



# Traditional Owner water use case study evaluation

A Marsden Jacob Short Report

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# Objectives

The Federation for Victorian Traditional Owner Corporations (FVTOC) engaged Marsden Jacob to evaluate three case studies of water use by Victorian Traditional Owners (VTO).

The case study evaluations identify whether and how reallocating Victorian water to Victorian Traditional Owners could:

1. **Create adverse impacts for existing Victorian entitlement holders** or distort southern interconnected Basin water markets without consent.
2. **Contravene the Victoria Government's [agreed socio-economic criteria](#) for efficiency measures projects.** These criteria were agreed at the Murray-Darling Basin Ministerial Council meeting in December 2018. The criteria recognise that efficiency measures may have flow-on impacts to regions, districts and the Basin, and that these market impacts and other flow-on impacts should be mitigated.

As part of this engagement, the Federation has provided Marsden Jacob with documents relating to the three case studies. Our evaluation of the three case studies has not considered the viability of the case studies, such as the costs and benefits. Instead, we have undertaken a rapid assessment against the objectives above, assuming the business cases themselves are viable.

# Evaluation framework

Our evaluation framework builds on established Commonwealth and Victorian Government definitions and approaches for evaluating adverse impacts and socio-economic outcomes of Basin water reform.

Adverse impacts on existing Victorian entitlement holders.

Our interpretation of what constitutes an adverse impact on existing Victorian water entitlements without the holder's consent is an event that:

- **reduces or changes the rights associated with a Victorian water access entitlement without a holder's consent; and / or**
- **reduces or changes the reliability of a Victorian water access entitlement holder's water allocations without the holders' consent.**

These definitions are consistent with the [Commonwealth's Guidelines for claiming payment under the Water Act 2007](#). The Commonwealth Guidelines determine that to qualify for a compensation payment under the Water Act 2007 there must have been (1) a permanent reduction in the water access entitlement's water allocations, or (2) a change in the reliability of the water access entitlement's water allocations and that (3) either or both of these changes must be associated with water recovery (i.e. a change in the sustainable diversion limit in the relevant area) and (4) either or both the changes would adversely affect the market value of the entitlement.

We note that trading of entitlements by a holder signals consent, except in cases where the sale is forced. We also note that the principle of no adverse impacts relates only to impacts on existing entitlement holders within the relevant water system in Victoria.

Does not infringe on the socio-economic neutrality criteria.

We have used a multi-criteria approach based on applicable as agreed by Murray-Darling Basin Ministerial Council members. These criteria are developed for efficiency measures projects, i.e., entitlement holders looking to cede water entitlements against grant funding to complete on- or off-farm efficiency projects. Because in these cases water would leave consumptive use, not all criteria have been deemed applicable for the case studies. This is because reallocating water to Traditional Owners will not remove water from consumptive use. The chosen criteria include:

**Requirements that projects are made public (criteria 1).**

A regional map must indicate where investments are being made to depict how these interrelate to improving the efficiency of the district. This includes showing the broad location of the project, the amount of water to be transferred to Traditional Owners, the type of project and relevant socio-economic information.

Where possible, reports or outcomes of past projects should be made available.

**Projects do not negatively impact on social and economic outcomes (criteria 2).**

All projects are required to describe the expected socio-economic benefits of their proposed project on the local community, region or state. Projects and programs should support local communities and economies (criteria 5)

- Programs or projects should identify opportunities to support local industry and regional development
- Programs or projects in an irrigation district don't reduce the overall productive capacity of the relevant region
- Programs or projects should not impact negatively on regional jobs.

**Programs or projects do not have negative impacts on irrigation system, water markets or regional communities (criteria 6).**

Where a proposed project is located within an irrigation network, the proponent must provide evidence that the relevant network operator or water corporation is involved in or aware of the project. The socio-economic assessment of programs or projects must consider impacts not just on participants, but for broader regions.

**Projects should be assessed for impacts on water market prices (criteria 7).**

Project proponents must ensure there is no direct impact on the reliability of water from cumulative implementation of projects. Projects must not directly increase the price of water.

