sunwater

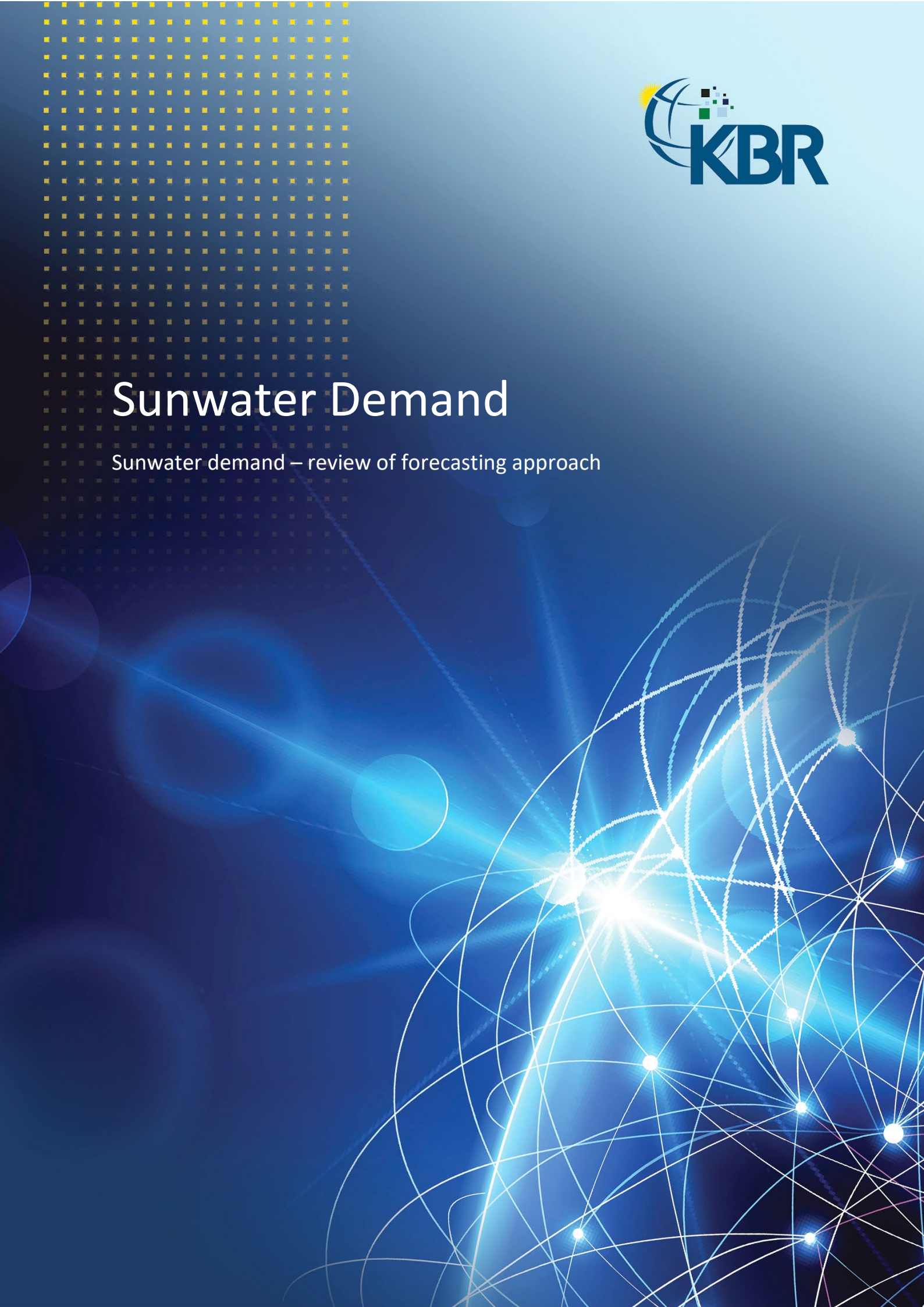
Irrigation pricing proposal

1 July 2025 to 30 June 2029

Appendix D Demand Report

Sunwater Demand

Sunwater demand – review of forecasting approach



Sunwater Demand

Sunwater demand – review of forecasting approach

Prepared for:
CLIENT
Sunwater

Prepared by:
Kellogg Brown & Root Pty Ltd
ABN 91 007 660 317
Yuggera Country
Level 1, 100 Brookes Street | Brisbane Qld 4006 | Australia
GPO Box 633 | Brisbane Qld 4001 | Australia

11 September 2023

Limitations Statement

The sole purpose of this report and the associated services performed by Kellogg Brown & Root Pty Ltd (KBR) is to **estimate demand in Sunwater's schemes** in accordance with the scope of services set out in the contract between KBR and **Sunwater** ('the Client'). That scope of services was defined by the requests of the Client, by the time and budgetary constraints imposed by the Client, and by the availability of access to the site.

KBR derived the data in this report primarily from **data provided by Sunwater**. In preparing this report, KBR has relied upon and presumed accurate certain information (or absence thereof). Except as otherwise stated in the report, KBR has not attempted to verify the accuracy or completeness of any such information.

The findings, observations and conclusions expressed by KBR in this report are not, and should not be considered, an opinion. No warranty or guarantee, whether express or implied, is made with respect to the data reported or to the findings, observations and conclusions expressed in this report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between KBR and the Client. KBR accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report by any third party.

Revision History

Revision	Date	Comment	Signatures			
			Originated by	Checked by	Technical Approval	Project Approval
1	11 September 2023	Distribution Loss Report	Matt Bradbury	Nick Smith	Sebastian Vanderzeil	Chris Hewitt

Contents

Sunwater demand forecast for 2025-26 to 2029-30 regulatory submission

BACKGROUND

The demand forecast for Sunwater's last pricing submission to the QCA was calculated as the average of the previous 20 years of water demand for each scheme.

This paper discusses two topics:

- Confirming the previous approach using a 20-year average
- Calculation of the 20-year average for each scheme

REVIEW OF FORECASTING APPROACH

The demand forecast for Sunwater's last pricing submission to the QCA was calculated as the average of the previous 20 years of water demand for each scheme.

KBR reviewed this approach, with the aim to determine whether the 20-year average continues to be the most suitable method, or whether there is an improved approach that is practical to implement and can be consistently applied to each of the schemes.

The recommended approach will form the basis of the demand forecast for the upcoming submission to the QCA for the regulatory period 2025-26 to 2029-30.

Data Provided

KBR relied on the following information provided by Sunwater and is considered comprehensive for the demand forecast assessment.

- PRODUCTION-#2640958-v2-All_Schemes_-_AA_History.XLSX
- PRODUCTION-#2776701-v1-Historical_water_allocations_all_schemes_2002_to_2022.XLSX
- PRODUCTION-#2776527-v1-Historical_water_usage_regulated_schemes_2002_to_2022.XLSX
- PRODUCTION-#2659833-v4-20211013_Scheme_water_allocation_and_usage_data_request_-_Service_and_Performance_Plans
- PRODUCTION-#2750877-v6-Scheme_water_allocation_and_usage_data_file_-_2024_Service_and_Performance_Plans_V2
- PRODUCTION-#2803882-v1-Scheme_water_allocation_entitlement_and_usage_data_file_-_2025_Service_and_Performance_Plans
- Sunwater 2020-2024 irrigation review final report – 20 year water use forecasts.XLSX
- QCA Information Request 29_Attachement 1_water entitlements and usage v2.XLSX

Method

KBR sought to identify trends in the data that could be used as a basis for projections of future water demand. Some of the initial questions considered were:

- Is there a general trend (up, down, or flat) in water demand over the 20 years?
- Is there a change in WAEs over the 20 years?
- Is there a relationship between AAs and annual water demand?

Assessment of the data was conducted for total water usage as well as at a scheme level, to determine if there are trends at all levels and to ensure the adopted demand forecasting approach aligns with the scheme-level

structure of other elements of the submission (e.g., the pricing model). The following table outlines the fields and parameters analysed from the three data sets.

Table 1 Data analysis parameters

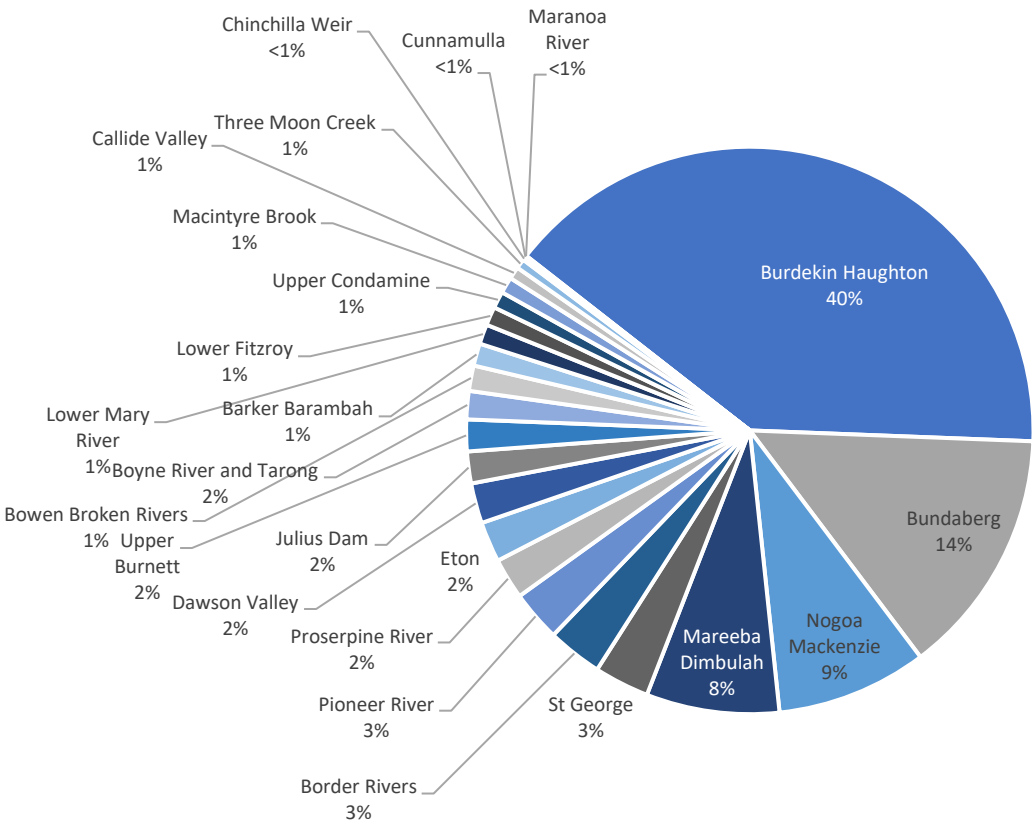
Data set and unit	Time step	Calculation	Priority	Scheme level
WAE (ML)	Annual	Sum	Medium and high	Scheme & total
AA (%)	Quarterly	Min, max, average	Medium and high	Scheme & total
Water demand (ML)	Annual	Sum	N/A (total only)	Scheme & total

AA percentage data was converted to volumes through multiplication with WAE volumes. The minimum and maximum AA in each quarter was extracted to provide the range over each timestep, as the opening, ramp up and closing AA in each quarter may have an impact on water demand.

Assessment

The pie chart in Figure 1 shows the scheme volumes as a percentage of the sum total volume of all schemes. This shows that top two schemes, Burdekin Haughton and Bundaberg, make up over 50% of the overall WAE volume, and the top five make up almost 75%. It's important to consider the relative contribution these schemes have on overall trends and to ensure that the proposed forecasting approach aligns with the trends of the greatest volume of demand.

Figure 1 Proportion of WAE by scheme (% of total WAE volume)



Water demand, WAE and AA data was plotted by date on charts to visualise and compare trends over the 20 years. The chart for the total water demand across all schemes is presented in Figure 2, and the individual scheme plots are provided in Appendix A.

For some schemes, there were material increases and/or decreases in WAE volumes over the last 20 years. Overall, the WAE total volume changed by only small amount over the 20 years, resulting in an overall increase

of 5% from 2003 to 2022. There was little to no evidence of WAE changes having an impact on water demand, i.e. increases or decreases in WAE did not consistently result in corresponding increases or decreases in water demand.

AA volumes fluctuated inconsistently over the 20 years. This is as expected, as the volumes announced depend on water availability, which is impacted by weather and climate conditions, which are inherently variable.

There are significant peaks and troughs in water demand, with a large variety in the timing and scale of those fluctuations across the schemes. Total water demand also fluctuates, but generally over larger time periods than individual schemes.

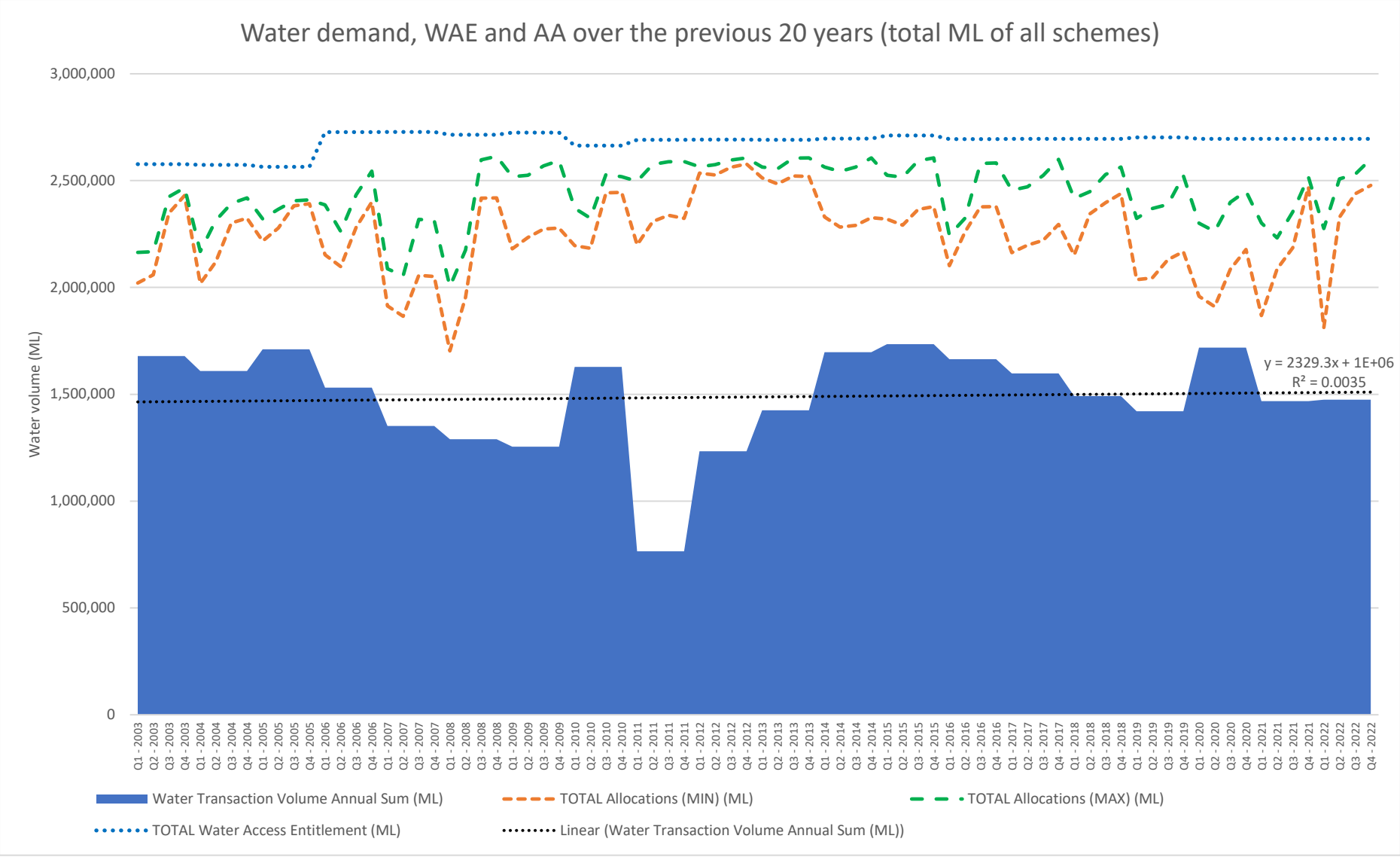


Figure 2 20 years of water demand, AA and WAE for all schemes totalised, 2003 to 2022. The water demand linear trend formula displayed is the equation for x in years, not quarters.

There is a near-zero growth trend in overall use. Placing a linear line of best fit across the total water demand generates an almost horizontal line (0.16% slope). The R^2 value of 0.003 indicates high variance when compared to a smooth linear trend,[1] showing how the water demand was volatile on an annual basis.

Lines of best fit were similarly placed on the individual scheme demand data, with varying results, as demonstrated in Table 2.

Table 2 Water demand trends by scheme

Network	2022 Access Entitlement (ML)	20-year average usage (ML/a)	Slope of linear trend of demand (ML/a)	R^2 value of linear trend (ML)
ALL NETWORKS	**2,695,244**	**1,487,227**	**2,329**	**0.003**
Barker Barambah	34,315	12,197	-398	0.089
Bowen Broken Rivers	38,931	15,725	131	0.092
Boyne River and Tarong	43,405	21,911	101	0.008
Bundaberg	380,329	122,514	5,146	0.283
Burdekin Haughton	1,079,593	617,944	-4,386	0.031
Callide Valley	18,935	12,296	252	0.201
Chinchilla Weir	4,049	9,256	986	0.476
Cunnamulla	2,612	1,880	26	0.082
Dawson Valley	61,737	53,999	1,681	0.420
Eton	62,059	25,429	-340	0.038
Lower Fitzroy	28,621	18,636	-66	0.054
Lower Mary River	30,399	9,003	182	0.045
Macintyre Brook	24,997	14,187	-733	0.398
Maranoa River	805	25	-2	0.129
Mareeba Dimbulah	204,424	131,541	-104	0.001
Nogoa Mackenzie	231,859	165,696	-2,870	0.180
Pioneer River	78,110	26,099	-621	0.150
Proserpine River	62,876	26,786	-589	0.131
St George	84,575	165,451	3,585	0.120
Three Moon Creek	14,934	-7,360	-160	0.145
Upper Burnett	48,700	17,874	106	0.014
Upper Condamine	25,715	26,138	402	0.029
Border Rivers	84,414	0	0	N/A*
Julius Dam	48,850	0	0	N/A*

* No water demand data provided

The majority of schemes did not correlate well with a linear trend, displaying similar volatility with significant peaks and troughs in demand. Although a handful of schemes had R^2 values of 0.4 to 0.5, closer scrutiny of those schemes revealed unusual data (e.g., demand far exceeding WAE volumes) and therefore inconclusive results.

Overall, the trend in total water demand matched almost exactly the 20-year average, and there was otherwise no growth trend identified that could be applied as a demand forecasting method.

[1] R^2 measures the variance between the data and the linear trend, where 0 is zero correlation and 1 is perfect correlation.

AA and water demand volumes

Intuitively, a correlation may exist between AA and future water demand: if the AA is currently high, does this correlate with higher water use, either now or in the future. If a strong relationship was found, there could be a justification to forecast higher / lower demand.

This was investigated by developing scatter plots of the AA volumes on one axis compared to water demand on the other. If the charts resembled dots along a line, it could indicate a relationship between the two variables. The strength of that correlation was tested with the R^2 value of a linear line of best fit.

Further factors were considered in this assessment:

- A lag may exist between the release of AA volumes and resulting impacts on water demand, due to storages providing a buffer between water sources and their users. Therefore, additional scatter plots were developed with water demand delayed by varying timeframes.
- The minimum, maximum or average AA may have varying impacts on water demand. Each were tested, but found to have only a minor impact on results. The scatter plots presented in this report are the results using an average annual AA, due to it producing the highest R^2 values, though only by a small margin.

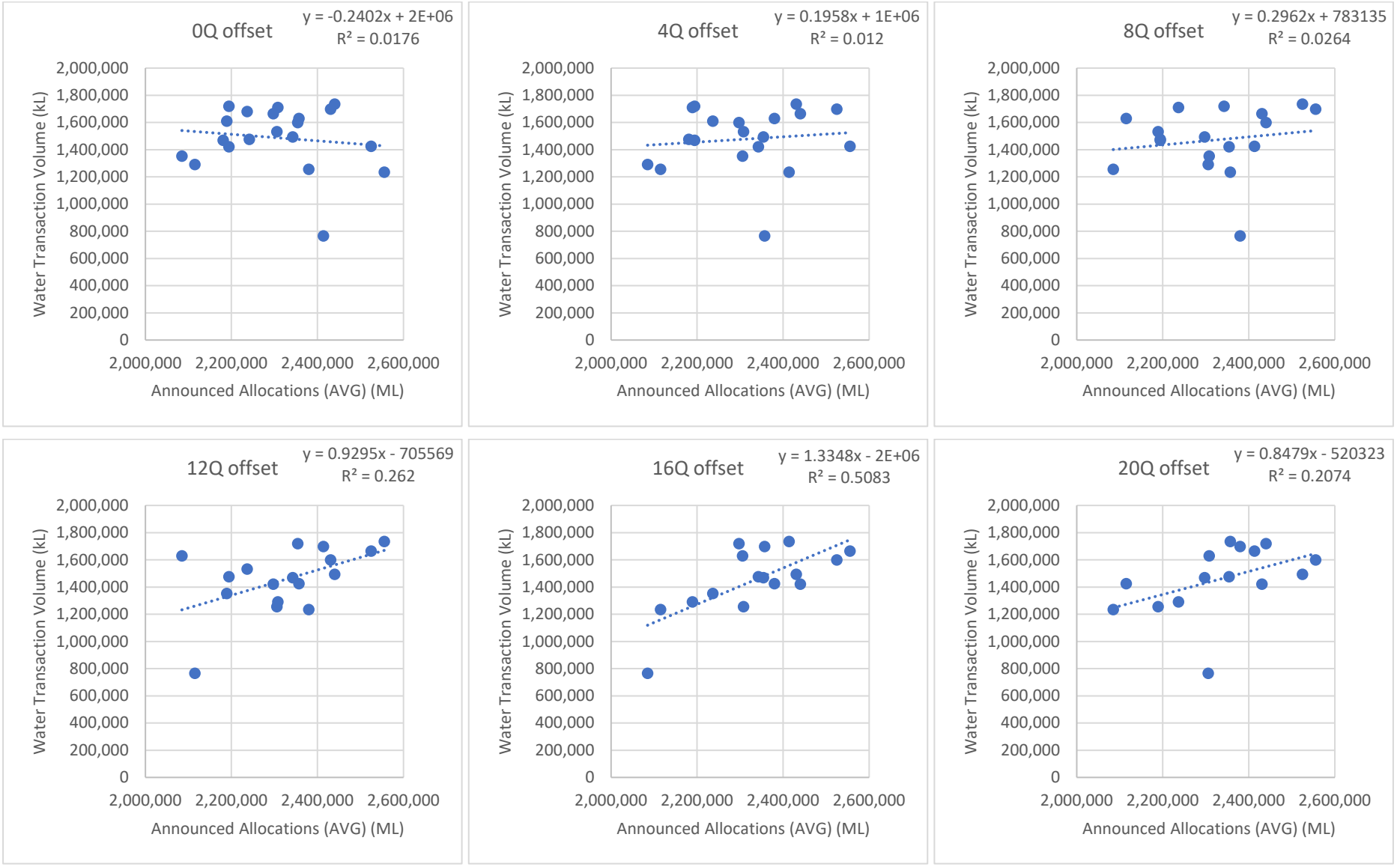
The R^2 results are summarised in Table 3, and the AA vs. water demand plots for totalised volumes are presented in Figure 3. Plots for each scheme are provided in Appendix A, due to the large number of figures.

Table 3 R^2 values for each water demand timing offset

Network	R^2 values for each water demand timing offset (Q = Quarters)						
	0Q	4Q	8Q	12Q	16Q	20Q	24Q
Total of all networks	**0.018**	**0.012**	**0.026**	**0.262**	**0.508**	**0.207**	**0.004**
Barker Barambah	0.321	0.579	0.423	0.379	0.051	0.061	0.276
Bowen Broken Rivers	0.000	0.157	0.115	0.107	0.000	0.015	0.131
Boyne River and Tarong	0.027	0.203	0.253	0.197	0.297	0.208	0.180
Bundaberg	0.130	0.174	0.111	0.186	0.277	0.211	0.160
Burdekin Haughton	0.003	0.001	0.010	0.045	0.164	0.062	0.020
Callide Valley	0.114	0.012	0.080	0.209	0.507	0.476	0.311
Chinchilla Weir	0.085	0.201	0.372	0.495	0.479	0.447	0.368
Cunnamulla	0.051	0.015	0.073	0.131	0.108	0.006	0.069
Dawson Valley	0.000	0.019	0.034	0.096	0.346	0.171	0.012
Eton	0.303	0.009	0.018	0.002	0.000	0.276	0.006
Lower Fitzroy	0.013	0.011	0.118	0.123	0.000	0.002	0.027
Lower Mary River	0.001	0.054	0.002	0.081	0.032	0.082	0.001
Macintyre Brook	0.076	0.000	0.034	0.178	0.168	0.027	0.190
Mareeba Dimbulah	0.219	0.008	0.001	0.031	0.068	0.003	0.274
Nogoa Mackenzie	0.440	0.222	0.041	0.004	0.028	0.009	0.060
Pioneer River	0.001	0.032	0.008	0.004	0.000	0.234	0.011
Proserpine River	0.026	0.010	0.002	0.035	0.339	0.050	0.005
St George	0.002	0.058	0.365	0.228	0.089	0.061	0.012
Upper Burnett	0.035	0.090	0.198	0.222	0.506	0.327	0.310
Upper Condamine	0.340	0.080	0.067	0.001	0.015	0.016	0.283
Maranoa River*	-	-	-	-	-	-	-
Three Moon Creek#	-	-	-	-	-	-	-

* No AA data provided ^ No water demand data provided # Negative water demand recorded

Figure 3 Scatter plots of AA versus water demand (total across all schemes), with varying annual quarter (Q) offsets and trend lines to evaluate correlation



For the totalised results, there appears to be little correlation between AA volumes and water demand in the same year (0Q) and the years immediately following (4Q through 12Q). For the 16Q offset, an R^2 value of 0.508 indicates a potential four-year lag between AA volumes and impacts to water demand. However, in discussion with Sunwater it was considered that four years is an unlikely long period to be reasonable for a lag factor, and it is possible that the result is a coincidence.

On an individual scheme basis, the results are varied. Of the 24 schemes, there are five with R^2 values of greater than 0.4, but at different timing offsets. The largest WAE volume scheme, Burdekin Haughton, has a top correlation result of just 0.164, and the second largest, Bundaberg, has a top result of 0.277, indicating low correlation for over 50% of the total WAE volume. The highest R^2 value was 0.579 for Barker Barambah at the 4Q offset, but amounts to just 1% of total WAE.

From these results, there is some indication of a measurable relationship between AA and water demand for some schemes, but it is not conclusive. Furthermore, it does not readily translate into an approach that can be adopted for a demand forecast, as an AA forecast would be required first, and one does not currently exist. It may be an area to investigate further for future submissions.

Key findings and recommended approach

Key findings:

- Water demand over the last 20 years was volatile, and did not conform to a smooth growth trend at a scheme level or in total over the 20-year period.
- The total water demand trendline was near horizontal, indicating that the 20-year average is a reasonable approximation of the long term trend in total water demand.
- No conclusive relationship could be established between water demand and AA volumes. Offsetting water demand by a lag factor improved results for some schemes, but not consistently. The greater volume of demand showed poor correlation at all timing offsets. In any case, basing the demand forecast on AA volumes would require a sufficiently robust AA forecast, and is not a practical approach.

Based on the above findings, KBR considers that the 20-year average of water demand remains the most practical demand forecasting approach, and recommends that it be adopted for the upcoming submission to the QCA.

The recommended approach has been applied to the latest (2022-23) water demand data and the results are discussed in the next section of this report.

DEMAND FORECAST

KBR has prepared a 20-year simple average for each of Sunwater's irrigation schemes, aligned with the method applied by the QCA in the previous review.

Adjustments to water demand and WAE data

In the previous review, several scheme-specific adjustments were applied to customer water demand and WAE data by Sunwater and the QCA, to reflect the way those schemes are managed and regulated. The approach undertaken for this submission is consistent with that of the previous review.

The adjustments made to the demand data are documented in Appendix B of this report.

The adjustments made to the WAE data are listed below, which is an extraction from the previous submission file *QCA Information Request 29_Attachment 1_Water entitlements and usage v2.xlsx*.

Table 4 Adjustments applied to 2023 WAE data, consistent with the previous submission

Adjustments to data

Scheme	Review adjustment	Reason
Bundaberg (distribution)	Included Burnett Water allocations delivered through the Bundaberg distribution system	Some Burnett Water allocations continue to be delivered through the distribution system.
Bundaberg (bulk)	Exclusion of Burnett Water allocations for Paradise Dam	Not subject to QCA review. Also excluded from water deliveries.
Burdekin Haughton (distribution)	Exclusion of 110,000 ML of reserve allocations for Townsville Thuringowa Water Supply Board	The Board has not yet taken up these reserve allocations.
Eton (bulk & distribution)	Additional 700 ML of high priority allocations for two industrial customers in the Pioneer scheme that use Eton bulk and distribution assets	Contractual arrangements have not changed since the 2012 review.
Lower Mary (bulk)	Included 2690 ML of medium priority water allocations and 1360 ML of high priority water allocations for the Teddington Weir water supply scheme.	The resource operations plan requirements in relation to bulk water transfers from Lower Mary River water supply scheme to Teddington Weir water supply scheme still apply.
Upper Burnett	Exclusion of Burnett Water allocations for Kirar Weir	Not subject to QCA review. Also excluded from water deliveries.

Other adjustments

Scheme	Adjustment
Eton distribution	Excluded 504 ML of risk priority water entitlements (Mirani Diversion Channel customers). These customers do not use the distribution system.

The adjusted water demand data has been used to calculate the 20-year average. This calculation has used the data provided to the QCA (and accepted by them) for the 2020-24 review for 16 years (2003-04 to 2018-19).

For the remaining four years (2019-20 to 2022-23), published NSP data has been used, which adopts the same adjustments to water demand.

Resulting 20-year average demand

The results of the 20-year average of adjusted water demand is provided Table 3. Average water use is presented in ML for each scheme, as well as a percentage of each scheme's WAE. This is then compared to the WAE percentage from the prior 2020-24 submission, showing the change in 20-year average demand.

Table 5 Water use by scheme, 20-year average over 2003-04 to 2022-23

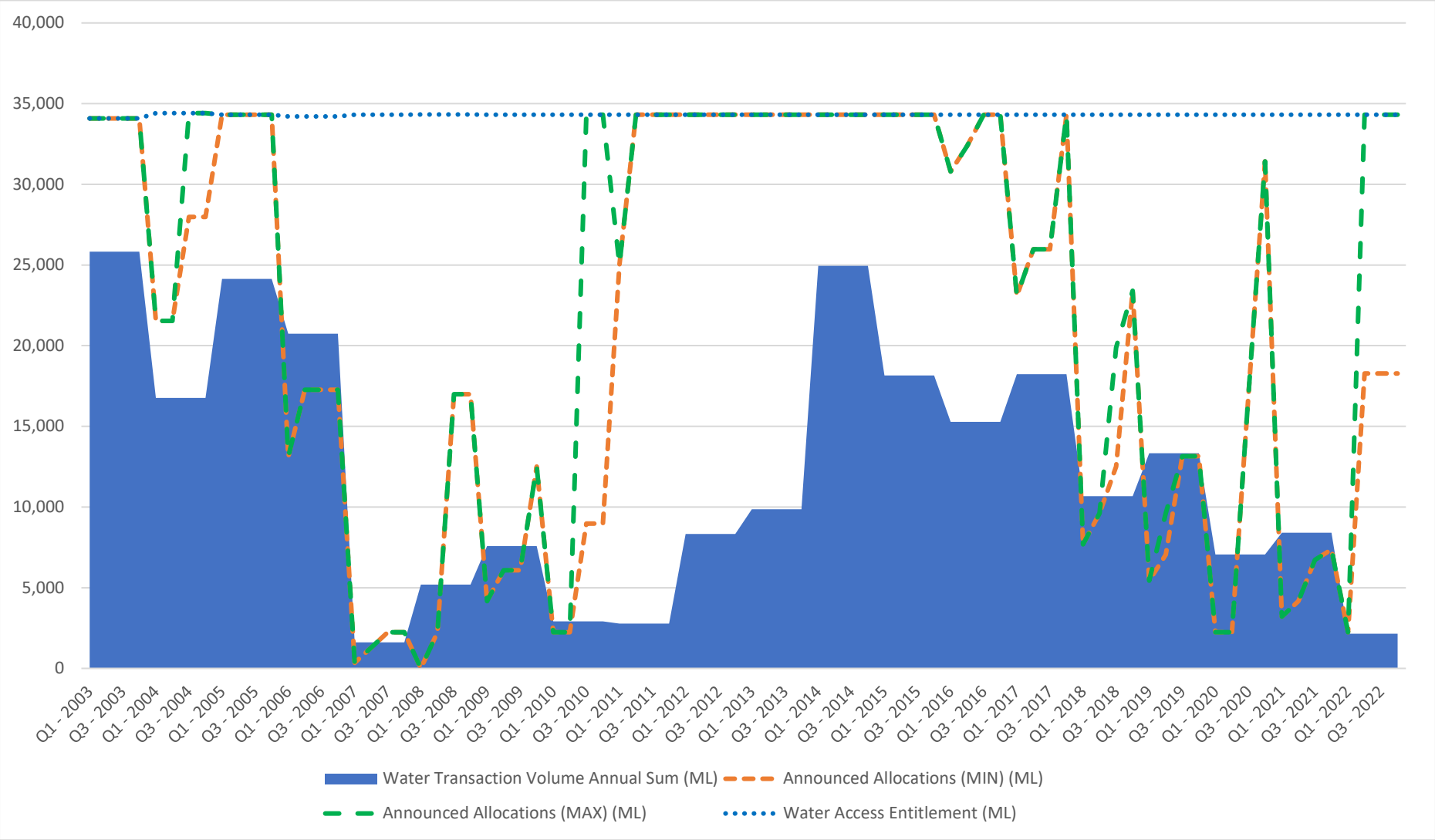
Scheme	System Type	20-year average usage (ML)	Average usage (% of 2022-23 WAE)	2020-24 QCA Average usage (% of WAE)	Difference (%)
Barker Barambah	Bulk Water	11,155	32.5%	42.0%	9.5%
Bowen Broken	Bulk Water	15,565	40.0%	37.2%	-2.8%
Boyne River	Bulk Water	21,819	50.3%	55.8%	5.5%
Bundaberg with BWPL	Channel + Distn Loss	99,500	48.0%	48.0%	0.0%
Bundaberg without BWPL	Bulk Water	113,349	48.0%	47.1%	-0.8%
Burdekin Haughton	Channel (incl. groundwater) + Distn Loss	336,827	62.2%	65.0%	2.8%
Burdekin Haughton	Bulk Water	573,507	53.1%	54.9%	1.8%
Callide	Bulk Water	12,271	63.1%	62.4%	-0.7%
Chinchilla	Bulk Water	2,263	55.9%	57.5%	1.6%
Cunnamulla	Bulk Water	1,587	60.7%	58.7%	-2.1%
Dawson Valley	Bulk Water	37,648	61.0%	61.6%	0.6%
Eton	Channel + Distn Loss	22,352	35.6%	42.1%	6.5%
Eton	Bulk Water	22,699	35.9%	41.9%	6.0%
Lower Fitzroy	Bulk Water	18,600	65.0%	66.4%	1.4%
Lower Mary River	Channel + Distn Loss	6,002	29.8%	31.2%	1.4%
Lower Mary River	Bulk Water	8,899	25.8%	33.1%	7.2%
Macintyre Brook	Bulk Water	13,399	53.6%	63.0%	9.4%
Maranoa River	Bulk Water	23	2.8%	3.3%	0.5%
Mareeba-Dimbulah	Channel + Distn Loss	119,879	62.6%	63.0%	0.4%
Mareeba-Dimbulah	Bulk Water	126,653	62.0%	64.7%	2.7%
Nogoa Mackenzie	Bulk Water	147,242	63.5%	72.7%	9.2%
Pioneer River	Bulk Water	23,512	30.1%	34.0%	3.9%
Proserpine	Bulk Water	24,223	38.5%	42.1%	3.5%
St George	Bulk Water	72,605	85.8%	88.6%	2.8%
Three Moon Creek	Bulk Water	5,958	39.9%	41.8%	1.9%
Upper Burnett without BWPL	Bulk Water	15,791	54.9%	56.7%	1.8%
Upper Condamine	Bulk Water	13,936	41.0%	45.0%	3.9%

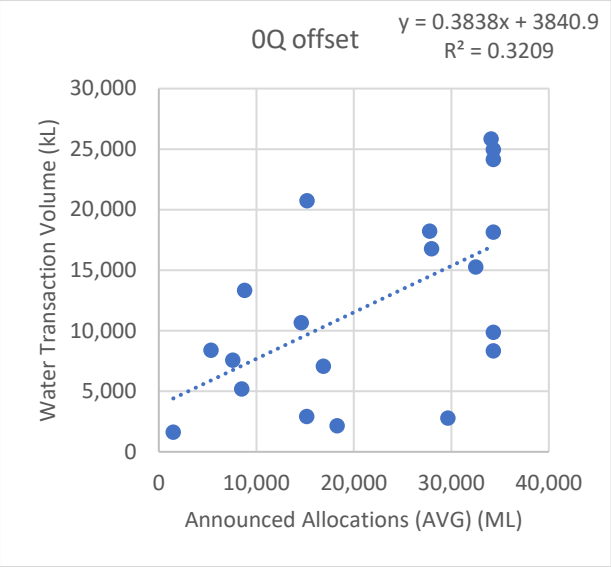
The full annual water demand over 2003-04 to 2022-23 is provided in the supporting Excel model.

