2023 Annual Compliance Report

Murrumbidgee Irrigation

This document is the property of Murrumbidgee Irrigation Limited. The data contained in this Annual Compliance Report is for the sole purpose of meeting MI's licence compliance reporting requirements. MI does not guarantee the accuracy, reliability or suitability of excerpts of this data for any other purpose.

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Abbreviations

AFFRA	Acoustic Flowmeter For Remote Areas
ANZECC	Australian and New Zealand Environment and Conservation Council
BBS	Barren Box Storage
CSIRO	Commonwealth Scientific Investigation and Research Organisation
DPE	NSW Department of Planning and Environment
EC	Electrical Conductivity
EHG	Environment, Heritage Group
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ETo	Evapotranspiration (crop reference)
GIS	Geographic Information System
GMSRR	EPL Point 5 - Gogeldrie Main Southern Drain River Road
ha	Hectare(s)
LAG	EPL Point 4 - Gogeldrie Main Drain at Gooragool Lagoon
LTA	Long-term average
MI	Murrumbidgee Irrigation Limited
MIA	Murrumbidgee Irrigation Area
MIRFLD	EPL Point 15 - Mirrool Creek Floodway Wyvern Station
ML	Megalitre
NARREG	Narrandera Regular
NRAR	Natural Resources Access Regulator
ROCUDG	EPL Point 7 - Point Cudgel Creek Roaches Escape
SOP	Standard Operating Procedure
SWL	Standing Water Level
t	tonnes
µS/cm	micro siemens per centimetre
µg/L	micrograms per litre
WAL	Water Access Licence
YMS	EPL Point 6 - Yanco Main Southern Drain

Preface

The Annual Compliance Report for the financial year 2022/23 has been prepared to meet the reporting requirements of the licences held by Murrumbidgee Irrigation (**MI**).

MI operates under a Combined Water Supply Work Approval and Water Use Approval 40CA403245 (Combined Approval) issued by the NSW Department of Primary Industry – Water and regulated by the Natural Resources Access Regulator (**NRAR**). MI also holds an Environment Protection Licence (**EPL**) 4651 issued by the NSW Environment Protection Authority (**EPA**).

MI is committed to achieving organisational excellence through operating safely, efficiently, and effectively, all of which contribute towards the measure of MI's compliance performance.

COMBINED WATER SUPPLY WORK APPROVAL AND WATER USE APPROVAL

1 Statement of compliance

MI has met the conditions of the Monitoring and Reporting Plan dated 16 March 2018 for our Combined Approval in 2022/23. The compliance requirements are cross referenced within this report and listed in **Table 1**.

MI has quality assurance and control procedures for data integrity and to ensure that all compliance obligations are met. This includes using a NATA accredited laboratory for water sample analysis and contracting an external hydrological service provider to manage and maintain our licensed supply and discharge points.

Table 1 Combined Approval (40CA403245) reporting summary

Approval section	Condition	Report section
Submission of annual compliance report	1	This report
Plans of the area of operations, authorised works, monitoring sites and water management infrastructure	2.1	2. Plan of operations and works
	2.2	
Statement of compliance	2.3	1. Statement of compliance
Presentation of data and analyses	2.4	Sections 3 - 7
	2.5	
	2.6	
	2.7	Provided via email with report
	2.8	1. Statement of Compliance
New measures to limit groundwater recharge and discharge of salt	2.9	8. New measures to limit groundwater recharge and discharge of salt
Reporting on water management	2.10	3.3 Diversions and water allocation
	2.11	3.5 Water discharged from area of operation
	2.12	3.6 Water balance
	2.13 (a) (b)	3.1 Climate conditions
	2.13 (c) – (i)	4. Water use
Reporting on salinity and salt load	2.14	5. Salinity and salt load
	2.15	
	2.16	
Reporting on groundwater conditions	2.17	6. Groundwater conditions

Approval section	Condition	Report section
Discharge of noxious aquatic weeds	5	9.1 Discharge of noxious aquatic weeds
Discharge of blue green algae	6	9.2 Discharge of blue-green algae

Table 2 outlines the number of significant events that occurred in 2022/23 that required notification to the Minister. The significant events are detailed in Attachment A: Significant events for 2022/23

When a significant event occurs MI lodge an S91i - self reporting form and engage a Duly Qualified Person (DQP) to investigate and rectify the issue. A Certification of Validation is completed and an S91 completion form is lodged with the relevant supporting documentation.

Table 2 Significant event notifications (S91i events)

Year	Number of significant events
2022/23	4

MI did not change or modify the condition of the existing authorised water supply works or authorised discharge works listed in the Combined Approval during 2022/23. MI did not construct new works that would allow further discharge from the Area of Operations.

2 Plan of operations and works

MI's area of operations, storages and major supply and drainage channels are presented in **Figure 1.** There were no changes to **Figure 1** from the prior financial year.

The Murrumbidgee Irrigation Area (**MIA**) is supplied by water stored in Burrinjuck and Blowering dams and released to the Murrumbidgee River. Water is diverted from the Murrumbidgee River in accordance with the conditions of the Combined Approval via two authorised supply works (**Figure 2**):

- NARREG - Narrandera Regulator (after diversion from Berembed Weir via Bundidgerry Creek and regulator)
- STURT - Sturt Regulator (after diversion from Gogeldrie Weir and Coononcoocabil Lagoon)

There are five (5) sites which have the potential to discharge water outside MI's area of operations, which are presented in **Figure 2**. These sites are monitored in accordance with MI's Combined Approval and EPL 4651.

MI's five discharge monitoring points are:

- EPL Point 4 - LAG – Gogeldrie Main Drain at Gooragool Lagoon
- EPL Point 5 - GMSRR – Gogeldrie Main Southern Drain River Road
- EPL Point 6 - YMS – Yanco Main Southern Drain
- EPL Point 7 - ROCUDG – Cudgel Creek Roaches Escape
- EPL Point 15 - MIRFLD – Mirrool Creek Floodway Wyvern Station

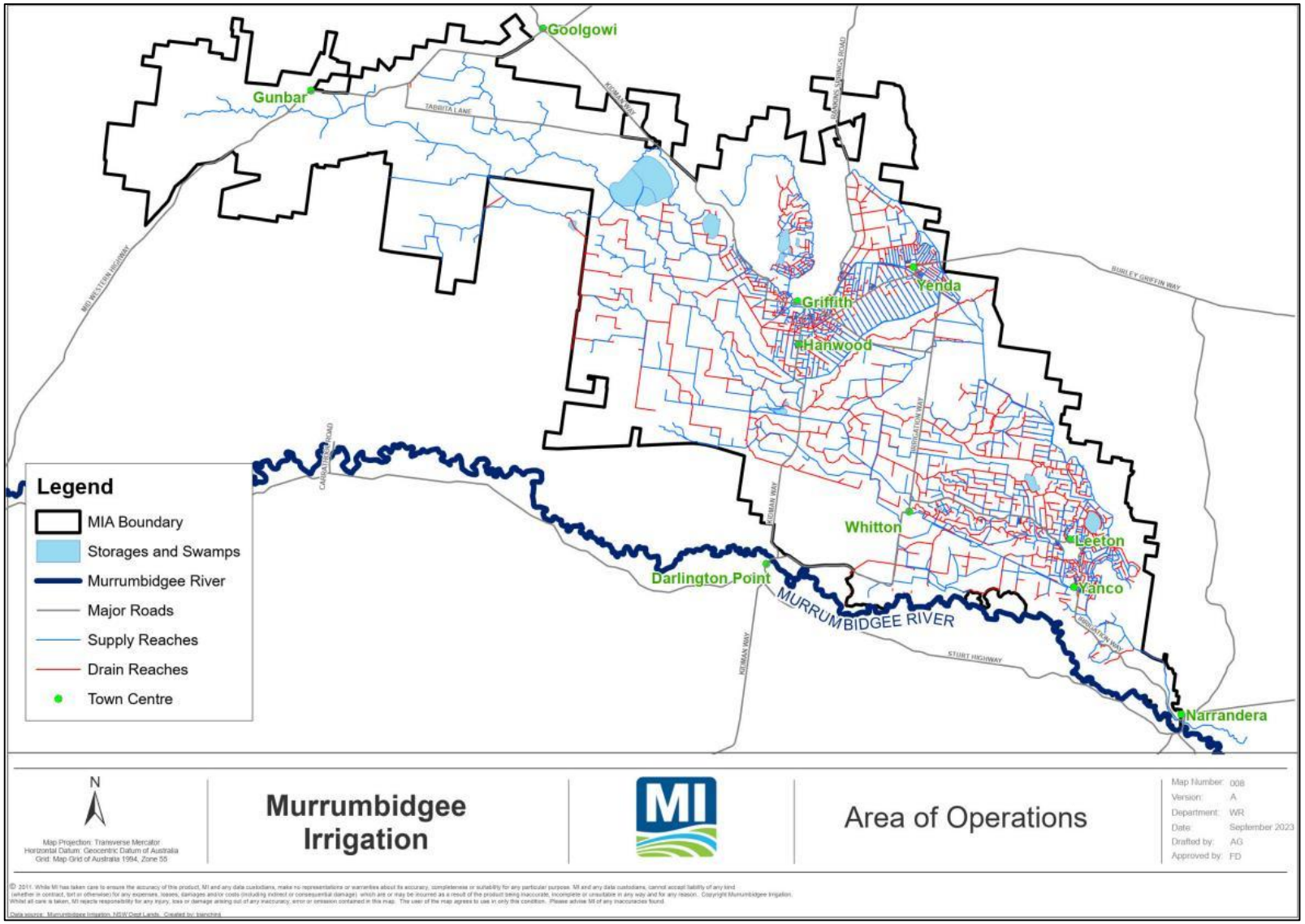

Figure 1 Murrumbidgee Irrigation's Area of Operations

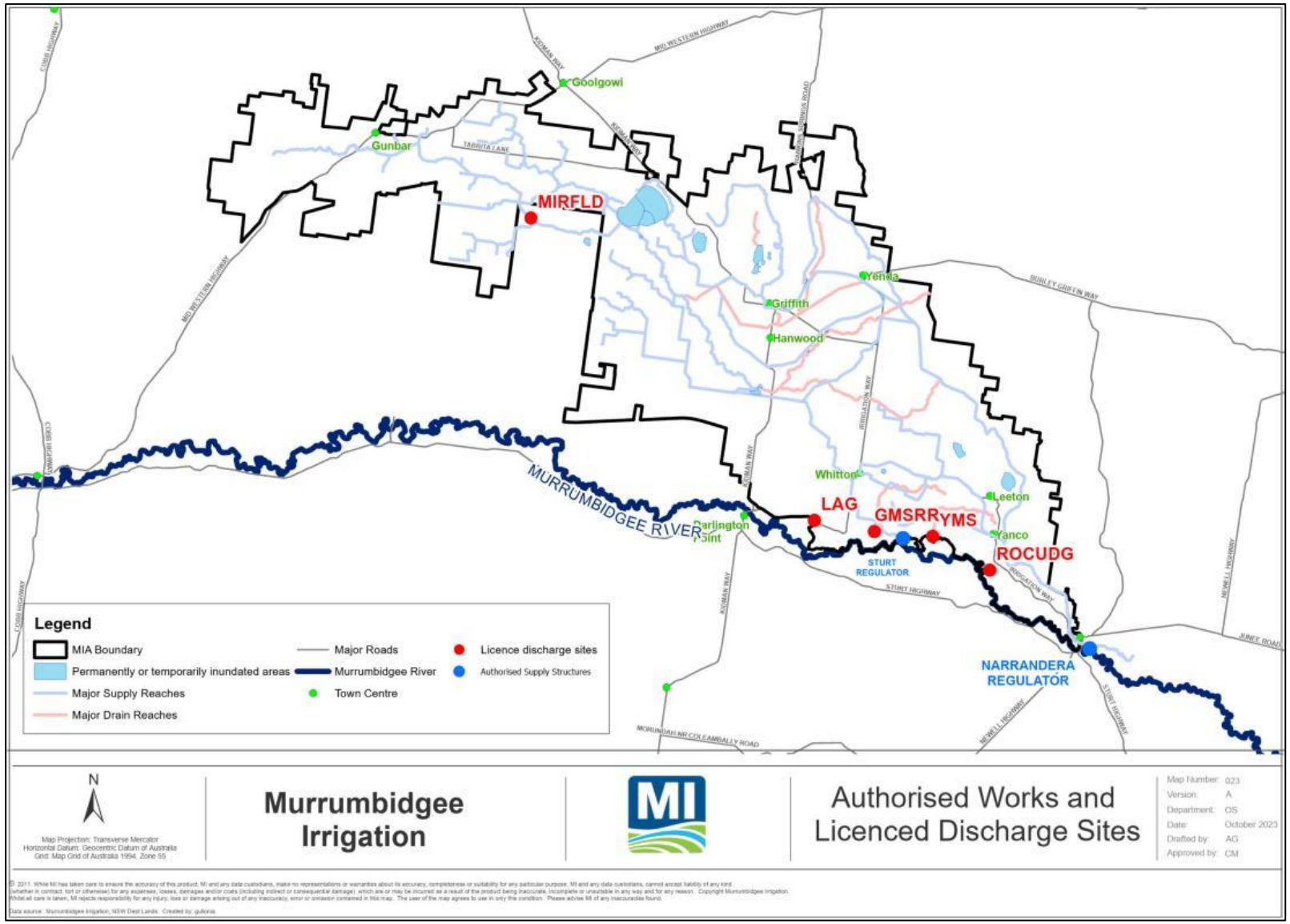

Figure 2 Location of authorised supply works and licence discharge points

3 Reporting on water management

MI's water management information is presented below. There are no internal benchmarks or targets that are relevant to this report.

The reference year 2016/17 was chosen for this year's report due to comparable climatic and water management conditions. In 2022/23 and 2016/17, the MIA experienced flood events which impacted water management within MI's area of operations including diversions, delivery volumes and discharges outside of MI's area of operations.

3.1 Climate conditions

Rainfall and evapotranspiration (ETo) data recorded at the DPI Beelbangera weather station is presented in **Table 3** for 2022/23. Past climate data was obtained from CSIRO Griffith weather station, however from 2022 the public access of this data was disabled. The DPI Beelbangera weather station correlates well with past CSIRO data, so it was chosen for data moving forward.