# Case Studies

## First People of the Millewa Mallee Aboriginal Corporation Native Fish Hatchery

|  |  |
|--|--|
| <b>Case study project description</b>  | First People of the Millewa Mallee Aboriginal Corporation (FPMMAC) will raise and sell native fish species for stocking rivers and wetlands. Stocking rivers and wetlands will deliver biocultural outcomes through increasing populations of native fish in waterways on Country. Detailed designs for a hatchery have been completed. A pilot project is currently underway at a site in Irymple, Victoria.  |
| <b>Location/water trading zone</b>   | <a href="#">Mildura/Zone 7</a> (Murray below the Barmah Choke).  |
| <b>Water requirement</b>   | 365 ML per annum at full capacity.   |
| <b>Does the project have adverse impacts on existing entitlements to water without the holder's consent?</b> | <p>The project would not have adverse impacts on existing Victorian entitlements to water without holders' consent. We note the following:</p> <ul style="list-style-type: none"> <li>• Water for the project would be purchased by Government on behalf of the First Peoples of the Millewa Mallee from entitlements/ or allocations available on the open water market. The sale of Victorian entitlements by a holder signals consent. Transfer of a Victorian water entitlement does transfer the rights of an existing entitlement holder when they sell the water or donate it. But this transaction occurs with the Victorian water entitlement holder's consent. The transaction is no different to any other entity or individual buying or selling Victorian water entitlement in the market.</li> <li>• Entitlement transfer to Traditional Owners does not change the property right characteristics of the entitlement, nor the yield or allocation. Nor does it change the property right characteristics of all other entitlement holders or their yields or allocations. The transfer is simply a consensual transfer between two parties.</li> <li>• There were around \$265 million worth of these transactions in northern Victoria in the 2021/22 year alone (see <a href="#">Table 1</a> in Appendix 1). 365 ML represents approximately 3% of the total market value for Zone 7 assuming an entitlement value of \$7,600/ML. In terms of volume traded (Appendix 1, <a href="#">Table 2</a>), 365 ML represents less than 1% of the total volume traded in northern Victoria in the 2021/22 water year.</li> </ul> |

| Socio-economic criteria  | Response   |
|--|--|
| <b>Project is made public (criteria 1)</b>   | The First Peoples of the Millewa Mallee Aboriginal Corporation will display the business case and provide access to ongoing documentation about completed projects to inform the development of any future projects. This will be completed following approval from DEWLP that the proposal meets the requires to proceed to public consultations.   |
| <b>Project does not negatively impact on social and economic outcomes (criteria 2)</b> | <p>The project will deliver social and economic outcomes through employment and providing a source of revenue for the FPMMAC. The project is expected to generate ongoing employment opportunities for Traditional Owners through the annual operation and maintenance and collection of data and sharing of cultural knowledge. The project is expected to create 30 jobs annually for Traditional Owners and generate economic opportunities for the region through Eco-tourism, niche markets and social enterprise. The project will also deliver environmental outcomes, including restoring native fish populations in waterways.</p> <p>Entitlement transfers to Traditional Owners will impact on social and economic outcomes in the same way that other transfers between productive and consumptive water uses for aquaculture do. This is because the transfer of water does not remove water from the consumptive pool. As such, the transfer should not be compared with environmental water transfers.</p> <p>The <a href="#">Victorian Government’s aquaculture strategy</a> promotes inland aquaculture and identifies that the northern areas of Victoria have a competitive advantage as they are better suited to the grow-out of Murray cod, yabby and other native warm water species.</p> |
| <b>Project supports local communities and economies (criteria 5)</b>                   | <p>The project will deliver social and economic outcomes through employment and providing a source of revenue for FPMMAC. The project also provides important support to Traditional Owners by embedding the region’s rich and diverse cultural values through the understanding of historical and spiritual significant sites.</p> <p>The delivery of the proposed FPMMAC Native Fish Hatchery can provide an economic stimulus for northwest Victorian regional communities through increased employment opportunities and work for local contractors and businesses. It will directly support the <a href="#">Victorian Government’s aquaculture strategy</a> which promotes inland aquaculture and identifies that the northern areas of Victoria have a competitive advantage as they are better suited to the grow-out of Murray cod, yabby and other native warm water species.</p>   |



This means that the water that would be transferred stays in the region and is used for local communities and economies. Effectively, the transfer ‘re-ties’ water and land through Traditional Owners’ connection to land and water at place. This is distinct from when entitlement water is traded to users who do not have the intent to use it within the region, but rather sell the allocation annually to the market (potentially outside of the region and/or Victoria). In 2021/22, more than \$40 million worth of entitlements were sold in Zone 7 to users holding the water independently from land<sup>1</sup>.