Appendix A

Data assessment charts for each scheme

BARKER BARAMBAH

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Announced Allocations (AVG) (ML)
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20,000
30,000
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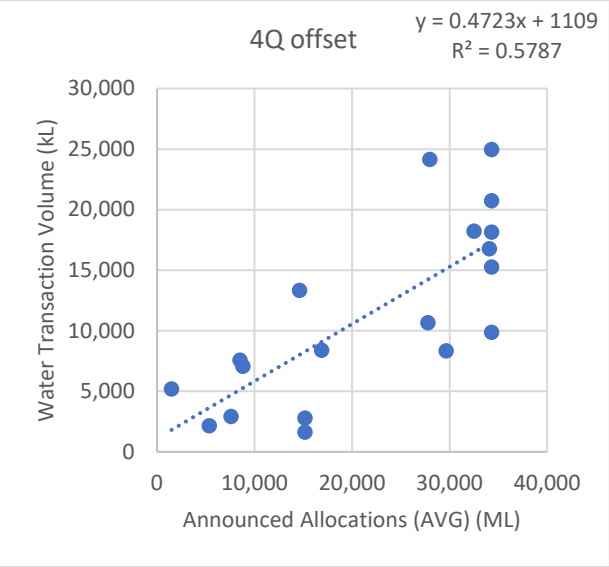
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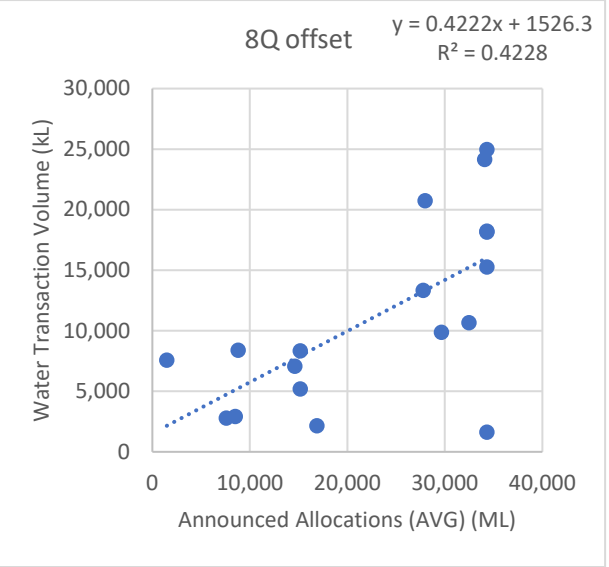
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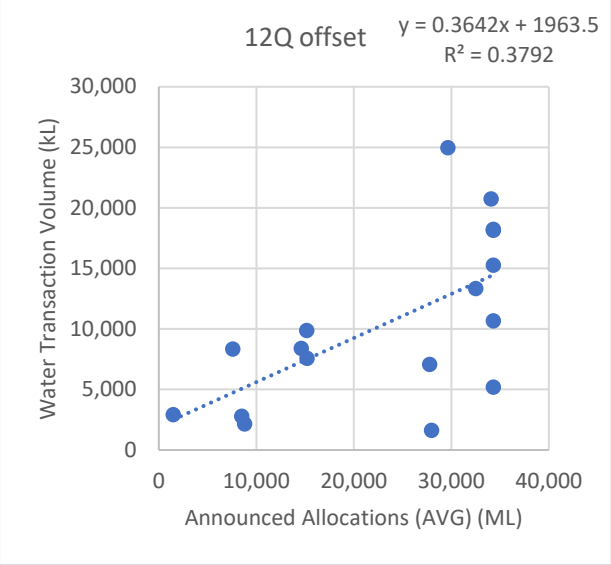
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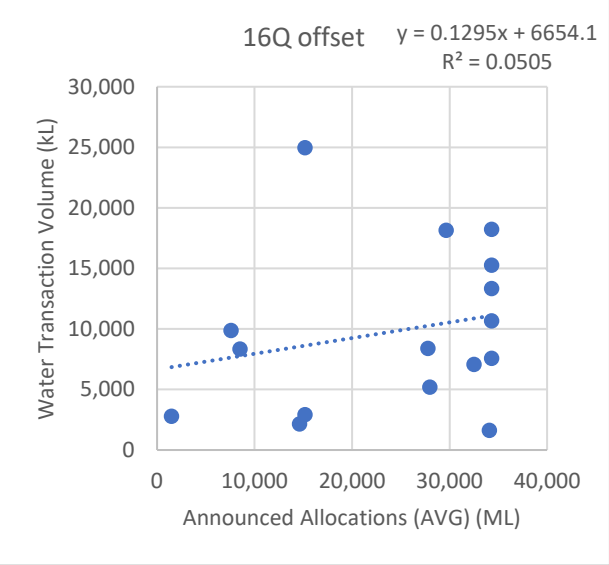
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Announced Allocations (AVG) (ML)
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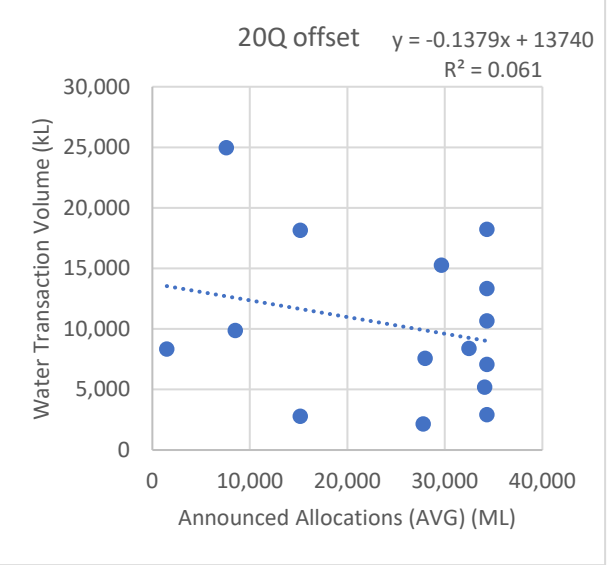
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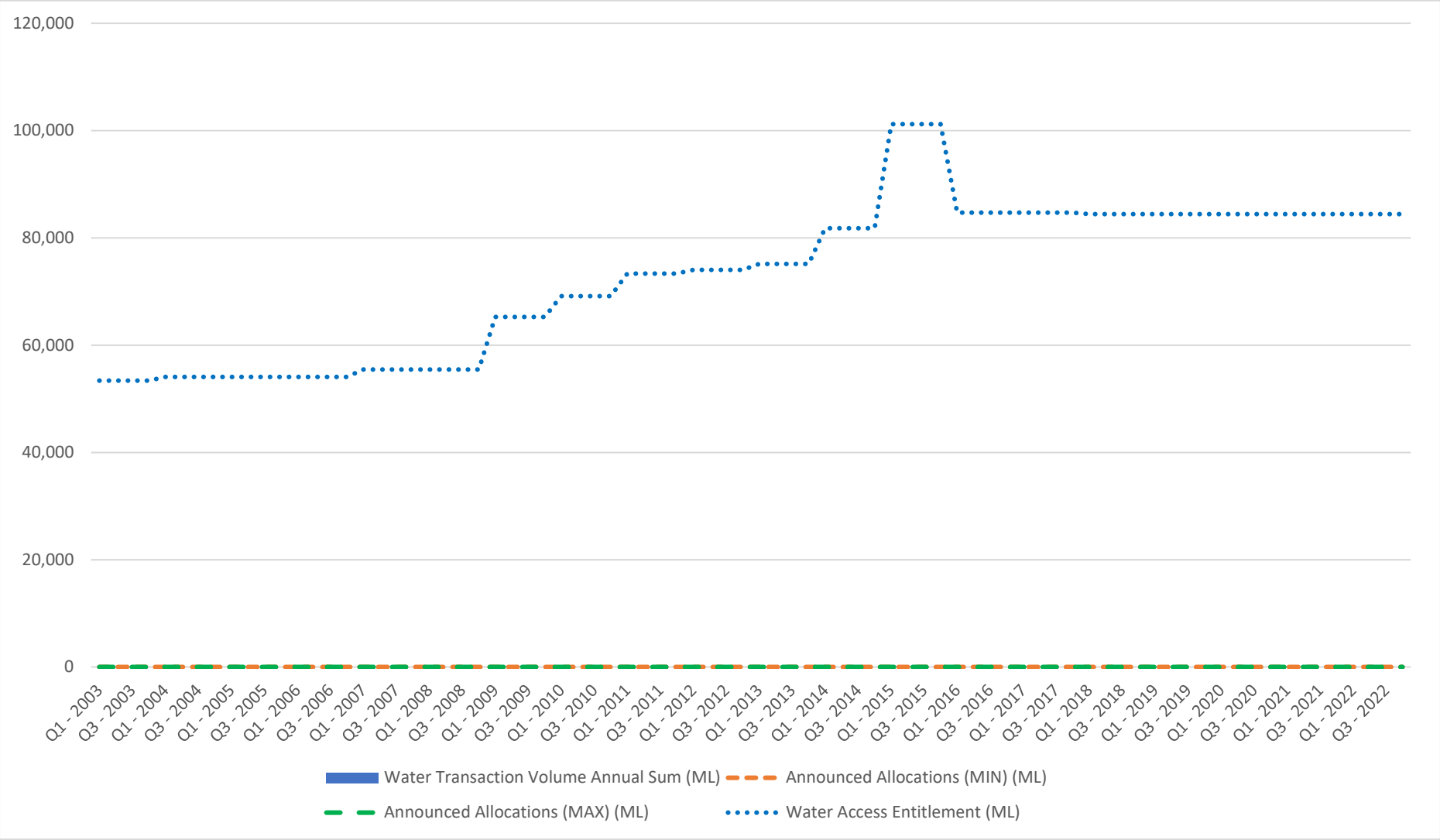
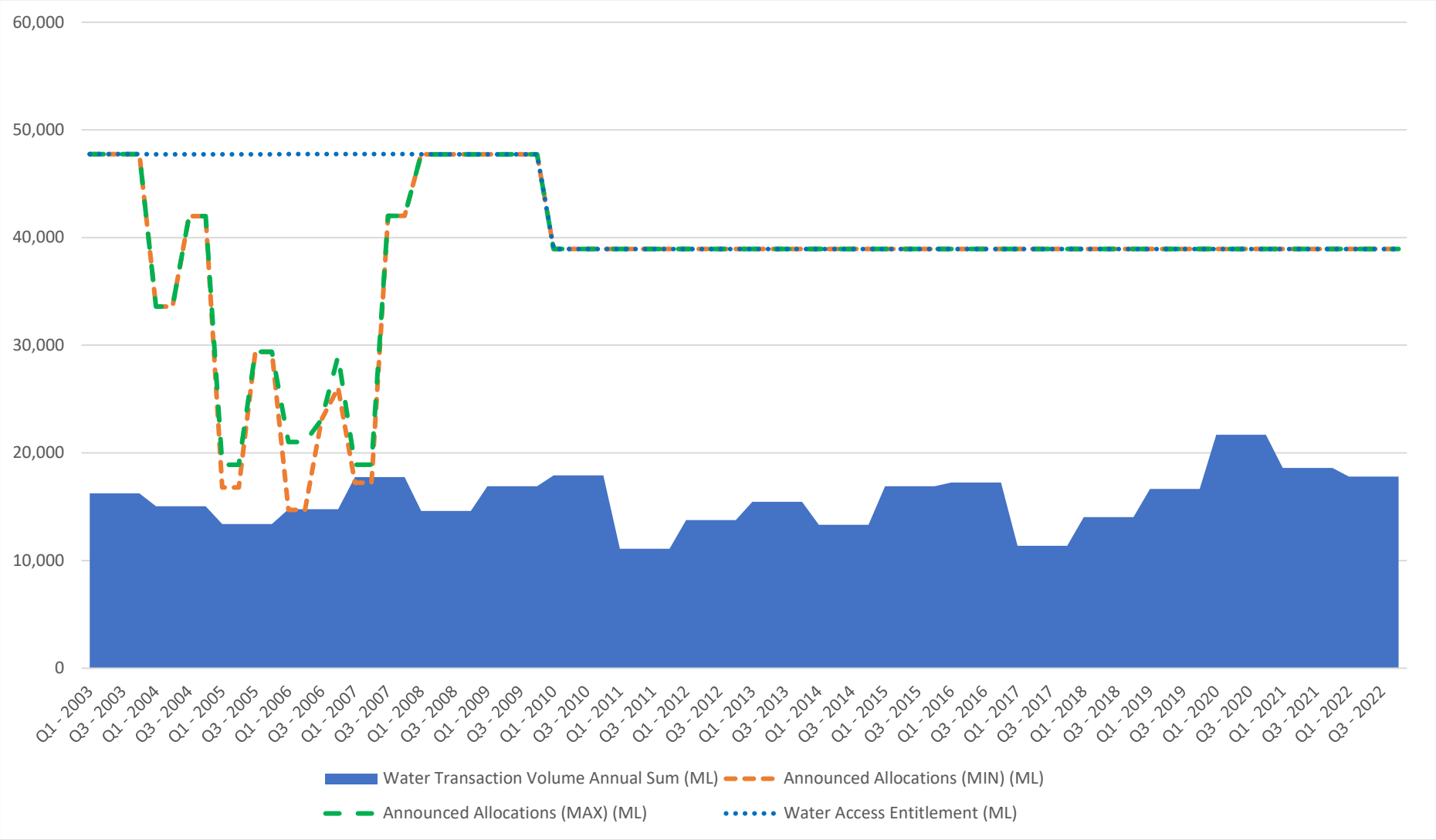
30,000
0
10,000
20,000
30,000
40,000

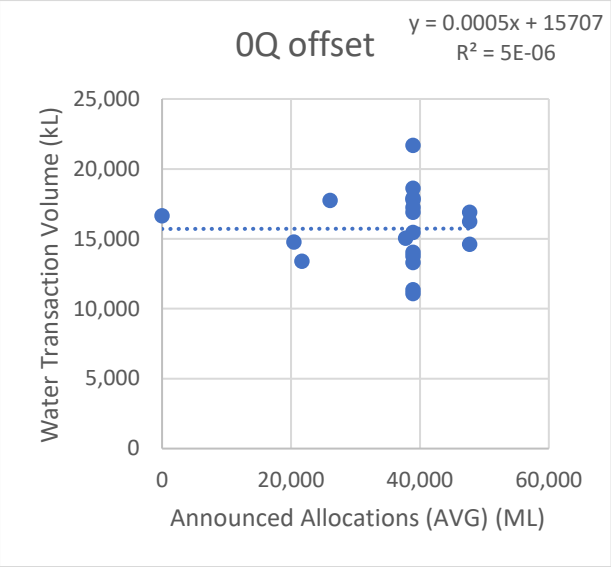
BORDER RIVERS

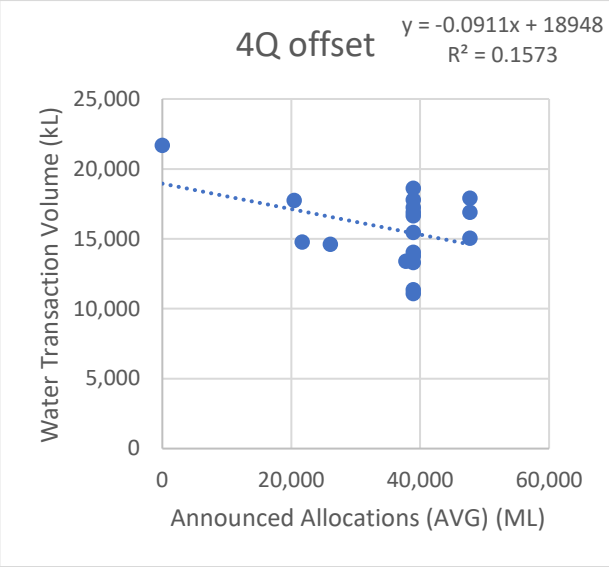
NOTE: No AA vs use charts developed, as no recorded AA volume or water demand data was provided for Border Rivers scheme.

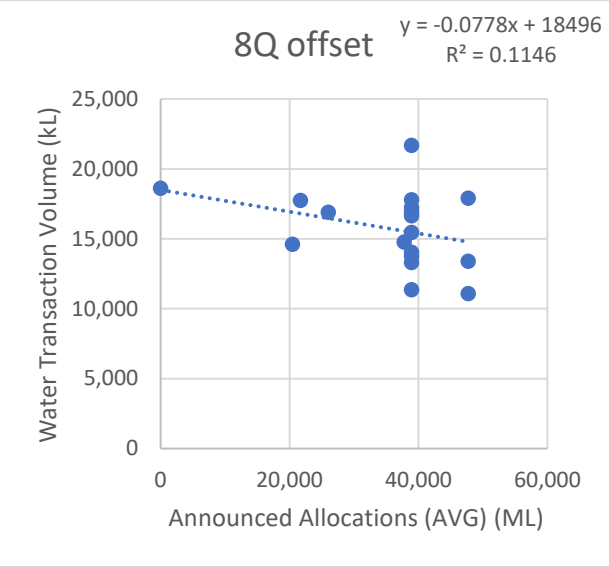


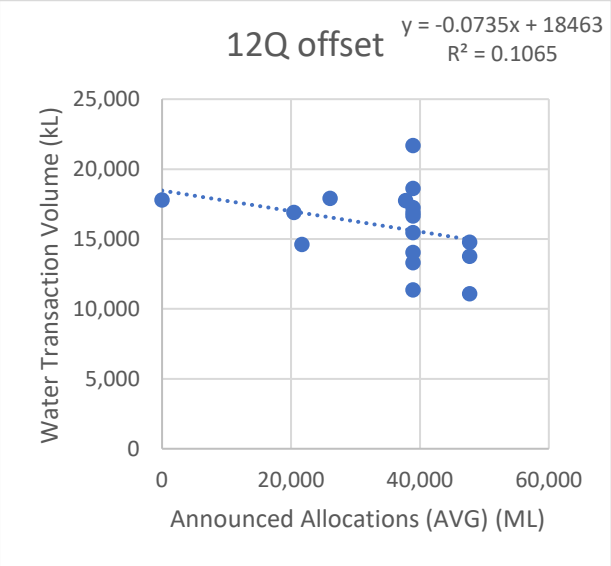
BOWEN BROKEN RIVERS

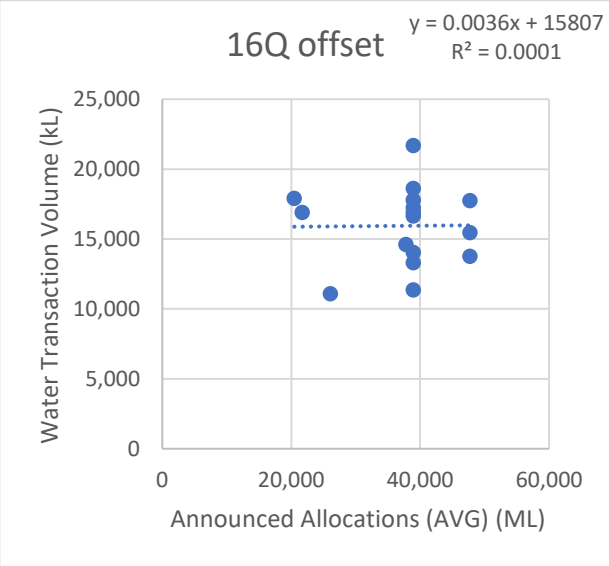


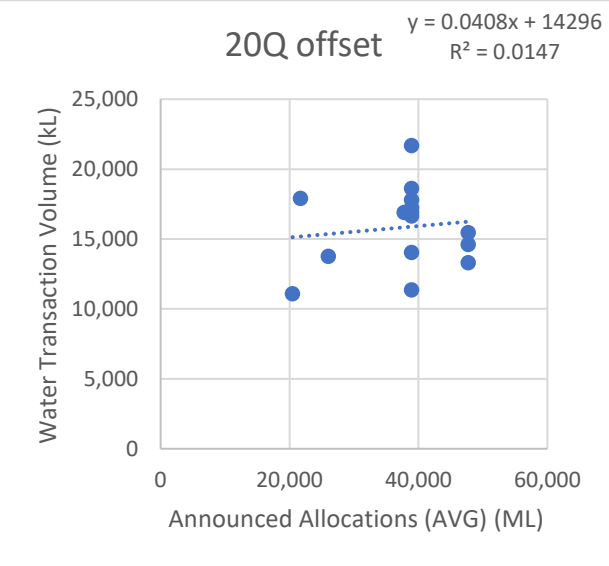

0Q offset
y = 0.0005x + 15707
R² = 5E-06
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)


4Q offset
y = -0.0911x + 18948
R² = 0.1573
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

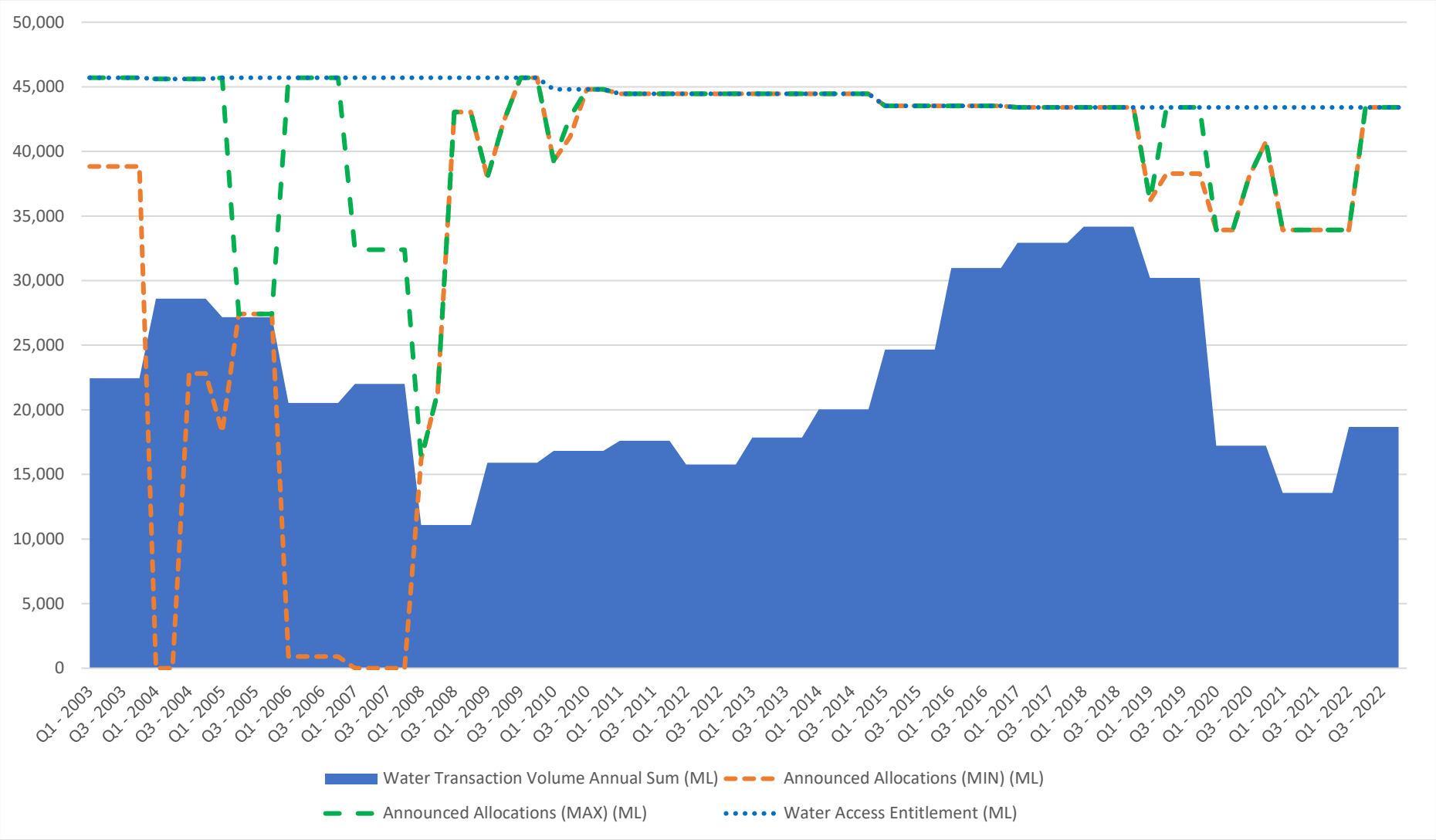

8Q offset
y = -0.0778x + 18496
R² = 0.1146
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

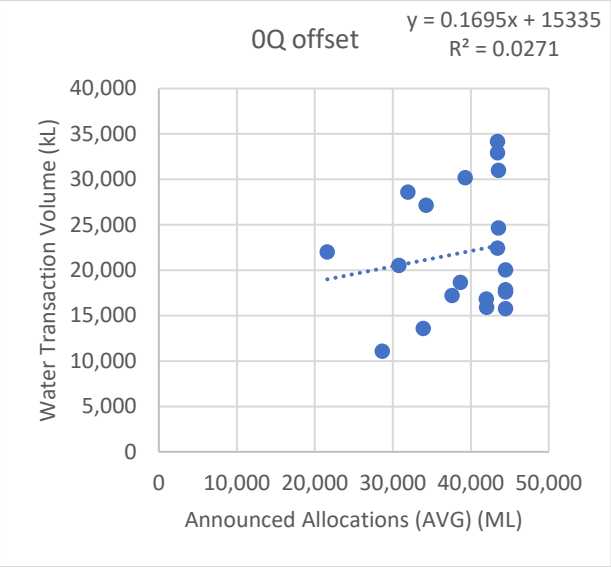

12Q offset
y = -0.0735x + 18463
R² = 0.1065
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

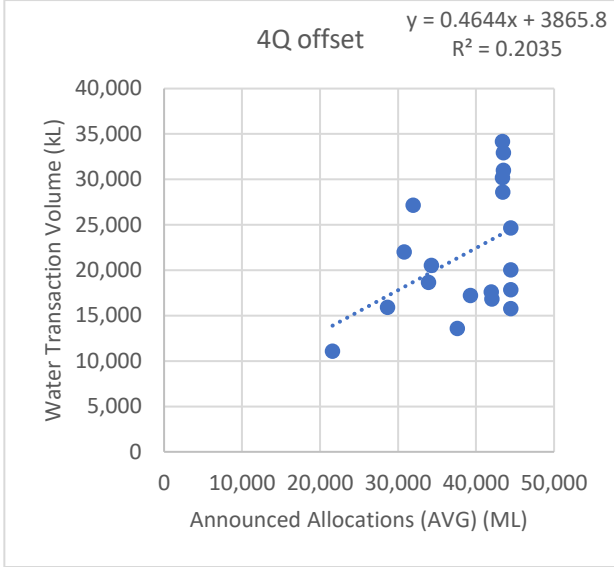

16Q offset
y = 0.0036x + 15807
R² = 0.0001
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

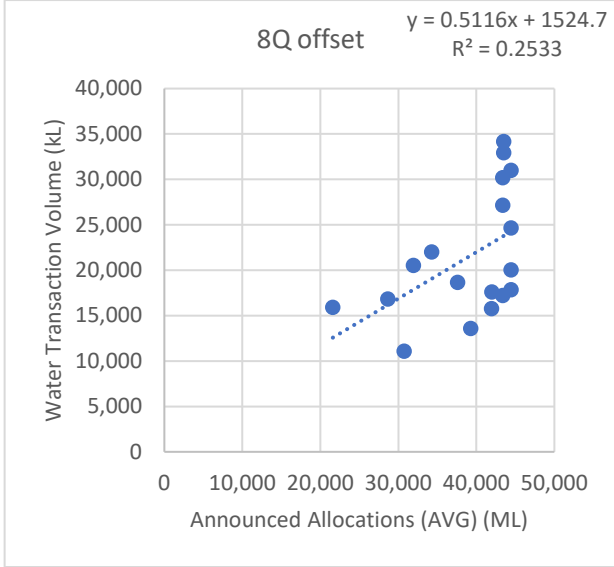

20Q offset
y = 0.0408x + 14296
R² = 0.0147
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

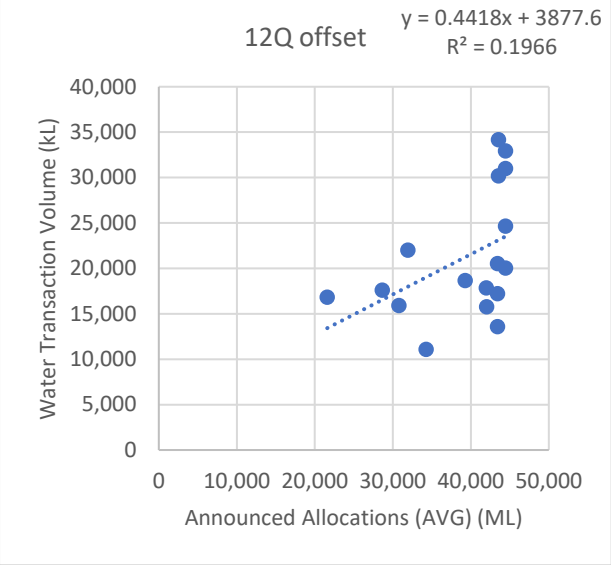
BOYNE RIVER AND TARONG

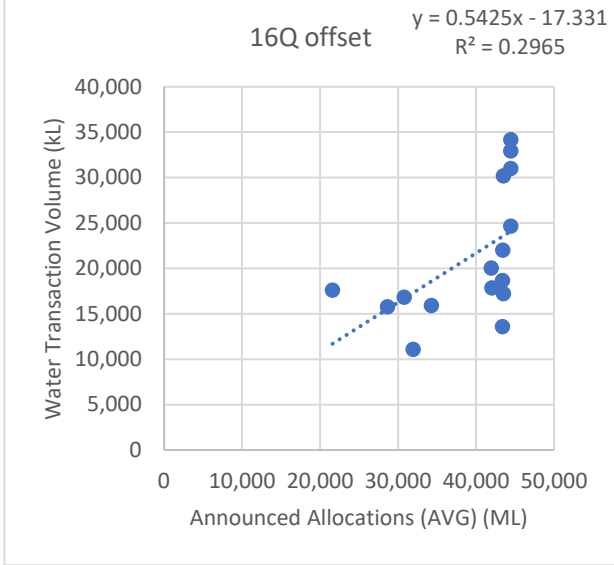


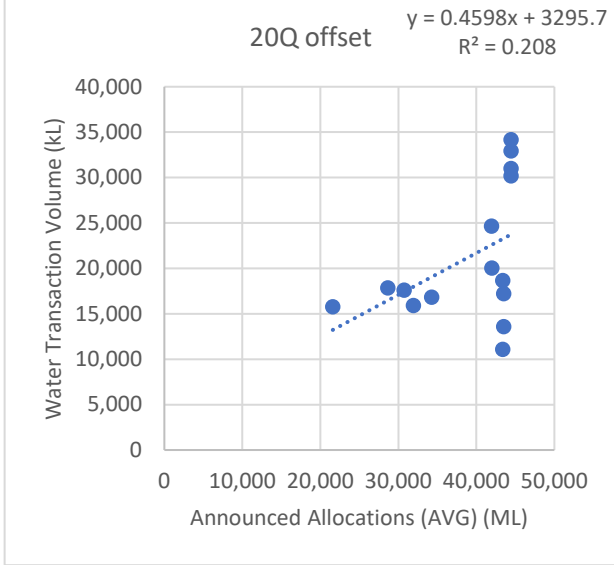

0Q offset
y = 0.1695x + 15335
R² = 0.0271
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.4644x + 3865.8
R² = 0.2035
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)

