliance Plan – CIRaM prioritisation - Water – CIRaM Prioritisation and State-wide risk assessment documents <p>The evidence demonstrated that DRDMW have identified risks and mitigation actions that were assigned to roles for implementation. The risk analysis was documented in the Flow Event Management Plan for the Lower Balonne Water Management Area (draft, 2020).</p> <p>Documented decision making and reporting</p> <p>Key compliance decisions are documented in CIRaM. Decisions on applications and changes to entitlements are documented in WMS. The key reporting relevant to this audit are the flow event reports. DRDMW generally publish these three months following the end of a flow event with announced access. During the audit period DRDMW published the February to March 2020 flow event report and the March to April 2021 flow event report. The final flow event report was not available for this audit. The evidence supplied showed that mitigation actions for risks were implemented.</p>
	<p>81 Waterharvesting entitlement with an instantaneous volumetric limit water sharing rule condition</p> <p>(1) This section applies to a waterharvesting entitlement that states a condition requiring the entitlement to be managed under an instantaneous volumetric limit water sharing rule.</p> <p>(2) The instantaneous volumetric limit is the maximum volume that may be stored at any time on the parcels of land shown on the administrative plan specified on the waterharvesting entitlement.</p> <p>(3) The holder of a waterharvesting entitlement must not take water under the entitlement if a volume of water equivalent to the volumetric limit for the entitlement is stored on the parcels of land shown on the administrative plan specified on the waterharvesting entitlement at any time.</p>		Moderate	<p>As listed above, DRDMW supplied multiple lines of evidence of their arrangements to confirm entitlement holder’s compliance with conditions.</p> <p>Of the 19 licences in the Lower Balonne, 6 of these contain an instantaneous volumetric limit water sharing rule condition. DRDMW advised the IGWC that instantaneous volumetric limits are generally not assessed or tracked as there are generally no licences that exceed the available storage on the property (and therefore there is low risk of noncompliance). There were two licences noted as exceptions where the available storage exceeds the licence volume.</p> <p>DRDMW advised that the approach to monitoring compliance for these two licences are through methods matching the auditing process. Satellite imagery from the Planet online platform is used in conjunction with survey information provided on application or update of a licence to determine the change in stored volume. Evidence of routine monitoring was not available because this information is not recorded unless there is an alleged noncompliance, so it is unknown how often these two licences were monitored remotely. The recording of routine monitoring undertaken is raised by the IGWC as a gap. As there are limited records the IGWC cannot conclude the frequency of remote monitoring is effective.</p>

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	<p>82 Waterharvesting entitlement with a multiyear account water sharing rule condition</p> <p>(1) This section applies to waterharvesting entitlements that state a condition that the take of water under the entitlement is managed under a multiyear account water sharing rule.</p> <p>(2) The chief executive must establish a volumetric account for each waterharvesting entitlement.</p> <p>(3) The volumetric account limit for a waterharvesting entitlement is equal to the volumetric limit of the entitlement multiplied by two.</p> <p>(4) The minimum volume of water that may be held in a volumetric account is zero megalitres.</p> <p>(5) At the start of the water year the chief executive must credit the volumetric account with the lesser of—</p> <p>(a) the difference between the volumetric account limit and the closing account balance at the end of the water year; and</p> <p>(b) the volumetric limit.</p> <p>(6) Water taken under the entitlement must be deducted from the volumetric account</p>		Moderate	<p>DRDMW supplied evidence of their multiyear account management. This included:</p> <ul style="list-style-type: none"> – Flow threshold reduction spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Overland flow permitted take spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Overland flow meter read spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Multiyear volumetric account statement spreadsheets <p>The IGWC reviewed the supplied evidence and found the following for each of the items under section 82:</p> <p>(1) Licences that have the multiyear account water sharing rule are included in the multiyear volumetric account spreadsheet. This covers 9 licence references over thirteen items (with the licences broken into river reaches), and 6 additional overland flow allowances</p> <p>(2) Each of the licences are represented in the Multiyear Volumetric Account Statements.</p> <p>(3) & (5) Formulas in the spreadsheet include a function that limits the credit volume to the lesser of the entitlement volumetric limit or twice the entitlement volumetric limit minus the account balance. This rule ensures that the amount required by item (5) is credited back to the account and limits the balance to the entitlement requirements of item (3).</p> <p>(4) None of the balances in the spreadsheet are below zero, however this is noted to not be ensured by a rule within the equations</p> <p>(6) Water taken under the entitlement is manually inputted into the spreadsheet before being deducted from the account balance using a formula linked to the value inputted.</p> <p>During the review of the supplied evidence, the IGWC noted that</p> <ul style="list-style-type: none"> – A large amount of the data input is manual, including references to previous year volumes. – Some of the formulas do not appear accurate (potentially due to column removal during redaction) – The data from the new water year is added to the existing spreadsheet information (and appears to have a copy saved) allowing review of the data and calculations conducted over previous years. <p>DRDMW advised the spreadsheets are updated and maintained by DRDMW staff in St George with the required delegation to make decisions regarding overland flow access. On the occasions that access is to be provided on days that none of the St George staff are available, the management of the spreadsheets and access provisions are managed by staff in other offices such as Goondiwindi, Toowoomba, and Brisbane. Handover is conducted by telephone and email, with no formal guidance for handover. Whilst there is potential for improvement to provide for quality assurance, audit testing concluded that DRDMW meet the requirements</p>