The delivery of the proposed Hatchery will also help achieving [Victorian Government’s aquaculture strategy](#) action 1.6. engage with Victorian aboriginal groups to identify aquaculture development opportunities and support initiatives in this area (Lead: VFA, Collaborate: Aboriginal groups).

**Project does not have negative impacts on irrigation system, water markets or regional communities (criteria 6)**

The project would not be expected to negatively impact irrigation systems, water markets or regional communities.

Lower Murray Water has been provided with the proposal, demonstrating direct engagement with the Irrigation Infrastructure Operator (IIO). The applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool, negating any negative impacts on water markets.

Direct engagement with the Mallee Catchment Management Authority, industry groups, irrigation infrastructure operators, local and state governments, and regional development organisations has and will continue to occur on the project.

The works proposed through this project are consistent with regional plans, priorities and strategies on sustainable land and water management practices, building and increasing the resilience and adaptability of the floodplain watercourses and wetlands in the lower Murray.

**Project's assessed impact on water market prices (criteria 7)**

The project will have no direct impact on the reliability or price of water as the applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool.

In our experience, significant price increases would require multiple transactions, totalling tens of thousands of ML, with above market prices. For this reason, it is highly improbable that single transaction would impact in a liquidly traded market.

<sup>1</sup> Based on Marsden Jacob’s analysis on Victorian Water Register data (not reported). This does not necessarily mean that the water would not be used in the region or in Victoria but indicates a stronger possibility of it.

In the water year 2021/22, the total volume of the Northern Victoria commercial entitlement market trades (based on cleaned data, excluding \$0 trades and other outliers) was approximately 69,000 ML (see Appendix 1). 365 ML represents 0.5% of the total market size.

More specifically, in zone 7, the total traded volume of High Reliability entitlements was 16,600 ML for 2021/22 (Table 2). 365 ML accounts for approximately 2.2% of that volume.

The ML volume required for this project is negligible considering the typical volume of entitlement water traded in a water year. The water would be sourced from the market at a prevailing market price, utilising existing market mechanisms (e.g., water brokers and exchanges). Hence, the transfer will impact market prices in the same way that all other trades in the market do. i.e., the market would continue to be determined based on supply and demand.

If the project applicant did not require the whole volume in some years, allocation against the entitlement could be traded back to the temporary market. This would result in additional water being available in the broader consumptive pool due to reduced demand by the applicant, putting downward pressure on temporary water prices.

The proposed quantity of water will be independently verified by a certified irrigation expert.

## First People of the Millewa-Mallee Aboriginal Corporation Native seed bank

|  |   |
|--|---|
| <b>Case study project description</b>  | First People of the Millewa-Mallee Aboriginal Corporation (FPMMAC) have secured access to land to begin farming native plants and foods. A native seed processing unit, seed bank and propagation area will be established at a newly procured 20-acre block of land at Birdwoodton. FPMMAC will grow specialised native plants that do not flower annually for use in conservation activities on Neds' Corner, surrounding Parks Victoria land and available for external purchase and plantings.  |
| <b>Location/water trading zone</b>   | <a href="#">Mildura/Zone 7</a> (Murray below the Barmah Choke)  |
| <b>Water requirement</b>   | 70 ML per annum at full capacity (seed bank alone)  |
| <b>Does the project have adverse impacts on existing entitlements to water without the holder's consent?</b> | <p>The project would not have adverse impacts on existing Victorian entitlements to water without holders' consent. We note the following:</p> <ul style="list-style-type: none"> <li>• Water for the project would be purchased by Government on behalf of the First Peoples of the Millewa Mallee from entitlements/ or allocations available on the open water market. The sale of Victorian entitlements by a holder signals consent. Transfer of a Victorian water entitlement does transfer the rights of an existing entitlement holder when they sell the water or donate it. But this transaction occurs with the Victorian water entitlement holder's consent. The transaction is no different to any other entity or individual buying or selling Victorian water entitlement in the market.</li> <li>• Entitlement transfer to Traditional Owners does not change the property right characteristics of the entitlement, nor the yield or allocation. Nor does it change the property right characteristics of all other entitlement holders or their yields or allocations. The transfer is simply a consensual transfer between two parties.</li> <li>• There were around \$265 million worth of these transactions in northern Victoria in the 2021/22 year alone (see <a href="#">Table 1</a> in Appendix 1). 75 ML represents less than 1% of the total market value for Zone 7 assuming an entitlement value of \$7,600/ML. In terms of volume traded (Appendix 1, <a href="#">Table 2</a>), 70 ML represents around 0.1% of the total volume traded in northern Victoria in the 2021/22 water year.</li> </ul> |