Above average rainfall was recorded during 2022/23 with a 12mm increase in rainfall compared to 2021/22 which also experienced above average rainfall. The 2022/23 reporting year recorded 108mm more rainfall than in 2016/17 while the ETo was 434mm less than in 2016/17. This is likely due to lower temperatures and a higher number of rain days occurring during 2022/23.

Table 3 Local weather station rainfall and ETo

Year	Total rainfall (mm)	Total ETo (mm)	Station
2022/23	664	1,159	DPI Beelbangera
2021/22	652	1,158	DPI Beelbangera
2020/21	441	1,646	CSIRO Griffith
2019/20	364	1,784	CSIRO Griffith
Surface water reference year			
2016/17	556	1,593	CSIRO Griffith
Groundwater reference year			
2010/11	739	1,391	CSIRO Griffith

3.2 Calibration report for Main Canal and Sturt Canal AFFRA units

The calibration reports for Narrandera Regulator (NARREG) and Sturt Canal offtake (STURT) AFFRA units have been provided by Ventia Utility Services as part of a contract with MI to ensure flow measurements meet the conditions of MI's Combined Approval 40CA403245.

During the 2021/22 reporting year, MI increased the rated operating range of the Main Canal and Sturt Canal AFFRA units, leading to more reliable instrument readings in 2022/23 which meant that only asset performance gaps where triaged and managed. When a gauging is taken outside of the instrument threshold it is used to update the index equation and subsequent certified volumes at the offtakes.

The calibration report summary for the NARREG AFFRA unit is presented in **Table 4** and the STURT AFFRA unit presented in **Table 5**. The VENTIA flow, EC, and salt load monitoring financial year report is included as **Attachment B**: VENTIA flow, EC, and salt load monitoring financial year report.

Table 4 Main Canal at NARREG (410127) calibration report

Date	Time (24hr)	Calibration measurements: Q measured discharge ML/day	AFFRA sensor: Q recorded mean ML/day	Deviation (%)
14/12/2022	10:36	2310.336	2335.392	-1.074
24/01/2023	16:52	3091.133	3182.976	-2.885
22/02/2023	12:33	3800.909	3663.51	3.755
19/04/2023	10:59	333.418	310.04	7.544*
24/05/2023	11:51	920.246	979.073	-5.989

* Measurement was performed on windy days

Table 5 Sturt Canal at STURT (410129) calibration report

Date	Time (24hr)	Calibration measurements: Q measured discharge ML/day	AFFRA sensor: Q recorded mean ML/day	Deviation (%)
13/12/2022	14:45	857.434	962.496	-10.919
25/01/2023	15:38	1068.077	1007.424	6.019
21/02/2023	12:42	1516.493	1463.616	3.613
18/04/2023	12:03	160.704	170.541	-5.724
23/05/2023	11:22	264.211	290.532	-8.982

3.3 Diversions and water allocation

A monthly summary of gross water diverted from the Murrumbidgee River is presented in **Table 6**. These volumes represent diversions entering the supply system via MI's two authorised water supply works at NARREG and STURT.

The total diversion volume of 613,614 ML includes an environmental water diversion volume of 837 ML diverted on behalf of Department of Planning and Environment – Environment, Heritage Group (DPE-EHG).

Table 6 Monthly summaries of water diversions delivered to customers, 2022/23

Month	STURT	NARREG	Total diversion	Delivered to customers
Jul-22	2,863	6,398	9,261	6,271
Aug-22	481	4,603	5,084	5,163
Sep-22	613	3,517	4,130	4,117
Oct-22	58	3,377	3,435	5,768
Nov-22	4,041	19,001	24,042	25,498
Dec-22	34,965	96,705	131,670	119,993
Jan-23	36,119	115,330	151,449	145,929
Feb-23	32,791	104,011	136,802	126,364
Mar-23	22,391	71,404	93,795	93,584
Apr-23	281	13,347	13,628	13,806
May-23	7,559	24,414	31,973	26,900
Jun-23	2,316	6,029	8,345	13,218
Total	**145,478**	**468,136**	**613,614**	**586,611**

Note: All figures in ML. The figures were reviewed by a certified third party and were within the approved +/- 5% and reported to Water NSW.

Water allocations, diversions, total deliveries, and climate data for 2022/23 is compared to previous years in **Table 7**. Announced allocations can determine the irrigation demand for the season, however rainfall and ETo can significantly affect the total diversions and deliveries supplied for the year.

Table 7 Water allocation, total diversions, and deliveries 2022/23 compared to previous years

Year	Announced allocation (%) general / high	Diversions (ML)	Deliveries (ML)	Rainfall (mm)	ETo (mm)
2022/23	100/100	613,614	586,611	664	1159
2021/22	100/100	684,959	646,082	652	1,158
2020/21	100/100	880,456	748,988	441	1,646
2019/20	11/95	349,523	285,270	364	1,784
2016/17	100/100	780,083	621,094	556	1,593

Note: All figures in ML

Above average rainfall was recorded throughout local and upriver catchments in 2022/23, resulting in 100% allocation for both General Security and High Security allocations. A decrease of 71,345 ML diversions and 59,471 ML of deliveries occurred between 2022/23 and 2021/22. The diversions and deliveries supplied in 2016/17 are slightly higher than those supplied in 2022/23 owing to less rainfall in the MIA during 2016/17.

The volume of water diversions debited to each grouping of MI's Water Access Licences are shown in **Table 8**.

Table 8 Diversions debited to Water Access Licences groups

Year	WAL 1 High Security	WAL 2 General Security	WAL 3 Towns	WAL 4 Stock & Domestic	WAL 5 Other
2022/23	225,705	196,269	19,699	6,384	165,557
2021/22	244,199	255,941	19,699	6,384	158,736
2020/21	231,450	404,808	19,699	6,384	218,115
2019/20	212,062	50,985	19,699	7,263	59,514

Note: All figures in ML. WAL 5 Other includes Supplementary Water Access and Conveyance licences

3.4 Environmental diversions

At the request of DPE-EHG, 837 ML of environmental water was delivered in 2022/23 as shown in **Table 9**. This volume is accounted for in total diversions and deliveries shown in **Table 7**.

Table 9 Environmental water diversions for 2022/23

Month	Cudgel Creek	Turkey Flats	Yanco Ag	Nericon Swamp	Total
Jul-22	0	0	0	0	0
Aug-22	0	0	0	0	0
Sep-22	0	0	0	0	0
Oct-22	0	0	0	0	0
Nov-22	0	0	0	0	0
Dec-22	0	0	0	0	0
Jan-23	0	0	0	0	0
Feb-23	57	0	0	0	57
Mar-23	238	0	0	0	238
Apr-23	0	0	0	117	117
May-23	0	0	0	35	35

Month	Cudgel Creek	Turkey Flats	Yanco Ag	Nericon Swamp	Total
Jun-23	0	190	200	0	390
Total (ML)	**295**	**190**	**200**	**152**	**837**

Due to flows from the Mirrool Creek exceeding the capacity of the Active and Intermediate cells at Barren Box Storage and Wetland (BBSW) approximately 42,157 ML was diverted into the Barren Box Wetland cell. Diversion to the wetland cell occurred in September 2022, December 2022, April 2023 and June 2023.

3.5 Water discharged from area of operations

Monthly discharge volumes for each discharge monitoring point are shown in **Table 10**. A total of 118,046 ML was discharged from MI's Area of Operations during 2022/23.

Table 10 Monthly discharge volumes (ML) recorded at monitoring points

Month	LAG (41010940)	ROCUDG (41010005)	YMS (410083)	GMSRR (41010921)	MIRFLD (41010163)
Jul-22	3.3	0[B]	0	0.6	0
Aug-22	0[B]	0[B]	0	0.6[B]	7,459.6
Sep-22	0[B]	0[B]	0	0[B]	13,053.1
Oct-22	0[B]	0[B]	0	0[B]	34,712
Nov-22	0[B]	0[B]	0	0[B]	44,340
Dec-22	757.6[N]	151[?]	0	201[*]	10,744
Jan-23	617.2[R]	87.6[?]	0	1.2[*]	2.8
Feb-23	836.8[R]	8.1[R]	0	10.5	0.1
Mar-23	946.6[R]	1,248[N]	0	12.9	652.5
Apr-23	756.2[R]	190	0	0	1,152.5
May-23	31.3	33.6	0	1.5	0
Jun-23	13.8	14.1[R]	0	5.6	0
Total	**3,963**	**1,733**	**0**	**233.9**	**112,116**

Note: All figures in ML
B Backed-up stage
N Rating table extrapol. within x1.5 max flow
R Rating table extrapolated
? Irregular data use with caution
*Debris affecting sensor

The total discharged volumes from MI's Area of Operations compared to prior years is presented in **Table 11**.

The total volume discharged in 2022/23 was notably higher than the prior years. This was a result of several factors including:

- Above average rainfall
- Saturated catchments
- Implementation of operational guideline measures via discharges to the Lower Mirrool Creek Floodway in response to excess flows from the Mirrool Creek upper catchment and MI's Channel 13 drainage system.

Table 11 Total volumes discharged from the MIA

Year	Total discharged (ML)
2022/23	118,046
2021/22	8,595
2020/21	900
2019/20	127
2016/2017	122,092

3.6 Water balance

The annual water balance in **Table 12** has been produced to meet condition 2.12 of the Combined Approval Monitoring and Reporting Plan. To assist with interpretation of this water balance, each line has been referenced to the specific requirements of Condition 2.12.

The conveyance volumes represented in this water balance account for seepage, evaporated water from in channel and storage, and general conveyance required to deliver water to customers.

Total gross diversions of 613,614 ML for 2022/23 were used to generate water deliveries of 585,774 ML to customers, 837 ML for environmental water diversions plus 42,157 ML into Barren Box Wetland cell.

The water captured volume in **Table 12** includes water that entered MI's area of operations via Mirrool Creek due to the upper catchment area flooding. Excess flood flows from the Mirrool Creek upper catchment led to the release of 112,116 ML of water via the Mirrool Creek Floodway which is captured below in overland flood discharge.

Table 12 Annual water balance as at 1 July 2023 and prior years

Condition	Sources	2022/23	2021/22	2020/21	2019/20	2016/17
2.10 (a) (b) (c)	River diversions	613,614	684,959	880,456	349,523	780,083
2.12 (c)	Internal storage (July 1)	39,152	35,402	4,724	2,434	29,042
2.12 (b)	Water captured (estimate)	156,269	15,113	5,870	0	171,376
	Total	**809,035**	**735,474**	**891,050**	**351,957**	**980,501**
	Applications					
2.10 (d)	Deliveries to customers (river and storages)	585,774	645,499	748,988	281,658	670,319
2.11 (a)	Discharges (without credit)	48,086+	12,872	4,822	127	121,363
2.11 (b)	Environmental water diversions	837	583	3,483	3,612	986
2.12 (b) loss	Overland flood discharge	112,116	0	0	0	27,555
2.12 (b) loss	Conveyance	27,003	37,368	98,355	61,836	127,960
2.12 (c)	Internal storage (June 30)	35,219	39,152	35,402	4,724	32,318
	Total	**809,035**	**735,474**	**891,050**	**351,957**	**980,501**

Note: All figures in ML.
+ includes 42,157 ML for BBS Wetland Cell for 2022/23

4 Water use

4.1 Crop statistics

Customers are required to nominate the intended purpose of their water use, including crops, when placing water orders. This data is not validated at the farm level and is therefore an estimate only. **Table 13** shows water deliveries and estimated crop water use for 2022/23. It is important to note the water use data presented for the total area of crop is influenced by seasonal rainfall, ETo and irrigation practices.

The 'Not Defined' category refers to water taken by MI customers without placing an order. This information is obtained after the meter is read and does not provide an opportunity to allocate the water to a use.

Table 13 Summary of water deliveries for major crop groupings 2022/23

Crop/ purpose	Area (ha)	Volume delivered (ML)	Crop water use (ML/ha)
Citrus	7,197	24,721	3.4
Cotton	13,626	71,273	5.2
Environment	1	837	342.6
Industrial	26.2	7,643	291.7
Nuts	8,713	41,562	4.8
Other crops	209.1	3,139	15
Other fruits	1,022	3,232	3.2
Plantation	93	29	0.3
Rice	21,034	259,067	12.3
Stock & Domestic	240.6	5,740	23.9
Summer cereals	1,945	17,196	8.8
Summer oilseeds	760	4,184	5.5
Summer pasture	1,467	8,274	5.6
Town supply	3	8,185	2,728.4
Vegetables	1,595	6,587	4.1
Vines	16,656.3	50,097	3
Winter cereals	20,276	23,718	1.2
Winter oilseeds	3,728	4,860	1.3
Winter pasture	5,081	14,285	2.8
Not defined*	-	31,981	-
Total	**103,672**	**586,611**	

*No crop type assigned

A comparison of crop water use for 2022/23 with prior years is presented in **Table 14** and **Figure 3**.

A 100% general security allocation was maintained and saw an increase in seasonal summer cropping deliveries in 2022/23. This was coupled with high annual rainfall which enabled on farm water storage to be utilised throughout summer. Rice crops accounted for the highest volume of water deliveries in the MIA, followed by citrus, vines and other fruits. In previous years, rice, cereals and oil seeds along with cotton were the main crop types receiving the highest proportion of water delivery volumes.

Figure 3 shows this reporting year's water deliveries correlate with the 2016/17 comparison year. The seasonal outlook and allocations were very similar for both years. The biggest difference between the two years is in deliveries to rice, which received 45,133 ML less deliveries in 2022/23 than in 2016/2017. This can be attributed to higher deliveries in 2016/17 with 49% of deliveries in 2016/17 going towards rice, compared to 46% of deliveries going to rice in 2022/23.

Cereals and oil seeds experienced similar deliveries compared to 2016/17 season despite this crop type receiving the greatest decrease of deliveries by 56,783 ML when compared to last season 2021/22. Deliveries for this crop type in 2022/23 were 79,036 ML less than the average of the preceding two reporting years. This is the result of climatic conditions experienced throughout the last two years.