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	<p>83 Water allocation with an annual volumetric limit water sharing rule condition</p> <p>(1) This section applies to water allocations that have a condition stating that the take of water under the allocation is managed under an annual volumetric limit water sharing rule.</p> <p>(2) The annual volumetric limit is the maximum volume of water in megalitres that may be taken under a water allocation in a water year.</p>	NA	NA	Annual volumetric limit is not a licence condition on any of the 19 water licences that authorise the take of overland flow water from the Lower Balonne floodplain therefore no testing could be undertaken.
<p>Criterion 4: Qld DRDWM have arrangements in place to confirm that entitlement holders have measured, collected and transferred data on take of overland flow water during an announced period in accordance with rules in section 84, Condamine and Balonne Water Management Protocol 2019.</p>	<p>84 Waterharvesting entitlement holder data collection and transfer (1) For water taken under a waterharvesting entitlement in the Lower Balonne water management area and not diverted by the distribution operations licence holder, waterharvesting entitlement holders must collect and record, for each announced period, details of— (a) the date, time and meter reading at the start and end of taking water; (b) the total volumes of the water taken under the authority of overland flow water licences and the volumes taken under the authority of water allocations to take unsupplemented water; (c) the volume of water stored in any storage associated with the waterharvesting entitlement at the start and the end of the announced period. (2) The waterharvesting entitlement holder must transfer the data collected under subsection (1) to the chief executive within five business days of the end of each announced period.</p>		Moderate	<p>DRDMW supplied the following evidence to demonstrate their arrangements for entitlement holders to measure, collect and transfer data on take of overland flow water during an announced period:</p> <ul style="list-style-type: none"> – Email to licence holders regarding an announced period – Template meter reading sheet – Returned meter read sheets from the three flow events – Non-urban water metering policy 2019 – Copies of on-site audit forms that show checking of 37 meters in October and November 2019. – Meter Validation Certificates for the three metered storages not audited in October and November 2019. <p>Measurement of take</p> <p>DRDMW advised that 40 storages are fitted with meters and supplied copies of on-site audit forms that show checking of 37 storages in October and November 2019. Meter Validation Certificates were supplied for the remaining three meters. A standard for overland flow meters (water level stations) was added to the Queensland interim water meter standard for non-urban metering in February 2021. The Water Regulation 2016 requires all water meters in the Lower Balonne be revalidated by 30 November 2022 to continue to be an approved meter to take water under a water licence or water allocation. In November 2021, DRDMW sent licence holders letters informing them of the requirement to revalidate their meters (supplied). Some efforts are made to reconcile data provided with flows, but DRDMW advised this is difficult as the floodplain is not gauged.</p>

Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 4: Qld DRDWM have arrangements in place to confirm that entitlement holders have measured, collected and transferred data on take of overland flow water during an announced period in accordance with rules in section 84, Condamine and Balonne Water Management Protocol 2019.</p>				<p>Collection and transfer of take data</p> <p>DRDMW send licence holders the template meter reading sheet by email with the initial notification of an announced period. The email sent to licence holders on 17/11/2021 was supplied. The template meter read sheet includes a table with fields for entitlement holder, property, licence number, offtake, date, meter reading, take for announced period (ML), and comments. There are separate rows for each announced period. The meter reading sheet includes instructions to email the readings to DRDMW at St George by the next business day via email (waterservices.stgeorge@rdmw.qld.gov.au). At a minimum, DRDMW request the measurement information at the end of the event via email and follow up until it is provided. DRDMW advised that most entitlement holders print the form, fill it in by hand and return a scanned copy by email however there is some variation in this method, as some entitlement holders choose to supply an Excel or pdf file with the required information. Sometimes the information is submitted as a hard copy to the St George office.</p> <p>There is no documented process for DRDMW to input and verify the measurement data. DRDMW advised that they add the returned information to their server and then transfer it to the accounting spreadsheet manually.</p> <p>To reconcile entitlement holder reported meter readings against permitted take, DRDMW advised that they look for any anomalies. If any anomalies are identified, the entitlement holder is contacted to confirm the information. If there is any suspected or alleged offence (overtake), this is recorded in CIRaM. If assessed as serious, the responsibility for investigating the alleged offence is transferred to investigation team, external to St George office.</p> <p>The February to March 2020 flow event report includes details on period length, allowance, recorded take (total and by reach), and water balance. This report describes that on-site audit occurred in Oct 2019 and Feb 2020 though these were hindered by rainfall and resulting access limitations. More detail on the water balance was included as an addendum following input from the Lower Balonne Flow Management Reference Group. The 2021 Report references audits completed in November 2020 (actually occurred in October 2020), and in March to April 2021 but cut short due to rainfall and wet conditions. The March to April 2021 audit referenced in the report did not include any overland flow licences.</p> <p>Entitlement holders are required by the Management Protocol to supply their measured take data within five business days of the end of each announced period. The licence states they must supply records within 10 business days. DRDMW advised that there are sometimes delays to receiving this data within the required timeframe. In this situation DRDMW advised that they contact the entitlement holder via email and phone until the information is received. No formal compliance responses have been taken for this purpose because Division 4 of the Water Regulation 2016 only enables the chief executive to give a relevant person a notice requiring a meter reading within 30 days.</p>

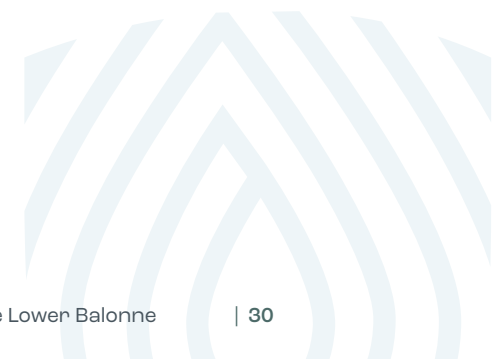
Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 5: Qld DRDMW have arrangements in place for ensuring that entitlement holders have provided notification on the completion of a new storage or any change to an existing storage that is used to store water taken under the authority of a water allocation is in accordance with Section 85, Condamine and Balonne Water Management Protocol 2019.</p>	<p>85 Water allocation holder notification of change to storage</p> <p>(1) The water allocation holder must notify the chief executive, in writing, within 20 business days of completion of a new storage or any change to an existing storage, that is used to store water taken under the authority of a water allocation.</p> <p>(2) Subsection (1) does not apply to activities associated with maintenance of a storage that do not increase the volume of water that should be stored.</p>		<p>Moderate</p>	<p>DRDMW have advised that no notifications were received during the audit period. DRDMW do not have any further guidance (beyond the Management Protocol) to differentiate a change to an existing storage (that should potentially increase the volume of water that should be stored) and maintenance of a storage (such as de-silting).</p> <p>DRDMW advised that public awareness of this requirement is effective due to previous and ongoing activities including:</p> <ul style="list-style-type: none"> – consultation on the Water Resource Plan – consultation on the Water Plan review – ongoing education through key stakeholder groups including the Lower Balonne Flow Management Reference Group. <p>DRDMW do not provide entitlement holders with clear written instructions on the requirement to notify them on completion of a new water storage, or the alteration of an existing storage used to store water taken under the authority of a water allocation. This is a requirement under section 85, Condamine and Balonne Water Management Protocol 2019.</p> <p>DRDMW should improve public awareness around entitlement holder obligations by including descriptive information on Water Licences and the DRDMW website.</p> <p>On-site audit and remote monitoring practices are described in Criterion 3. The activity (frequency and outcome) related to remote monitoring and onsite monitoring is not consistently recorded (unless there is an alleged noncompliance). As there are limited records the IGWC cannot conclude the frequency of remote monitoring is effective. There is also a lack of documented processes, and guidance for remote monitoring.</p>