| Socio-economic criteria  | Response  |
|--|---|
| <b>Project is made public (criteria 1)</b>   | The FVTOC website will display the business case and provide access to ongoing documentation about completed projects to inform the development of any future projects. This will be completed following in principle or formal approval from DEWLP.  |
| <b>Project does not negatively impact on social and economic outcomes (criteria 2)</b> | <p>Currently in the Millewa-Mallee there is a minimal local native foods industry including within product development, farming enterprises or hospitality businesses. This project creates the opportunity for local the local community and Traditional Owners to combine their knowledges and resources to create a thriving native food economic outcome in the Millewa-Mallee region. The project will deliver social and economic outcomes through employment and providing a source of revenue for the Corporation.</p> <p>Entitlement transfers to Traditional Owners will impact on social and economic outcomes in the same way that other transfers between productive and consumptive water uses for agriculture do. This is because the transfer of water does not remove water from the consumptive pool, nor agriculture. As such, the transfer should not be compared with environmental water transfers.</p>                               |
| <b>Project supports local communities and economies (criteria 5)</b>                   | <p>By respecting cultural and intellectual property the project will create an Indigenous-led native foods industry in the Mallee region to deliver social, cultural, economic and environmental benefits to the First Peoples of the Millewa-Mallee and support local community and the regional economy.</p> <p>There is potential for the creation of jobs and new businesses, training opportunities, sharing knowledge and culture and caring for Country.</p> <p>The project will deliver social and economic outcomes through employment and providing a source of revenue for the Corporation.</p> <p>This means that the water that would be transferred stays in the region and is used for local communities and economies. Effectively, the transfer ‘re-ties’ water and land through Traditional Owners connection to land and water at place, and the preference of Traditional Owners not to transfer water across catchments, in cases.</p> |

|   |   |
|---|---|
|   | <p>This is distinct from when entitlement water is traded to users who do not have the intent to use it within the region, but rather sell the allocation annually to the market (potentially outside of the region and/or Victoria). In 2021/22, more than \$40 million worth of entitlements were sold in Zone 7 to users holding the water independently from land<sup>2</sup>.</p>  |
| <p><b>Project does not have negative impacts on irrigation system, water markets or regional communities (criteria 6)</b></p> | <p>The project does not have negative impacts on irrigation systems, water markets or regional communities.</p> <p>Lower Murray Water has been provided with the proposal which demonstrates direct engagement with the Irrigation Infrastructure Operator (IIO).</p> <p>The applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool, nor agricultural use, negating any negative impacts on water markets.</p> <p>The works proposed through this project are consistent with regional plans, priorities and strategies on sustainable land and water management practices, increasing the resilience and adaptability of the regenerative agriculture in the lower Murray.</p> <p>Currently in the Millewa-Mallee there is a minimal local native foods industry including within product development, farming enterprises or hospitality businesses. This creates the opportunity for groups like the First People of the Millewa-Mallee Aboriginal Corporation (FPMMAC) and Food Next Door Co-op (FND) to combine their expertise to seize the potential to establish a positive foundation for a local industry to emerge.</p> |
| <p><b>Project's assessed impact on water market prices (criteria 7)</b></p>   | <p>The project will have no direct impact on the reliability or price of water as the applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool.</p> <p>In our experience, significant price increases would require multiple transactions, totalling tens of thousands of ML, with above market prices. For this reason, it is highly improbable that single transaction would impact in a liquidly traded market.</p> <p>In the water year 2021/22, the total volume of the Northern Victoria commercial entitlement market trades (based on cleaned data, excluding \$0 trades and other outliers) was approximately 69,000 ML. 70 ML represents approximate 0.1% of the total market size based on traded volume (see Appendix 1).</p>  |

<sup>2</sup> This does not necessarily mean that the water would not be used in the region or in Victoria but indicates a stronger possibility of it.

More specifically, in zone 7, the total market size (volume traded) for high reliability entitlements was 16,600 ML. 70 ML would represent 0.4% of that total traded volume in 2021/22.