Table 14 Total deliveries to major crop types 2022/23 compared to previous years

Year	Rice	Pasture	Cereals and oil seeds	Vegetables	Citrus, vines, other fruits	S&D, towns, industrial	Cotton	Other crops, plantations+	Nuts+
2022/23	259,06	22,559	49,958	6,587	78,050	13,383	71,273	3,168	41,562
2021/22	240,20	16,526	106,741	7,321	75,756	12,422	99,949	2,969	45,055
2020/21	250,51	25,742	151,247	11,587	121,579	27,092	62,778	56,611	
2019/20	27,302	4,346	30,105	10,655	114,229	22,216	1,170	23,969	
2016/17	304,20	26,030	57,479	10,129	109,257	9,844	82,004	71,376	

Note: All figures in ML. Excludes 'not defined' deliveries from **Table 13**.
+ Prior to 2021/22 Nuts were reported under 'other crops, plantations'

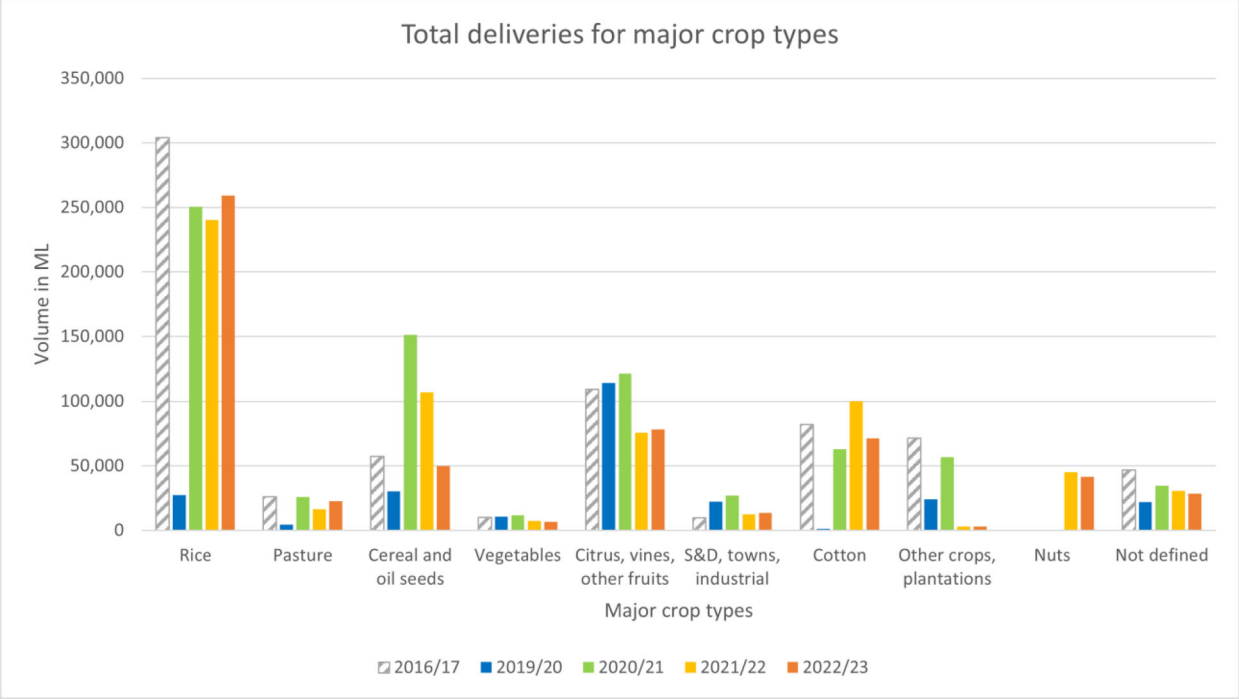

Figure 3 Comparison of total water deliveries to major crop types

4.2 Irrigation intensity

Irrigation intensity is displayed in **Figure 4** by water use (ML/ha), from data obtained from customer deliveries and is displayed per property. This map identifies locations of landholdings using between > 0 to 4; > 4 to 8; and above 8 ML/ha of irrigation water.

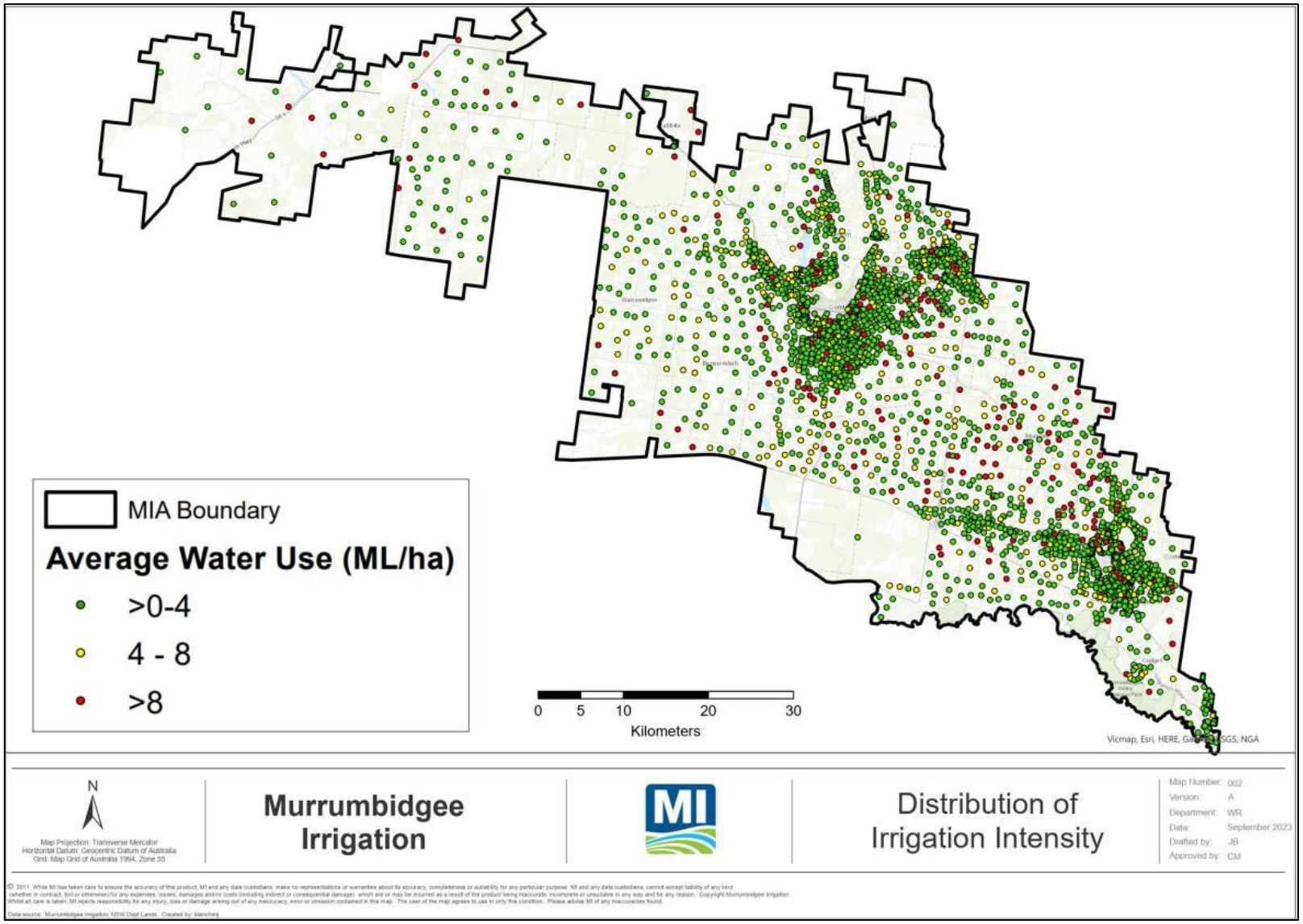

Figure 4 Distribution of irrigation intensity across the MIA

5 Salinity and salt load

5.1 Extracted salt load

The monthly mean electrical conductivity (EC) values and extracted salt loads are calculated using EC sensors at MI's two river offtake sites NARREG and Sturt and presented in **Table 15**. Attachment B: VENTIA flow, EC, and salt load monitoring financial year report contains Ventia's report which outlines the data and quality assurance information.

Table 15 Total extracted salt load for 2022/23

Month	STURT			NARREG		
	Flow (ML)	Mean EC (µS/cm)	Salt (t)	Flow (ML)	Mean EC (µS/cm)	Salt (t)
Jul-22	2,863	155[T]	181[V]	6,398	163	619[V]
Aug-22	481	148	85[V]	4,603	198	542
Sep-22	613	182	66[V]	3,517	211	467
Oct-22	58	183	77[V]	3,377	208	253
Nov-22	5,041	182	492[K]	19,001	185	1,996
Dec-22	34,965	180	3731[K]	96,705	182	10,220
Jan-23	36,119	127	2855[K]	115,330	144	10,480
Feb-23	32,791	124	2399[V]	104,011	139	8,469[V]
Mar-23	22,391	133	1757[V]	71,404	142	5,833[K]
Apr-23	281	199	52[K]	13,347	242	1,900[K]
May-23	7,559	270	1057[V]	24,414	268[V]	3,250[V]
Jun-23	2,316	149[T]	245[T]	6,029	163[V]	515[V]
Total	**145,478**		**12,997**	**468,136**		**44,544**

V Operational data
K Minor editing
T Probe out of water/below instrument threshold

The total extracted salt loads for 2022/23 compared to prior years is presented in **Table 16**.

During 2022/23, an estimated 57,541 tonnes of salt was imported into MI's area of operations from the Murrumbidgee River. A decrease of 2,603 tonnes of salt was imported into MI's area of operations compared to 2021/22.

During 2016/17 MI received more diversions than 2022/23, however, during 2022/23 the salt volume imported into MI's area of operation increased by 29% compared to 2016/17. Higher EC was recorded at STURT and NARREG in 2022/23, with a maximum EC of 441 µS/cm compared to a maximum EC of 108 µS/cm recorded in 2016/17.

Table 16 Extracted salt load (t) for 2022/23 compared to prior years

Year	Diversions (ML)	Extracted salt load (t)		
		STURT	NARREG	Total
2022/23	613,614	12,997	44,544	57,541
2021/22	684,959	15,965	44,179	60,144
2020/21	880,456	19,975	53,357	73,332
2019/20	349,523	1,787	17,030	18,817
2016/17	780,083	11,722	32,903	44,625

5.2 Discharged salt load

There are five licensed locations where discharge water from MI's area of operations is monitored in accordance with MI's Combined Approval and EPL 4651. The locations of these sites are shown in **Figure 2**.

Flow, EC and salt load data for these sites is presented in **Table 17**. During periods of no or low flow, while EC measurements continue to be recorded from the standing pool, no salt load is discharged. Accordingly, minor flows do not trigger accurate measurements to enable robust salt load calculations.

An estimated salt load of 18,464 tonnes were discharged from MI's area of operations through the five discharge monitoring points in 2022/23.

Table 17 Monthly summary of flow, EC, and salt loads at monitoring points for 2022/23

Month	Flow (ML)	Mean EC (µS/cm)	Min EC (µS/cm)	Max EC (µS/cm)	Salt load (t)
Yanco Main Southern Escape (YMS) 410083					
Jul-22	-	375[T]	246[T]	732[T]	-
Aug-22	-	218[T]	190[T]	323[T]	-
Sep-22	-	267[T]	202[T]	331[T]	-
Oct-22	-	157[T]	101[T]	188[T]	-
Nov-22	-	137	74.2	191	-
Dec-22	-	239	128	397	-
Jan-23	-	185	131	294	-
Feb-23	-	179	133	255	-
Mar-23	-	170	109	258	-
Apr-23	-	212	80.1	320	-
May-23	-	302	188	405	-
Jun-23	-	244	206	268	-
Total	**0**				**0**
Gooragool Lagoon Escape (LAG) 41010940					
Jul-22	3.3[B]	448[T]	9.4[T]	612[T]	1[T]
Aug-22	0[B]	-[B]	-[B]	-[B]	0[B]
Sep-22	0[B]	-[B]	-[B]	-[B]	0[B]
Oct-22	0[B]	-[B]	-[B]	-[B]	0[B]
Nov-22	0[B]	-[B]	-[B]	-[B]	0[B]
Dec-22	757.6[N]	321	182	846	134[N]
Jan-23	617.2[R]	245[*]	138[*]	554[*]	68[*]
Feb-23	836.8[R]	-[*]	-[*]	-[*]	0[*]
Mar-23	946.6[R]	134[*]	84.7[*]	177[*]	6[*]
Apr-23	756.2[R]	168	46.4	257	72[R]
May-23	31.3	312	73.3	514	5
Jun-23	13.8	309	47.1	967	2
Total	**3,962.8**				**288**
Gogeldrie Main Southern Escape (GMSRR) 41010921					
Jul-22	0.6	176[T]	153[T]	188[T]	0[T]

Month	Flow (ML)	Mean EC (µS/cm)	Min EC (µS/cm)	Max EC (µS/cm)	Salt load (t)
Aug-22	0.6[B]	93[B]	74.2[B]	103[B]	0[B]
Sep-22	0[B]	-[B]	-[B]	-[B]	0[B]
Oct-22	0[B]	-[B]	-[B]	-[B]	0[B]
Nov-22	0[B]	-[B]	-[B]	-[B]	0[B]
Dec-22	201[*]	298[B]	233[B]	377[B]	6[*]
Jan-23	1.2[*]	332	92.3	664	0[*]
Feb-23	10.5[M]	316[M]	192[M]	498[M]	2[M]
Mar-23	12.9	253	153	369	2
Apr-23	0	519[T]	69.1[T]	865[T]	0[T]
May-23	1.5	-[T]	-[T]	-[T]	0[T]
Jun-23	5.6	-[T]	-[T]	-[T]	0[T]
Total	**233.9**				**10**
Cudgel Creek Escape (ROCUDG) 41010005					
Jul-22	0[B]	165[B]	160[B]	169[B]	0[B]
Aug-22	0[B]	168[B]	162[B]	176[B]	0[B]
Sep-22	0[B]	-[B]	-[B]	-[B]	0[B]
Oct-22	0[B]	-[B]	-[B]	-[B]	0[B]
Nov-22	0[B]	-[B]	-[B]	-[B]	0[B]
Dec-22	151[?]	241[?]	198[?]	321[?]	21[?]
Jan-23	87.6[?]	430[?]	319[?]	595[?]	22[?]
Feb-23	8.1[R]	472[T]	461[T]	501[T]	2[T]
Mar-23	1,248[N]	194[?]	129[?]	295[?]	162[?]
Apr-23	190	143	128	156	16
May-23	33.6	145	118	179	3
Jun-23	14.1[R]	177	145	227	1[R]
Total	**1,732.3**				**227**
Mirrool Creek Floodway (MIRFLD) 41010163					
Jul-22	0	-	-	-	0
Aug-22	7,459.6	379.55	311.2	447.9	1,812
Sep-22	13,053.1	349.2	349.2	349.2	2,917.2
Oct-22	34,712	358.6	358.6	358.6	7,966.5
Nov-22	44,340	165.2	165.2	165.2	4,688
Dec-22	10,744	-	-	-	0
Jan-23	2.8	-	-	-	0
Feb-23	0.1	-	-	-	0
Mar-23	652.5	357.4	357.4	357.4	149.3
Apr-23	1,152.5	550.5	550.5	550.5	406
May-23	0	-	-	-	0
Jun-23	0	-	-	-	0
Total	**112,116.6**				**17,939.1**

Note: See Ventia's report in Attachment B for further details. EC values for MIRFLD include compliance and due diligence monitoring results which were recorded during extended periods of release to the floodway.