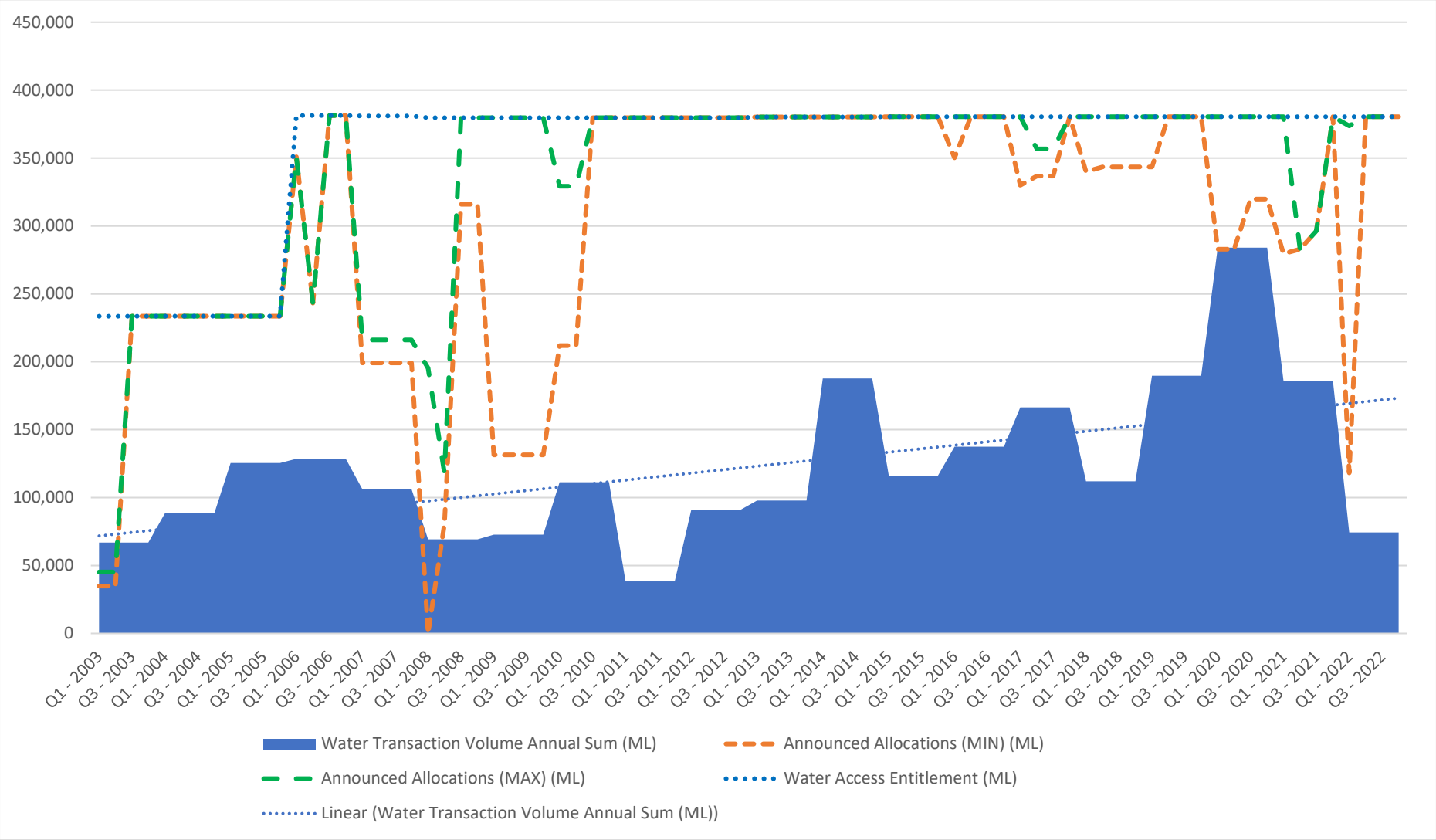

8Q offset
y = 0.5116x + 1524.7
R² = 0.2533
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)

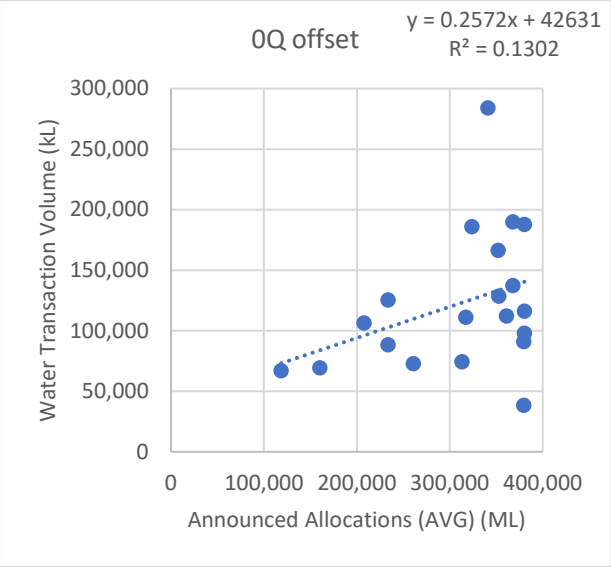

12Q offset
y = 0.4418x + 3877.6
R² = 0.1966
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)

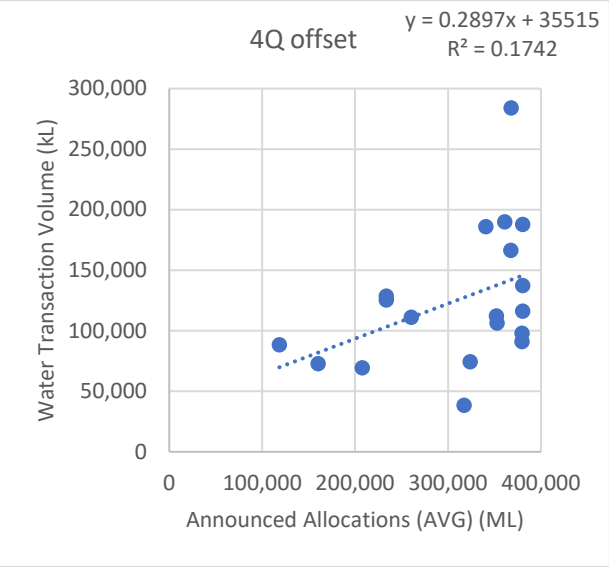

16Q offset
y = 0.5425x - 17.331
R² = 0.2965
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)

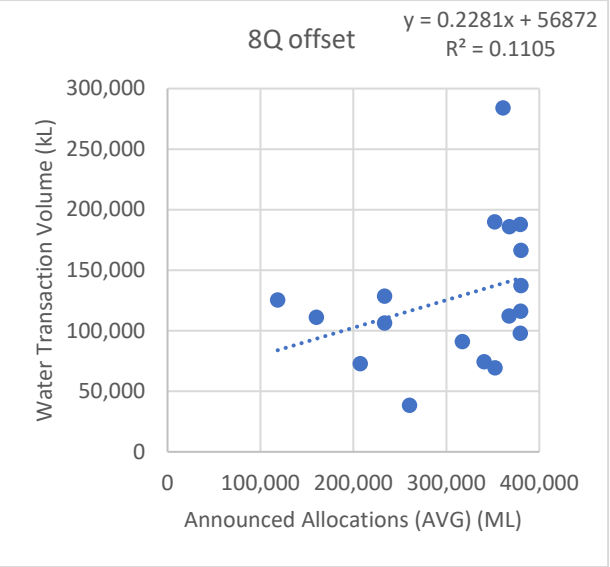

20Q offset
y = 0.4598x + 3295.7
R² = 0.208
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
50,000
Announced Allocations (AVG) (ML)

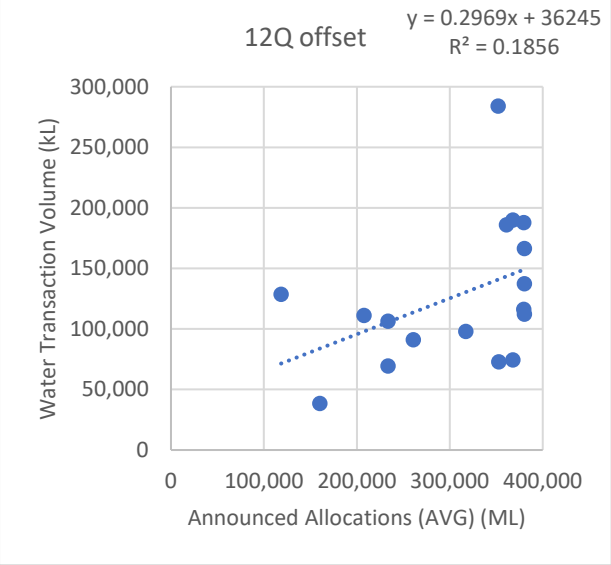
BUNDABERG

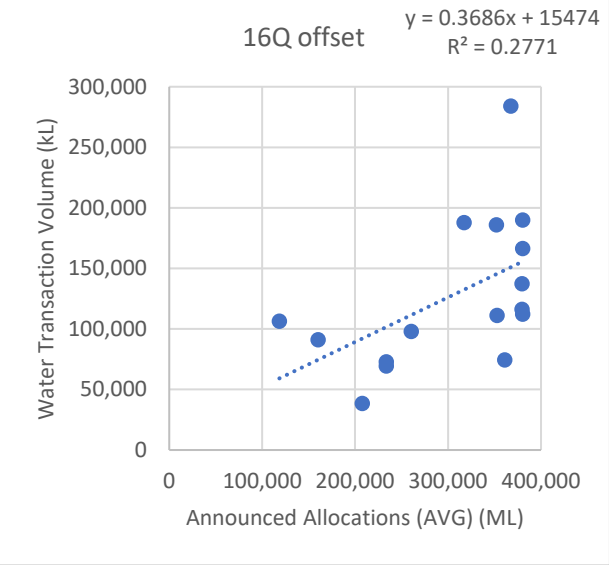

450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Q1 - 2003
Q3 - 2003
Q1 - 2004
Q3 - 2004
Q1 - 2005
Q3 - 2005
Q1 - 2006
Q3 - 2006
Q1 - 2007
Q3 - 2007
Q1 - 2008
Q3 - 2008
Q1 - 2009
Q3 - 2009
Q1 - 2010
Q3 - 2010
Q1 - 2011
Q3 - 2011
Q1 - 2012
Q3 - 2012
Q1 - 2013
Q3 - 2013
Q1 - 2014
Q3 - 2014
Q1 - 2015
Q3 - 2015
Q1 - 2016
Q3 - 2016
Q1 - 2017
Q3 - 2017
Q1 - 2018
Q3 - 2018
Q1 - 2019
Q3 - 2019
Q1 - 2020
Q3 - 2020
Q1 - 2021
Q3 - 2021
Q1 - 2022
Q3 - 2022
Water Transaction Volume Annual Sum (ML)
Announced Allocations (MIN) (ML)
Announced Allocations (MAX) (ML)
Water Access Entitlement (ML)
Linear (Water Transaction Volume Annual Sum (ML))

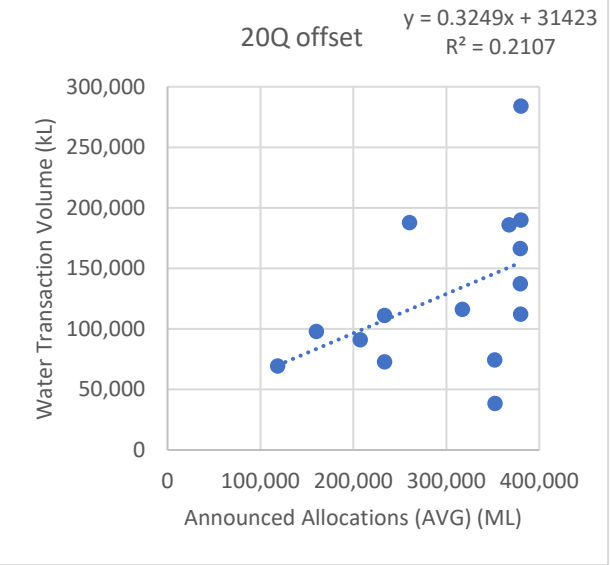

0Q offset
y = 0.2572x + 42631
R² = 0.1302
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.2897x + 35515
R² = 0.1742
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)

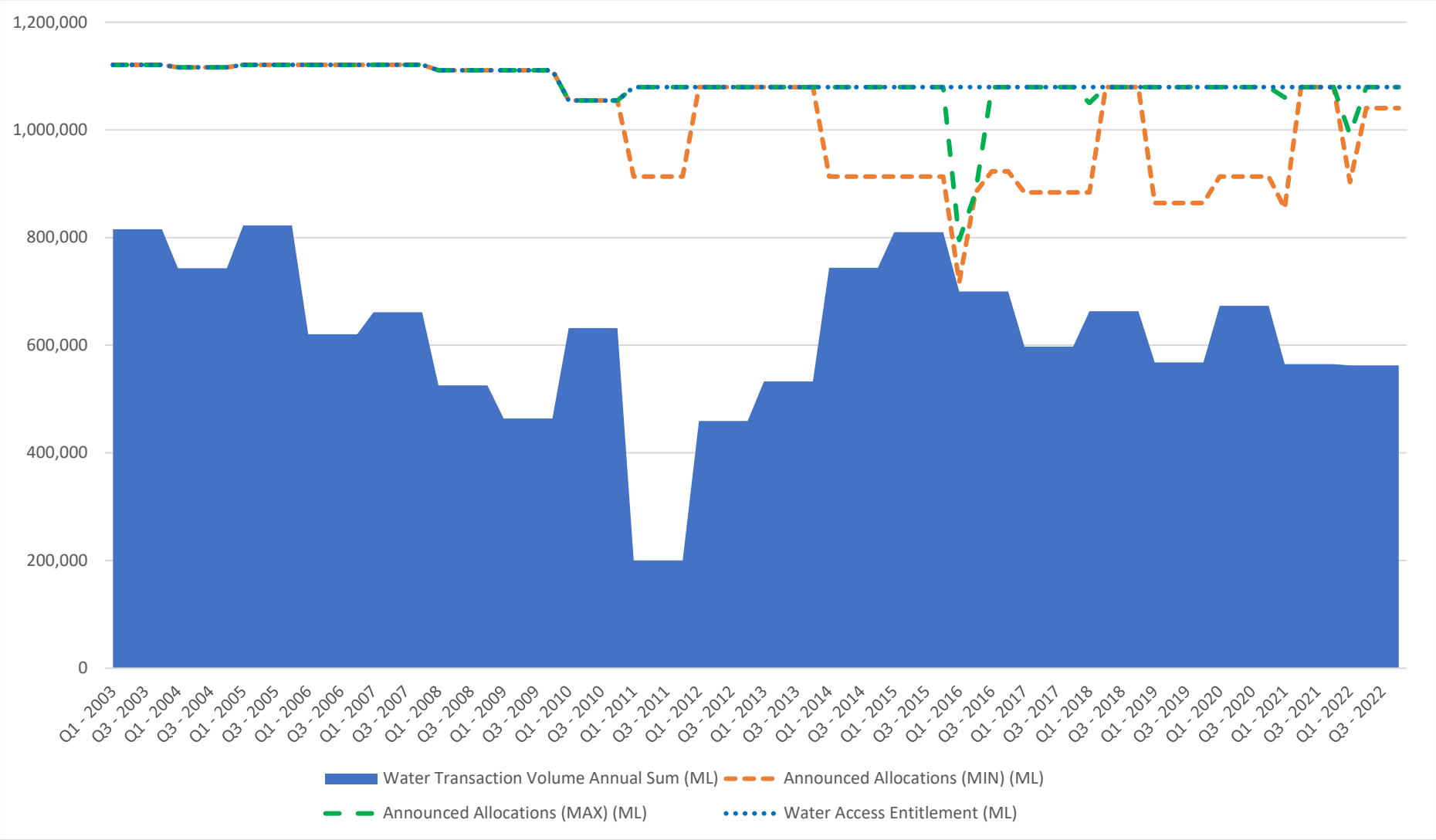

8Q offset
y = 0.2281x + 56872
R² = 0.1105
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)

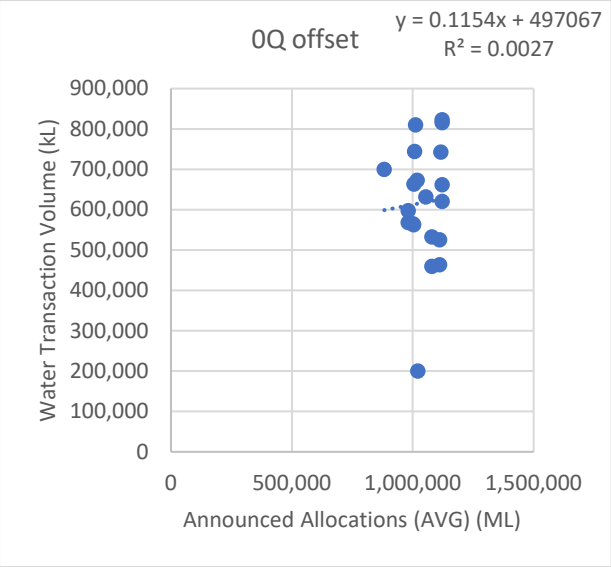

12Q offset
y = 0.2969x + 36245
R² = 0.1856
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)

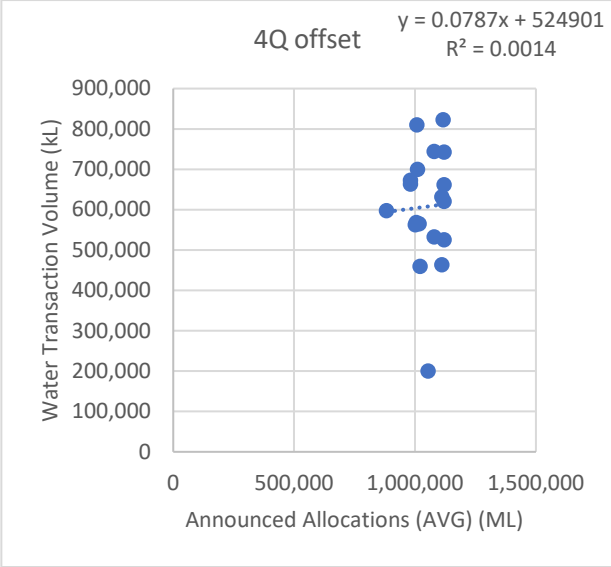

16Q offset
y = 0.3686x + 15474
R² = 0.2771
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)

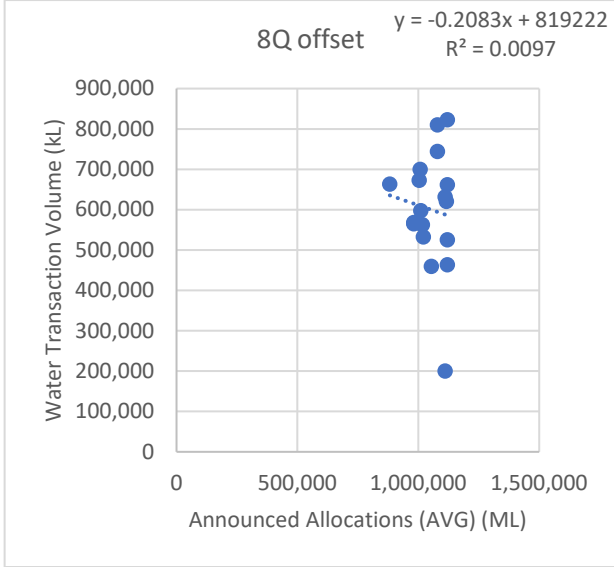

20Q offset
y = 0.3249x + 31423
R² = 0.2107
Water Transaction Volume (kL)
300,000
250,000
200,000
150,000
100,000
50,000
0
0
100,000
200,000
300,000
400,000
Announced Allocations (AVG) (ML)

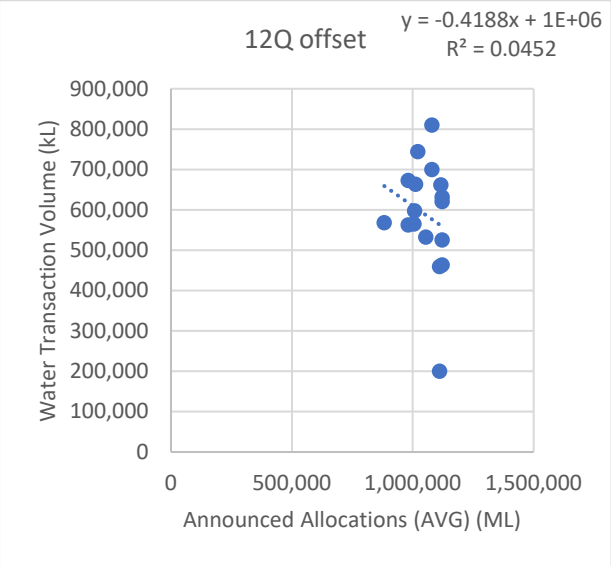
BURDEKIN HAUGHTON

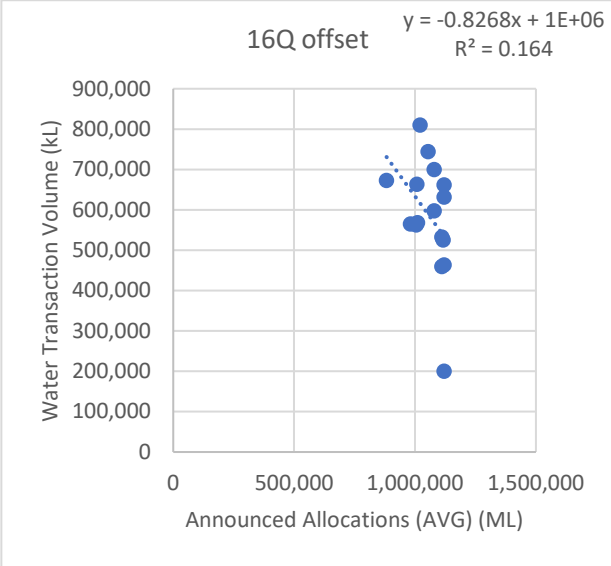


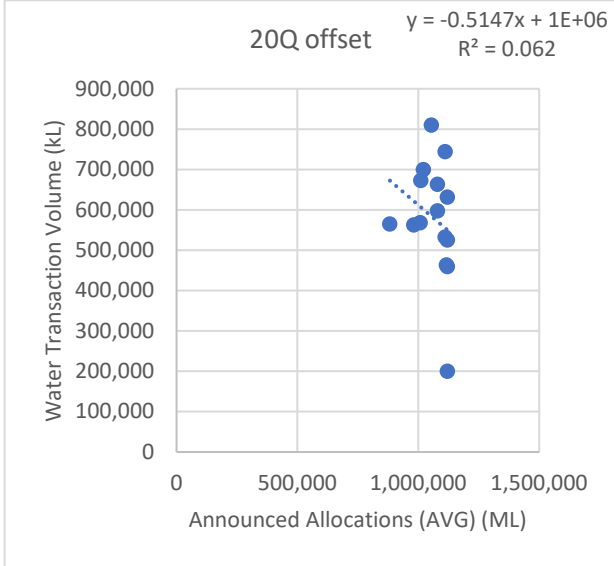

0Q offset
y = 0.1154x + 497067
R² = 0.0027
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.0787x + 524901
R² = 0.0014
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)

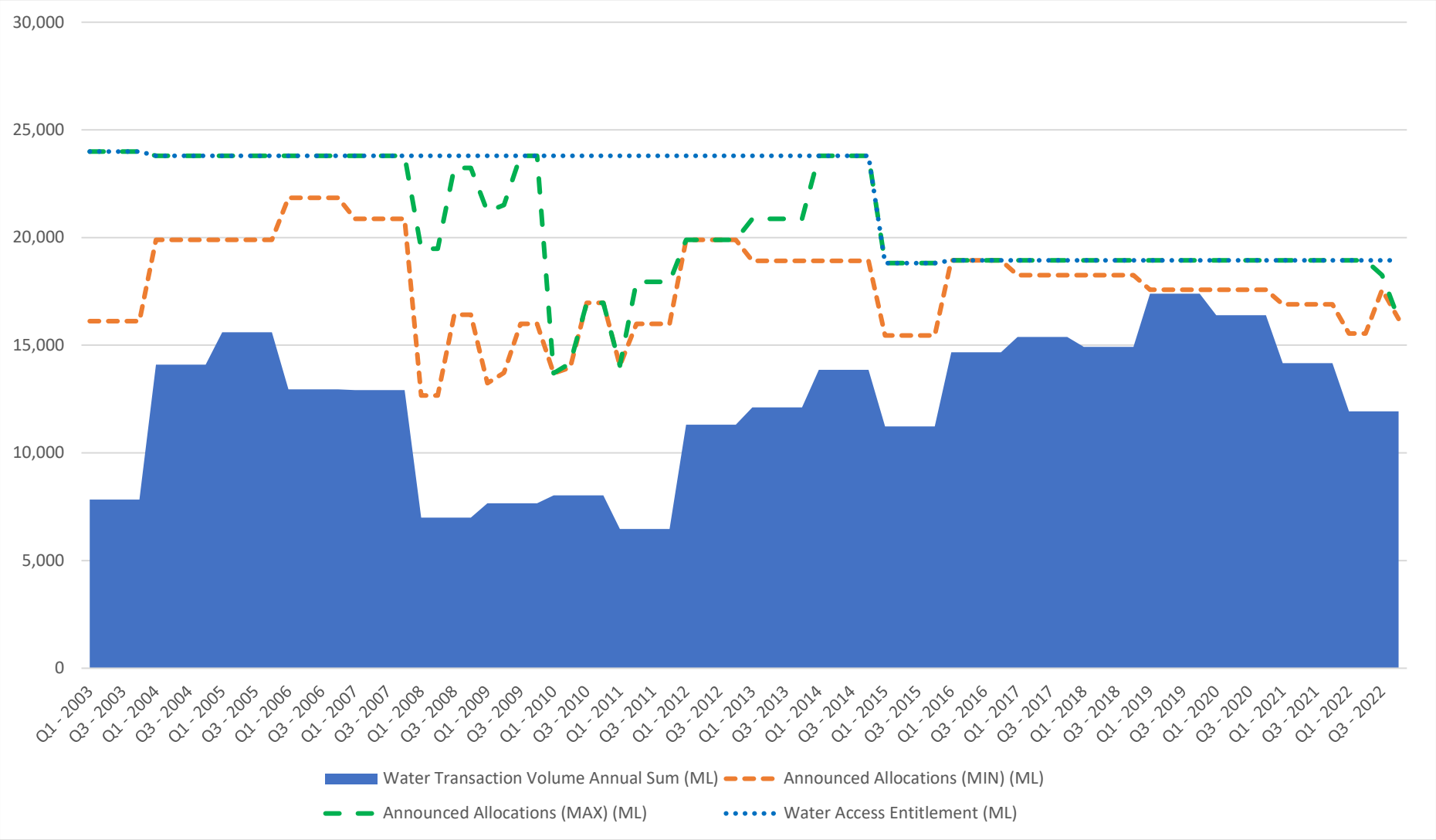

8Q offset
y = -0.2083x + 819222
R² = 0.0097
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)

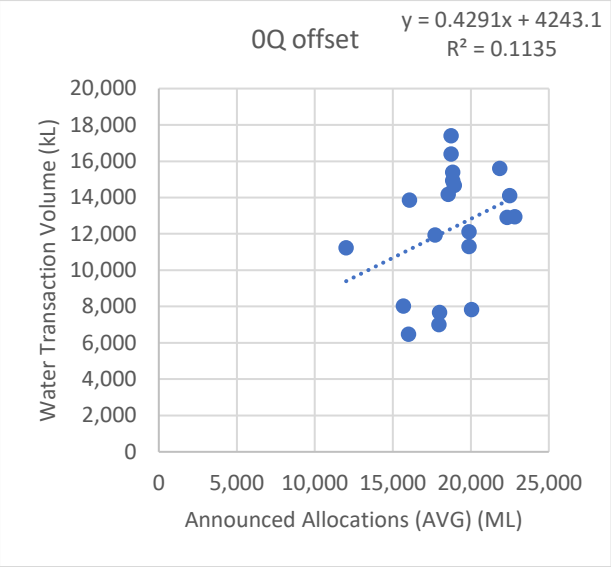

12Q offset
y = -0.4188x + 1E+06
R² = 0.0452
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)

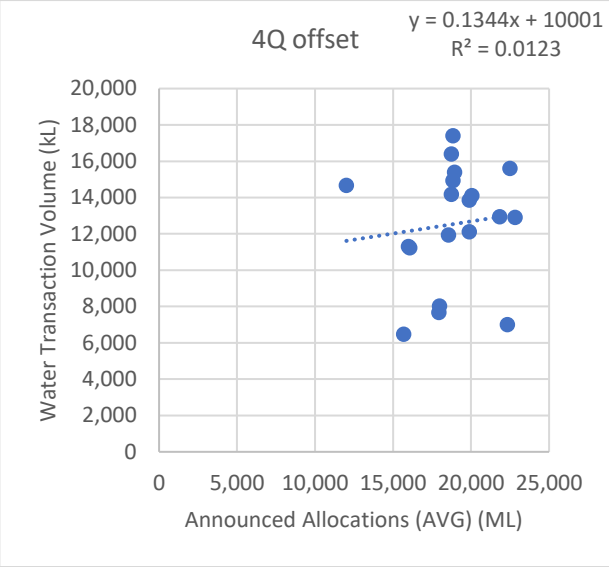

16Q offset
y = -0.8268x + 1E+06
R² = 0.164
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)

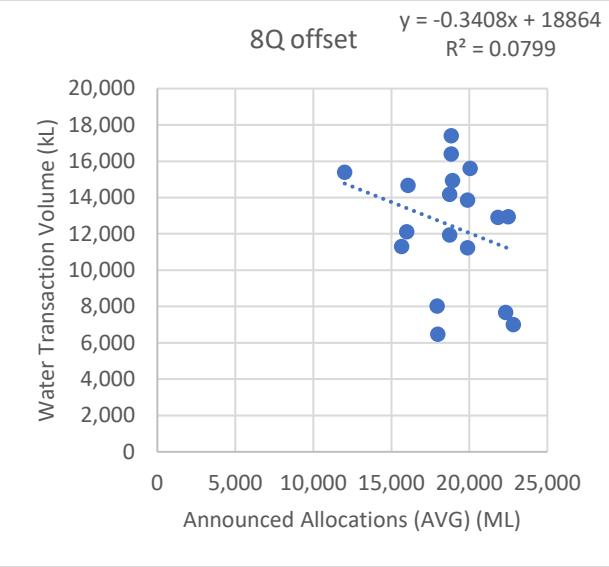

20Q offset
y = -0.5147x + 1E+06
R² = 0.062
Water Transaction Volume (kL)
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
0
500,000
1,000,000
1,500,000
Announced Allocations (AVG) (ML)

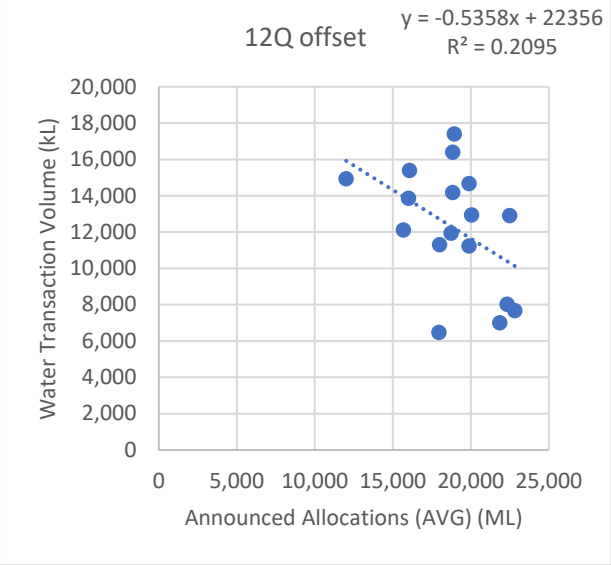
CALLIDE VALLEY

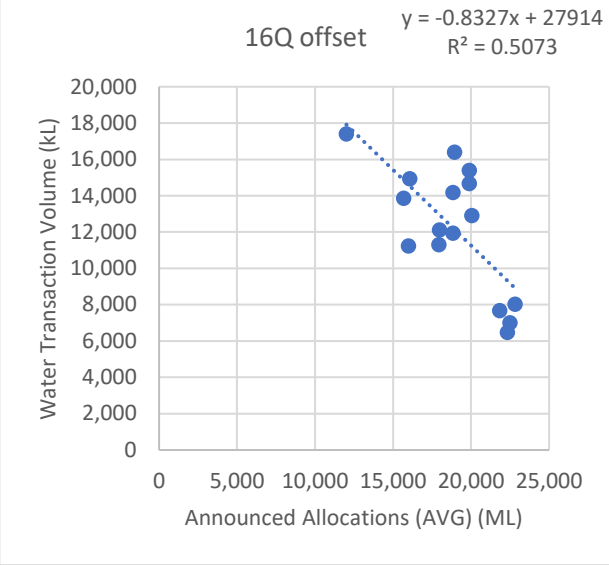


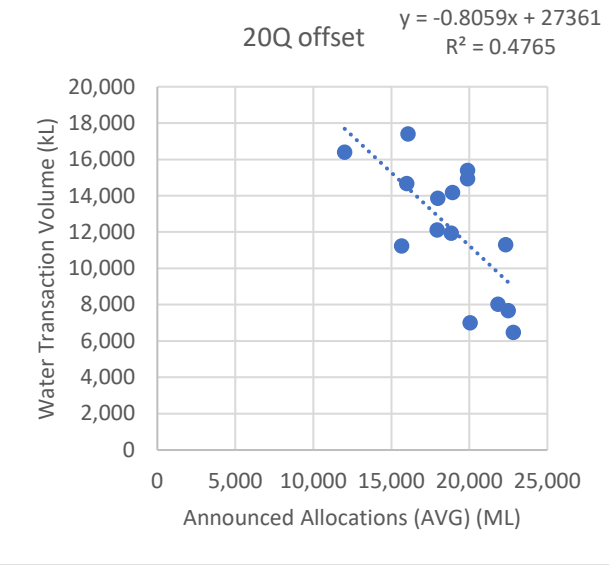

0Q offset
y = 0.4291x + 4243.1
R² = 0.1135
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = 0.1344x + 10001
R² = 0.0123
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