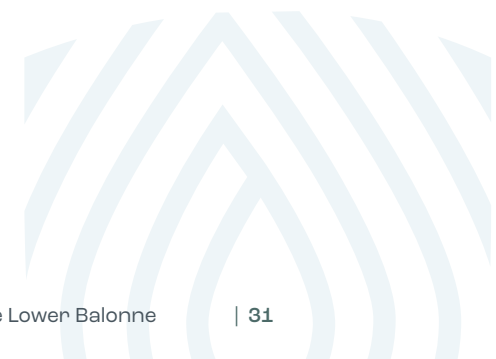
Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 6: Qld DRDMW have compliance processes for monitoring compliance with licence conditions, Moratorium Notice and Water Plan requirements to prevent new works, or changes to existing works and ensuring that there has been no take of water through infrastructure which has been decommissioned.</p>	<p>Moratorium Notice made under the Water Act 2000 given effect 30 August 2019, to prevent new works, or changing of existing works, for the purpose of taking overland flow water that is contaminated agricultural runoff (CAR).</p> <p>Compliance processes to ensure there has not been take of water through infrastructure which has been decommissioned.</p>		Moderate	<p>DRDMW have arrangements to uphold the Moratorium Notice. This includes preventing new works and changes to existing works.</p> <p>DRDMW advised that the Moratorium Notice is upheld through no new floodplain licences being given for storage works. Only overland flow that has not yet entered the watercourse is able to be licenced, a process that is dependent on the property characteristics. Any changes to licenses (such as a reconfiguration) involve a check of the certified report to ensure that there have been no new storages, or changes to existing storages (e.g. raised, enlarged, deepened storage). DRDMW also advised that they were confident that the level of work required to construct new storages was of a scale that the machinery used for earthworks would be noticed by staff either by remote monitoring, on-site, or by neighbours.</p> <p>DRDMW advised that they monitor take of water through decommissioned works by satellite imagery. DRDMW use the online platform Planet for viewing satellite imagery and monitor by comparing imagery of storages over time. Evidence of remote monitoring throughout the audit period including pre, mid and post each of the three flow events was requested. DRDMW were able to supply two examples of remote monitoring comparisons, one recorded in September 2020 and one recorded in February 2022 – the latter is outside the audit period. DRDMW advised that satellite imagery is viewed on Planet and not usually recorded unless there is an alleged offence to investigate. There was no other evidence supplied related to remote monitoring to understand the frequency of remote monitoring undertaken in the audit period.</p> <p>There was one instance identified where water was being stored in a decommissioned work, which was supported by the evidence of remote monitoring recorded in September 2020. For this alleged offence DRDMW investigated and discovered that the take had been caused by a failure of a levee bank. DRDMW worked with the licence holder to resolve the alleged offence by instructing the licence holder to reinstate the levee bank and confirming this work was completed. The IGWC reviewed the CIRaM evidence supplied and confirmed that this alleged offence was recorded in CIRaM and resolved with no further compliance action taken.</p> <p>The IGWC note that DRDMW do not have any documented processes to guide water officers in how to do satellite monitoring for compliance purposes, how often it should be done or what activity needs to be documented. Documentation of the monitoring activity would provide greater confidence for audit, demonstrating the frequency and overall rates of compliance.</p>