Table 18 details the discharged salt load for the current reporting year and prior years, including the reference year.

While the salt load in tonnes increased, as expected with the higher volume discharged overall, the percentage of salt load per megalitre is slightly below the average salt load percentage from 2019/20 to 2021/22 and lower than the baseline year of 2016/17. During August to December 2022, large volumes of water were released to the Mirrool Creek Floodway (MIRFLD) to mitigate flooding in the MIA. Due to releases at MIRFLD being regulated, EC results are based on compliance and due diligence field monitoring during the operation of the MIRFLD. During the periods of extended release, salt load calculations cannot fully represent the total salt load discharged via MIRFLD. Accordingly, the discharged salt load was below average in 2022/23. The percentages for these years are shown in **Table 18**.

The salt load per megalitre recorded over the past four years was consistently low, including where water was discharged in larger quantities. This can be attributed to MI's efforts to recycle irrigation discharge water within the MIA and our customer's efforts to improve water efficiency by recycling waters on-farm.

Table 18 Discharged salt load 2022/23 compared to prior years

Year	Water discharged (ML)	Discharged Salt load (t)	Salt load/volume discharged (t/ML)
2022/23	118,046*	18,464	0.156
2021/22	8,595	1,555	0.181
2020/21	900	88.5	0.098
2019/20	127	25	0.197
2016/17	122,092*	34,230	0.28

* Flood events

5.3 Salt load summary

The salt loads presented in **Table 19** displays 57,541 tonnes of salt were received through diversions recorded at MI's authorised supply works (NARREG and STURT). A total of 18,464 tonnes were discharged from the area of operations and an estimated 39,077 tonnes were retained within the MIA.

Table 19 Salt load summary for 2022/23

Extracted	**Salt load (t)**
STURT	12,997
NARREG	44,544
Total extracted	**57,541**
Discharged	**Salt load (t)**
YMS	0
GMSRR	10
LAG	288
ROCUDG	227
MIRFLD	17,939.1
Total discharged	**18,464**
Retained	**Salt load (t)**
MIA	**39,077**

It is important to note that this is a simple annual salt balance that considers salt loads entering via authorised works and leaving via approved discharge locations. The balance does not consider other factors that impact total salt loads in the MIA.

No additional data is held by MI that is relevant to the assessment of salinity impacts under the Murray Darling Basin – Basin Salinity Management 2030.

6 Groundwater conditions

The following information is provided from MI's groundwater network monitoring only. MI cannot comment on influences on groundwater from other sources, including groundwater extraction by private owners or other entities and any recharge or disturbance from other developments or activities.

NRAR, via their Annual Review of MI's last Annual Compliance Report, noted MI is non-compliant with Condition 2.17 regarding having 90% of our piezometer network usable. NRAR acknowledged that MI are working toward compliancy with DPE Water.

MI is currently investigating the rationalisation of our groundwater network, including the tubewell sites. MI engaged a specialist consultant to undertake this investigation and assist in any application for amending the network under our Combined approval. MI is liaising with DPE Water staff on this matter to ensure we meet the requirements of any amendment, including appropriate supporting information as justification for the requested change.

6.1 Groundwater monitoring and reporting

Groundwater monitoring was completed in the last quarter of 2022. The network consists of piezometers in the Shallow and Deep Shepparton Formation and a smaller monitoring network in the Calivil Formation.

A total of 641 piezometers are required to be monitored and reported on as per **Attachment B** of the Monitoring and Reporting Plan. The locations of these bores are displayed in **Figure 5**, which has not changed from the prior financial year report.

Factors affecting the percentage read includes an increasing number of piezometers found to be destroyed by land development or other activities outside of MI's control. In 2022, flooding led to high water levels in the Murrumbidgee River and associated estuaries, along with saturated access across the MIA causing limited access to piezometers in some areas. Where access was available, a concerted effort was made during the 2022 monitoring rounds to validate where piezometers were destroyed or not found. Of the piezometers available to be read, 96% were read in 2022.

Due to the wet conditions and flood warnings of the Murrumbidgee River MI was unable to complete the monitoring in August (+/- 2 weeks) in line with condition 2.17 and Attachment 2 of MI's Combined Approval. MI notified NRAR in September 2022 upon becoming aware of the constraints. The monitoring was completed between August – November 2022 once safe access became available.

Table 20 provides a status summary of the groundwater piezometers monitored in 2022.

A total of 540 piezometers were read during the monitoring, a decrease of seventeen from the prior year. The total piezometers read equates to 84.24% of the network.

Table 20 Groundwater piezometer status summary 2022

Total bores	Total destroyed+	Dry, flooded or blocked	Total read	Total unable to read
641	77	46	540	24++

Note: + piezometers damaged or destroyed in the field due to land development or other uses or actions.
++ includes 24 inaccessible piezometers due to flood effected access.

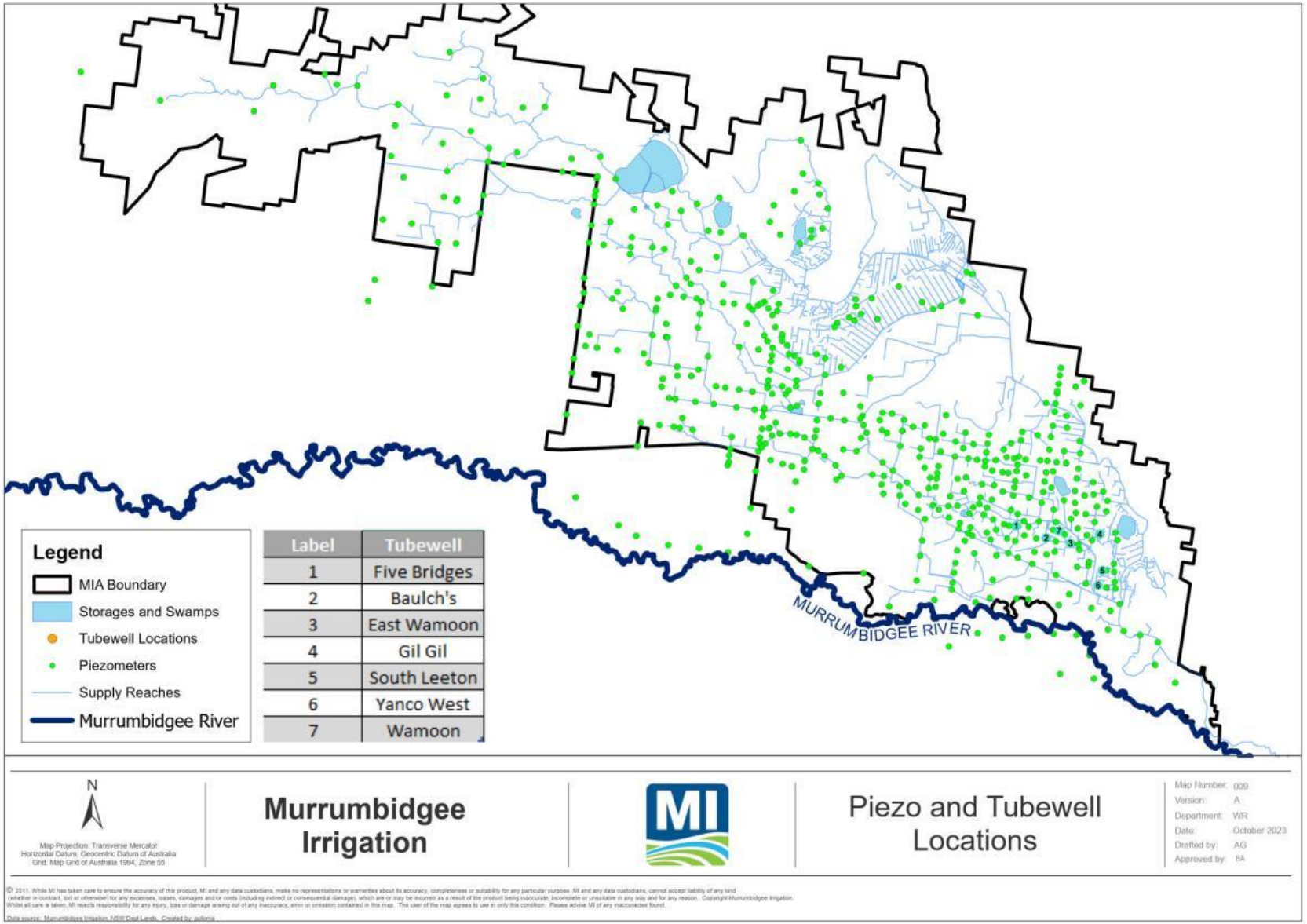

Figure 5 Location of piezometers and tubewells in the MIA 2022/23

Depth to water table data is reported for 2022/23, 2021/22, 2020/21, 2019/20 and 2010/11. The groundwater data, read in August 2022, is more likely to be influenced by the prior year's climatic and land conditions. The 2010/11 year was chosen as the historical reference year for groundwater. That year had climatic conditions such as rainfall and evapotranspiration, along with announced allocation in the MIA comparable to the 2021/22 year (i.e. the year prior to the readings).

The number of piezometers read within depth ranges for 2022 are shown in **Table 21** and includes the three prior reporting years and the 2010 reference year. **Table 22** provides a comparison of the three depth class areas relative to the prior three years and a historical reference year.

Table 21 Number and percent of total piezometers readings within each depth range

Year	<2M of surface	2-4M of surface	>4M of surface	% <2M of surface	% 2-4M of surface	% >4M of surface	Total
2022	52	110	378	10%	21%	70%	540
2021	23	100	431	4%	18%	78%	554
2020	12	86	437	2%	16%	82%	535
2019	5	96	386	1%	20%	79%	487
2010	6	103	752	1%	12%	87%	861

Table 22 Change in groundwater depth

Ground-water depth range (m)	Depth to water table area (ha)					Change in depth [+ = rising] [- = falling]			
	2022	2021	2020	2019	2010	2022 vs 2021	2022 vs 2020	2022 vs 2019	2022 vs 2010
<2M	11,103.4	3,803	178	161	8.5	+7,301	+10,925	+10,942	+11,095
<2-4M	57,736	50,627	24,392	26,924	30,126	+7,109	+33,344	+30,812	+27,610
>4M	301,290.8	306,618	336,117	343,045	330,553	-5,327	-34,826	-41,754	-29,262
Total	370,130.2	361,048	360,687	370,130	360,687				

Note: Previous years' data was cropped to match MI's area of operations for comparison.

Table 21 shows the standing water level (SWL) of piezometers is rising, with 30% of the network recording standing water levels within 4 meters of the surface level. This has resulted in an 8% decrease in SWLs recorded at depths greater than 4m compared to the prior reporting year. A small influence may have come from the reduction of 17 piezos read for the year.

Table 22 contains information using SWLs at known points interpolated to each pixel within MI's area of operations using the nearest neighbour resampling method. The area for each depth class equals the count of pixels within the depth class * pixel size. Data for each year in the table was cropped to the extent of MI's area of operations for comparison. This information can change if certain piezometers are not read due to being blocked, flooded, destroyed or lack of access.