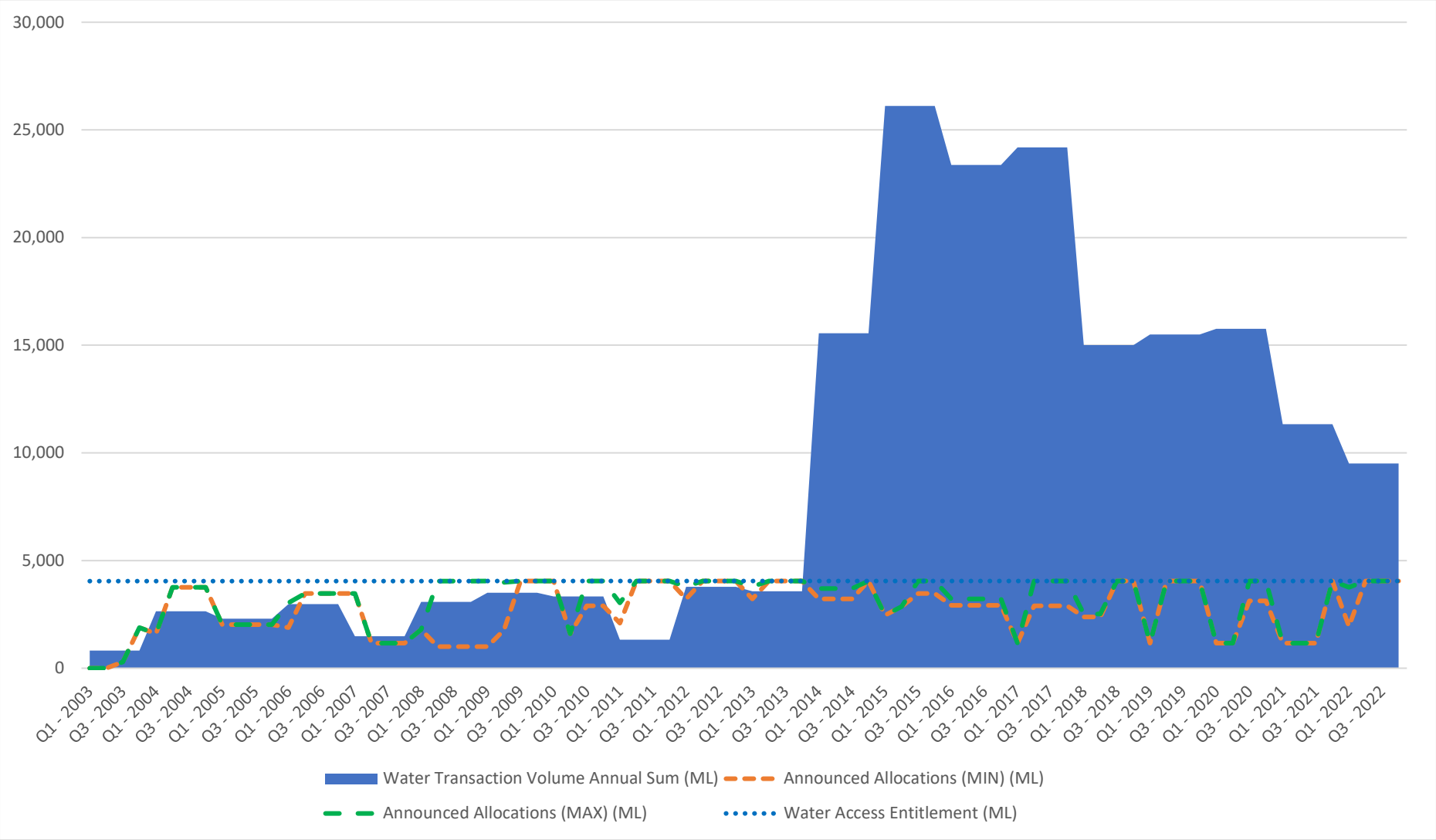

8Q offset
y = -0.3408x + 18864
R² = 0.0799
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

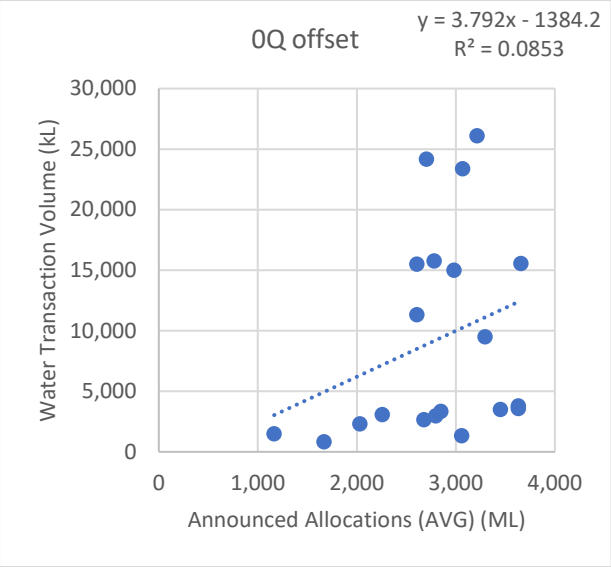

12Q offset
y = -0.5358x + 22356
R² = 0.2095
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

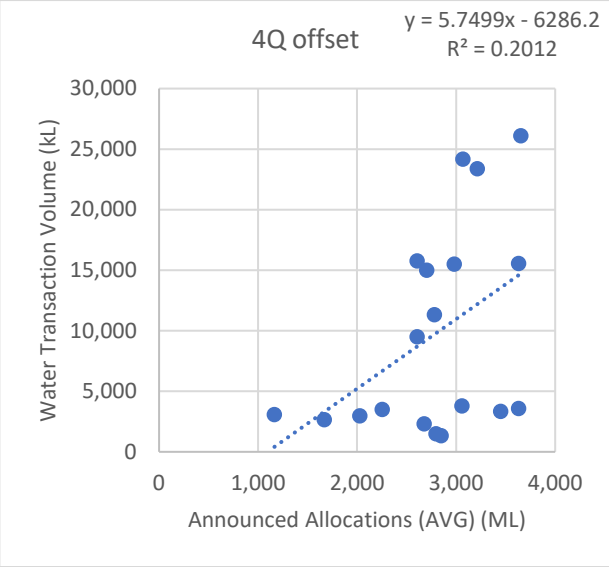

16Q offset
y = -0.8327x + 27914
R² = 0.5073
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

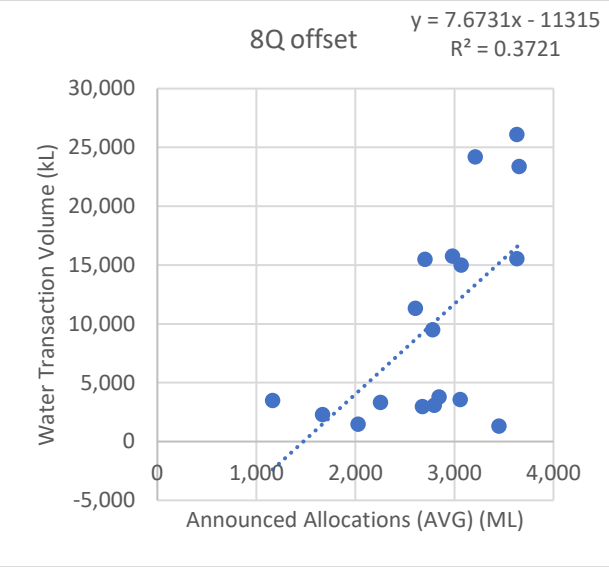

20Q offset
y = -0.8059x + 27361
R² = 0.4765
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

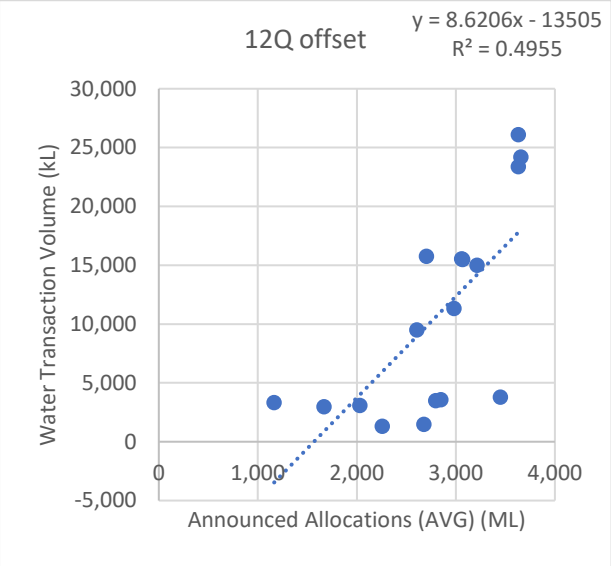
CHINCHILLA WEIR

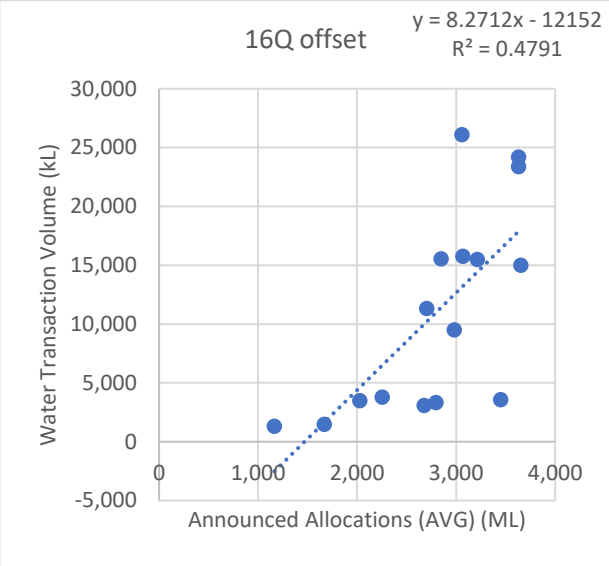


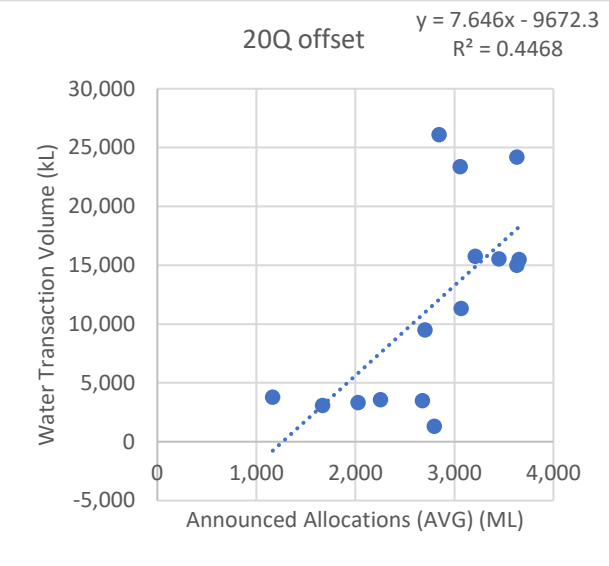

0Q offset
y = 3.792x - 1384.2
R² = 0.0853
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = 5.7499x - 6286.2
R² = 0.2012
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

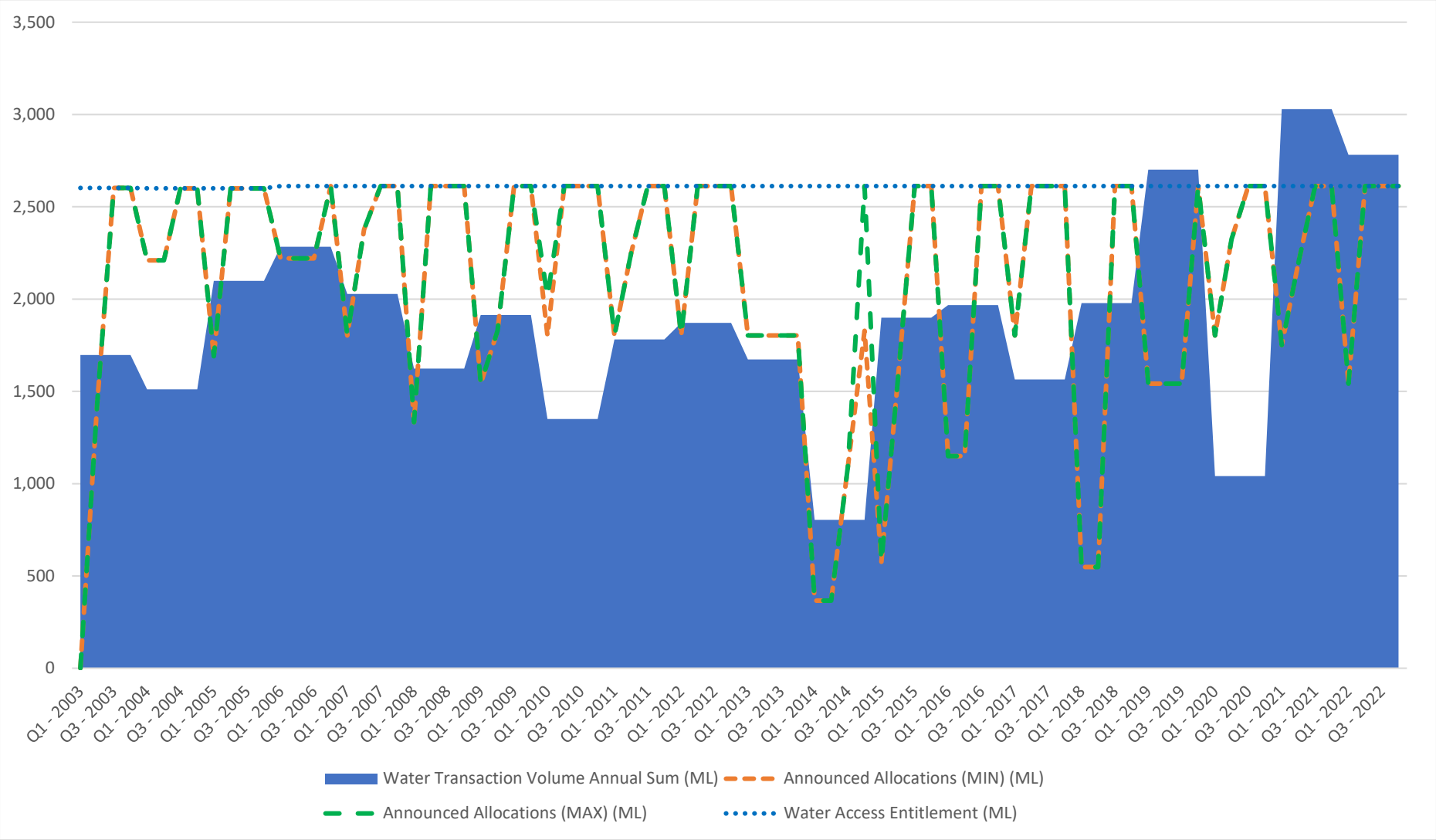

8Q offset
y = 7.6731x - 11315
R² = 0.3721
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

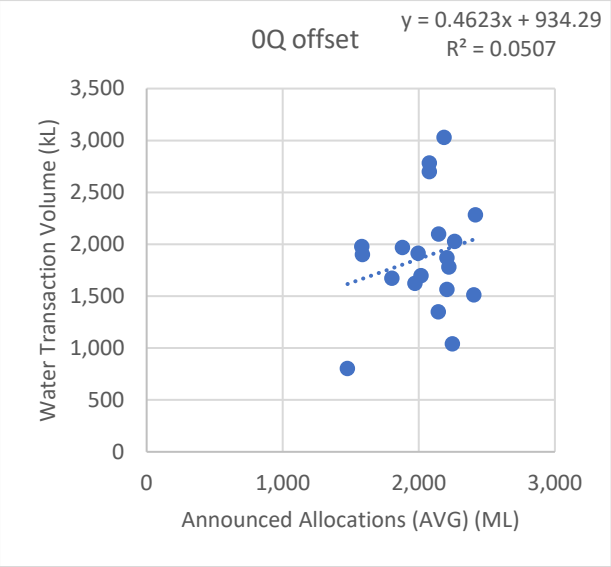

12Q offset
y = 8.6206x - 13505
R² = 0.4955
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

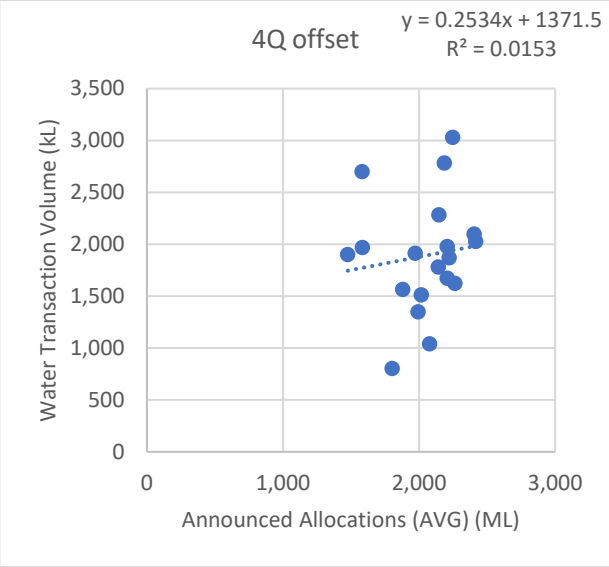

16Q offset
y = 8.2712x - 12152
R² = 0.4791
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

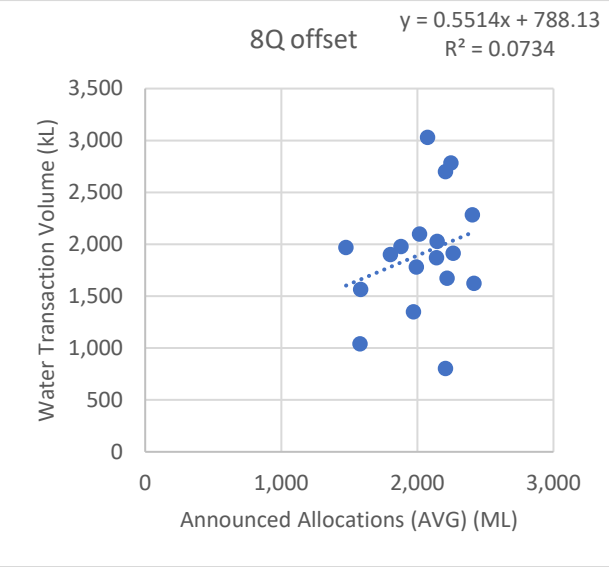

20Q offset
y = 7.646x - 9672.3
R² = 0.4468
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

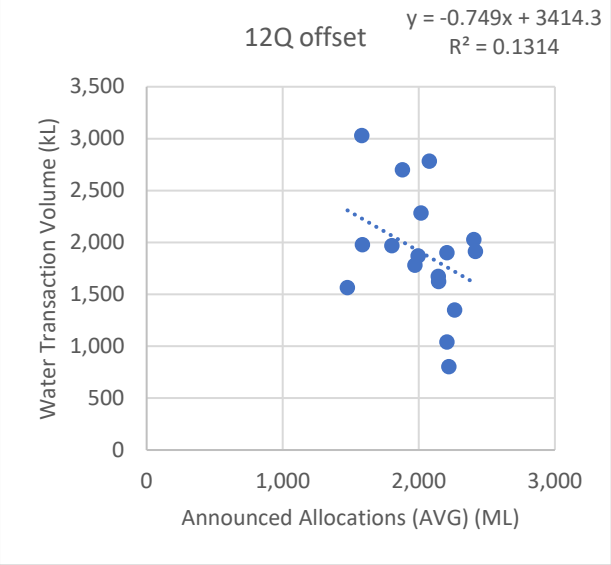
CUNNAMULLA

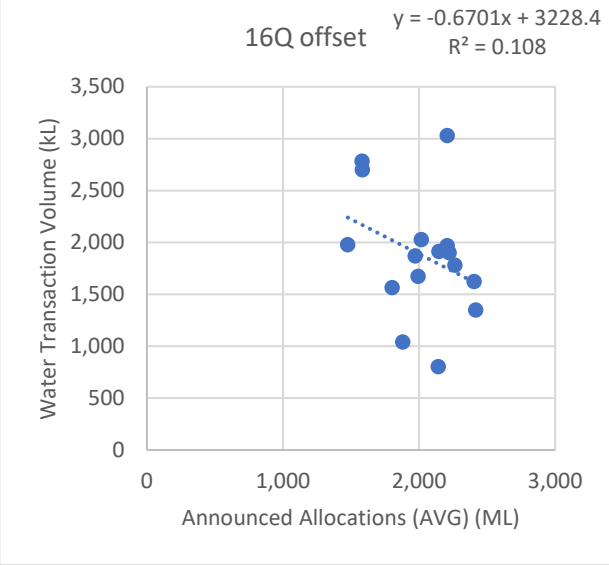

3,500
3,000
2,500
2,000
1,500
1,000
500
0
Q1 - 2003
Q3 - 2003
Q1 - 2004
Q3 - 2004
Q1 - 2005
Q3 - 2005
Q1 - 2006
Q3 - 2006
Q1 - 2007
Q3 - 2007
Q1 - 2008
Q3 - 2008
Q1 - 2009
Q3 - 2009
Q1 - 2010
Q3 - 2010
Q1 - 2011
Q3 - 2011
Q1 - 2012
Q3 - 2012
Q1 - 2013
Q3 - 2013
Q1 - 2014
Q3 - 2014
Q1 - 2015
Q3 - 2015
Q1 - 2016
Q3 - 2016
Q1 - 2017
Q3 - 2017
Q1 - 2018
Q3 - 2018
Q1 - 2019
Q3 - 2019
Q1 - 2020
Q3 - 2020
Q1 - 2021
Q3 - 2021
Q1 - 2022
Q3 - 2022
Water Transaction Volume Annual Sum (ML)
Announced Allocations (MIN) (ML)
Announced Allocations (MAX) (ML)
Water Access Entitlement (ML)

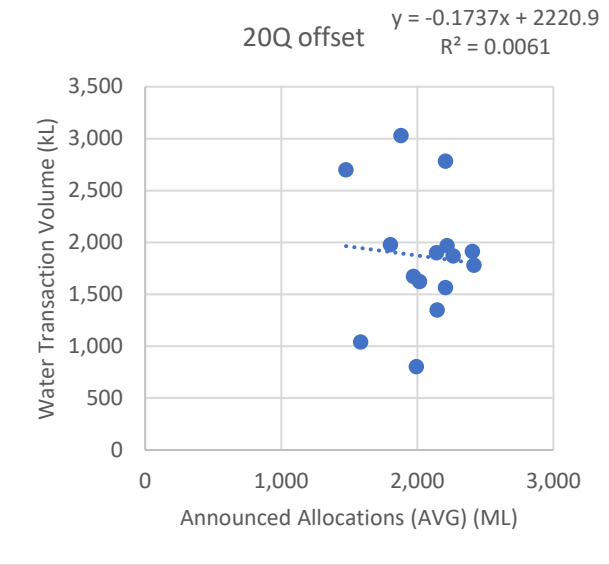

0Q offset
y = 0.4623x + 934.29
R² = 0.0507
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = 0.2534x + 1371.5
R² = 0.0153
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

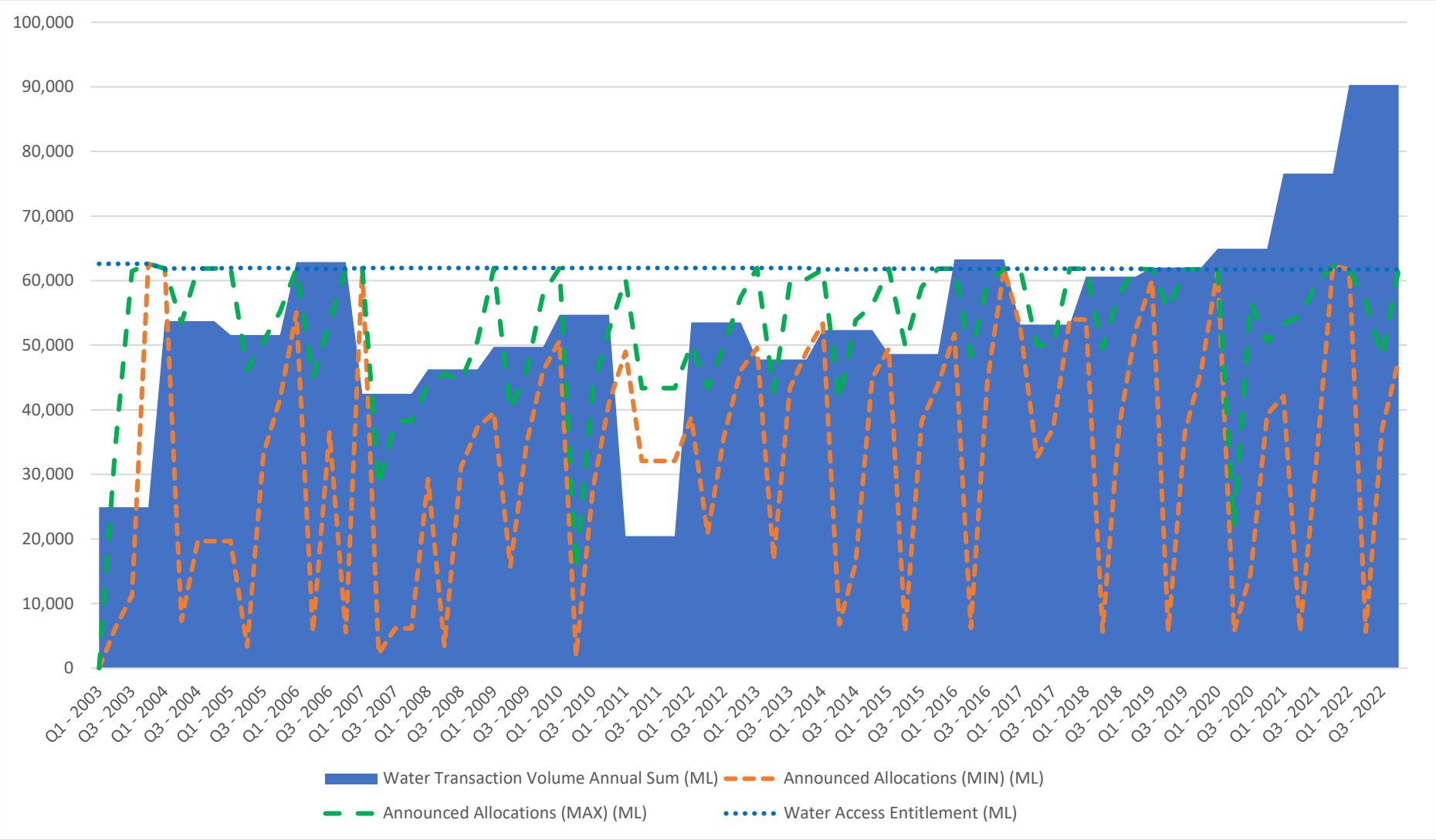

8Q offset
y = 0.5514x + 788.13
R² = 0.0734
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

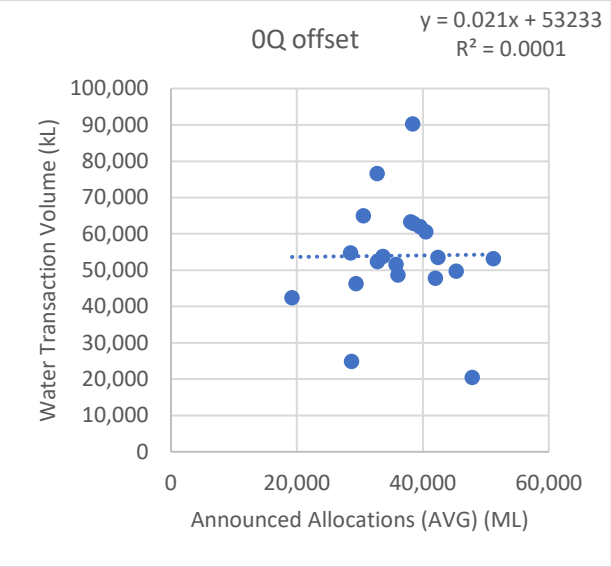

12Q offset
y = -0.749x + 3414.3
R² = 0.1314
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

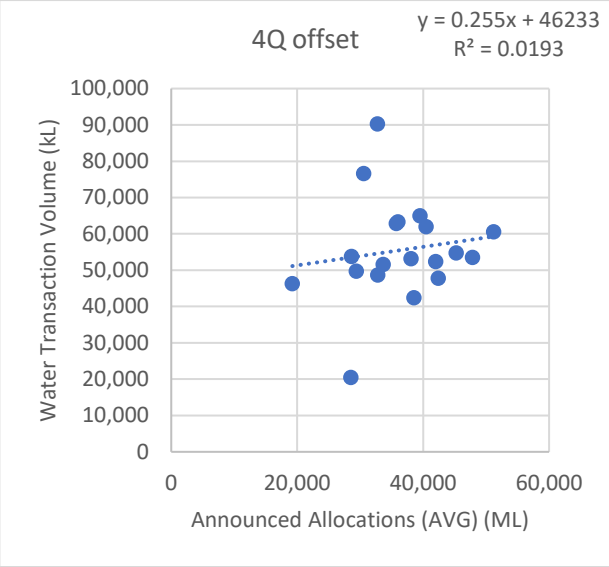

16Q offset
y = -0.6701x + 3228.4
R² = 0.108
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

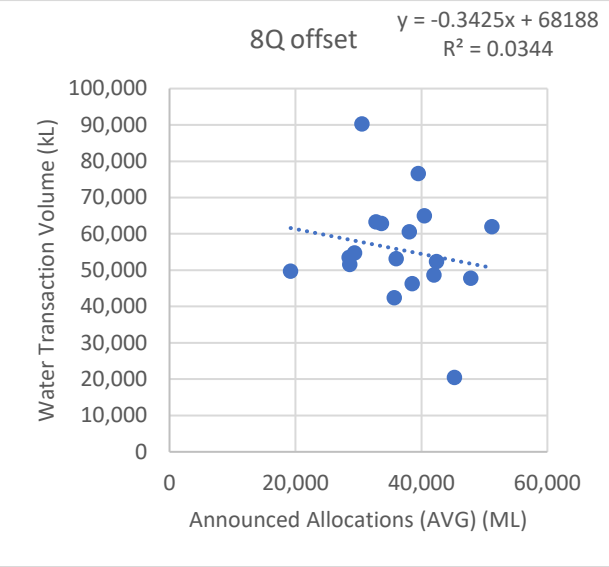

20Q offset
y = -0.1737x + 2220.9
R² = 0.0061
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

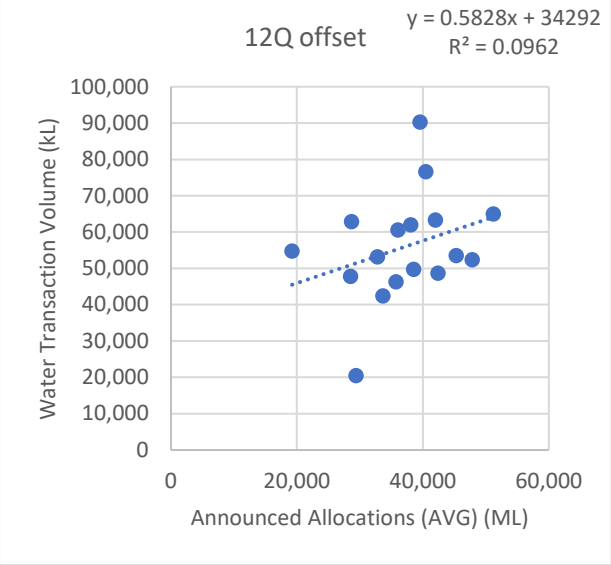
DAWSON VALLEY

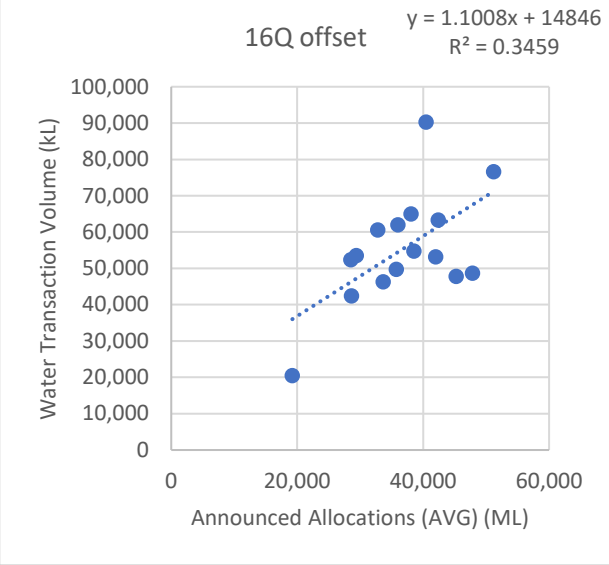


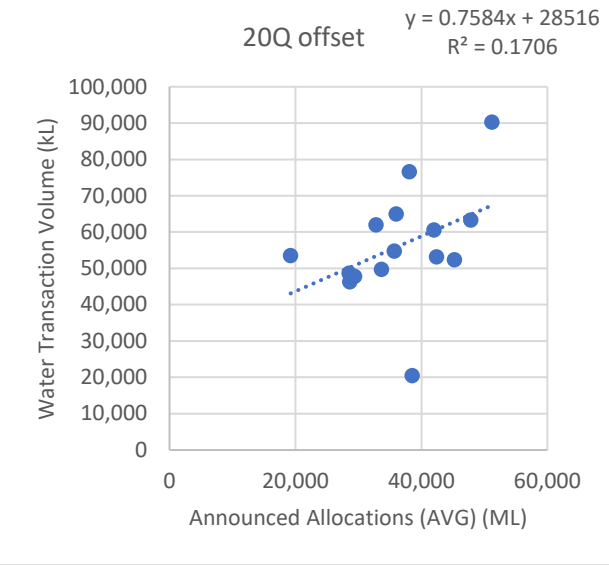

0Q offset
y = 0.021x + 53233
R² = 0.0001
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = 0.255x + 46233
R² = 0.0193
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

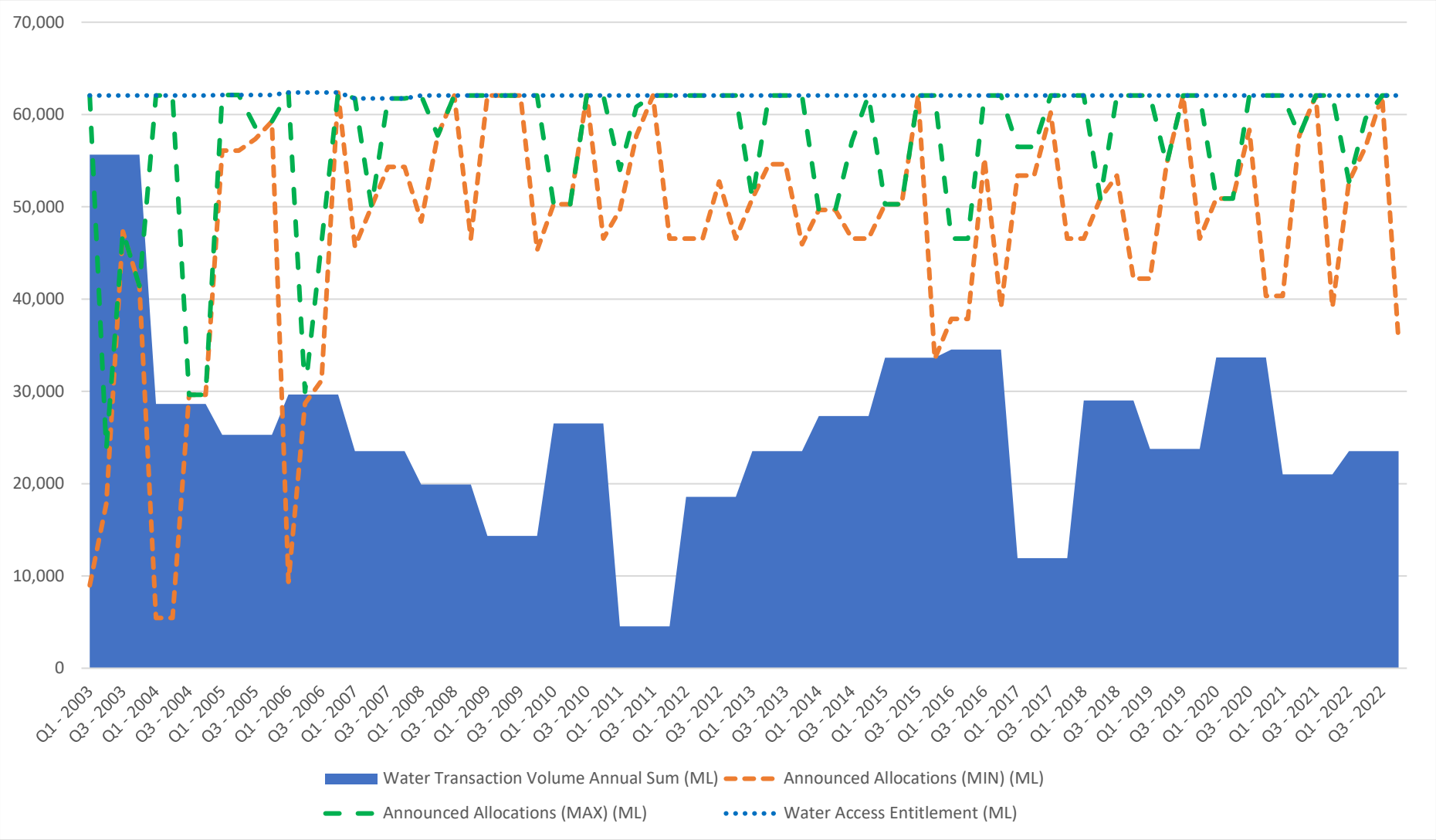

8Q offset
y = -0.3425x + 68188
R² = 0.0344
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