The volume and value of water sought is negligible considering the total market size. The water would be sourced from the market at a prevailing market price, utilising existing market mechanisms (e.g., water brokers and exchanges). Hence, the transfer will not impact the market prices in any way other than the way all trades for agricultural water use do, which would continue to be determined based on supply and demand.

During years when the project applicant would not be using the whole volume, allocation water could be traded back to the temporary market. This is normal practice for many agricultural water holders in Victoria. This will result in additional water being available in the broader consumptive pool due to reduced demand by the applicant, putting downward pressure on temporary water prices.

A certified irrigation expert will independently verify the proposed quantity of water.

## Land and water sale from a Victorian farmer to Victorian Traditional Owners

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|--|--|
| <b>Case study project description</b>  | A land and water holder has approached Traditional Owners offering to sell three parcels of land for a peppercorn fee of \$1, along with on-farm water delivery infrastructure on the parcels for \$500,000 – and high- and low-reliability water shares at the prevailing market price.   |
| <b>Location/water trading zone</b>   | <a href="#">Kerang Lakes/Zone 1A</a> (Greater Goulburn)  |
| <b>Water requirement/volume</b>  | 2,500 ML of high-reliability and 500 ML of low-reliability entitlements are offered by the current holder.   |
| <b>Does the project have adverse impacts on existing entitlements to water without the holder's consent?</b> | <p>The project would not have adverse impacts on existing Victorian entitlements to water without holders' consent. We note the following:</p> <ul style="list-style-type: none"> <li>• Water for the project would be sourced via the market from a willing seller, signalling consent by default.</li> <li>• Entitlement transfers to Traditional Owners does not change the property right characteristics of the offered entitlements, nor the yield. Nor does it change the property right characteristics of all other entitlement holders or their yields. It is simply a consensual transfer between two parties. There have been around \$265 million worth of these transactions in northern Victoria in the 2021/22 water year (<a href="#">Table 1</a>). What is being proposed is no different to these transfers.</li> </ul> |

| Socio-economic criteria                      | Response   |
|--|--|
| <b>Project is made public (criteria 1)</b>   | The project will be made public through appropriate channels following discussions with DEWLP. This will include the business case and provide access to ongoing documentation about completed projects to inform the development of any future projects. This will be completed following in principle or formal approval from DEWLP. |
| <b>Project does not negatively impact on</b> | The Barapa Cultural watering opportunity enables water delivery to the culturally significant sites. The project does not negatively impact on social and economic outcomes as the land is already a nature reserve. There is potential to increase social values by providing amenities to local Traditional Owners.                  |

|  |   |
|--|---|
| <b>social and economic outcomes (criteria 2)</b>   | Entitlement transfers to Traditional Owners will impact on social and economic outcomes in the same way that other transfers between productive and consumptive water uses do, including for agriculture. This is because the transfer of water does not remove water from the consumptive pool. As such, the transfer should not be compared with environmental water transfers.   |
| <b>Project supports local communities and economies (criteria 5)</b>   | <p>The project will support local traditional owner communities and economies through a combination of cultivating native foods and botanicals and fostering surrounding nature reserves.</p> <p>This is distinct from when entitlement water is traded to users who do not have the intent to use it within the region, but rather sell the allocation annually to the market (potentially outside of the region and/or Victoria). In 2021/22, more than \$22 million worth of entitlements were sold in Zone 1A to users holding the water independently from land<sup>3</sup>.</p>   |
| <b>Project does not have negative impacts on irrigation system, water markets or regional communities (criteria 6)</b> | <p>The proposed project is located within an irrigation network, but water would be directly accessed using private infrastructure. Suitable delivery shares will need to be determine through consultation with the irrigation network providers.</p> <p>The applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool, negating any negative impacts on water markets.</p> <p>The project could enable water delivery to culturally significant sites that are connected to the larger Ramsar listed Kerang wetlands system. Therefore, the water received through the project can be used to benefit local environmental and cultural assets (and potentially other priority sites located across the broader southern MDB system), delivering positive outcomes for the regional communities.</p> |
| <b>Project's assessed impact on water market prices (criteria 7)</b>   | <p>The project will have no direct impact on the reliability or price of water as the applicant would retain any water that is transferred to them. In other words, the water transfer would not remove water from the consumptive pool.</p> <p>In our experience, significant price increases would require multiple transactions, totalling tens of thousands of ML, with above market prices. For this reason, it is highly improbable that single transaction would impact in a liquidly traded market.</p>   |

<sup>3</sup> This does not necessarily mean that the water would not be used in the region or in Victoria but indicates a stronger possibility of it.