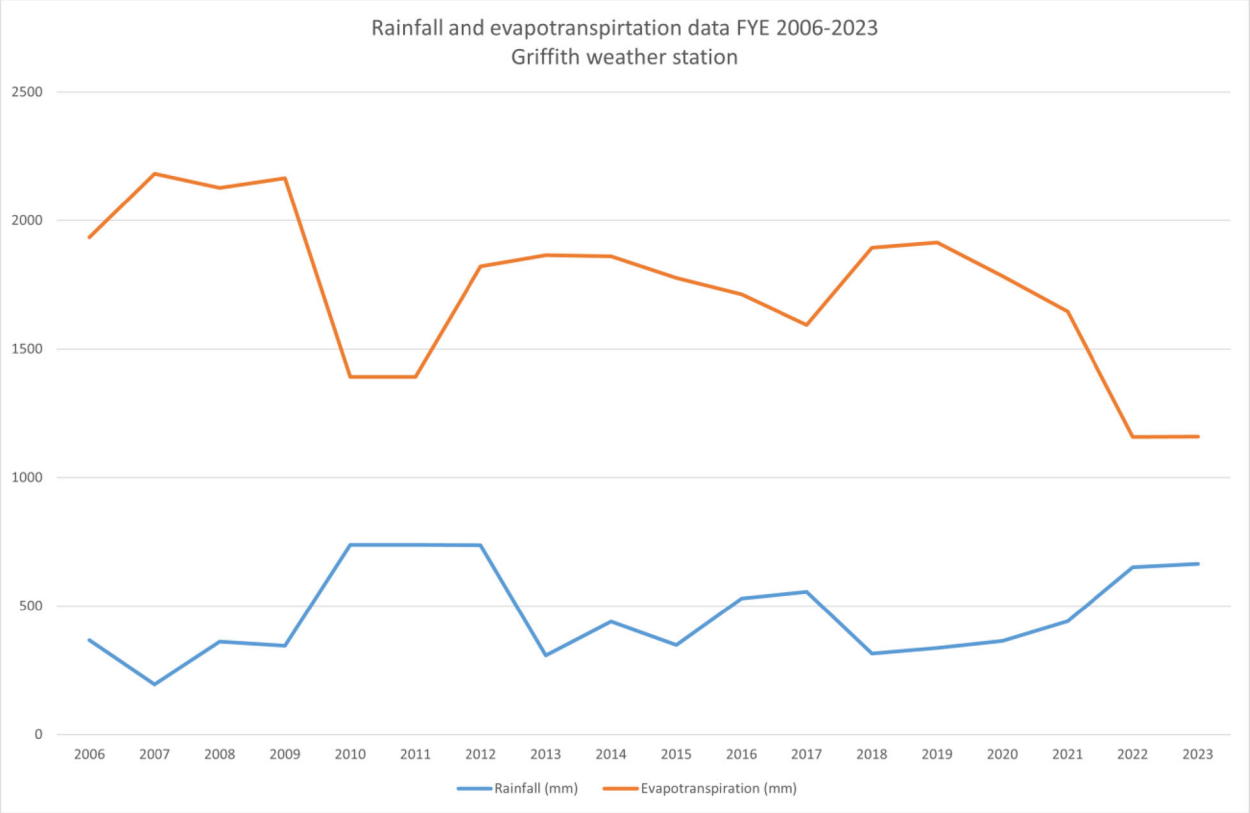

Figure 6 Rainfall and evapotranspiration data FYE 2006-2023 - Griffith weather station

Figure 6 shows similar climatic patterns between the lead up to 2010 and 2022, with rainfall increasing while evapotranspiration is reducing. In addition, in 2010/11 the MIA encompassed a larger land area compared to 2022/23, while diversions in 2010/11 were 108,438 ML less than the current reporting year. Indicating that in 2022/23 there was more water in use in the MIA resulting in greater influence on groundwater trends than there had been in 2010/11.

The overall trend in groundwater levels using both point data from **Table 21** and area data from **Table 22** shows groundwater levels are rising when compared to both recent years and the benchmark year of 2010. The extent of groundwater within 4m of the surface has increased in hectares from 2021 to 2022, and from 2010. The rise is consistent with consecutive years of above average rainfall with saturated catchments.

In 2015, approval was given for the groundwater piezometer network to be reduced. As a result, in 2022 piezometer readings in some areas are indicative of a larger area than they had been in 2010, influencing the interpretation of the depth to water table area.

6.2 Groundwater salinity

Groundwater salinity was not requested by the Minister for 2022/2023 reporting year.

6.3 Shallow Shepparton Formation

The depth to water table for piezometers in the shallow Shepparton Formation are presented in **Figure 7** to **Figure 11**. Groundwater levels in this formation are expected to be highly influenced by seasonal rainfall, geology, and irrigation. A comparison between **Figure 7** and **Figure 8** demonstrates that the groundwater levels have risen in comparison with the prior year.

In 2022, forty piezometers in the Shallow Shepparton Formation experienced a greater than 1 m rise in the SWL, with one of those piezometers recording a rise greater than 5 m. In 2021, twenty-four piezometers recorded a rise in SWL of more than 1 m from the prior year. When compared to 2010 (**Figure 11**), 2022 groundwater piezometers show a higher number of standing water levels within 5.1 m of the surface level. Both 2010/11 and 2022/23 saw high annual rainfall, low ETo, and similar diversions from the river. While the climatic conditions and deliveries in 2021/22 were very similar to 2022/23, 2009/10 had similar deliveries but much lower rainfall and higher ETo than 2010/11.

Factors contributing to shallower groundwater in 2022/23 include consecutive years of above average rainfall leading to saturated catchments. This resulted in the flooding of the Murrumbidgee River and local water bodies for several months, including during groundwater monitoring in 2022. The influence of wet conditions over an extended period of time has led to a rise in SWLs in the current reporting year.