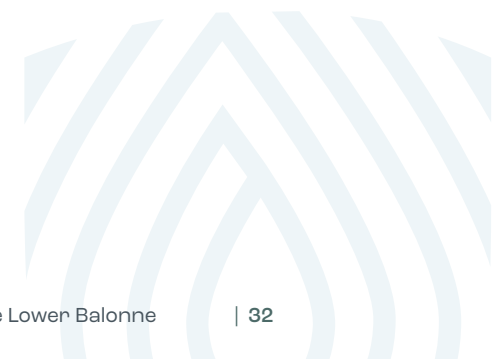
Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
<p>Criterion 7: Qld DRDMW met the flow event management rules in the Lower Balonne water management area as set out in Chapter 9, Condamine and Balonne Water Management Protocol 2019 during a flow event</p>	<p>162 Likelihood of a flow through event</p> <p>The chief executive must have regard to any management guidelines when determining the likelihood of a flow through event.</p>		<p>High</p>	<p>A flow through event occurs when flows are established at the five reference points referred to in the Management Protocol within a three month period.</p> <p>DRDMW supplied the following evidence which were reviewed:</p> <ul style="list-style-type: none"> – Lower Balonne Water Management Area Waterharvesting Announced Period Guide – Announced Period Considerations spreadsheets from the November 2021 to January 2022 event – Inflow summary graph spreadsheet from the November 2021 to January 2022 event – February to March 2020 flow event report – March to April 2021 flow event report. <p>Audit testing confirmed that DRDMW had regard to the management guidelines when determining the likelihood of a flow through event which is documented in Attachment 6 of the Flow event reports for the first two of three flow events (February to March 2020 flow event report and March to April 2021 flow event report). The third flow event report was not yet available at the time of writing. It is expected to be finalised within three months of January 2022 (outside the audit period).</p> <p>It was noted that while there is a Lower Balonne Water Management Area Waterharvesting Announced Period Guide and a Flow Event Management Plan for Lower Balonne Water Management Area (2020), these documents do not provide guidance for using the using the spreadsheets. DRDMW advised that water officers learn this skillset through on the job training.</p> <p>DRDMW met the requirements to have regard to the management guidelines when determining the likelihood of a flow through event. However, guidance for using the using the spreadsheets would provide greater confidence in the finding.</p>



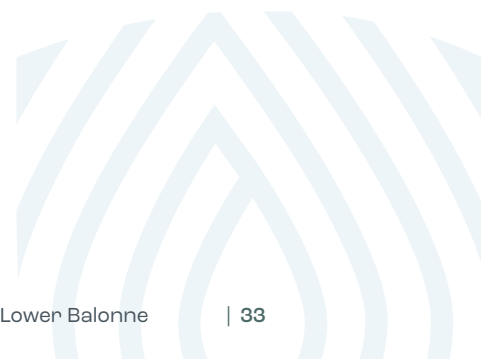
Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	<p>169 Flow event management rules—managing medium flows (1) This section applies if the chief executive has determined an announced period for waterharvesting entitlements under section 79 and either— (a) more than two years have passed since a flow event with a peak flow of greater than or equal to 60 000 ML/day at St George gauging station; or (b) more than three years have passed since a flow event with a peak flow of greater than or equal to 100 000 ML/day at St George gauging station. (2) The chief executive must notify each holder of a waterharvesting entitlement of a reduction to the daily rate of take for the entitlement to 90 percent of the daily rate of take stated on the entitlement— (a) for each threshold for waterharvesting stated on the entitlement; and (b) for the period of the flow event up to a maximum of five days</p>		High	<p>DRDMW supplied evidence detailing the characteristics of flow events. This includes:</p> <ul style="list-style-type: none"> – Flow threshold reduction spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Overland flow permitted take spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Overland flow meter read spreadsheets for Feb-Mar 2020, Mar-Apr 2021, Nov-Jan 2021/22 – Multiyear volumetric account statement spreadsheets – Lower Balonne Flow event report February to March 2020 – Lower Balonne Flow event report March to April 2021. <p>The reporting provided showed that there was only one event over 60,000 ML/day at St George Gauging Station, therefore no testing should be undertaken on the period of time elapsed before a second event occurred.</p> <p>It is noted by the IGWC that there is no calculation in the spreadsheets provided to ensure that this provision is met, relying on the knowledge of the delegated members of the DRDMW staff. This creates a risk of multiple events in the two-year period if the second were to occur under a new staff member or during handover to another office. Developing guidance for use of spreadsheets and including a method of calculating the period of time elapsed before a second event occurred would provide greater confidence that the requirement will be met.</p>



Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	<p>170 Flow event management rules—managing flow events to support Narran Lakes</p> <p>(1) This section applies if the chief executive has determined an announced period for waterharvesting entitlements under section 79.</p> <p>(2) Subsection (3) applies when:</p> <p>(a) the announced period includes any date within the period 1 March to 31 August; and</p> <p>(b) the flow event includes a flow greater than or equal to 20 000 ML/day passing the St George gauging station.</p> <p>(3) The chief executive must notify each holder of a waterharvesting entitlement of a reduction to the daily rate of take for the entitlement to 90 percent of the daily rate of take stated on the entitlement—</p> <p>(a) for each threshold for waterharvesting stated on the entitlement; and</p> <p>(b) for the period of the flow event up to a maximum of 10 days.</p>		High	<p>DRDMW supplied evidence from three announcement periods that included flow rates, period of applicability and acknowledgement that they were made under section 79 of the Condamine and Balonne water management protocol 2019.</p> <p>The only flow event that contained five (5) days during the period outlined in Section 170 (2)(a) that was over the 20,000ML/day threshold of Section 170 (2)(b) occurred between Sun 16 Feb 2020 6:00pm to Wed 18 Mar 2020 6:00pm. All the days that met both requirements included a 90% reduction of the maximum daily rate of take.</p> <p>Audit testing concluded that DRDMW met the requirements based on the single event able to be tested within the audit period.</p>



Audit scope item	Legislative provision or other testing requirement	Compliance rating	Confidence in compliance rating	Details of testing, including results
	<p>172 Recording reduction in take of waterharvesting under rules for flow event management</p> <p>(1) The chief executive must keep a record of the volume of water not available to be taken as a result of reductions applying under the flow event management rules in sections 168(2), 169(2) and 170(3) under each waterharvesting entitlement.</p> <p>(2) For waterharvesting entitlements managed under an instantaneous volumetric limit water sharing rule, the chief executive must not credit the record mentioned in subsection (1) with the volume of water referred to in subsection (1) if storages were full at the time of reductions.</p> <p>(3) For water allocations managed under a multiyear account water sharing rule, the chief executive must not credit the record with the volume of water referred to in subsection (1) if the balance of the volumetric account at the time of reductions was zero.</p> <p>(4) The chief executive may report on the total volume on record, any change in the total volume on record, and the average annual volume on record in the flow event report prepared under chapter 14.</p> <p>(5) A waterharvesting entitlement holder may request a copy of the record of the reduction for their entitlement.</p>		High	<p>DRDMW supplied an Excel spreadsheet that included records of the volume of water not available to be taken as a result of reductions applying under the flow event management rules for each of the three flow events. Audit testing including review of this spreadsheet concluded that DRDMW met the requirements of 172 (1) of the management protocol.</p>



Appendix B: IGWC priorities

The 2021-22 priorities of the Office of the Inspector-General of Water Compliance are published on their website and include the following:

Compliance Work Program Priority 1: Effective approach to water compliance

Why it's a priority	Inconsistency in Basin states' response to water theft risks undermining confidence. Left unchecked, these differences, including in the mandatory response to water theft, reinforces views that water management is unfair or not effective.
Inspector-General's Desired outcome	Ensure the Basin has clear, fair and effective compliance frameworks.
What the Inspector-General will do	<ul style="list-style-type: none">• Review whether Commonwealth water agencies are abiding by the Basin Plan rules• Independently review and publicly report on each State's water compliance and enforcement systems• Work with states to develop a set of common metrics to be used to communicate and report on water compliance performance and effort across the Basin

Priority 2: Water metering and measurement

Why it's a priority	Reforms to ensure accurate metering and measurement of water take is far from complete. Whilst policies have been developed and implementation plans are rolling out, increased meter accuracy and its benefits to communities, landowners and regulators is still some years away. This lag creates a risk of unchecked water theft.
Inspector-General's Desired outcome	Accurate metering and measurement of water take is in place across the Basin
What the Inspector-General will do	<ul style="list-style-type: none">• Monitor jurisdictions commitments to develop and implement metering and measurement reforms• Audit key areas of risk• Provide easy to understand information to the community with a focus on outcomes