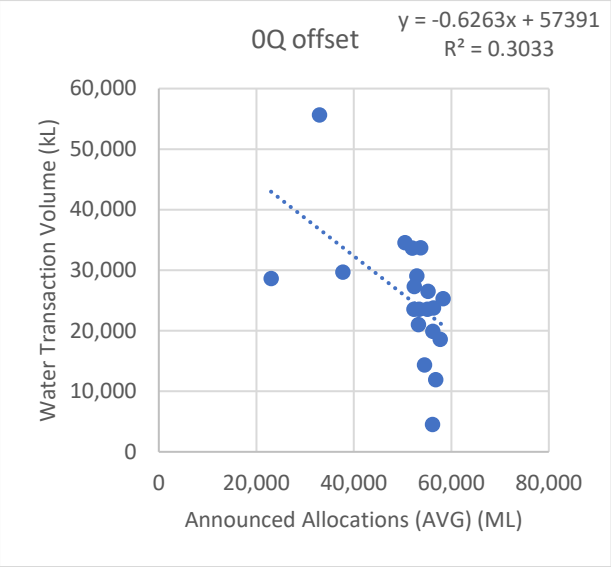

12Q offset
y = 0.5828x + 34292
R² = 0.0962
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

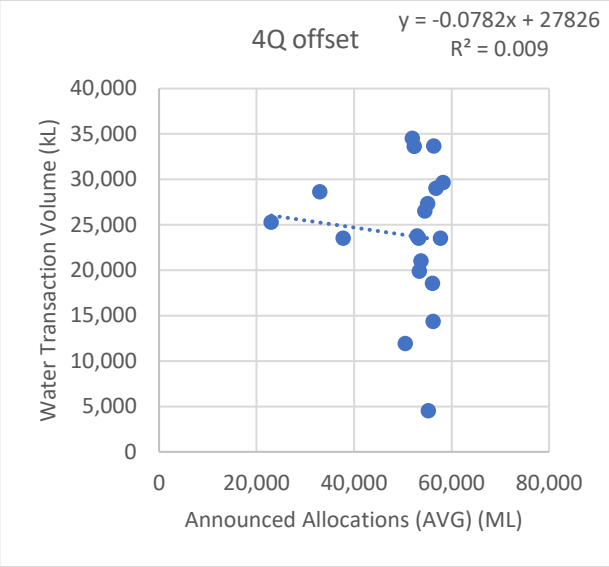

16Q offset
y = 1.1008x + 14846
R² = 0.3459
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

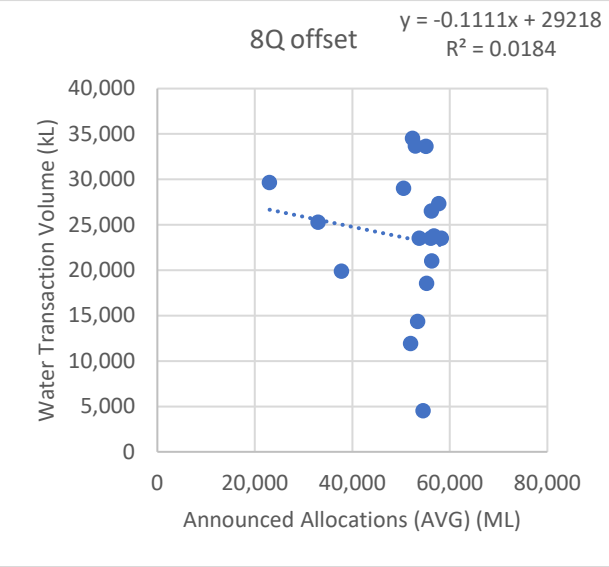

20Q offset
y = 0.7584x + 28516
R² = 0.1706
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

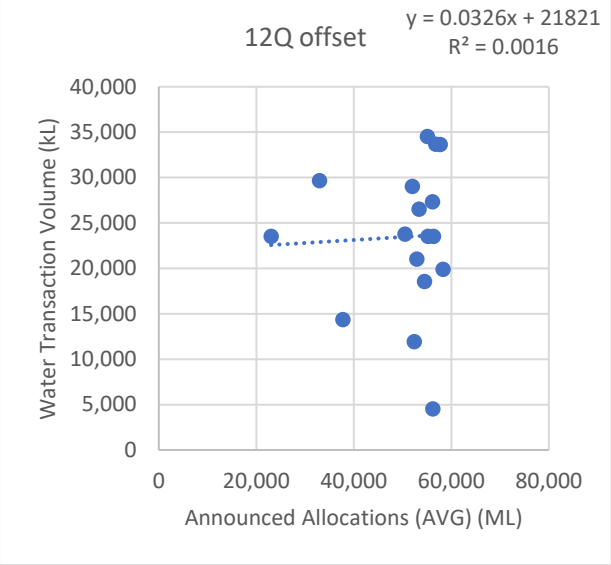
ETON

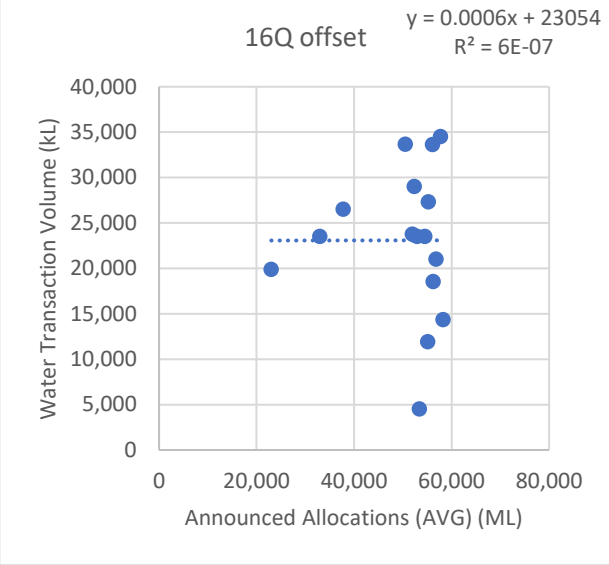

70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
Q1 - 2003
Q3 - 2003
Q1 - 2004
Q3 - 2004
Q1 - 2005
Q3 - 2005
Q1 - 2006
Q3 - 2006
Q1 - 2007
Q3 - 2007
Q1 - 2008
Q3 - 2008
Q1 - 2009
Q3 - 2009
Q1 - 2010
Q3 - 2010
Q1 - 2011
Q3 - 2011
Q1 - 2012
Q3 - 2012
Q1 - 2013
Q3 - 2013
Q1 - 2014
Q3 - 2014
Q1 - 2015
Q3 - 2015
Q1 - 2016
Q3 - 2016
Q1 - 2017
Q3 - 2017
Q1 - 2018
Q3 - 2018
Q1 - 2019
Q3 - 2019
Q1 - 2020
Q3 - 2020
Q1 - 2021
Q3 - 2021
Q1 - 2022
Q3 - 2022
Water Transaction Volume Annual Sum (ML)
Announced Allocations (MIN) (ML)
Announced Allocations (MAX) (ML)
Water Access Entitlement (ML)

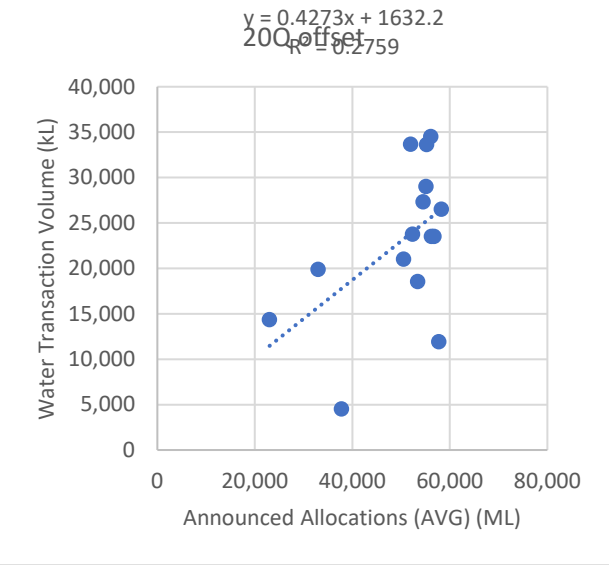

0Q offset
y = -0.6263x + 57391
R² = 0.3033
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = -0.0782x + 27826
R² = 0.009
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


8Q offset
y = -0.1111x + 29218
R² = 0.0184
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

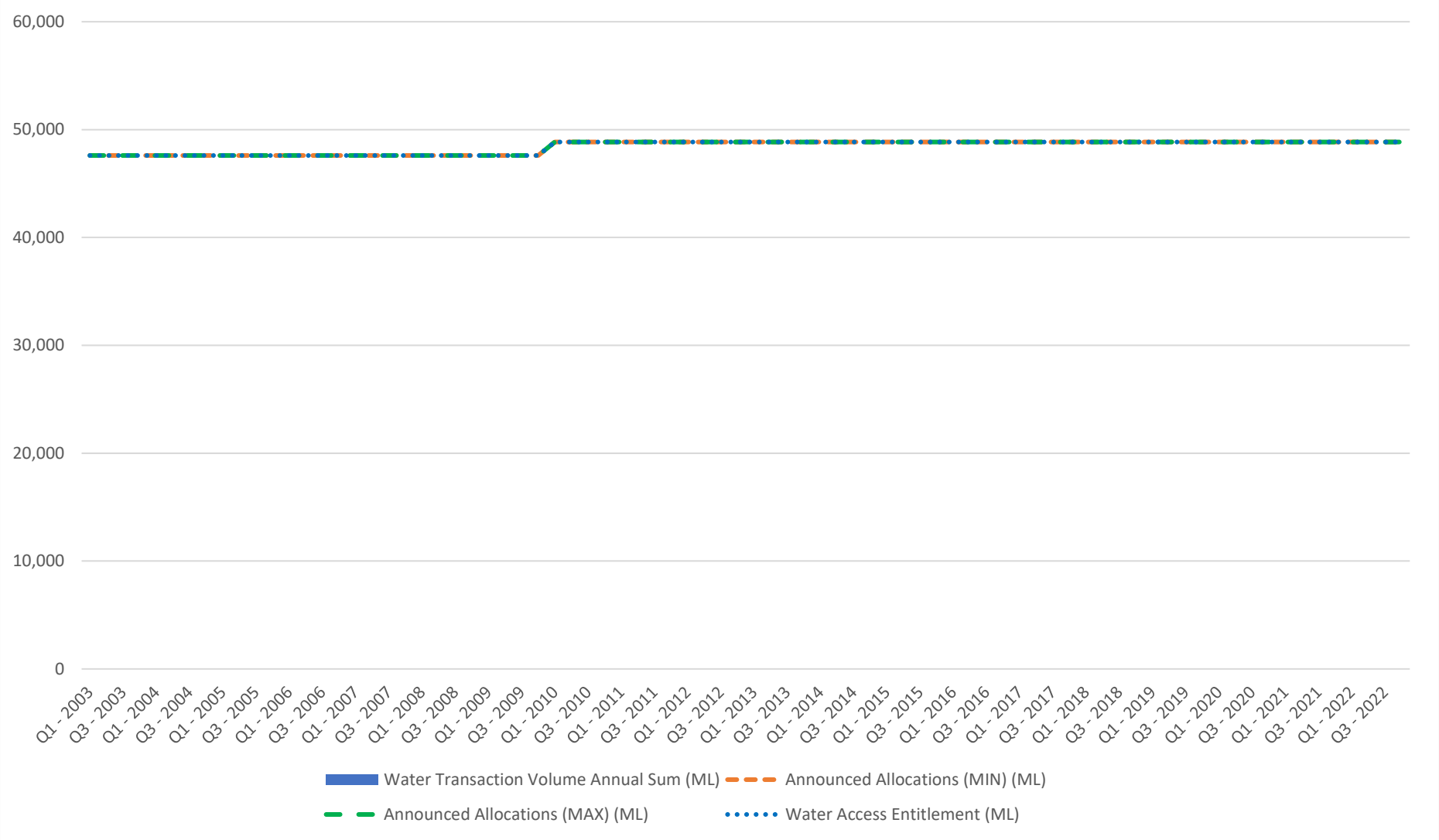

12Q offset
y = 0.0326x + 21821
R² = 0.0016
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


16Q offset
y = 0.0006x + 23054
R² = 6E-07
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

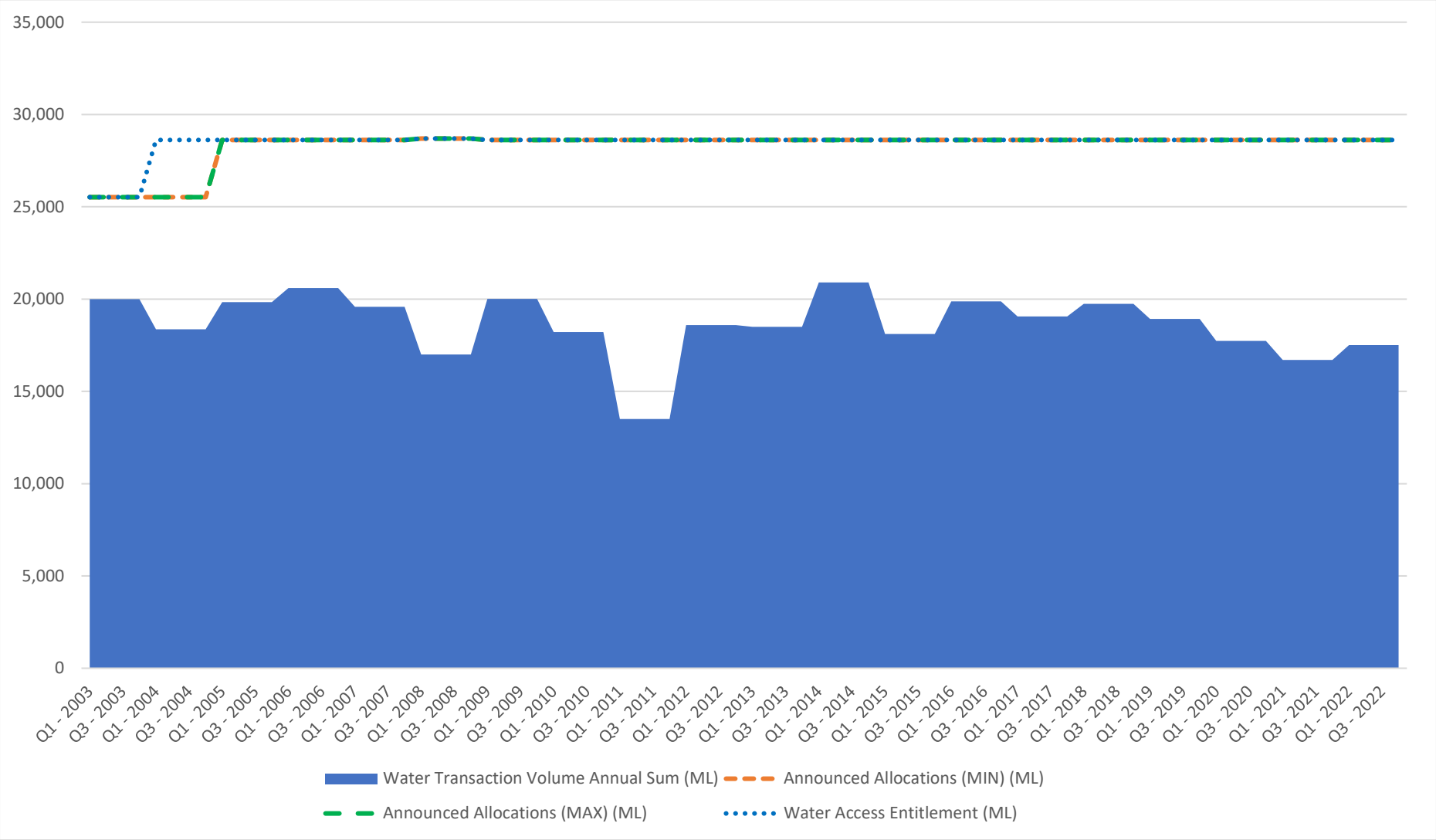

20Q offset
y = 0.4273x + 1632.2
R² = 0.2759
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

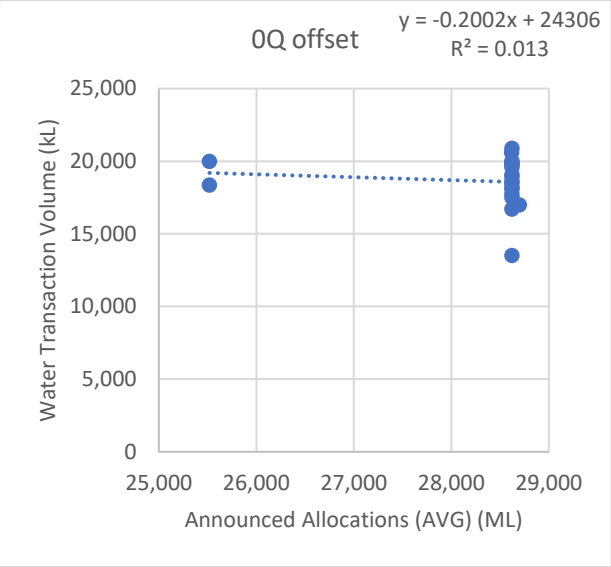
JULIUS DAM

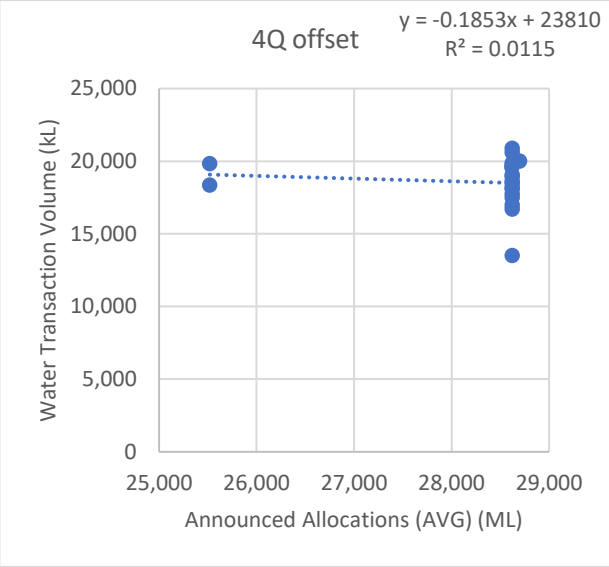
NOTE: No AA vs use charts developed, as no recorded water demand data was provided for Julius Dam scheme.

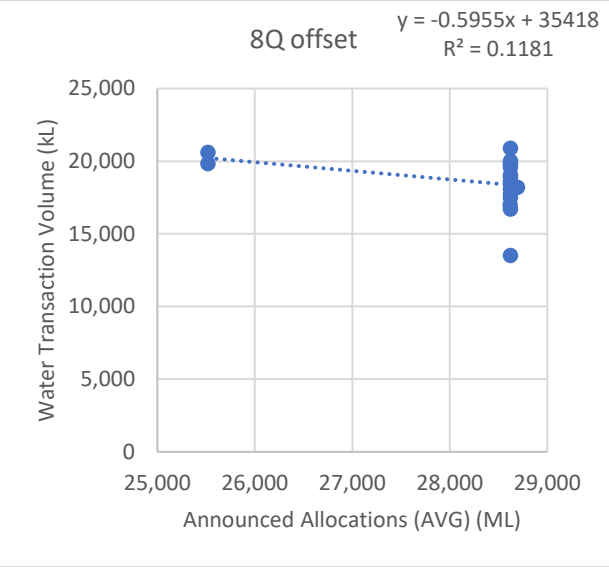


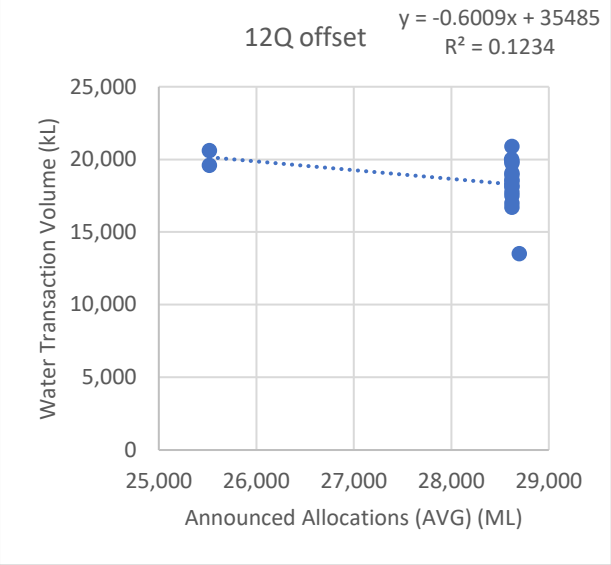
LOWER FITZROY

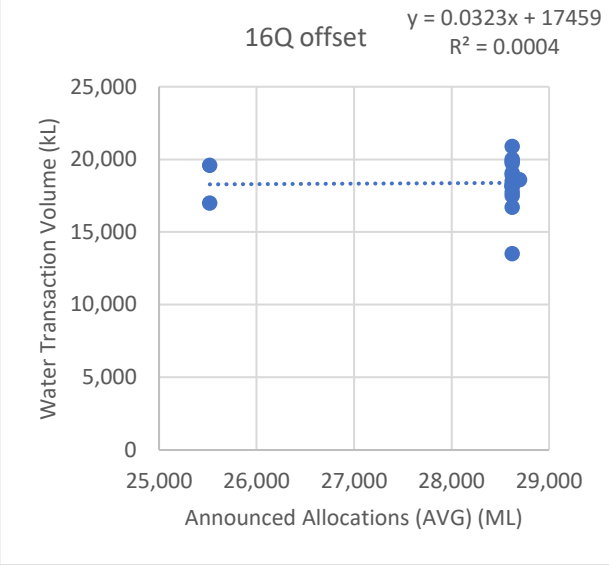


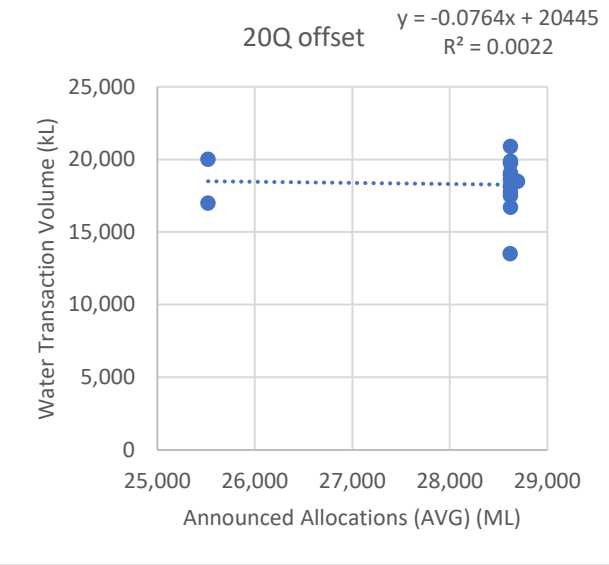

0Q offset
y = -0.2002x + 24306
R² = 0.013
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)


4Q offset
y = -0.1853x + 23810
R² = 0.0115
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)

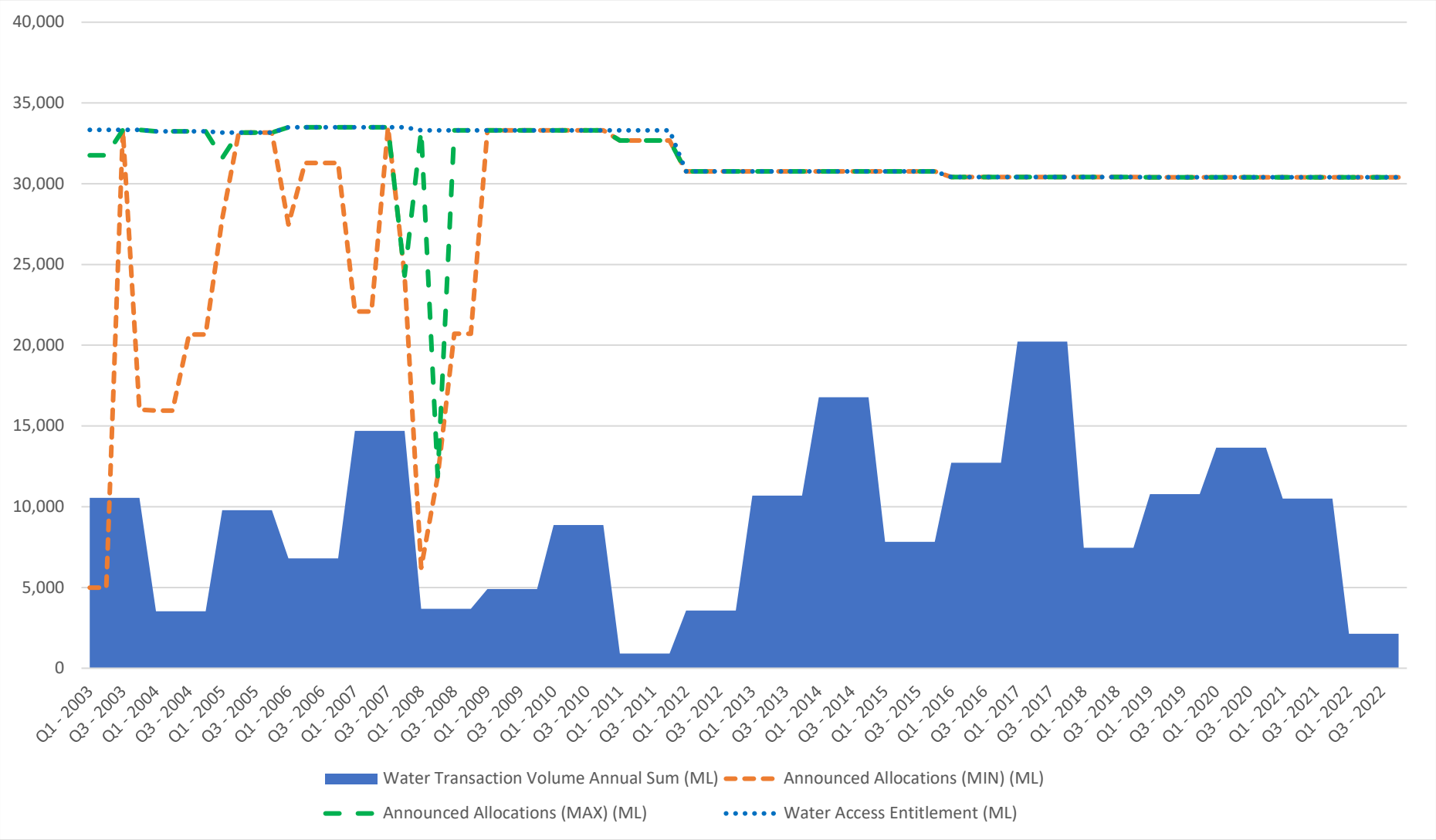

8Q offset
y = -0.5955x + 35418
R² = 0.1181
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)

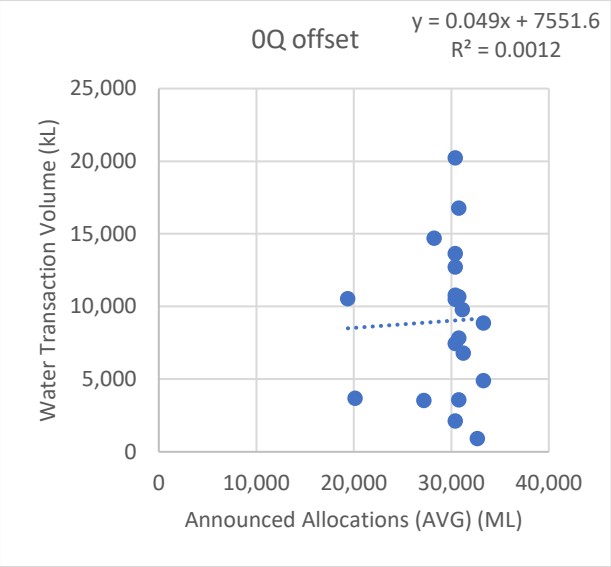

12Q offset
y = -0.6009x + 35485
R² = 0.1234
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)

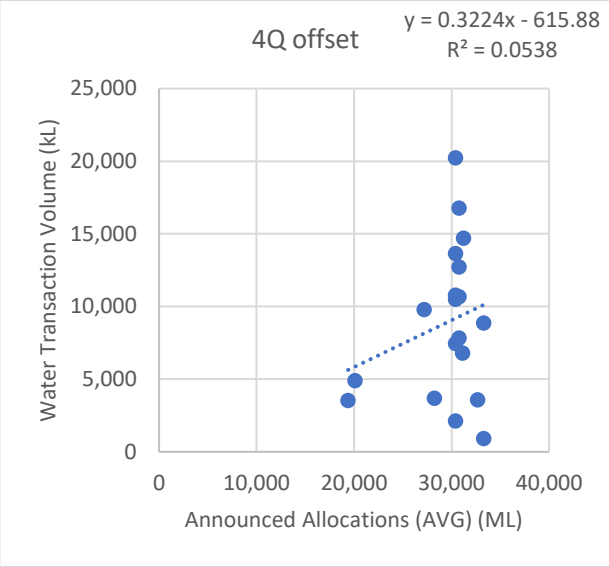

16Q offset
y = 0.0323x + 17459
R² = 0.0004
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)

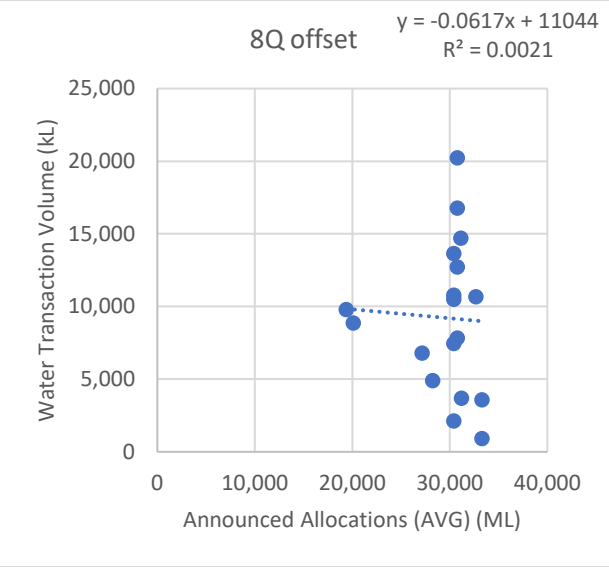

20Q offset
y = -0.0764x + 20445
R² = 0.0022
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
25,000 26,000 27,000 28,000 29,000
Announced Allocations (AVG) (ML)

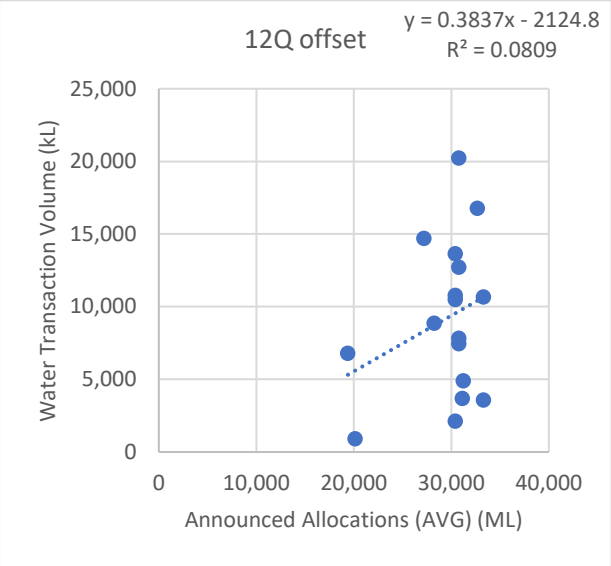
LOWER MARY RIVER

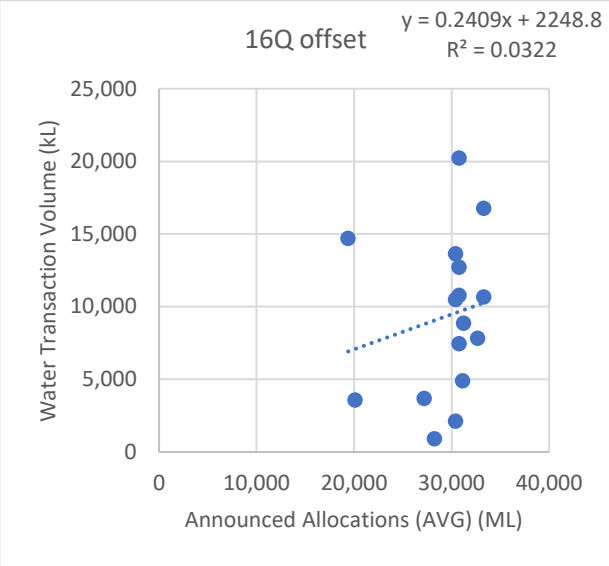


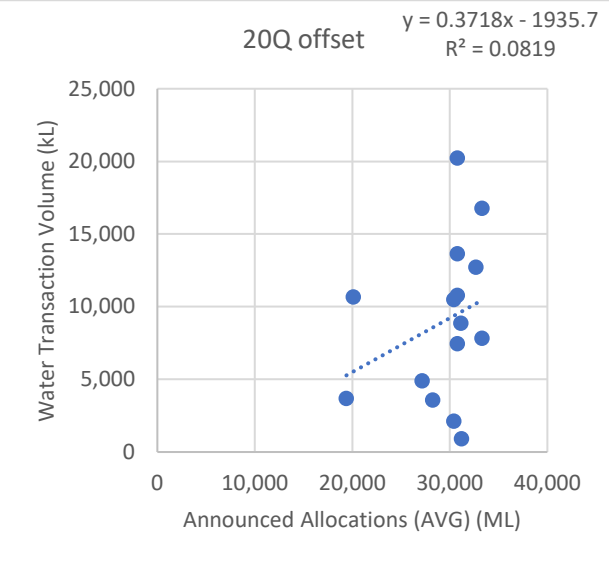

0Q offset
y = 0.049x + 7551.6
R² = 0.0012
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.3224x - 615.88
R² = 0.0538
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)