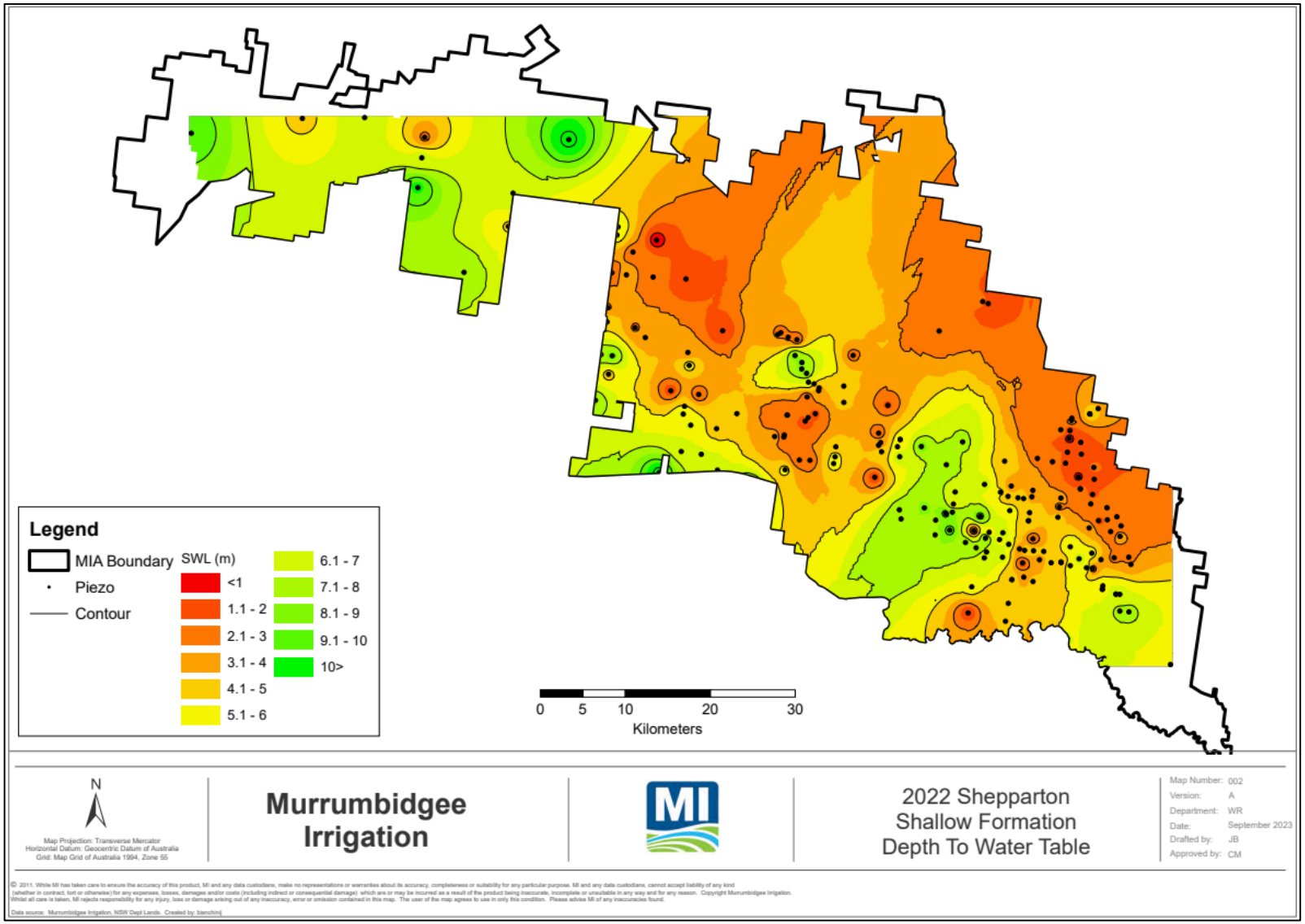

Figure 7 Shallow Shepparton Formation – depth to water table 2022

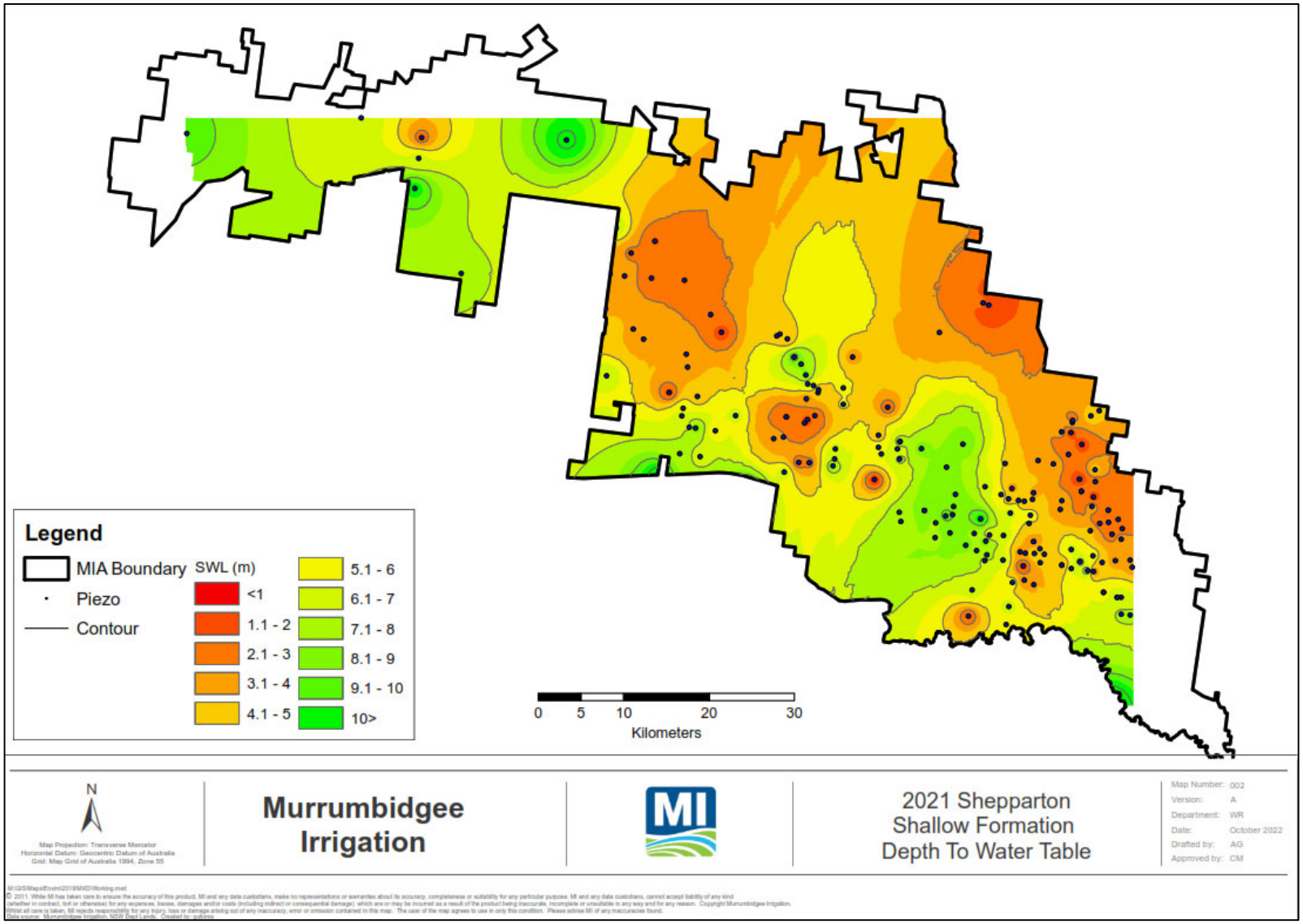

Figure 8 Shallow Shepparton Formation – depth to water table 2021

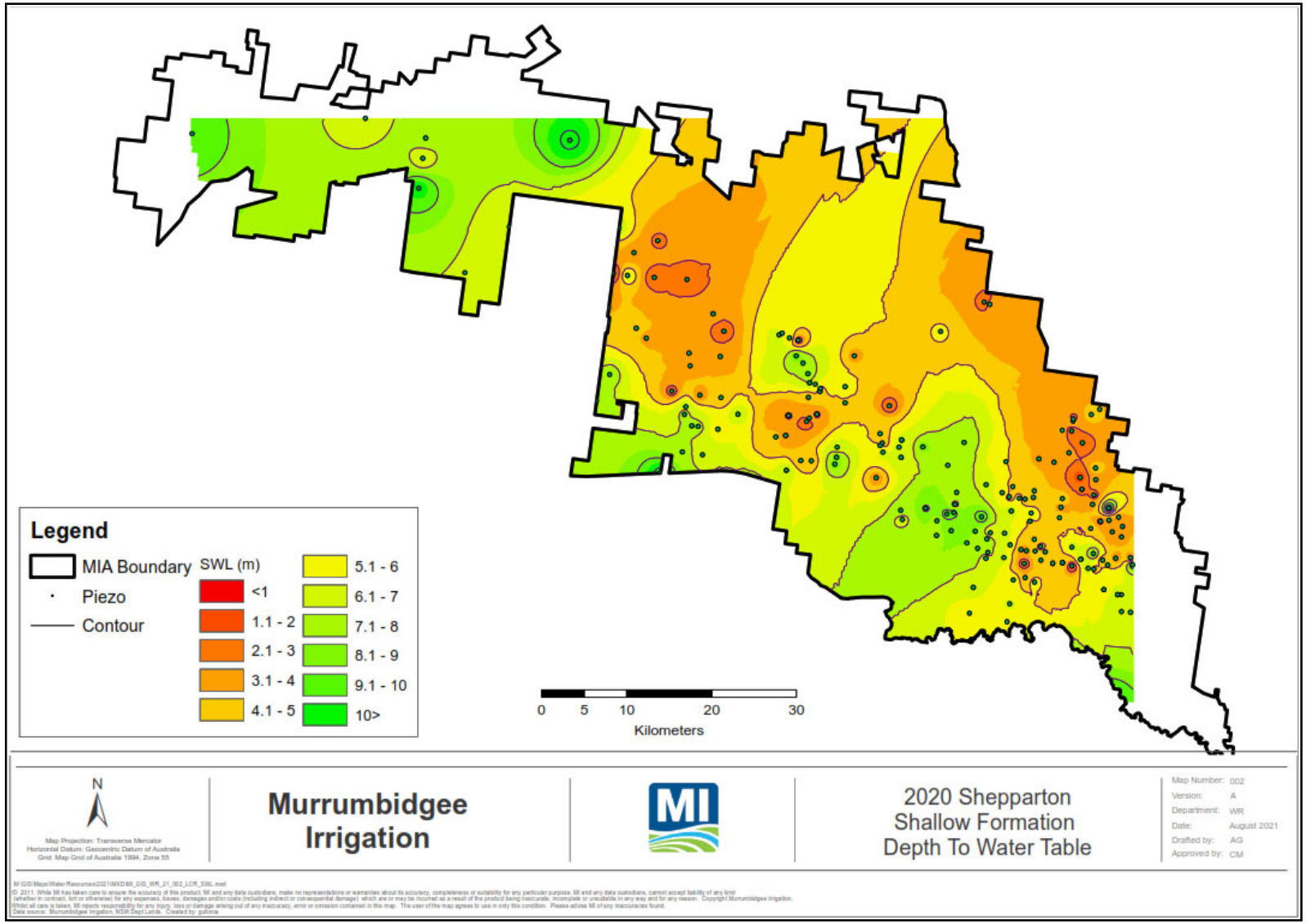

Figure 9 Shallow Shepparton Formation – depth to water table September 2020

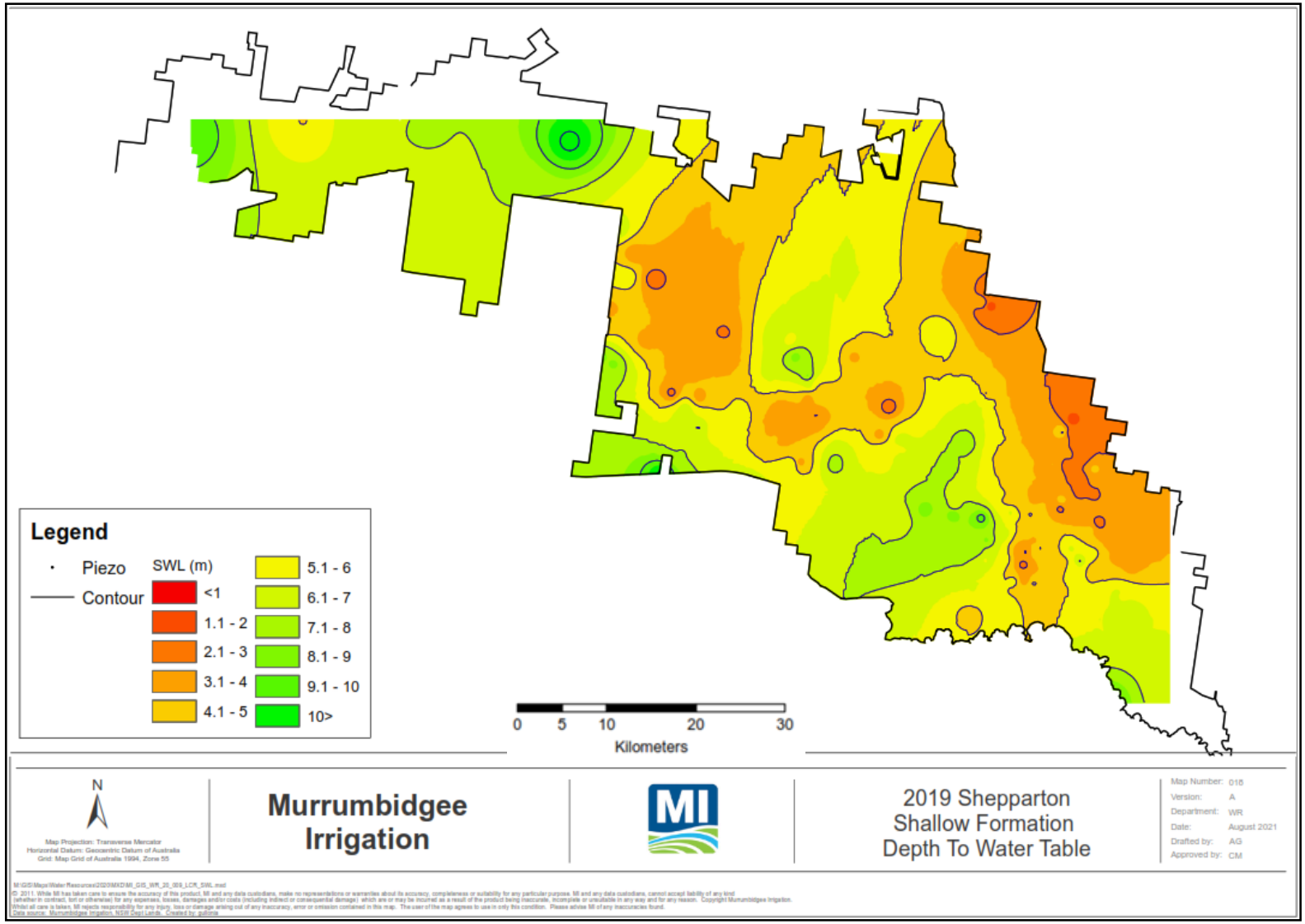

Figure 10 Shallow Shepparton Formation - depth to water table, September 2019

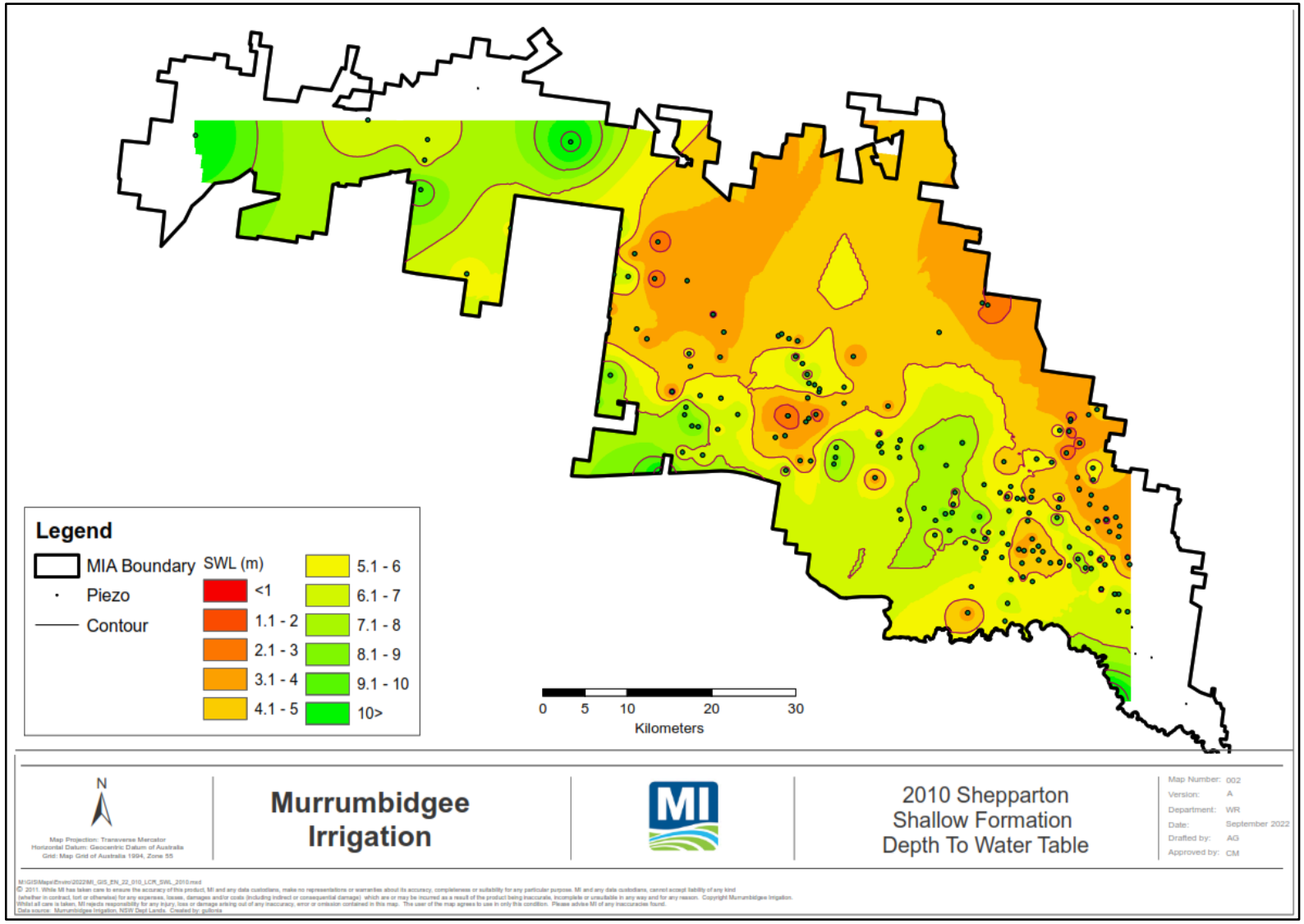

Figure 11 Shallow Shepparton Formation - depth to water table, September 2010

6.4 Deep Shepparton Formation

Depth to water table for piezometers in the deep Shepparton Formation are presented in **Figure 13** to **Figure 16**.

Groundwater levels in the deep Shepparton Formation are influenced by the shallow Shepparton Formation in the long term. This means that seasonal rainfall, irrigation practices and geology also impact the SWLs recorded in this aquifer.

Like the shallow formation, the number of piezometers in the deep Shepparton Formation recording a rise in SWL of more than 1m has increased by 65 piezometers since 2021. A comparison of 2022 (**Figure 12**) and 2021 (**Figure 13**) demonstrates an increase in groundwater levels within 5 m of the surface. The number of piezometers recorded in 2022 within 2 m of the surface has increased in this formation since 2010, with no piezometers in this depth range represented in 2010 (**Figure 16**), compared to several areas of shallow water represented in 2022 (**Figure 12**). However, large areas of the deep Shepparton Formation remain where SWL readings are deeper than 9 m below surface level, which is consistent across all reporting years.

Contributing factors influencing the rise in groundwater in 2022 in this formation include consecutive years of high river diversions, above average annual rainfall, and saturated catchments. The rise in groundwater in the shallow Shepparton Formation over the past several reporting years is reflected in the rising groundwater levels of the deep Shepparton Formation.

Groundwater extraction may also influence levels in this aquifer; however, MI does not have access to this data.