Priority 3: Managing increasing groundwater use

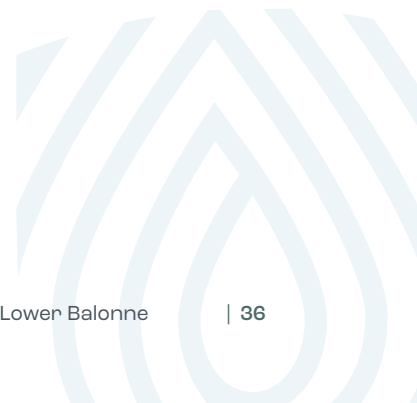
Why it's a priority	Groundwater extraction is increasing. All governments need to ensure that this precious resource is sustainably managed, particularly for surviving the next drought. If increasing use and demand for groundwater is not appropriately managed, it can lead to declining pressure levels, permanent salinity and drawdown problems, reversal of flow direction and affect dependent ecosystems.
Inspector-General's Desired outcome	Ensure the ground water management rules are complied with and enforced
What the Inspector-General will do	<ul style="list-style-type: none">• Audit Water Resource Plan groundwater compliance

Glossary

Term	Definition
Administrative plan	Administrative plan means a plan illustrating parcels of land or other features on the land, for instance the footprint of existing storage works. Water entitlements may refer to the administrative plan to display the land or other features rather than place lengthy text descriptions within the water entitlement's conditions. These plans are held electronically and may be changed subject to requirements in the water management protocol.
Announced period	The period of time, as determined and announced by the chief executive, when water may be taken under the authority of a water allocation. While the announced period is normally based on a 24 hour time interval, it can be for a greater or shorter period of time depending on the volume and duration of the flow event.
Basin Plan	Murray-Darling Basin Plan 2012
Condamine-Balonne WRP	Condamine-Balonne Water Resource Plan 2019
DRDMW, the department	Department of Regional Development, Manufacturing and Water
Entitlement holders, licence holders	Holders of a licence to take overland flow during an announced period
Flow Event	Means a flow passing through the Lower Balonne Water Management Area where one or more consecutive announced periods apply.
Flow through event	A flow through event occurs when a flow passes through all of the major distributary streams to meet the Culgoa River, Barwon River or the Narran Park Gauging Station upstream of the Narran Lakes.
IGWC	Inspector-General of Water Compliance
Lower Balonne Flow Management Reference Group	Comprises stakeholders from the Lower Balonne, including the Murray-Darling Basin Authority (MDBA), the Commonwealth Environmental Water Office (CEWO), graziers and water users, who provide advice to the department on issues around application of the water sharing rules and flow event management rules.
Overland flow	Overland flow is water that runs across the land after rainfall, either before it enters a watercourse, after it leaves a watercourse as floodwater, or after it rises to the surface naturally from underground ⁹ .
Sustainable Diversion Limit	<p>The maximum long-term annual average quantities of water that can be taken, on a sustainable basis, from:</p> <ul style="list-style-type: none"> (a) the Basin water resources as a whole; and (b) the water resources, or particular parts of the water resources, of each water resource plan area <p>The averages are the long-term average sustainable diversion limits for the Basin water resources, and the water resources, or particular parts of the water resources, of the water resource plan area.</p>

⁹ <https://www.business.qld.gov.au/industries/mining-energy-water/water/authorisations/overland-flow>

Term	Definition
Unsupplemented Flow	means a flow that results from tributary inflow (including dam and weir spills) that exceeds the requirements to satisfy supplemented uses (i.e. filling ROL holder dams and weirs, water orders, etc).
Water Management Protocol	Condamine and Balonne Water Management Protocol 2019
Water Plan	Water Plan (Condamine and Balonne) 2019
Water harvesting	means for the Lower Balonne, the taking of unsupplemented water under a water allocation and the taking of overland flow water or water harvesting under a water licence.
Water harvesting entitlement	For the Lower Balonne, means a water allocation with a flow condition for the take of unsupplemented water or a water licence for the take of overland flow water subject to an announced period.
WRP	Water Resource Plan



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