In the water year 2021/22, the total volume of the Northern Victoria commercial entitlement market trades (based on cleaned data, excluding \$0 trades and other outliers) was approximately 69,000 ML. 3,000 ML represents around 4.3% of the total annual traded volume (see Appendix 1).

More specifically, in zone 1A, the annual traded market size (volume traded) for high and low reliability entitlements was 32,800 ML. 3,000 ML represents 9.1% of that total traded volume in 2021/22.

Therefore, the impact of the volume for this project is likely negligible considering the total market size and the fact that water would be transacted from a willing seller at prevailing market prices through direct negotiations. Direct negotiation and settling outside of the market mean the transfer will not impact the broader market bids and offers, or prices, given these continue to be determined based on supply and demand.

During years when the purchaser would not be using the whole volume, allocation water could be traded back to the temporary market. Many northern Victorian farmers do this. This will result in additional water being available in the broader consumptive pool due to reduced demand by the applicant, contributing to downward pressure on temporary water prices.

## Appendix 1. Victorian water market statistics 2021/22

Table 1: Northern Victoria entitlement value of trades 2021/2022, by entitlement category

| Zone                  | High Reliability     | Low Reliability     | Spill Reliability | Total                |
|-----------------------|----------------------|---------------------|-------------------|----------------------|
| 1A/1B Goulburn        | \$73,747,258         | \$9,499,728         | n.a.              | \$83,246,986         |
| 2 Broken              | \$2,167,350          | \$24,205            | n.a.              | \$2,191,555          |
| 3 Lower Goulburn      | \$1,655,586          | \$51,280            | n.a.              | \$1,706,866          |
| 4A Campaspe           | \$614,725            | \$28,528            | n.a.              | \$643,253            |
| 4C Lower Campaspe     | \$12,000             | n.a.                | n.a.              | \$12,000             |
| 5A Loddon             | \$1,651,215          |                     | n.a.              | \$1,651,215          |
| 6 Murray Above        | \$42,798,115         | \$2,127,948         | n.a.              | \$44,926,063         |
| 6B Lower Broken Creek | \$7,545,315          | \$497,083           | n.a.              | \$8,042,398          |
| 7 Murray Below        | \$117,251,364        | \$5,152,525         | n.a.              | \$122,403,889        |
| 9A Ovens              | \$148,850            | n.a.                | \$3,000           | \$151,850            |
| 9B King               | \$129,900            | n.a.                | \$11,400          | \$141,300            |
| <b>Total</b>          | <b>\$247,721,679</b> | <b>\$17,381,297</b> | <b>\$14,400</b>   | <b>\$265,117,376</b> |

Source: Marsden Jacob Waterflow™ and VWR

Table 2: Northern Victoria entitlement volume of trades (ML) 2021/2022, by entitlement category


| Zone                  | High Reliability | Low Reliability | Spill Reliability | Total         |
|-----------------------|------------------|-----------------|-------------------|---------------|
| 1A/1B Goulburn        | 17,986           | 14,831          | n.a.              | 32,816        |
| 2 Broken              | 792              | 100             | n.a.              | 892           |
| 3 Lower Goulburn      | 416              | 112             | n.a.              | 528           |
| 4A Campaspe           | 156              | 31              | n.a.              | 186           |
| 4C Lower Campaspe     | 4                | n.a.            | n.a.              | 4             |
| 5A Loddon             | 411              |                 | n.a.              | 411           |
| 6 Murray Above        | 8,774            | 3,369           | n.a.              | 12,143        |
| 6B Lower Broken Creek | 1,063            | 441             | n.a.              | 1,504         |
| 7 Murray Below        | 16,566           | 3,334           | n.a.              | 19,900        |
| 9A Ovens              | 116              | n.a.            | 15                | 131           |
| 9B King               | 95               | n.a.            | 57                | 152           |
| <b>Total</b>          | <b>46,377</b>    | <b>22,217</b>   | <b>72</b>         | <b>68,666</b> |

Source: Marsden Jacob Waterflow™ and VWR

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