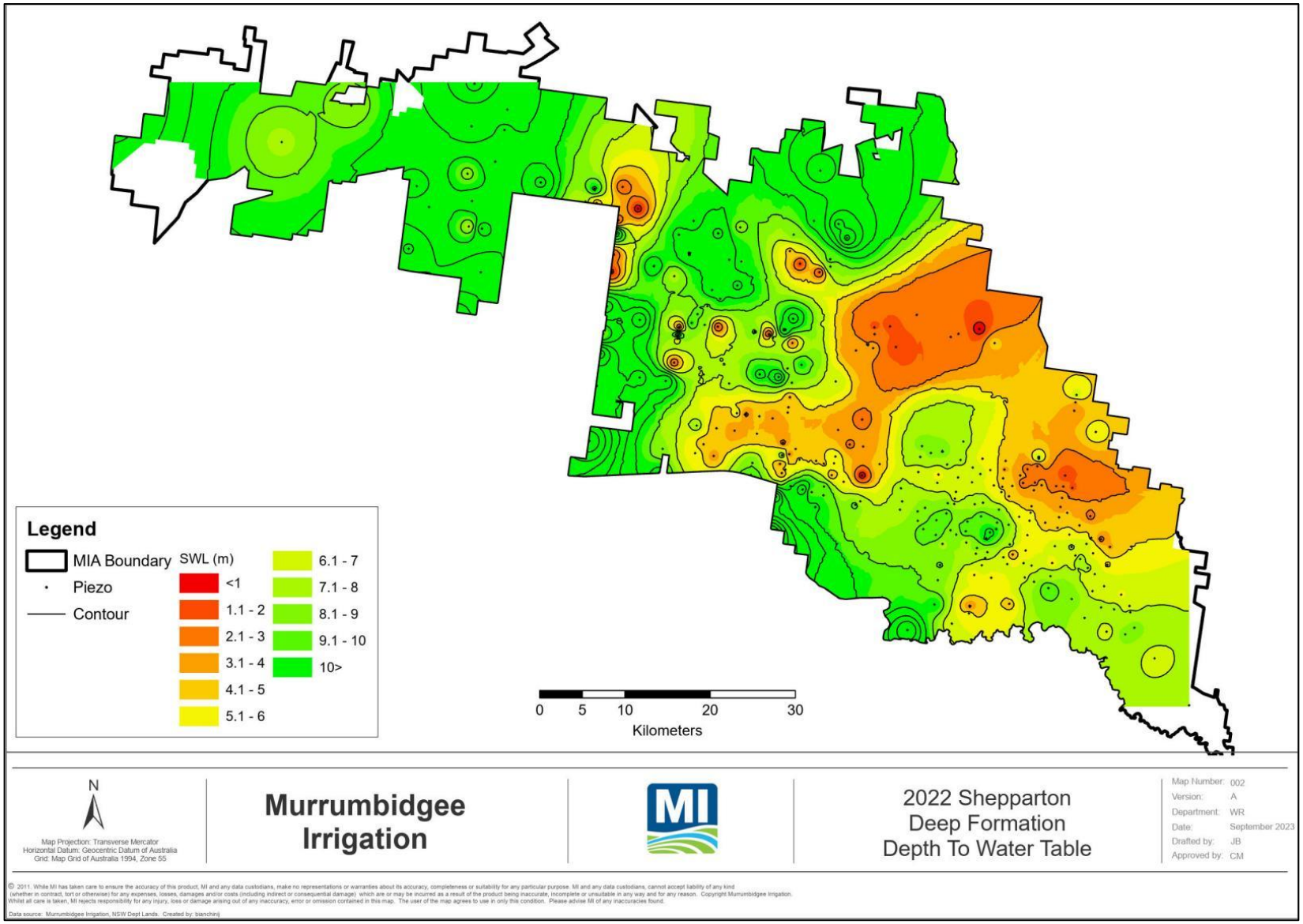

Figure 12 Deep Shepparton Formation - depth to water table, 2022

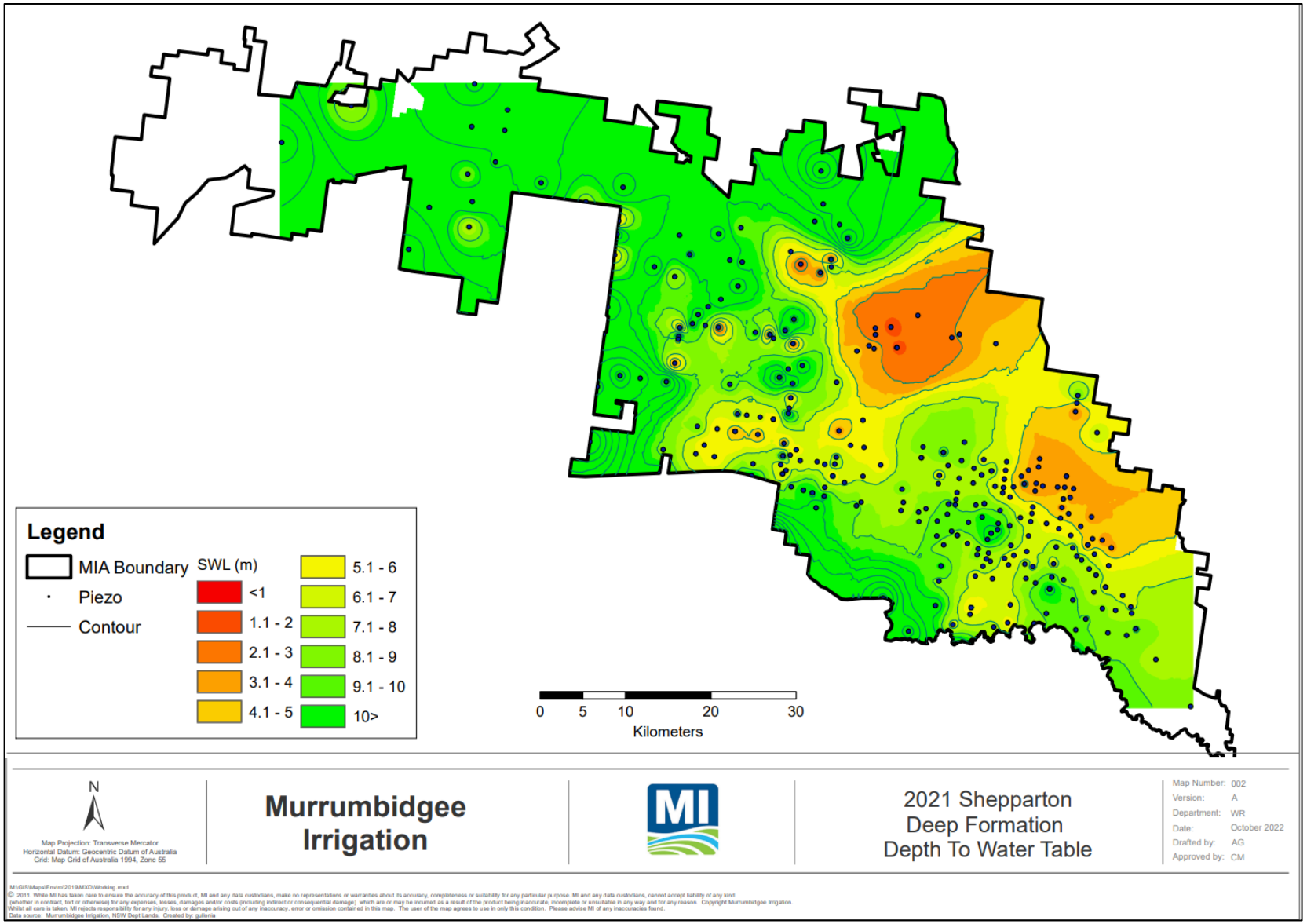

Figure 13 Deep Shepparton Formation - depth to water table, 2021

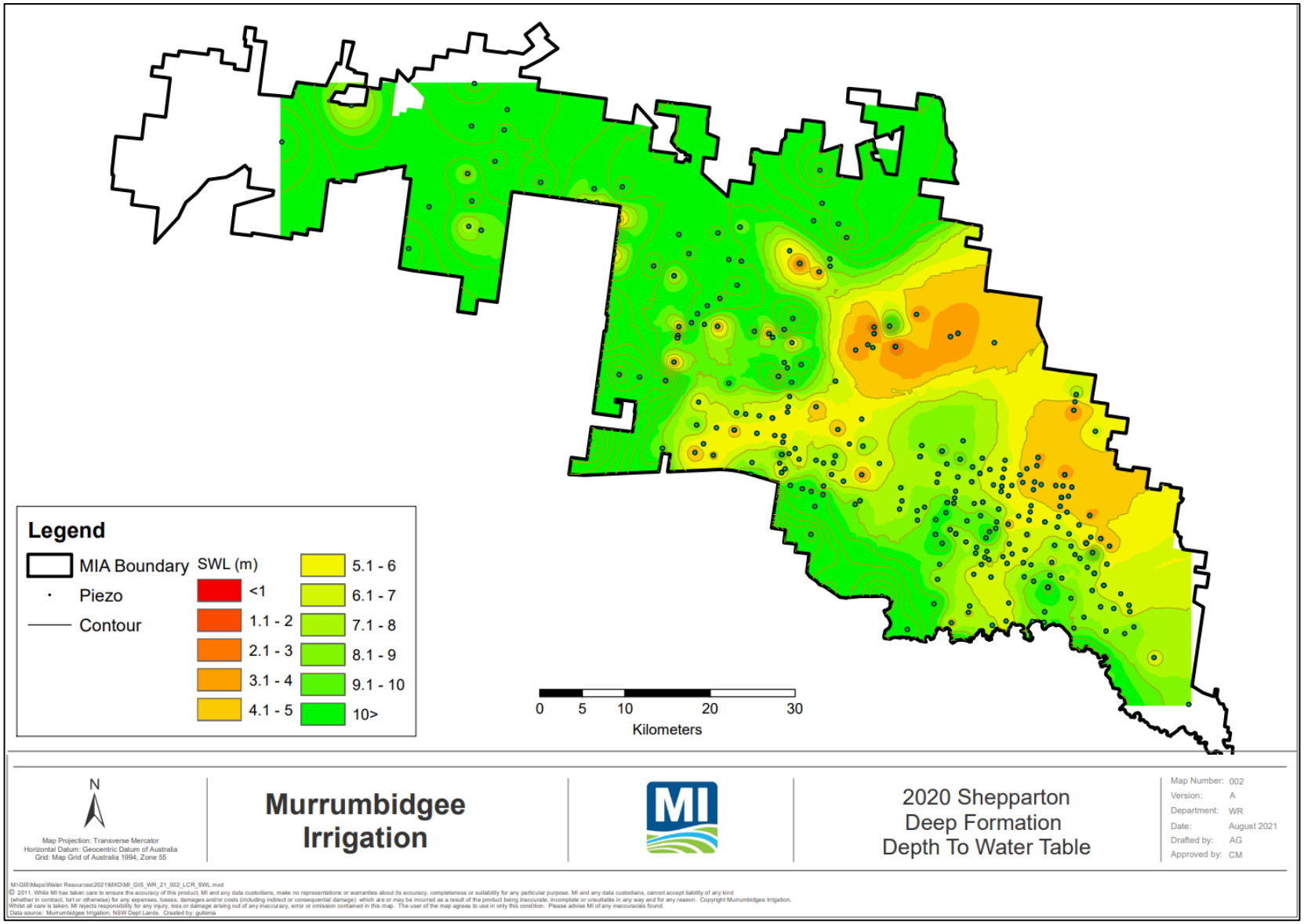

Figure 14 Deep Shepparton Formation - depth to water table, September 2020

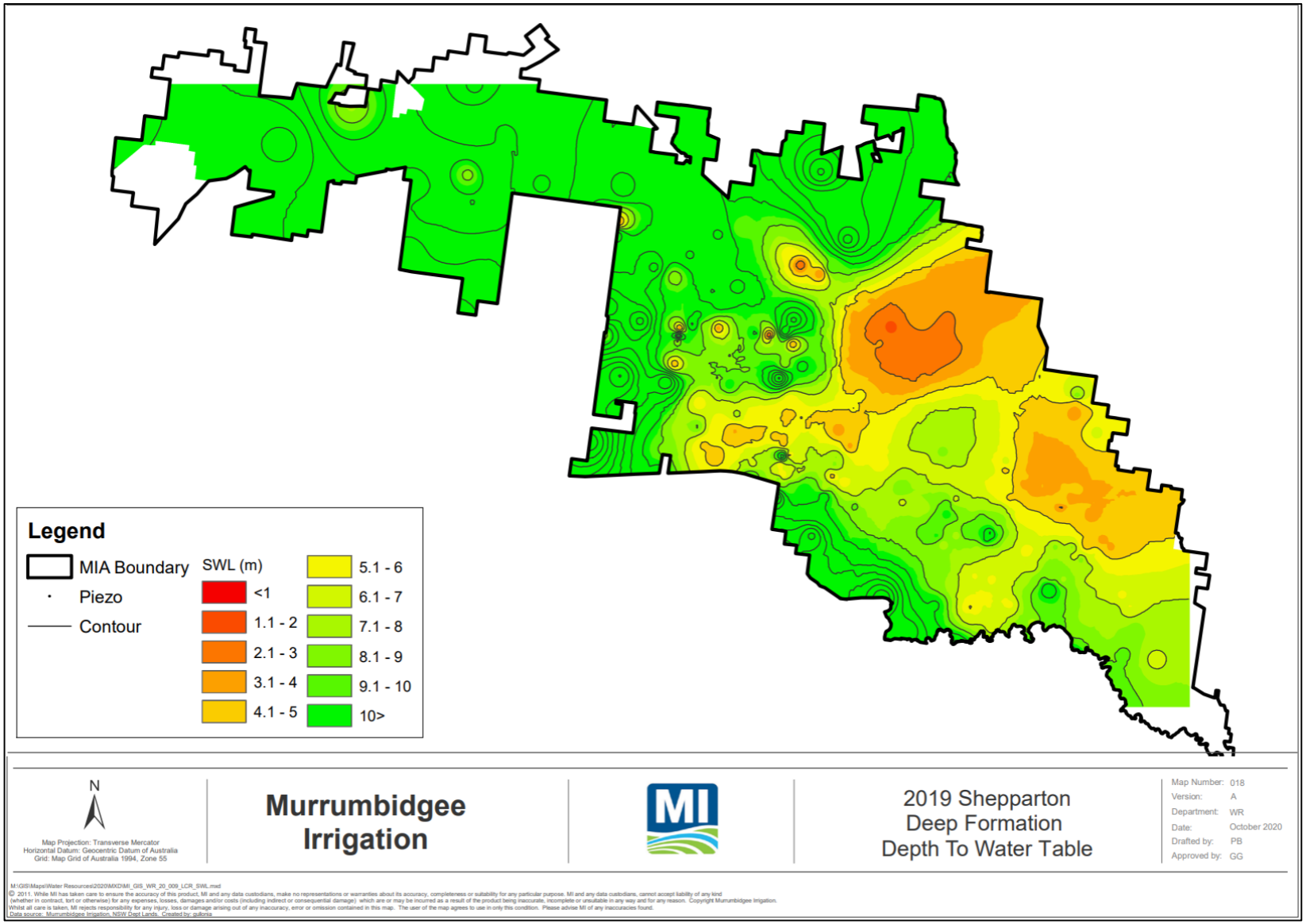

Figure 15 Deep Shepparton Formation - depth to water table, September 2019

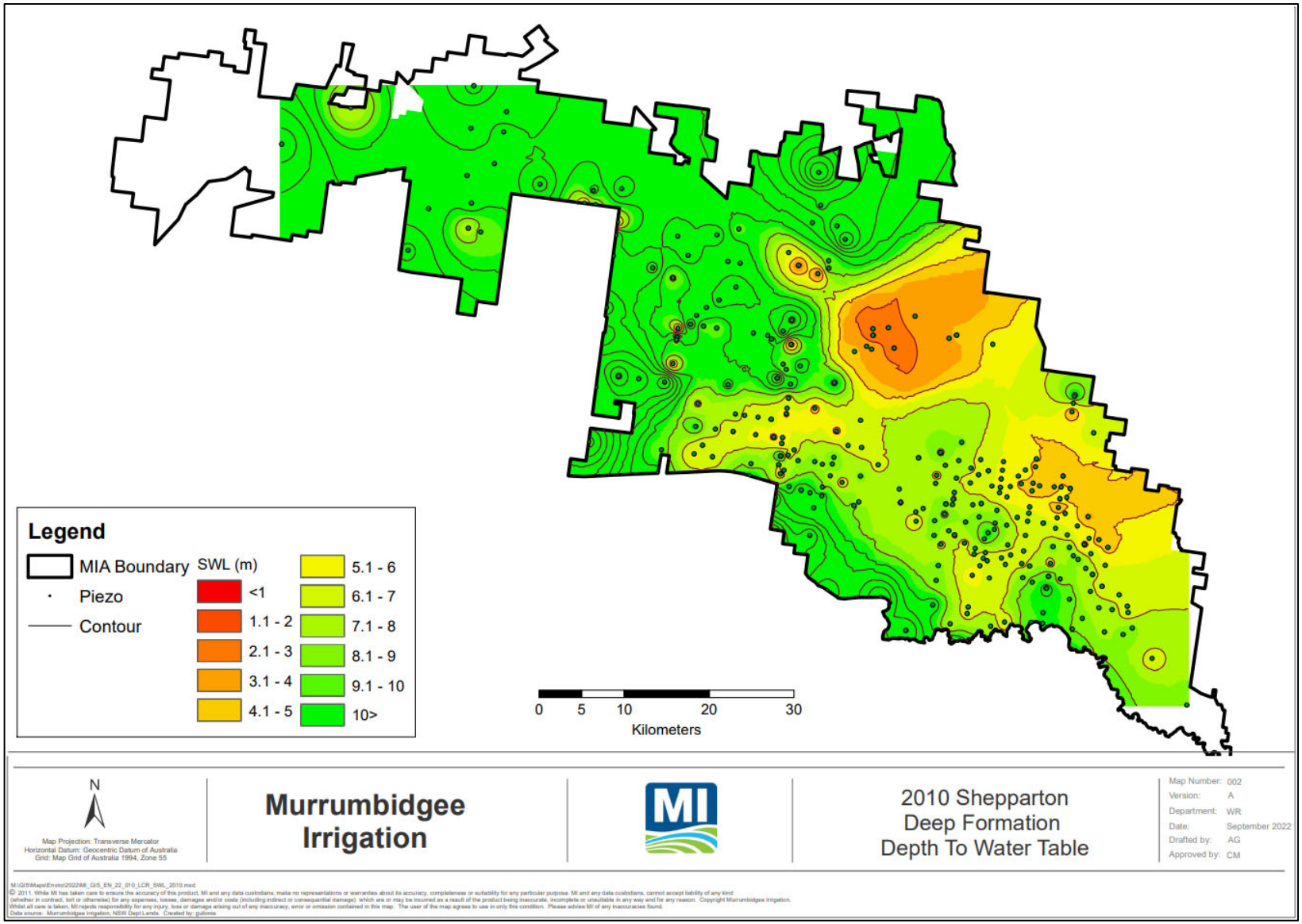

Figure 16 Deep Shepparton Formation – depth to water table, September 2010

6.5 Calivil Formation

Depth to water table for piezometers in the Calivil Formation are presented in **Figure 18** to **Figure 21.**