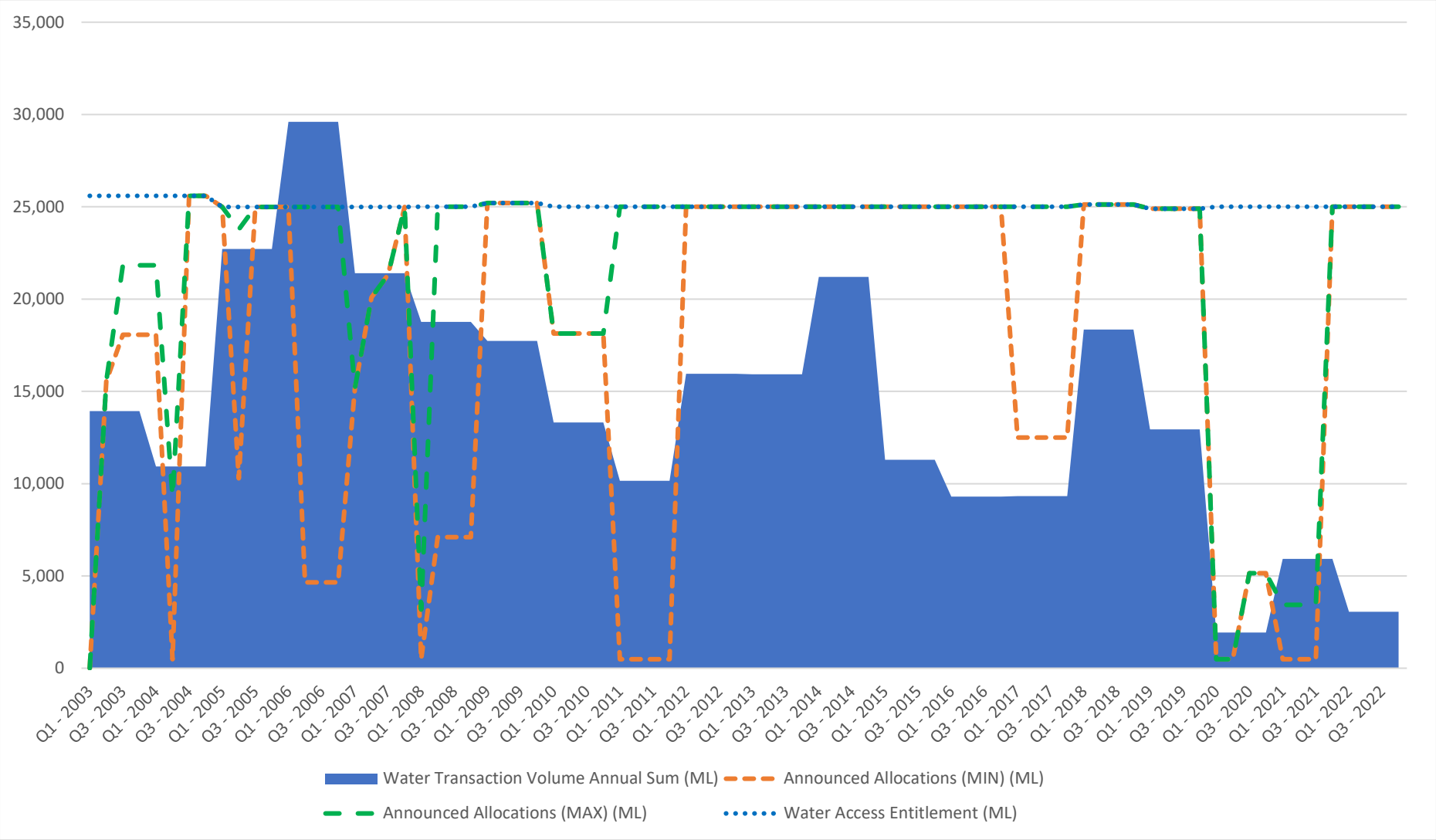

8Q offset
y = -0.0617x + 11044
R² = 0.0021
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)

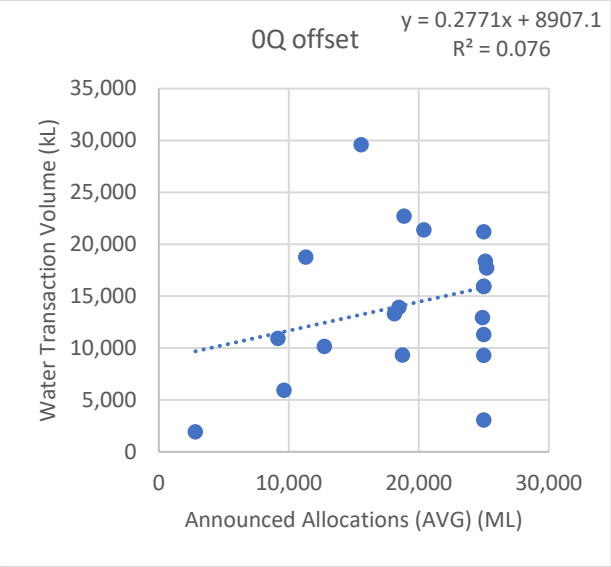

12Q offset
y = 0.3837x - 2124.8
R² = 0.0809
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)

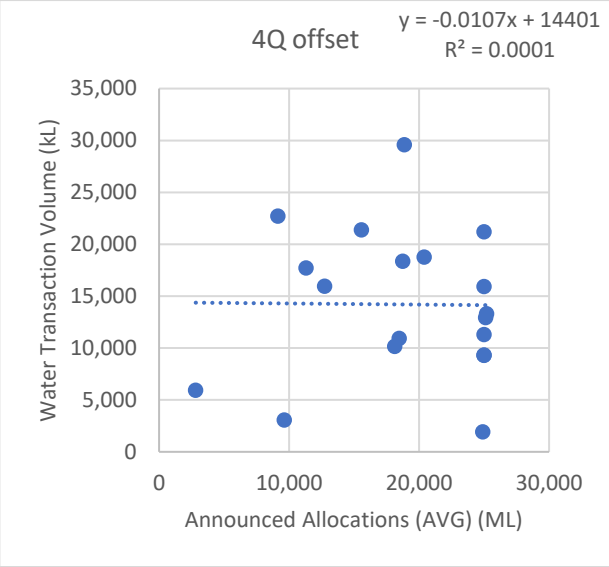

16Q offset
y = 0.2409x + 2248.8
R² = 0.0322
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)

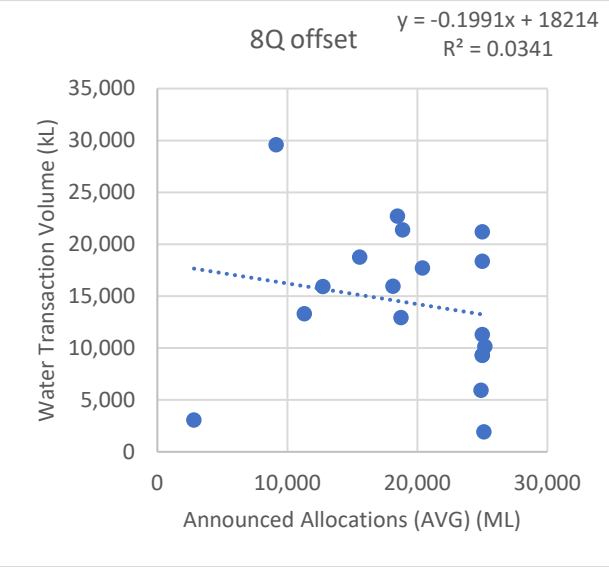

20Q offset
y = 0.3718x - 1935.7
R² = 0.0819
Water Transaction Volume (kL)
25,000
20,000
15,000
10,000
5,000
0
0
10,000
20,000
30,000
40,000
Announced Allocations (AVG) (ML)

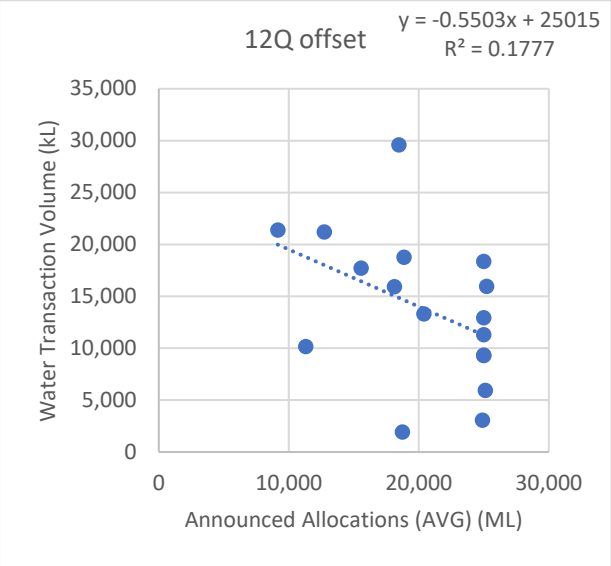
MACINTYRE BROOK

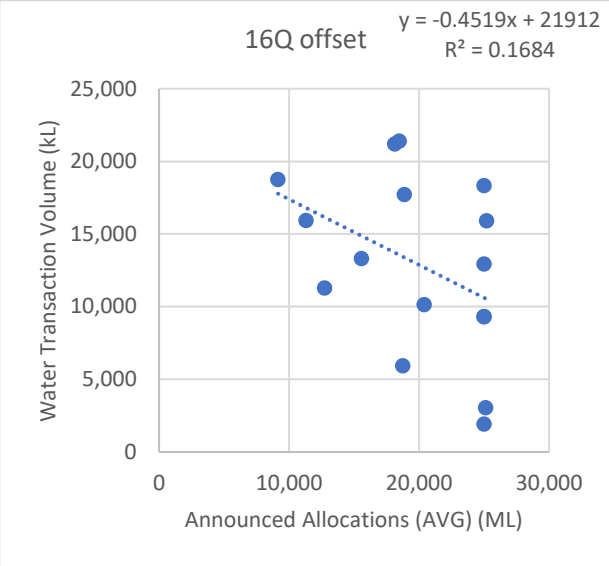


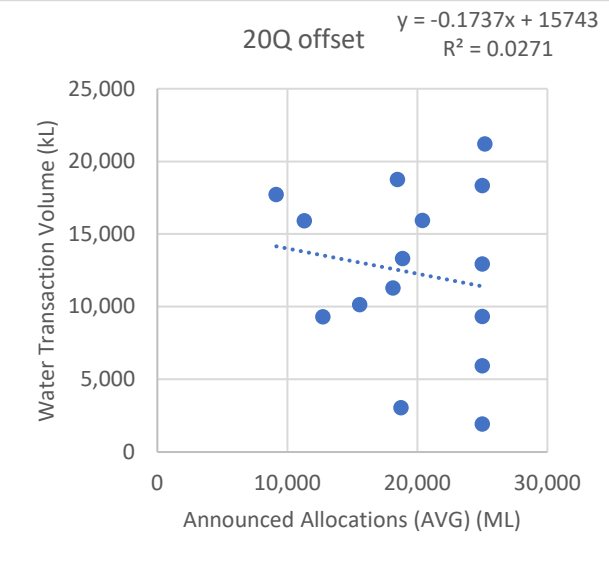

0Q offset
y = 0.2771x + 8907.1
R² = 0.076
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


4Q offset
y = -0.0107x + 14401
R² = 0.0001
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


8Q offset
y = -0.1991x + 18214
R² = 0.0341
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

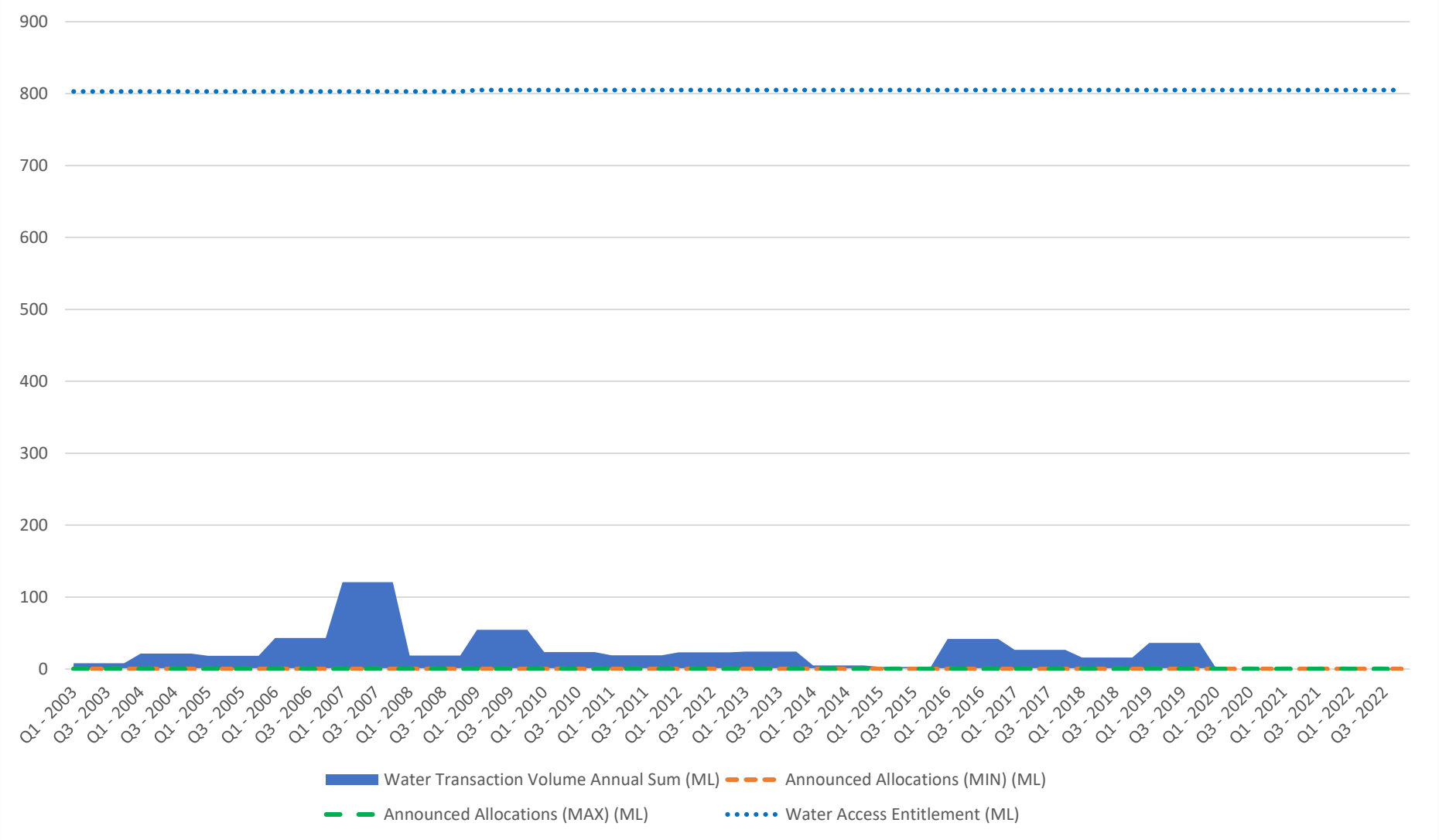

12Q offset
y = -0.5503x + 25015
R² = 0.1777
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)


16Q offset
y = -0.4519x + 21912
R² = 0.1684
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

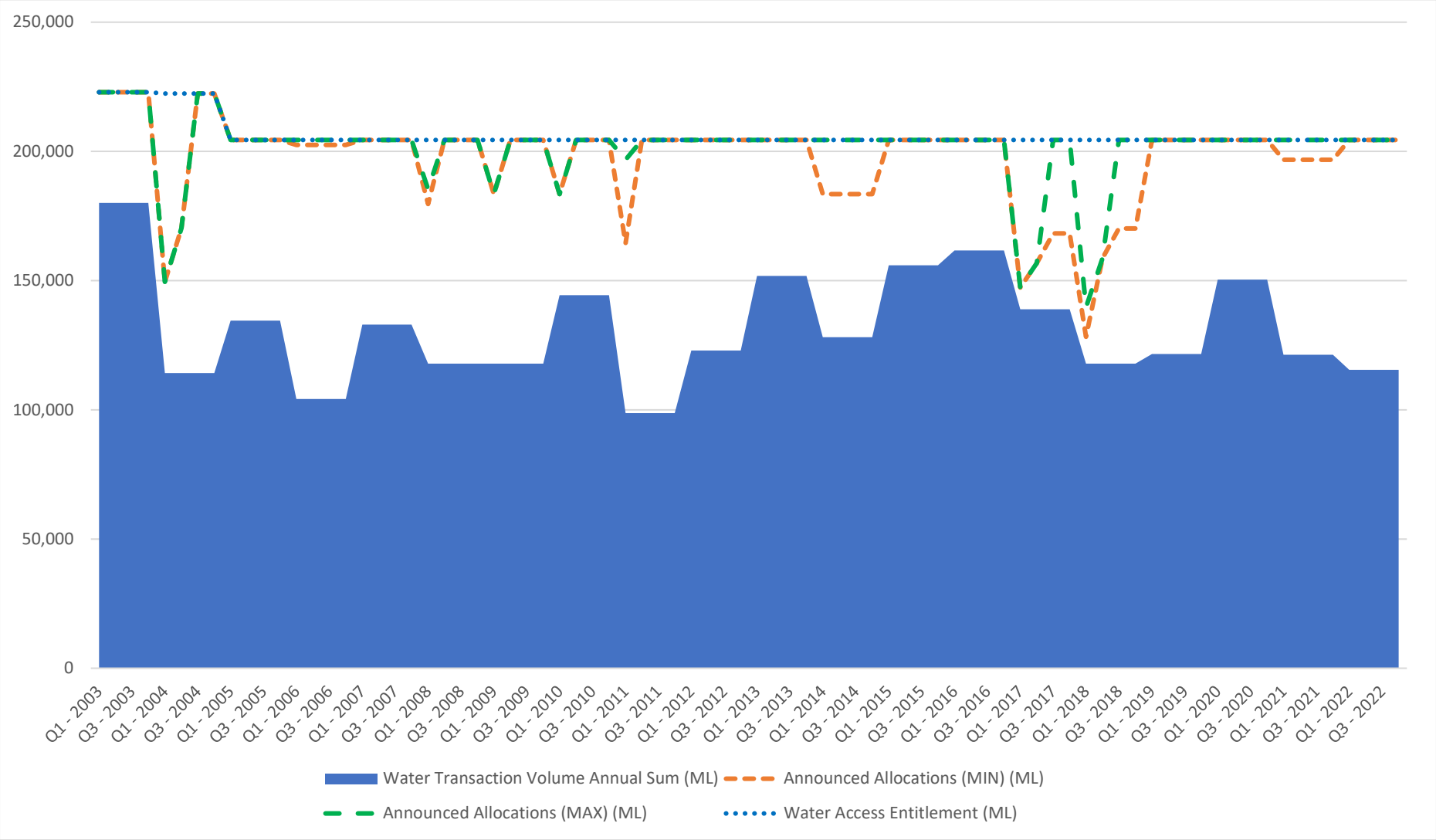

20Q offset
y = -0.1737x + 15743
R² = 0.0271
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)

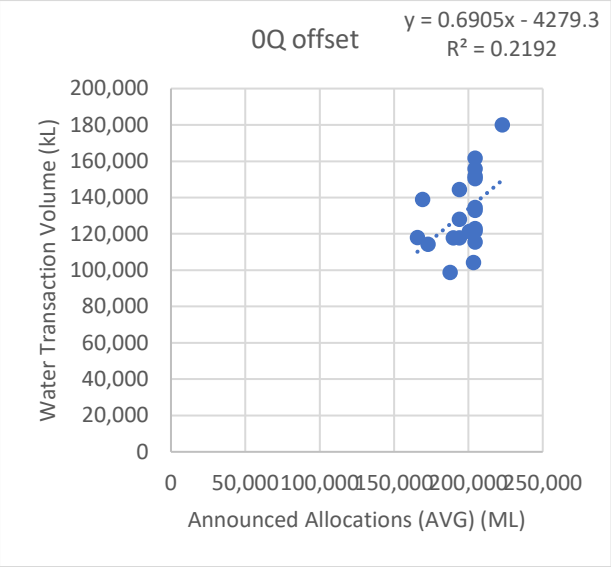
MARANOA RIVER

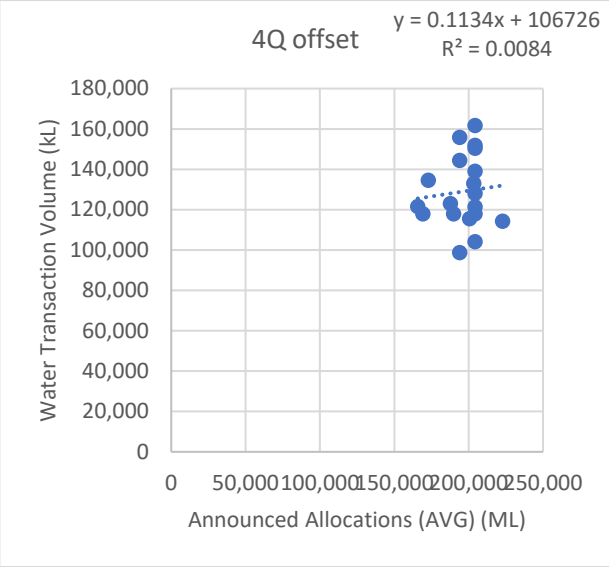
NOTE: No AA vs use charts developed, as no recorded AA volume data was provided for Maranoa River scheme.

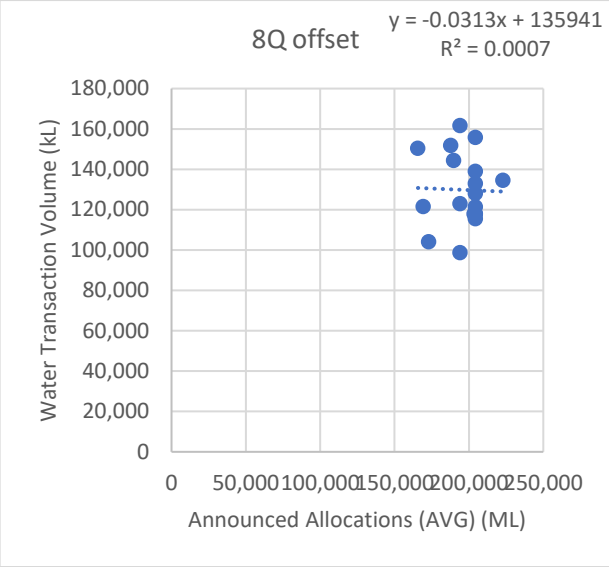


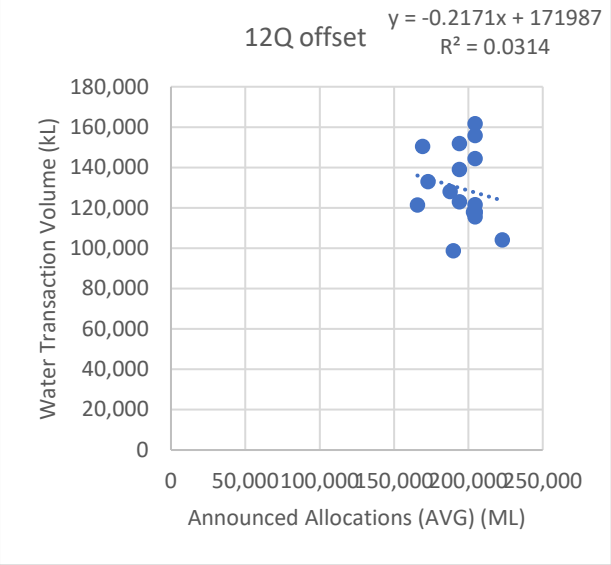
MAREEBA DIMBULAH

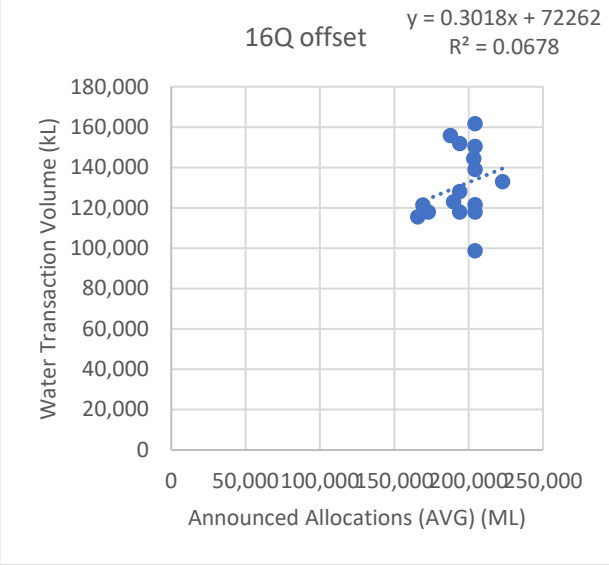


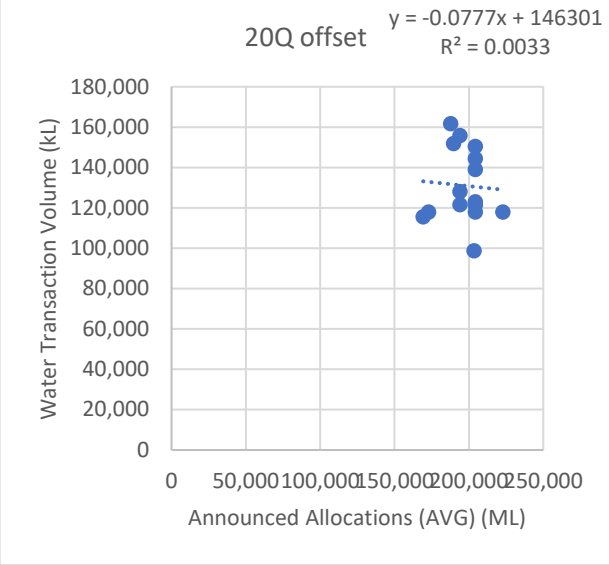

0Q offset
y = 0.6905x - 4279.3
R² = 0.2192
Water Transaction Volume (kL)
200,000
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.1134x + 106726
R² = 0.0084
Water Transaction Volume (kL)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

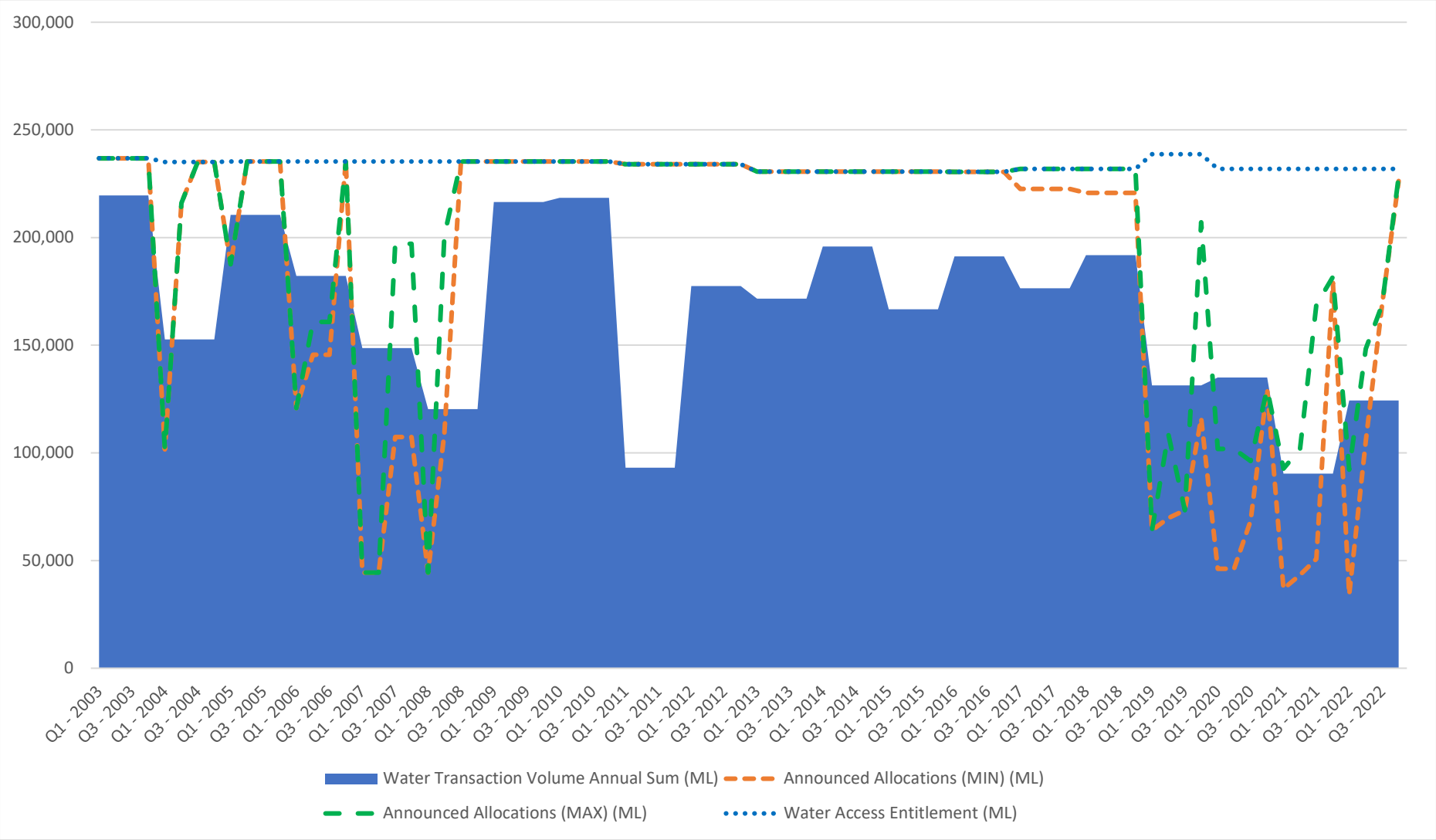

8Q offset
y = -0.0313x + 135941
R² = 0.0007
Water Transaction Volume (kL)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

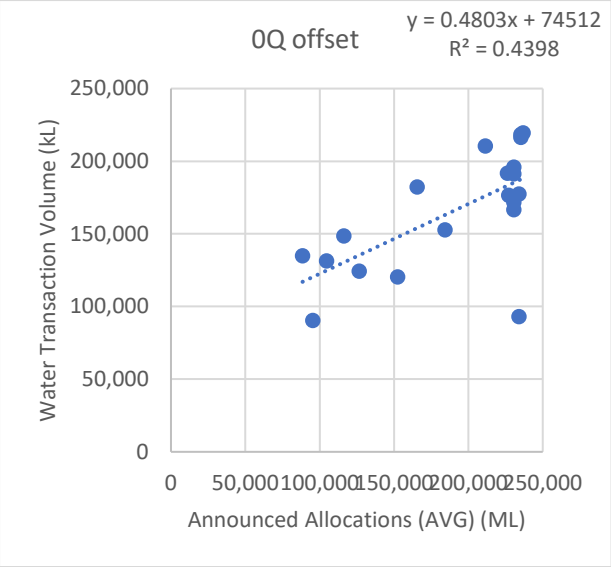

12Q offset
y = -0.2171x + 171987
R² = 0.0314
Water Transaction Volume (kL)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

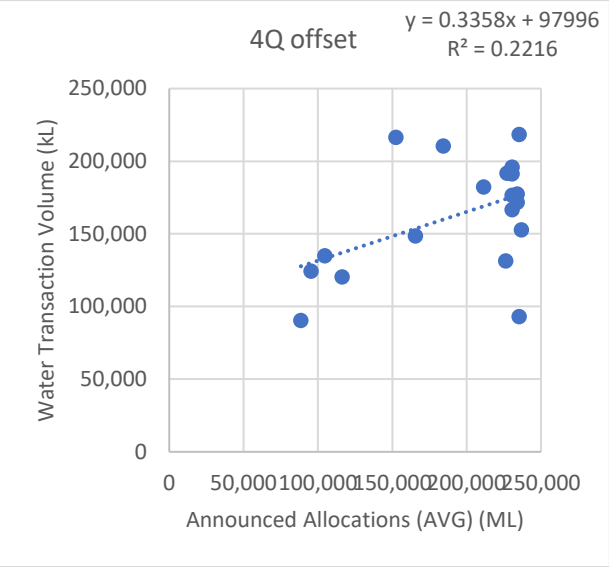

16Q offset
y = 0.3018x + 72262
R² = 0.0678
Water Transaction Volume (kL)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

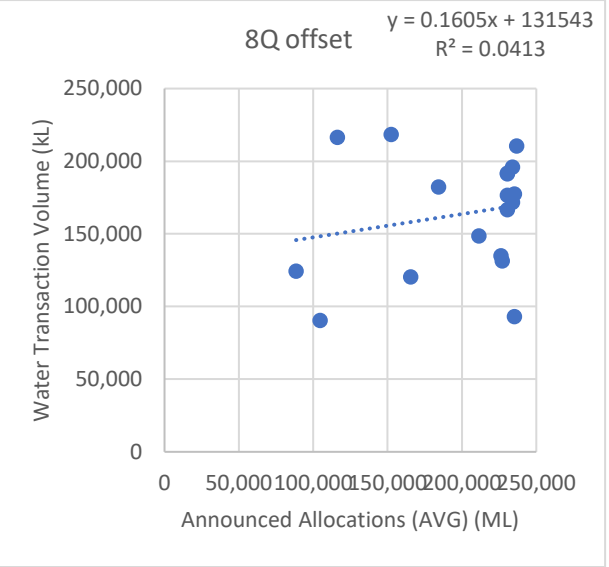

20Q offset
y = -0.0777x + 146301
R² = 0.0033
Water Transaction Volume (kL)
180,000
160,000
140,000
120,000
100,000
80,000
60,000
40,000
20,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

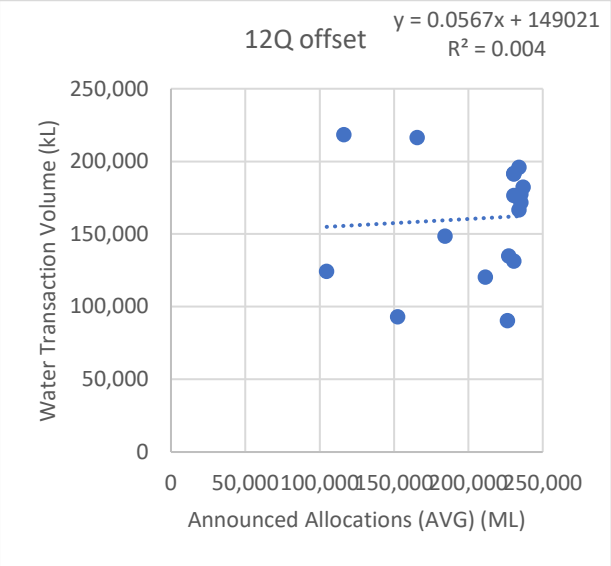
NOGOA MACKENZIE

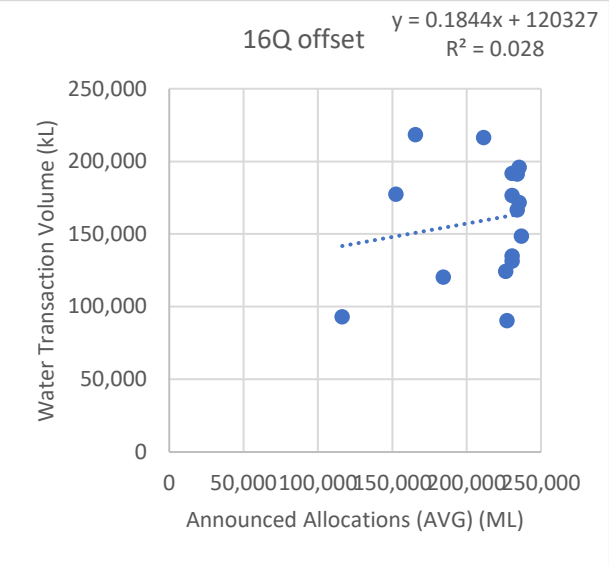


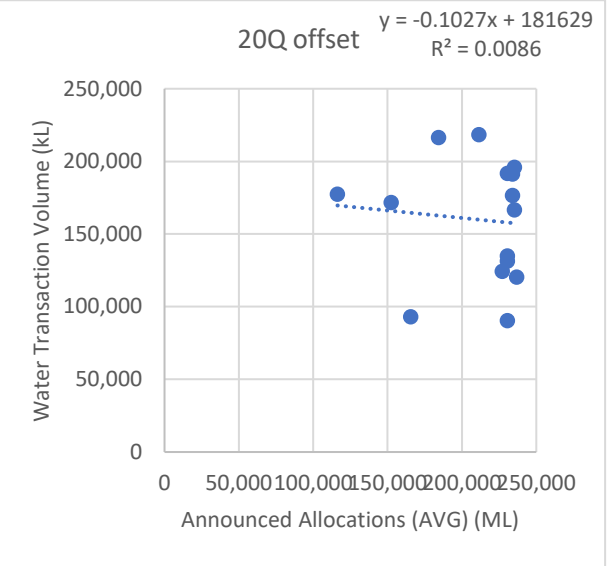

0Q offset
y = 0.4803x + 74512
R² = 0.4398
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.3358x + 97996
R² = 0.2216
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

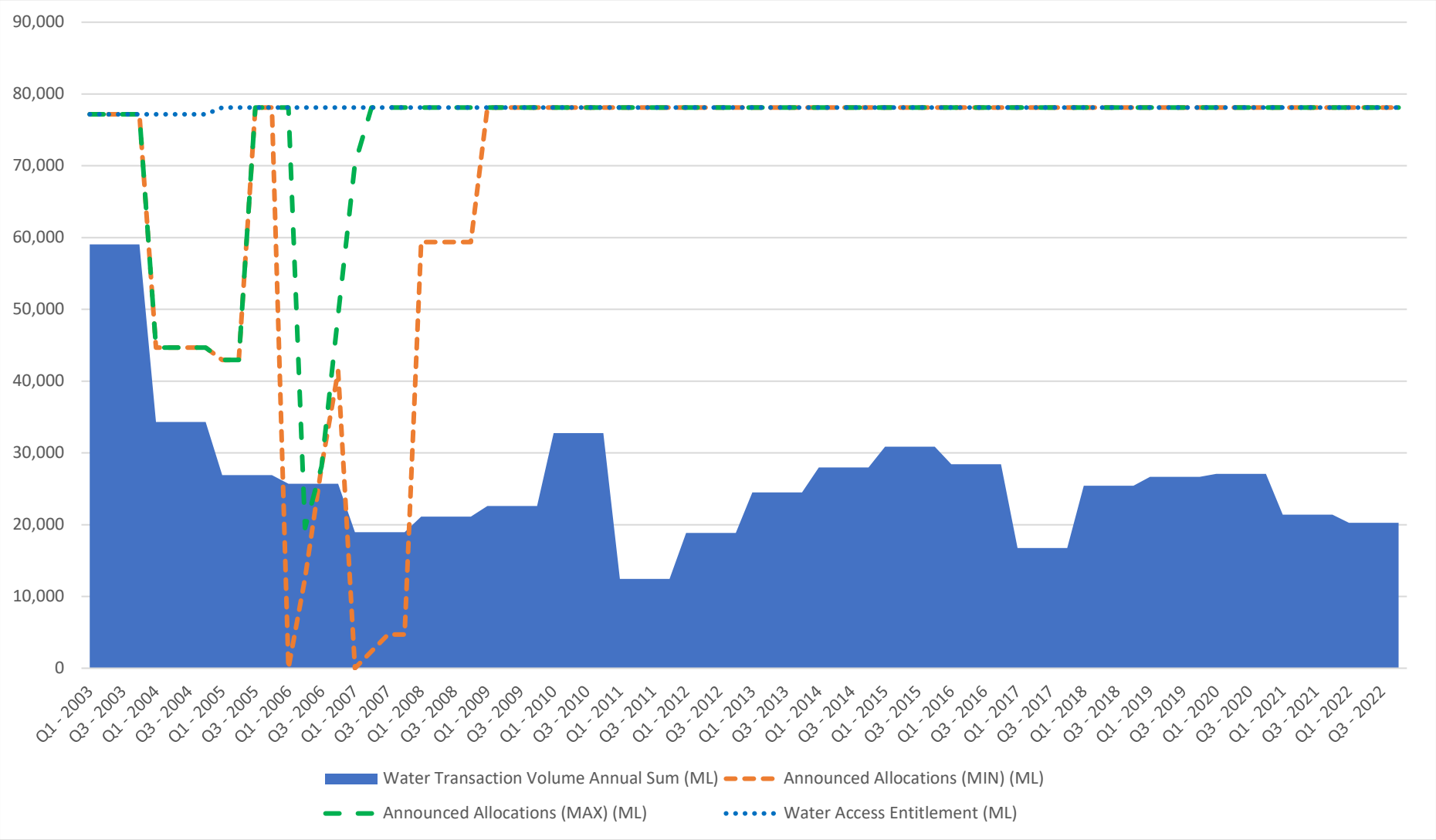

8Q offset
y = 0.1605x + 131543
R² = 0.0413
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

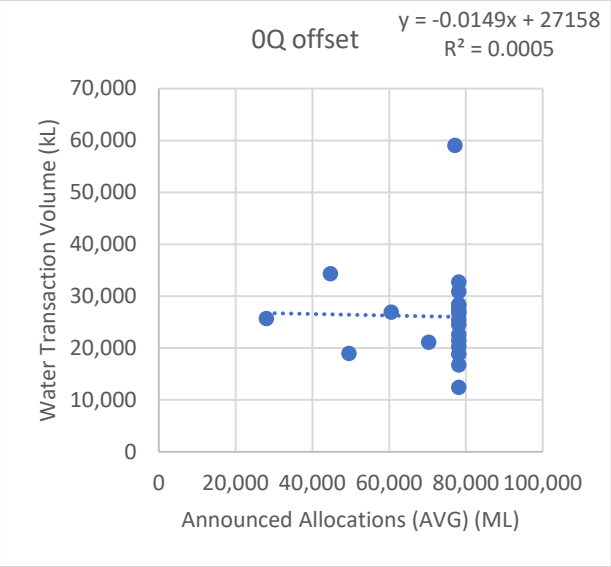

12Q offset
y = 0.0567x + 149021
R² = 0.004
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

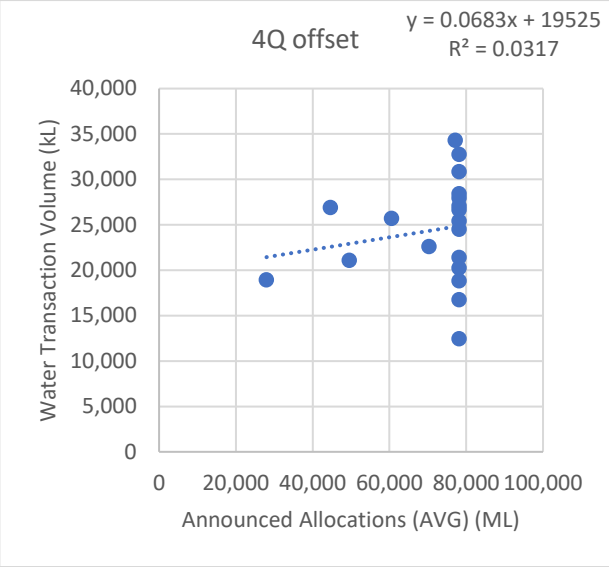

16Q offset
y = 0.1844x + 120327
R² = 0.028
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

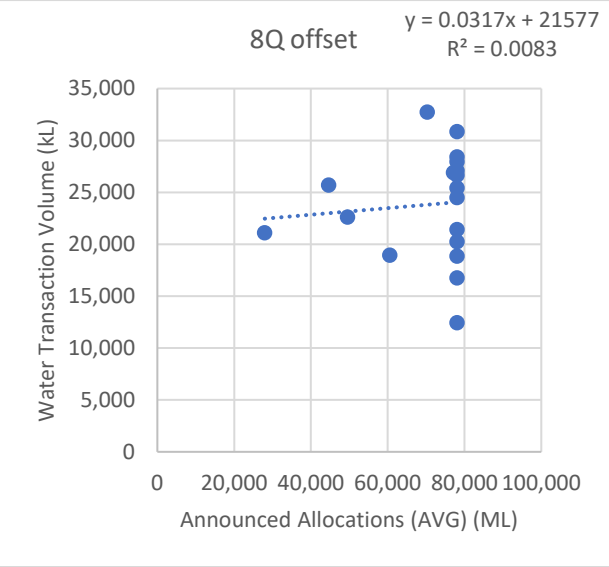

20Q offset
y = -0.1027x + 181629
R² = 0.0086
Water Transaction Volume (kL)
250,000
200,000
150,000
100,000
50,000
0
0
50,000
100,000
150,000
200,000
250,000
Announced Allocations (AVG) (ML)

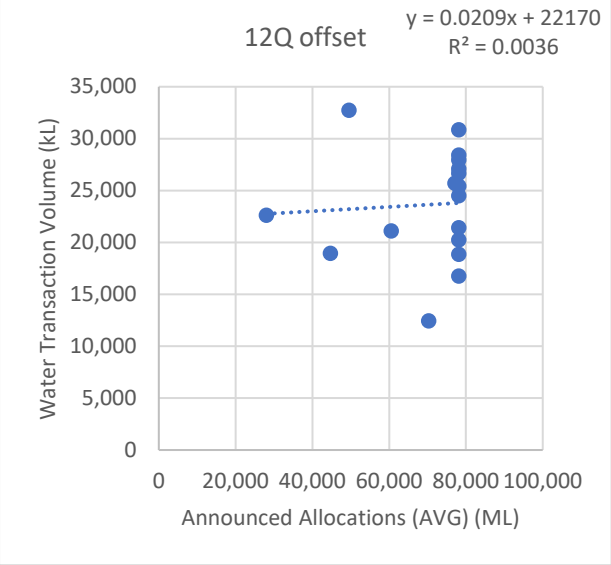
PIONEER RIVER

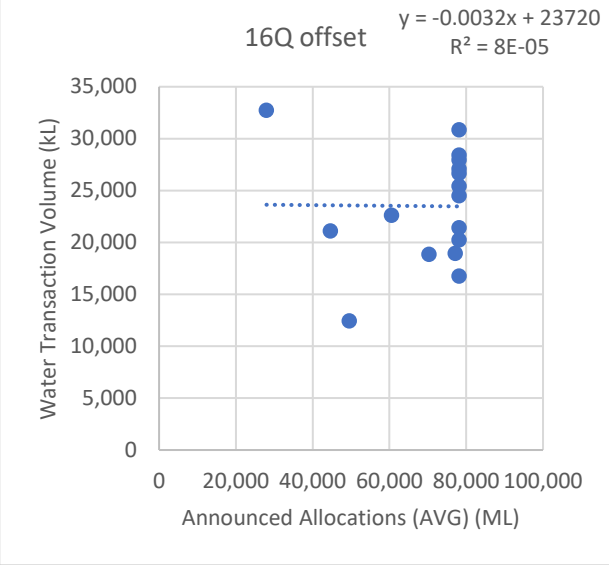


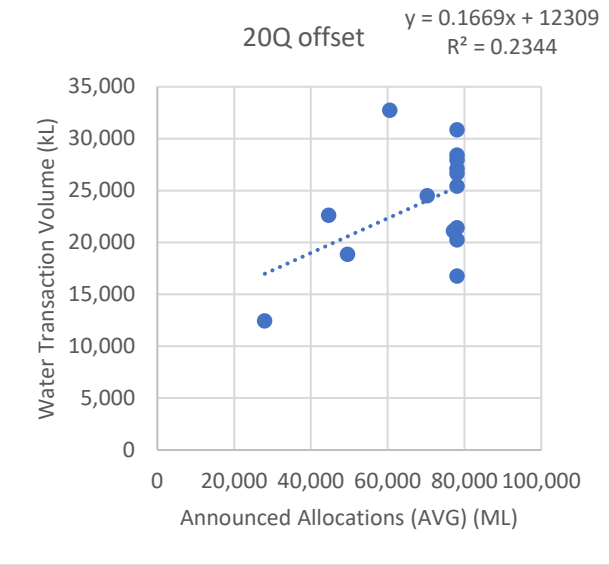

0Q offset
y = -0.0149x + 27158
R² = 0.0005
Water Transaction Volume (kL)
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.0683x + 19525
R² = 0.0317
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)

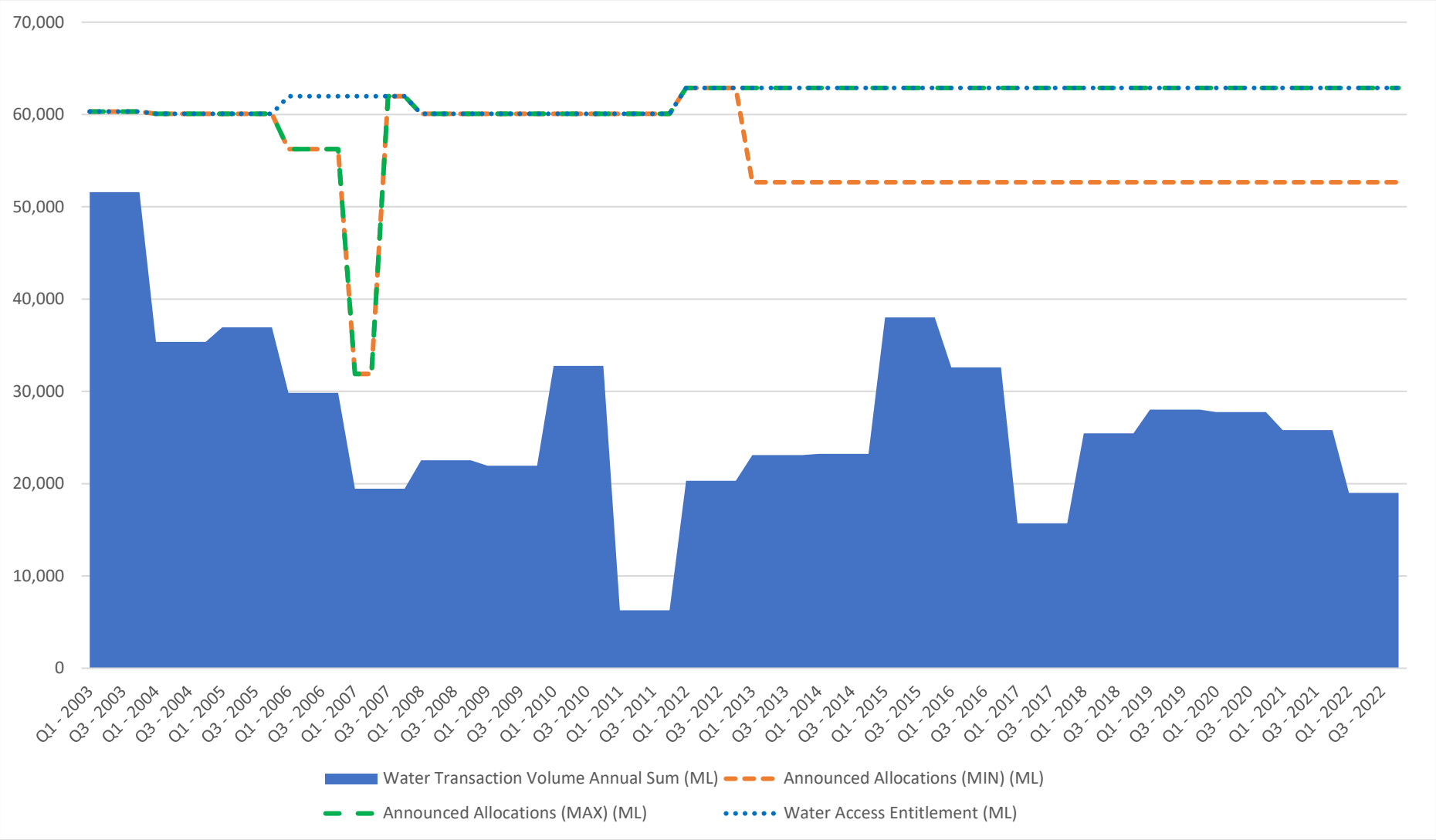

8Q offset
y = 0.0317x + 21577
R² = 0.0083
Water Transaction Volume (kL)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)

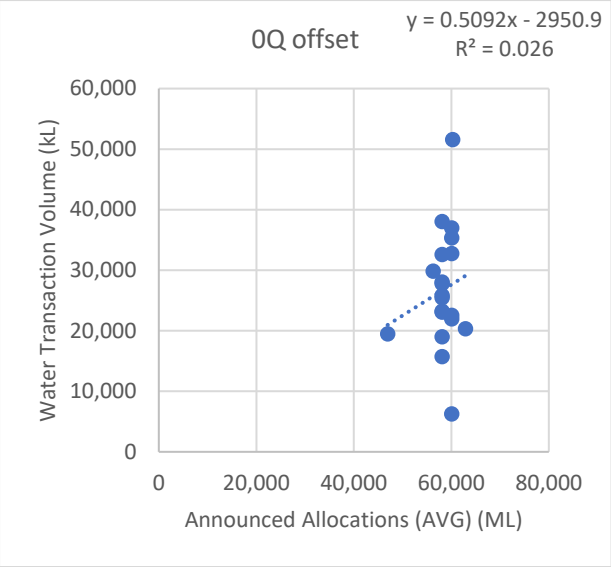

12Q offset
y = 0.0209x + 22170
R² = 0.0036
Water Transaction Volume (kL)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)

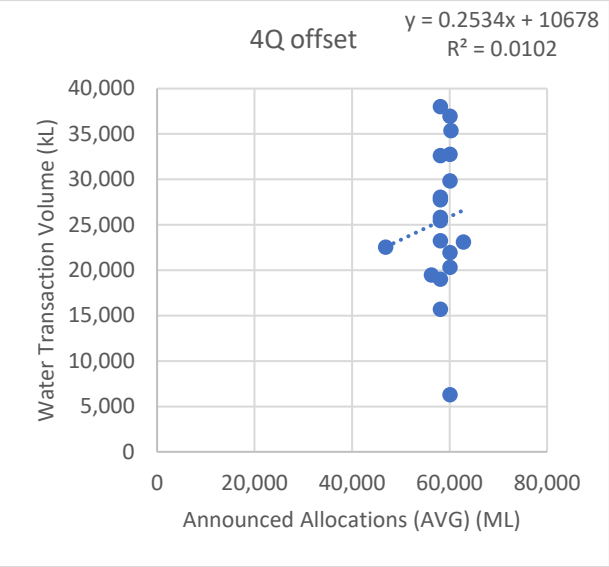

16Q offset
y = -0.0032x + 23720
R² = 8E-05
Water Transaction Volume (kL)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)

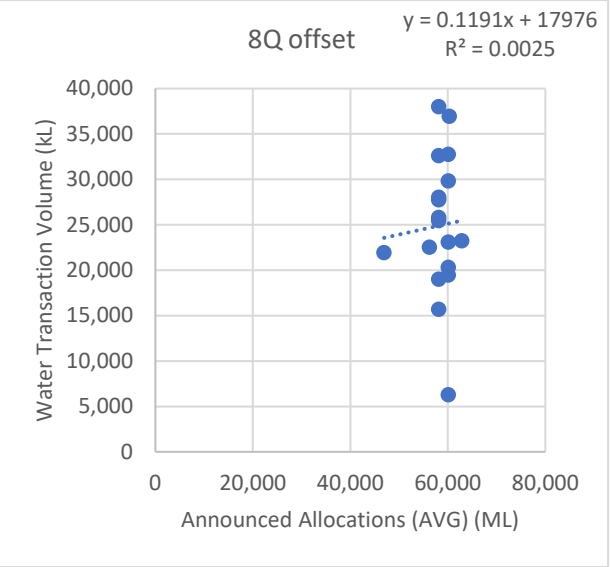

20Q offset
y = 0.1669x + 12309
R² = 0.2344
Water Transaction Volume (kL)
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0 20,000 40,000 60,000 80,000 100,000
Announced Allocations (AVG) (ML)

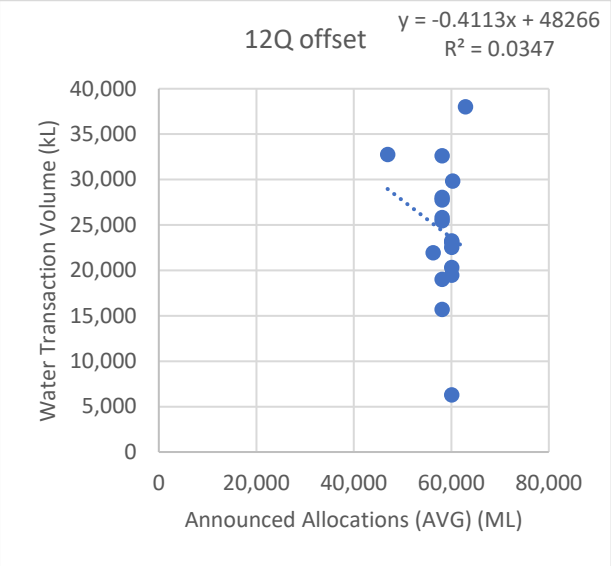
PROSERPINE RIVER

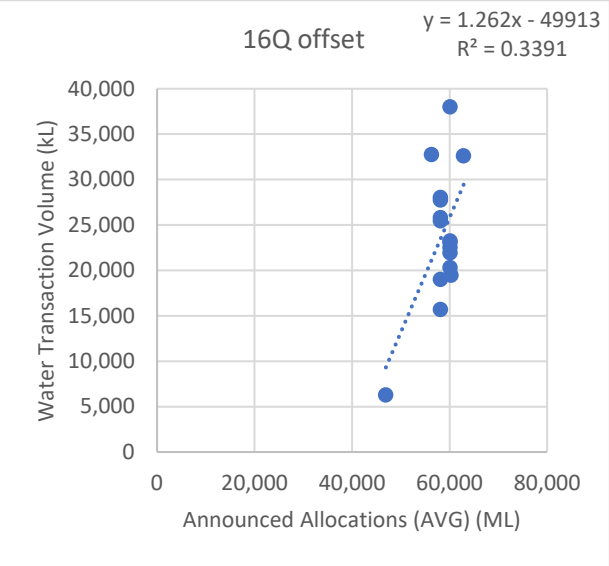


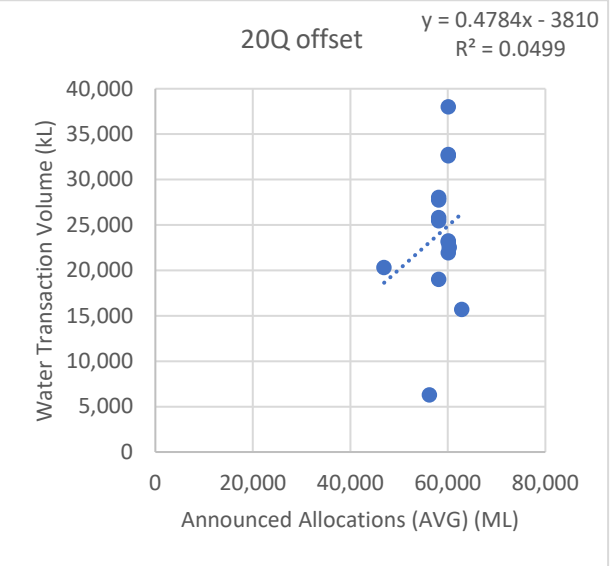

0Q offset
y = 0.5092x - 2950.9
R² = 0.026
Water Transaction Volume (kL)
60,000
50,000
40,000
30,000
20,000
10,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.2534x + 10678
R² = 0.0102
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

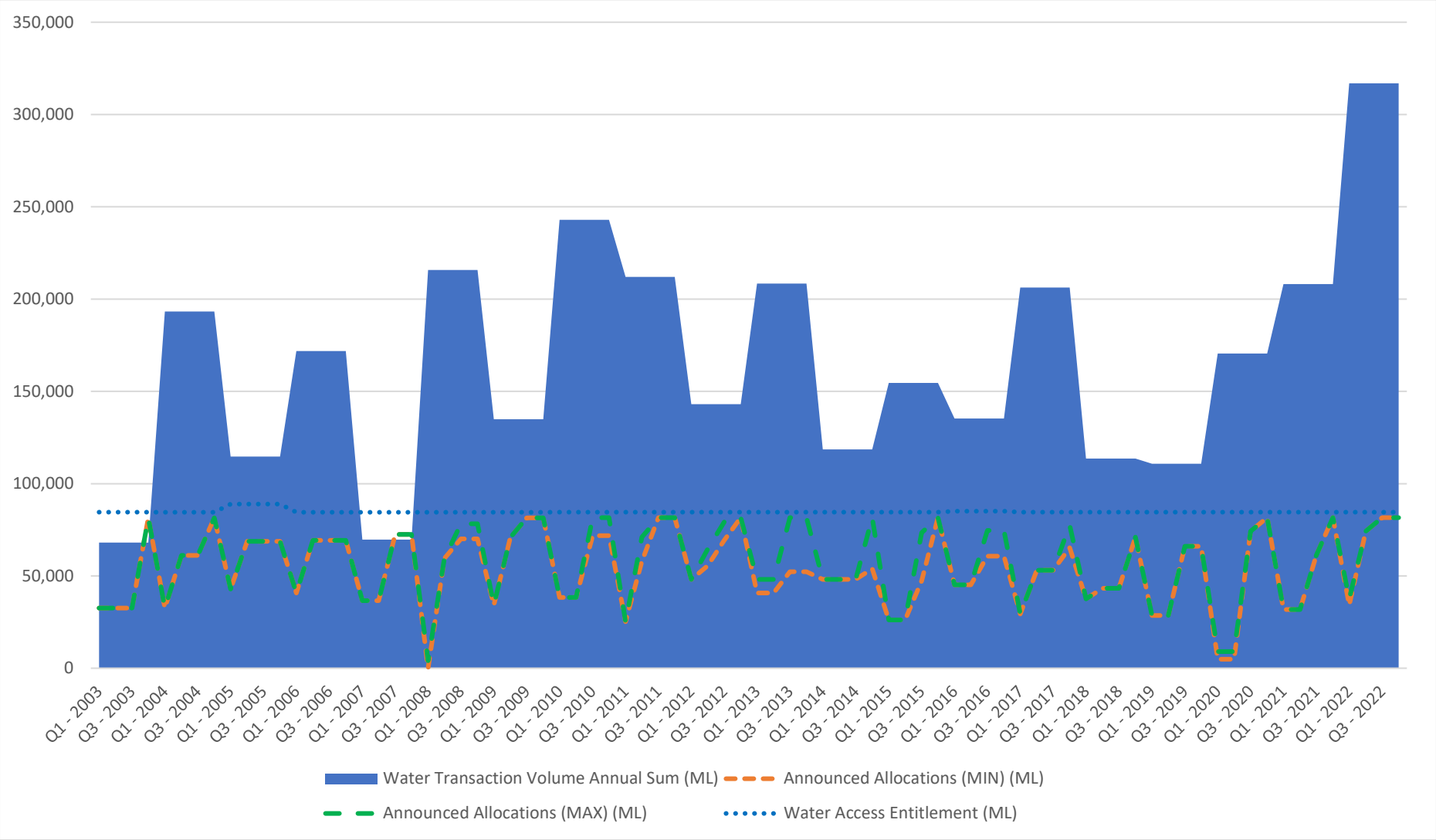

8Q offset
y = 0.1191x + 17976
R² = 0.0025
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

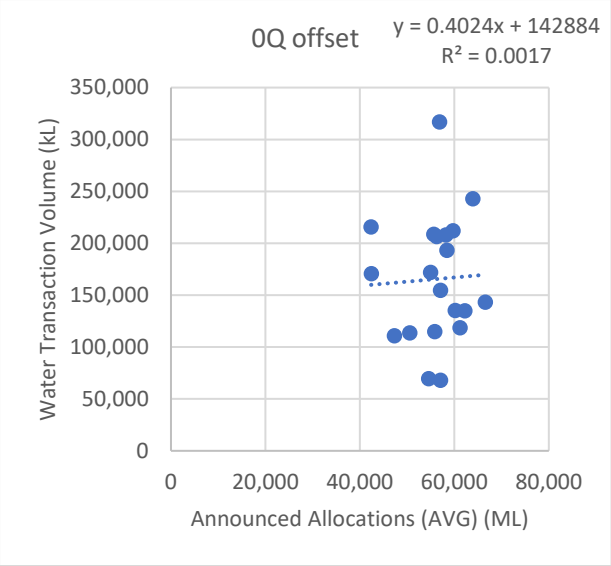

12Q offset
y = -0.4113x + 48266
R² = 0.0347
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

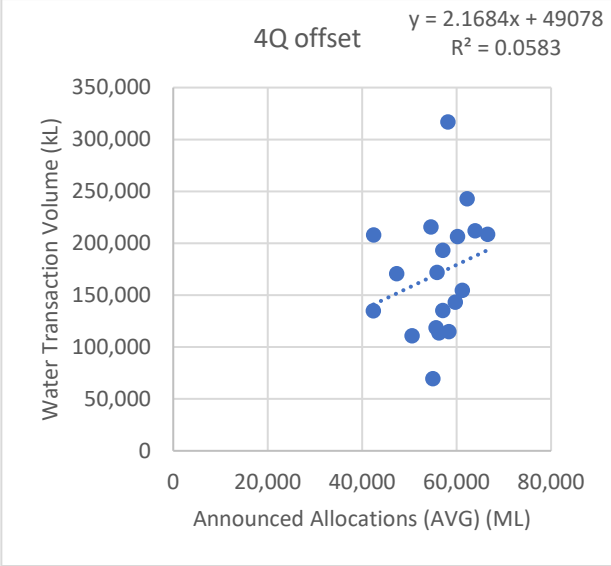

16Q offset
y = 1.262x - 49913
R² = 0.3391
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

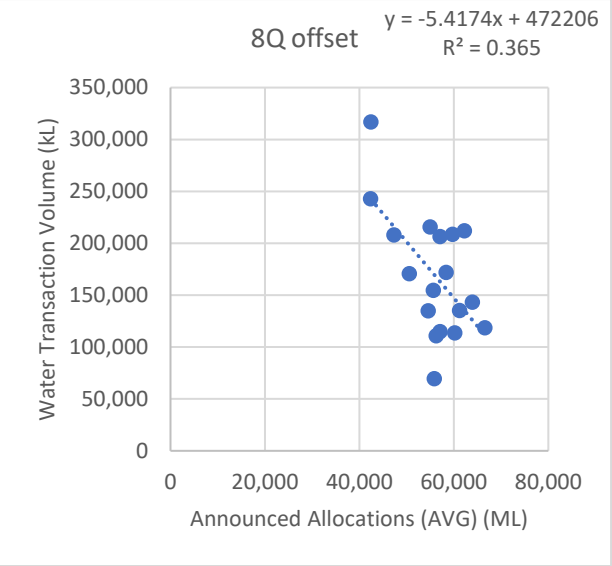

20Q offset
y = 0.4784x - 3810
R² = 0.0499
Water Transaction Volume (kL)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

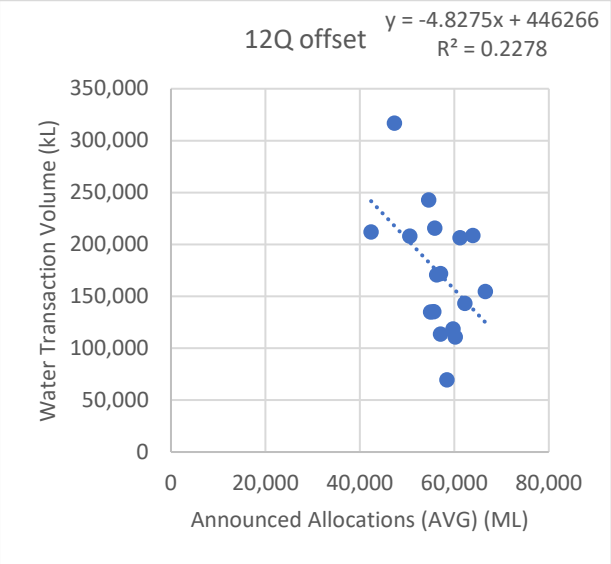
ST GEORGE

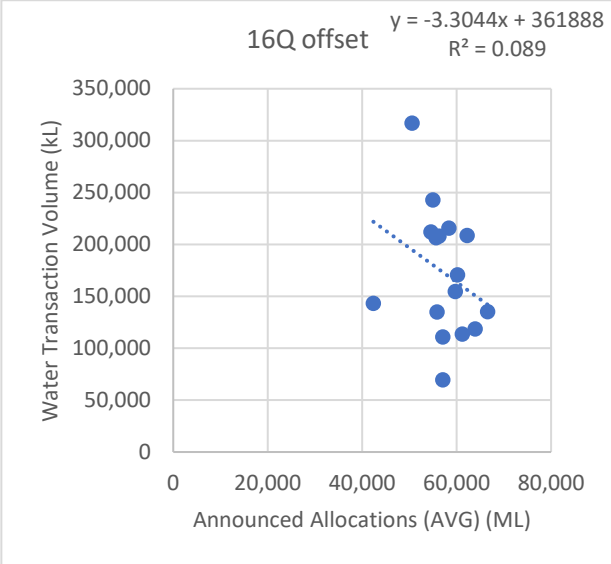

350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
Q1 - 2003
Q3 - 2003
Q1 - 2004
Q3 - 2004
Q1 - 2005
Q3 - 2005
Q1 - 2006
Q3 - 2006
Q1 - 2007
Q3 - 2007
Q1 - 2008
Q3 - 2008
Q1 - 2009
Q3 - 2009
Q1 - 2010
Q3 - 2010
Q1 - 2011
Q3 - 2011
Q1 - 2012
Q3 - 2012
Q1 - 2013
Q3 - 2013
Q1 - 2014
Q3 - 2014
Q1 - 2015
Q3 - 2015
Q1 - 2016
Q3 - 2016
Q1 - 2017
Q3 - 2017
Q1 - 2018
Q3 - 2018
Q1 - 2019
Q3 - 2019
Q1 - 2020
Q3 - 2020
Q1 - 2021
Q3 - 2021
Q1 - 2022
Q3 - 2022
Water Transaction Volume Annual Sum (ML)
Announced Allocations (MIN) (ML)
Announced Allocations (MAX) (ML)
Water Access Entitlement (ML)

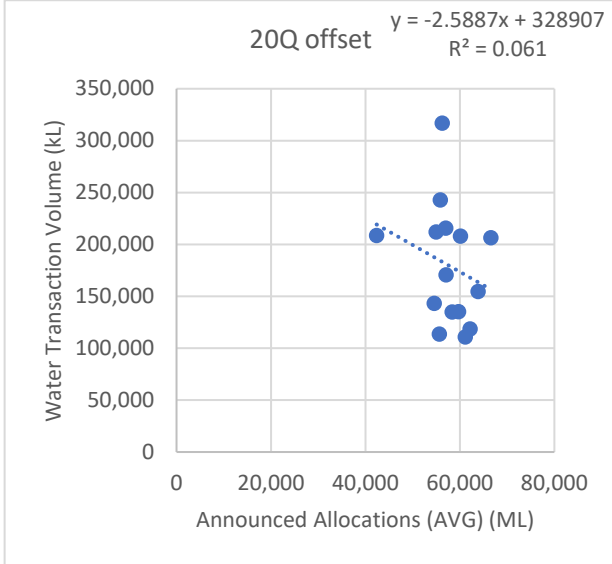

0Q offset
y = 0.4024x + 142884
R² = 0.0017
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)


4Q offset
y = 2.1684x + 49078
R² = 0.0583
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)


8Q offset
y = -5.4174x + 472206
R² = 0.365
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

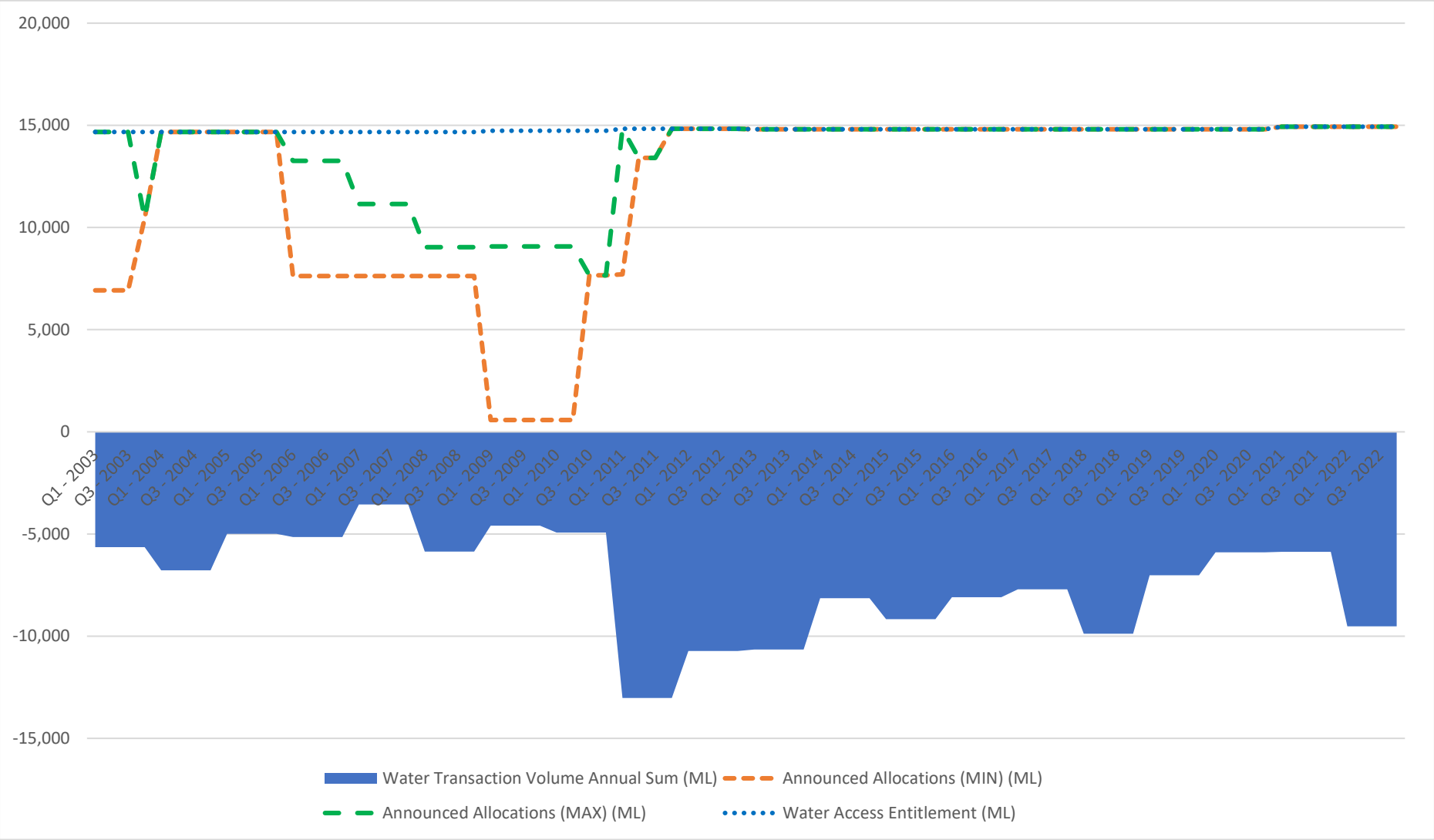

12Q offset
y = -4.8275x + 446266
R² = 0.2278
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)


16Q offset
y = -3.3044x + 361888
R² = 0.089
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

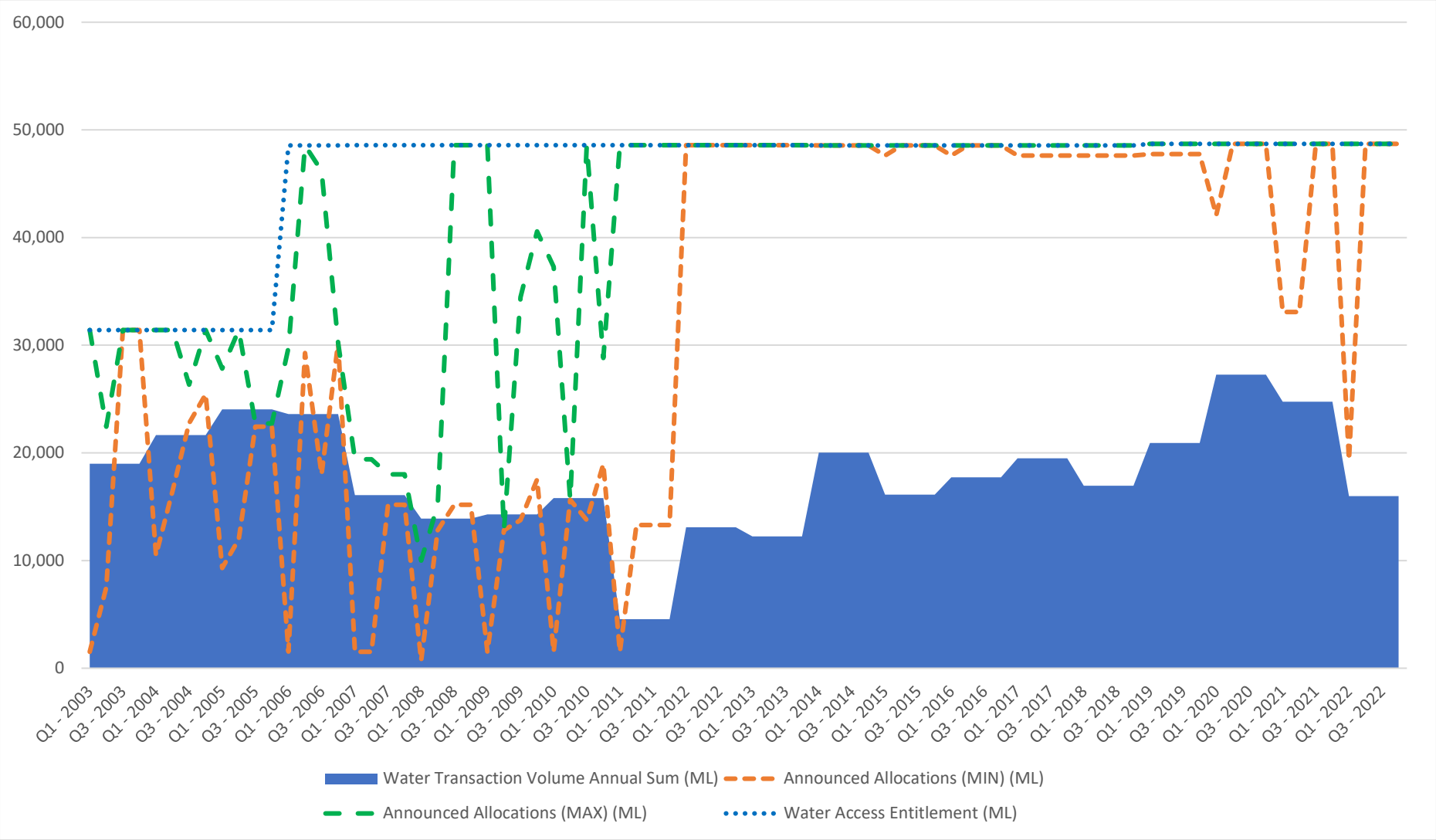

20Q offset
y = -2.5887x + 328907
R² = 0.061
Water Transaction Volume (kL)
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
0
20,000
40,000
60,000
80,000
Announced Allocations (AVG) (ML)

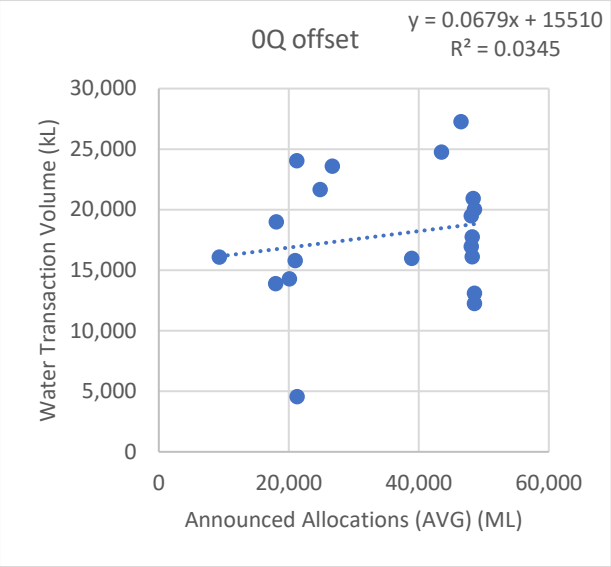
THREE MOON CREEK

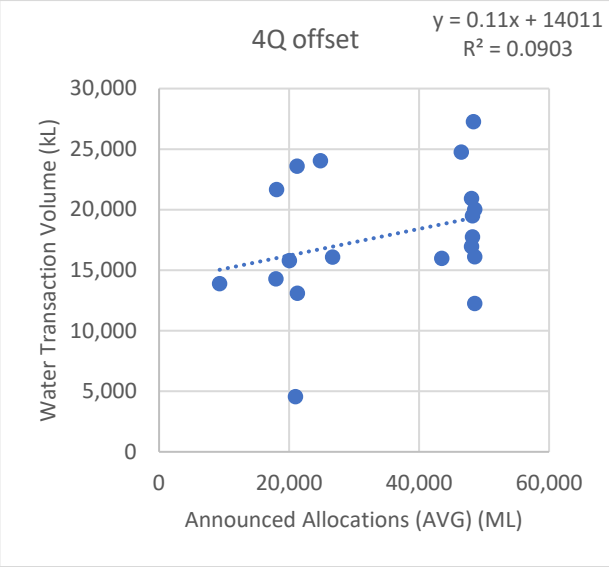
NOTE: No AA vs use charts developed, as the data provided for Three Moon Creek scheme demand shows negative volumes.

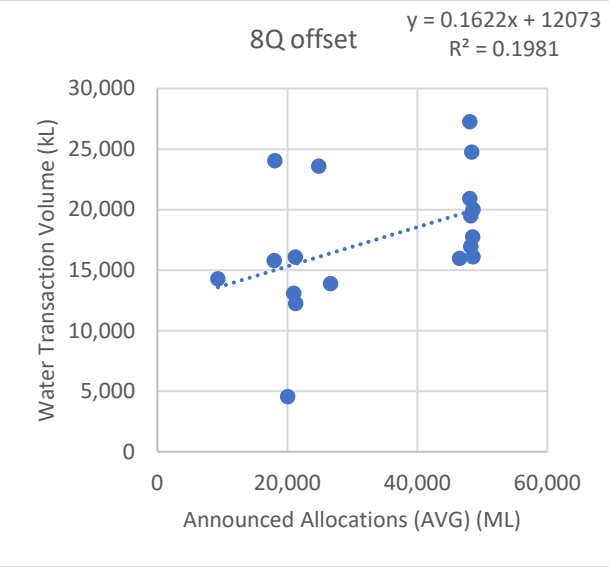


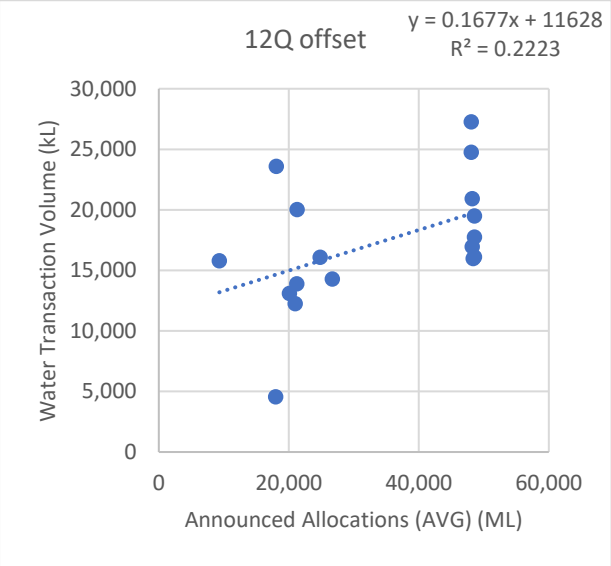
UPPER BURNETT

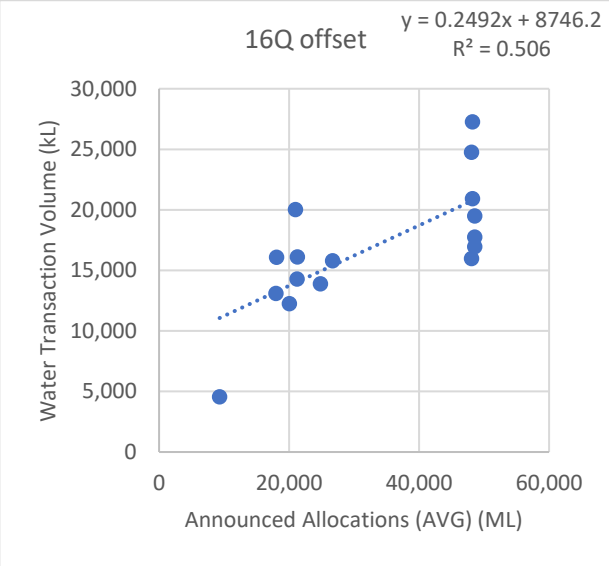


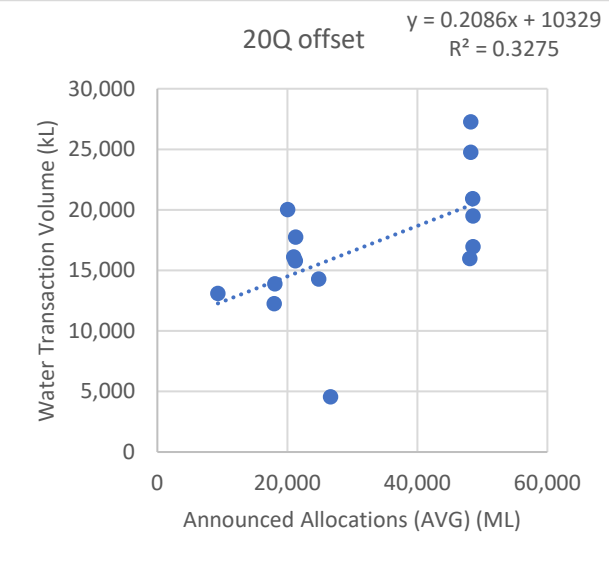

0Q offset
y = 0.0679x + 15510
R² = 0.0345
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)


4Q offset
y = 0.11x + 14011
R² = 0.0903
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

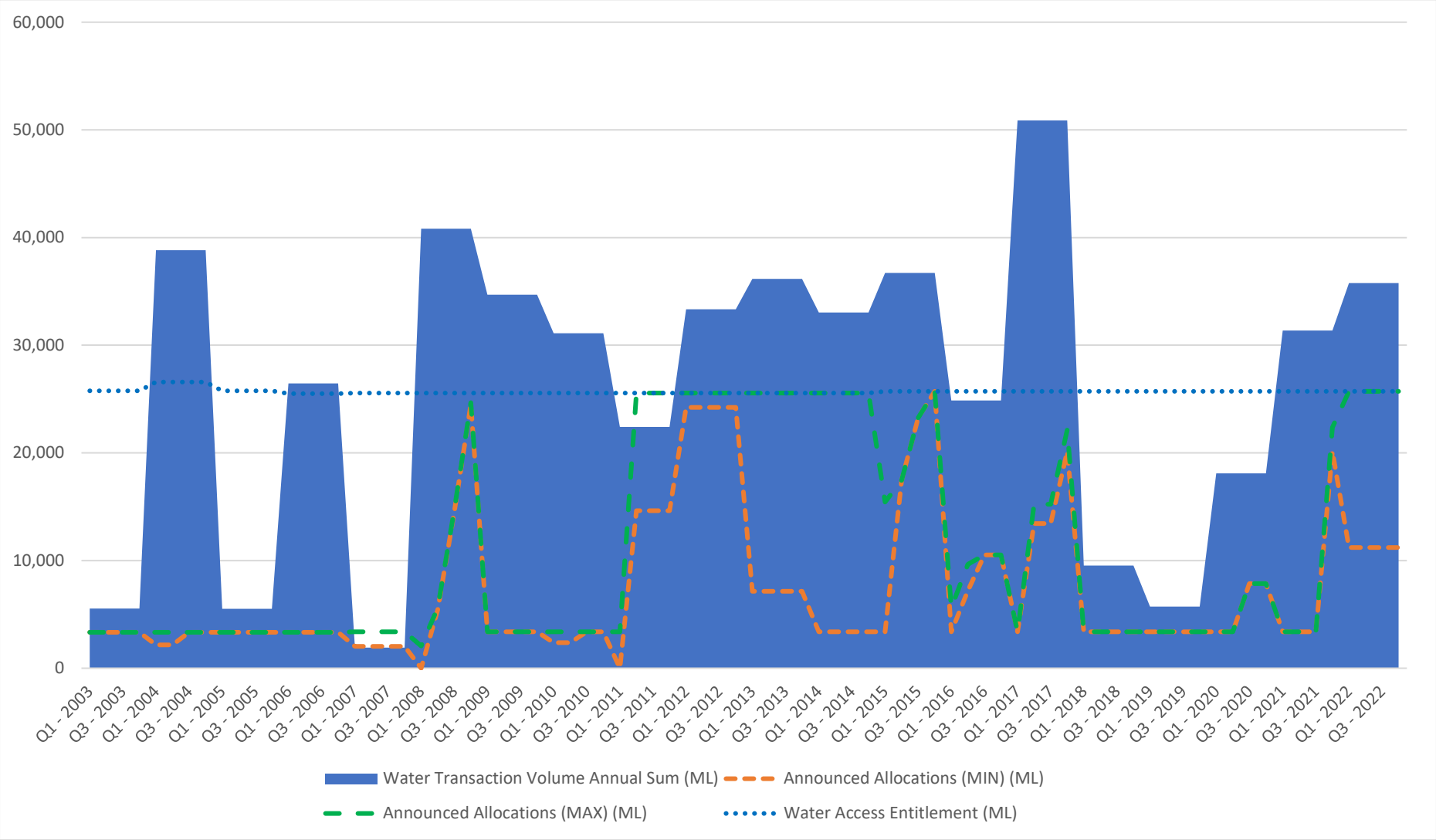

8Q offset
y = 0.1622x + 12073
R² = 0.1981
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

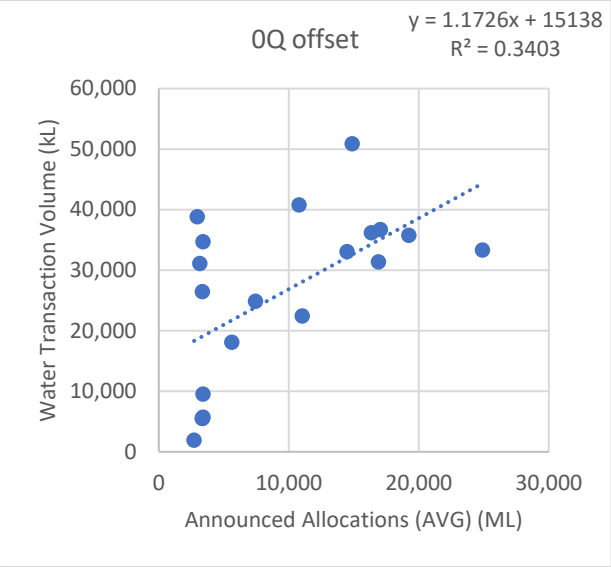

12Q offset
y = 0.1677x + 11628
R² = 0.2223
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

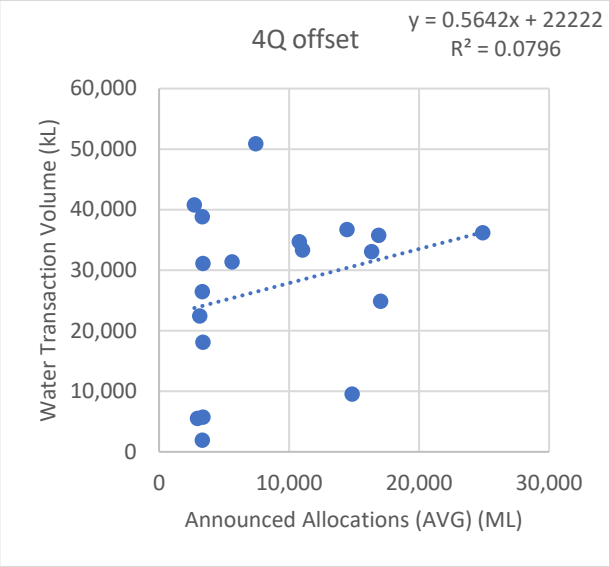

16Q offset
y = 0.2492x + 8746.2
R² = 0.506
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

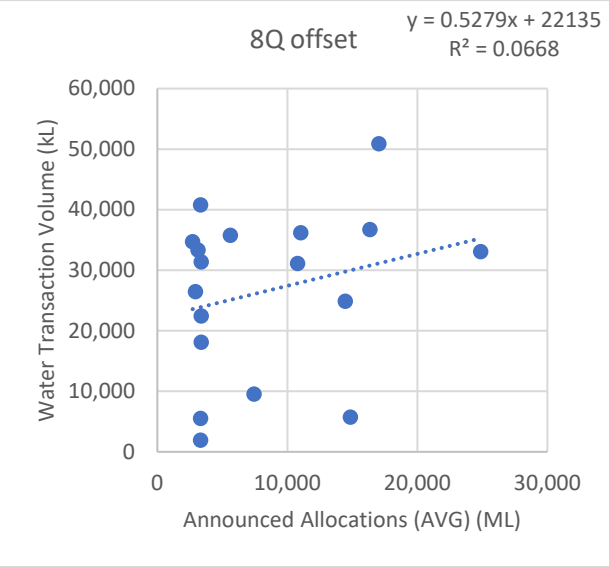

20Q offset
y = 0.2086x + 10329
R² = 0.3275
Water Transaction Volume (kL)
30,000
25,000
20,000
15,000
10,000
5,000
0
0
20,000
40,000
60,000
Announced Allocations (AVG) (ML)

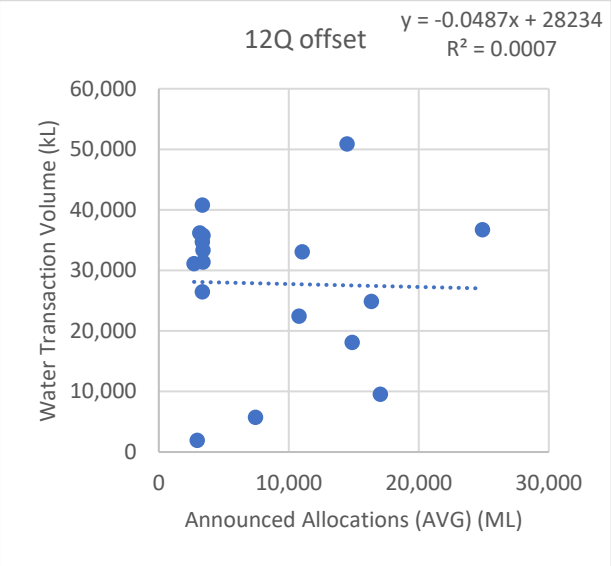
UPPER CONDAMINE

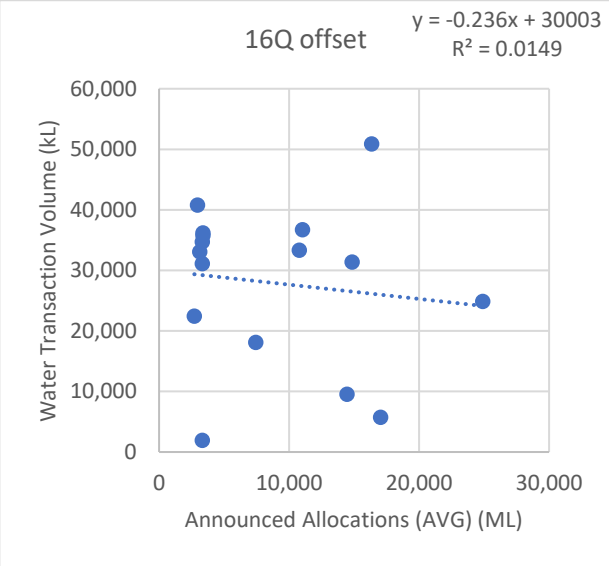


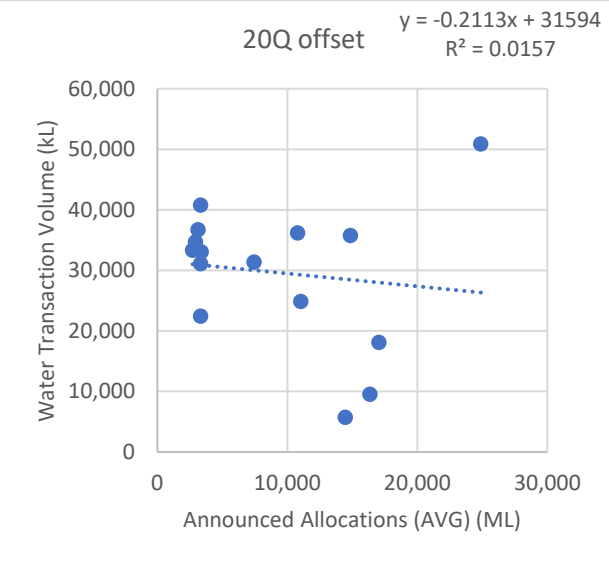

0Q offset
y = 1.1726x + 15138
R² = 0.3403
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000


4Q offset
y = 0.5642x + 22222
R² = 0.0796
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000


8Q offset
y = 0.5279x + 22135
R² = 0.0668
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000

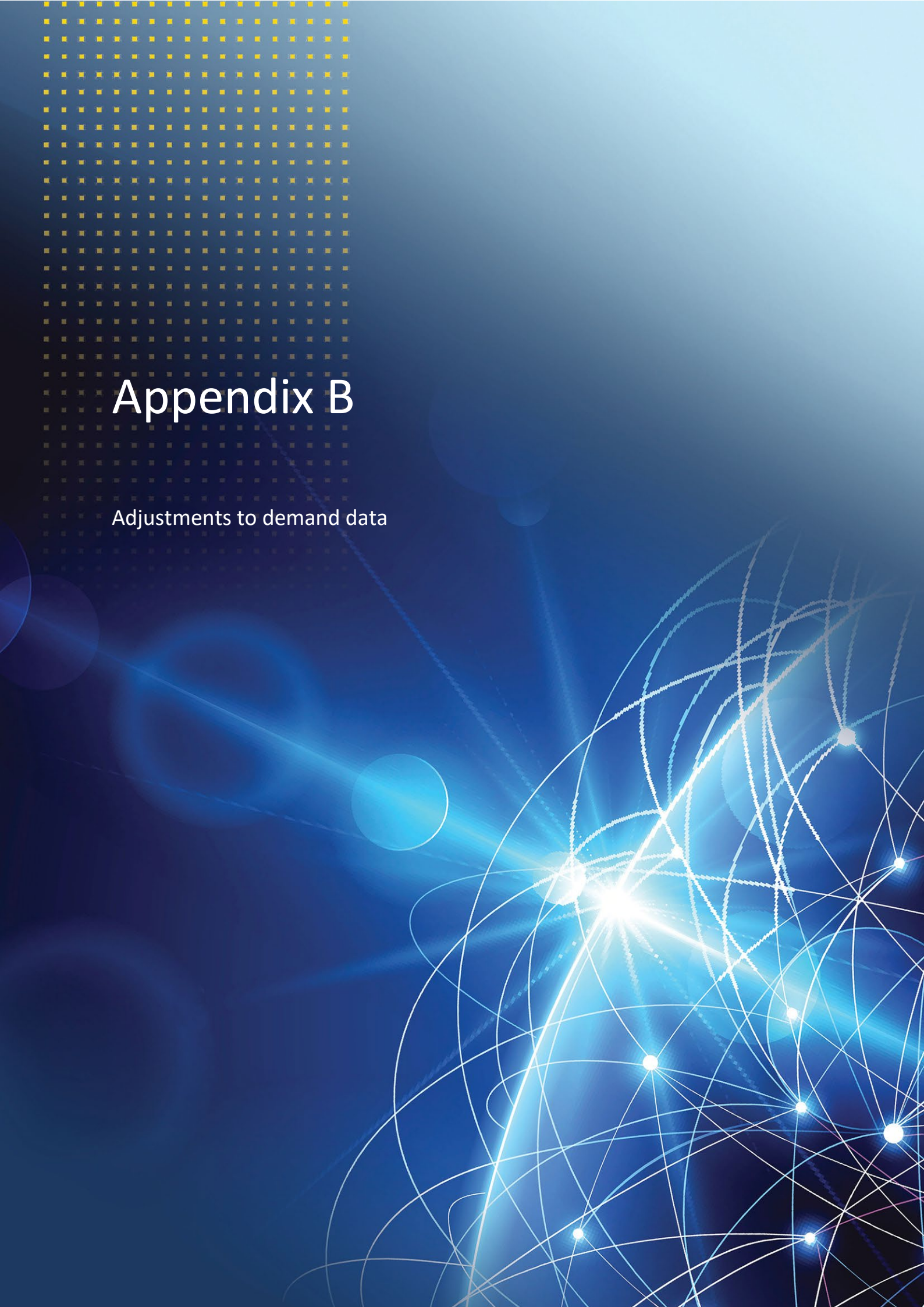

12Q offset
y = -0.0487x + 28234
R² = 0.0007
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000


16Q offset
y = -0.236x + 30003
R² = 0.0149
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000


20Q offset
y = -0.2113x + 31594
R² = 0.0157
Water Transaction Volume (kL)
Announced Allocations (AVG) (ML)
0
10,000
20,000
30,000
40,000
50,000
60,000

Appendix B

Adjustments to demand data



The following information in Table 4 below details the adjustments that are applied to the customer demand data, with the relevant column headings in **bold**.

Table 6 Filters applied to water use data to align assessment results with the previous approach

Scheme description	Adjustments to align data assessment (column headings in Bold)	Justification (Sunwater to populate)
Filters applied to all schemes	**Water_Transaction_Group** • Allocation Water Usage • Estimated Losses • Other Water Usage **Water_Transaction_Type_Desc** • Allocation Water (Positive/Negative) • Estimated Loss (Positive/Negative) • Risk A Water (Positive/Negative) **Water_Transaction_Date** • Assessment performed by financial year	
St George – Bulk water	**Textbox31** • Removed 'Environmental, S & D'	
Bundaberg with BWPL – Channel + Distribution Loss	**Water_Transaction_Type_Desc** • Added 'BW Allocation Use (Positive/Negative)' **Offtake_Type** • Removed 'River water' **Textbox31** • Removed 'SW Trading'	
Burdekin Haughton – Channel + Distribution Loss	**Operational_System_Description** • Removed 'Burdekin Moranbah Pipeline' • Removed 'Burdekin River & Burdekin Falls Dam'	
Dawson – Bulk water	**Water_Transaction_Date** • Assessed by the water year for the Dawson scheme: 1 October to 30 September. • Reported in the financial year in which the water year ended. For example, usage over the Dawson water year from 1 October 2018 to 30 September 2019 was reported in the 2019-20 financial year. This is consistent with the previous report.	
Eton – Bulk water, and Channel + Distribution Loss	**Water_Transaction_Date** • Assessed by the water year for the Eton scheme: 1 April to 30 March. For example, the water year 1 April 2018 to 30 March 2019 was designated as the 2018-19 water year.	
Lower Mary River – Channel + Distribution Loss	**Offtake_Type** • Removed 'River water'	
Mareeba-Dimbulah – Channel + Distribution Loss	**ROL_Zone_Offtake** • Included 40% only of 'Barron E – Walsh & Mitchell Catchments Supplemented Streams'	