Level trends in this formation generally represents drawdown from the shallow and deep Shepparton aquifers. **Figure 17** (2022) shows a small increase in piezometers recording a SWL of less than 6 m deep compared to **Figure 18** (2021). In all reporting years, including the baseline year of 2010, the majority of piezometers record a SWL of greater than 10 m deep. Overall, the levels in this aquifer remain consistent.

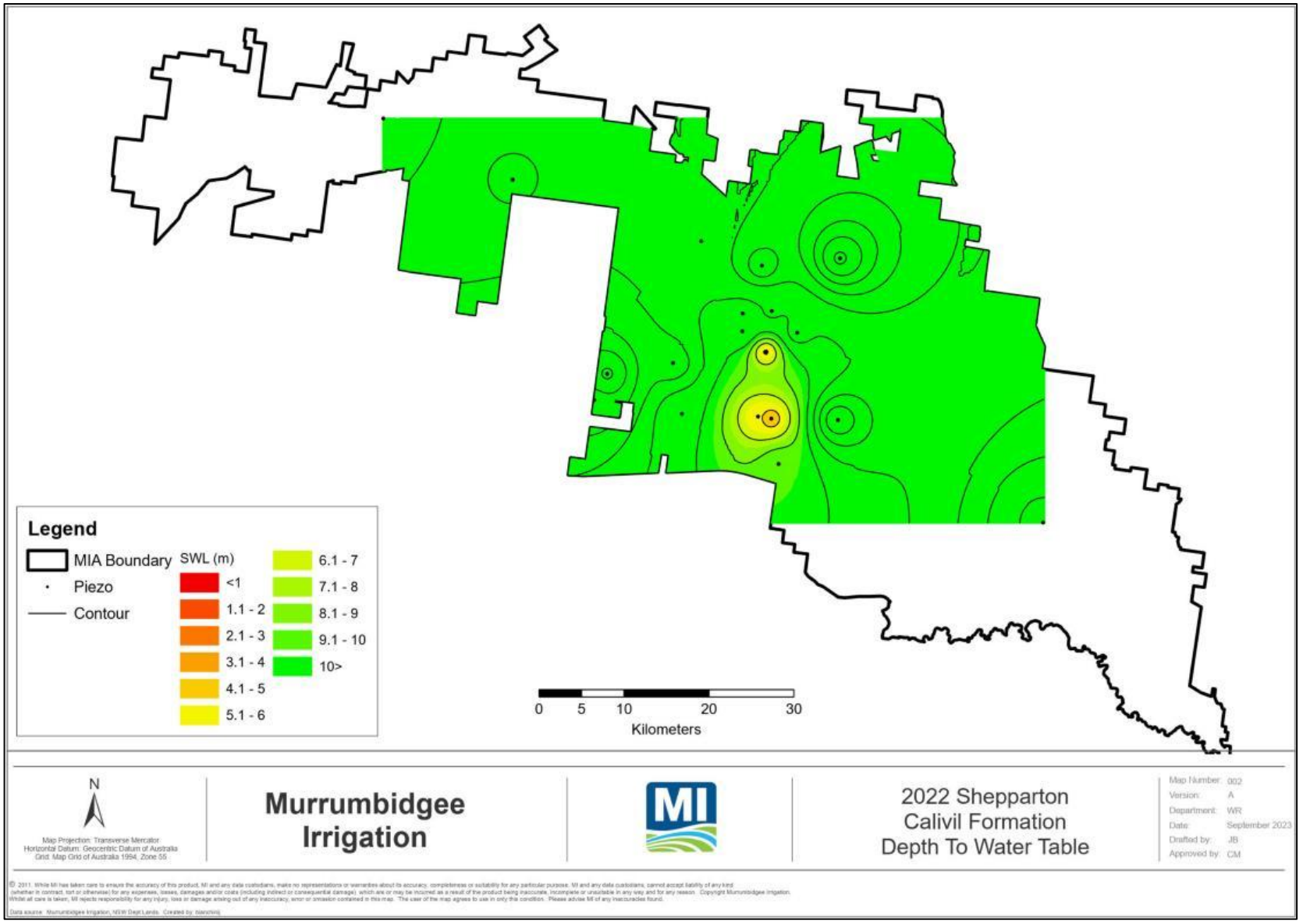

Figure 17 Calivil Formation – depth to water table, 2022

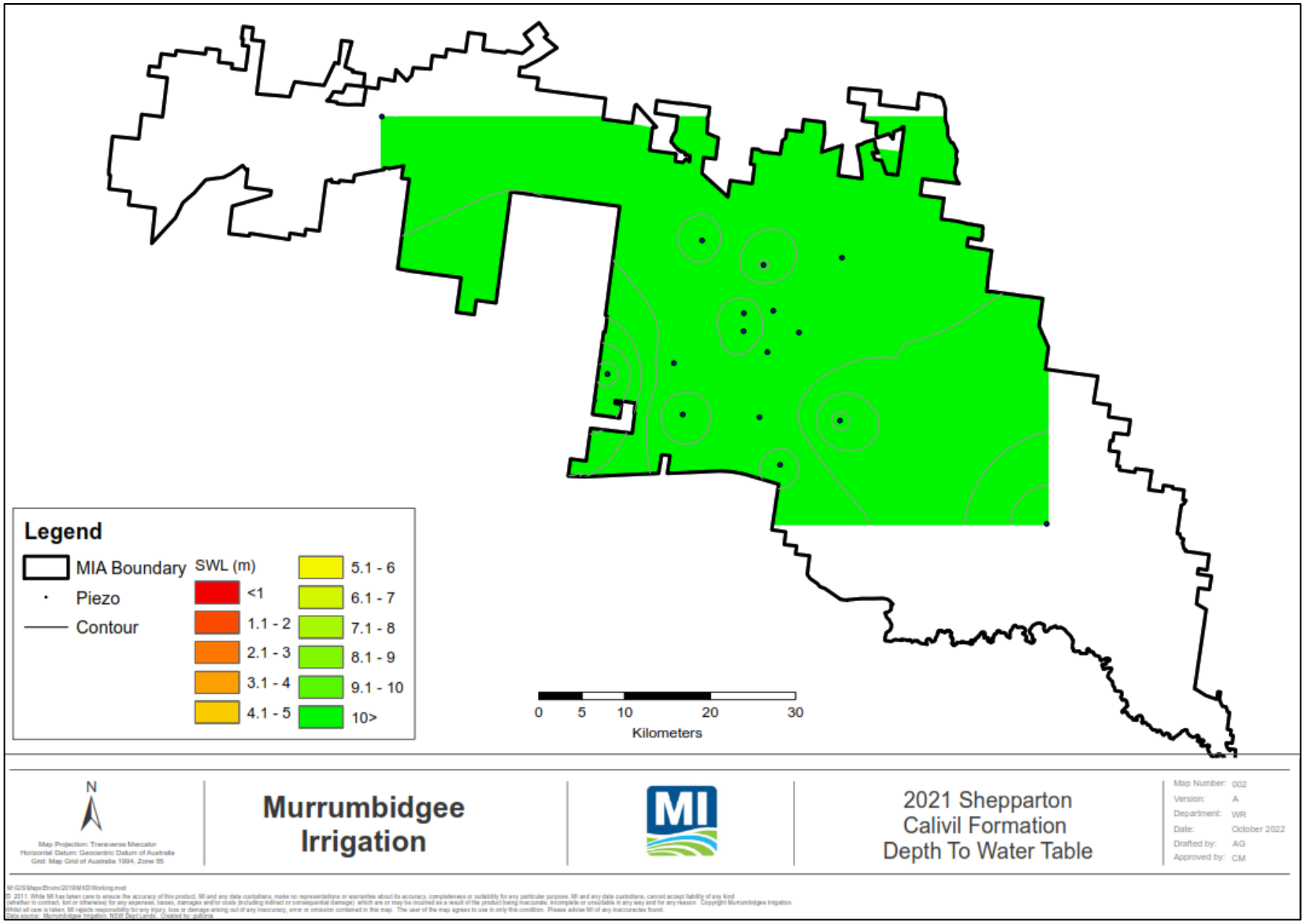

Figure 18 Calivil Formation – depth to water table, 2021

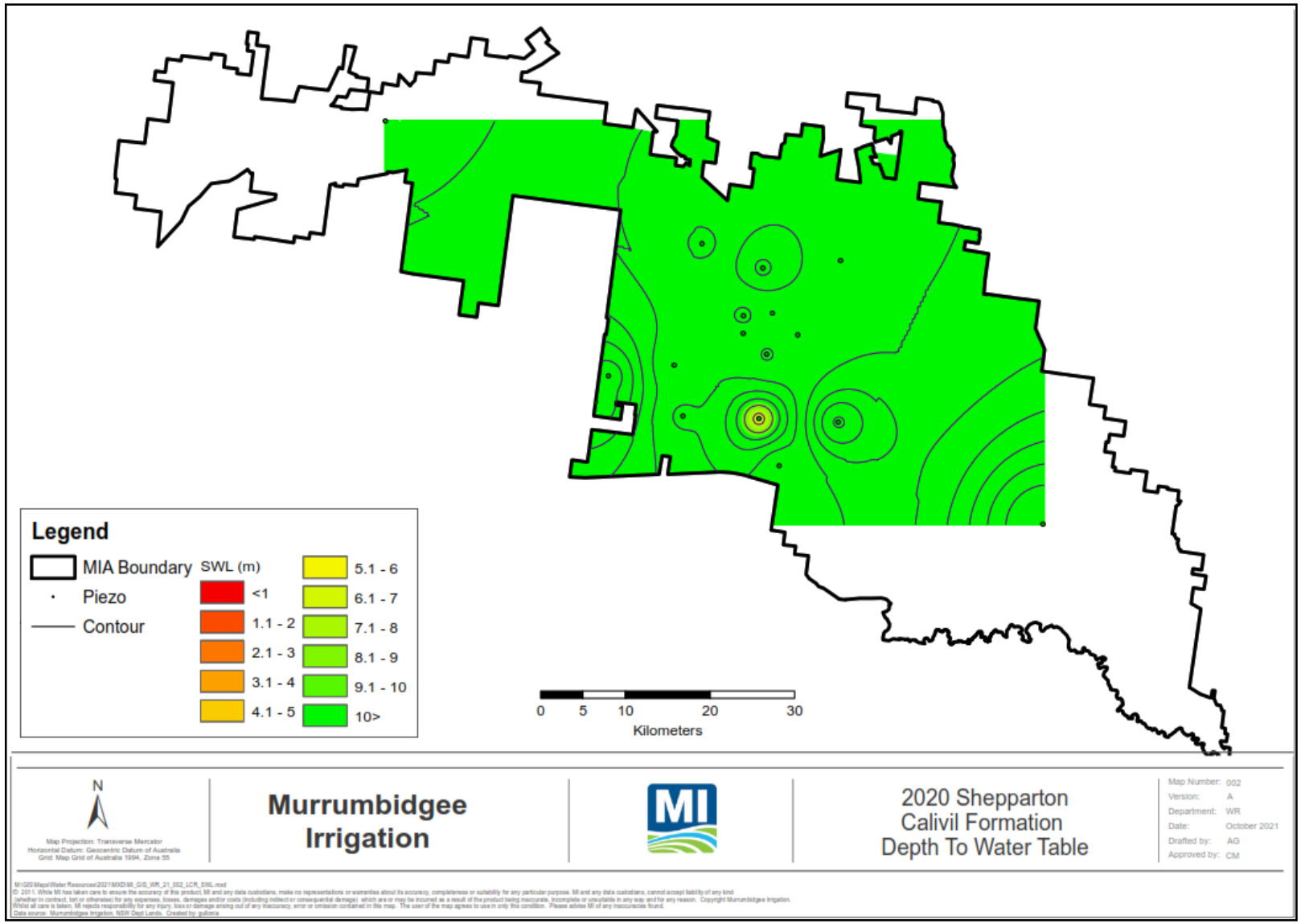

Figure 19 Calivil Formation - depth to water table, September 2020

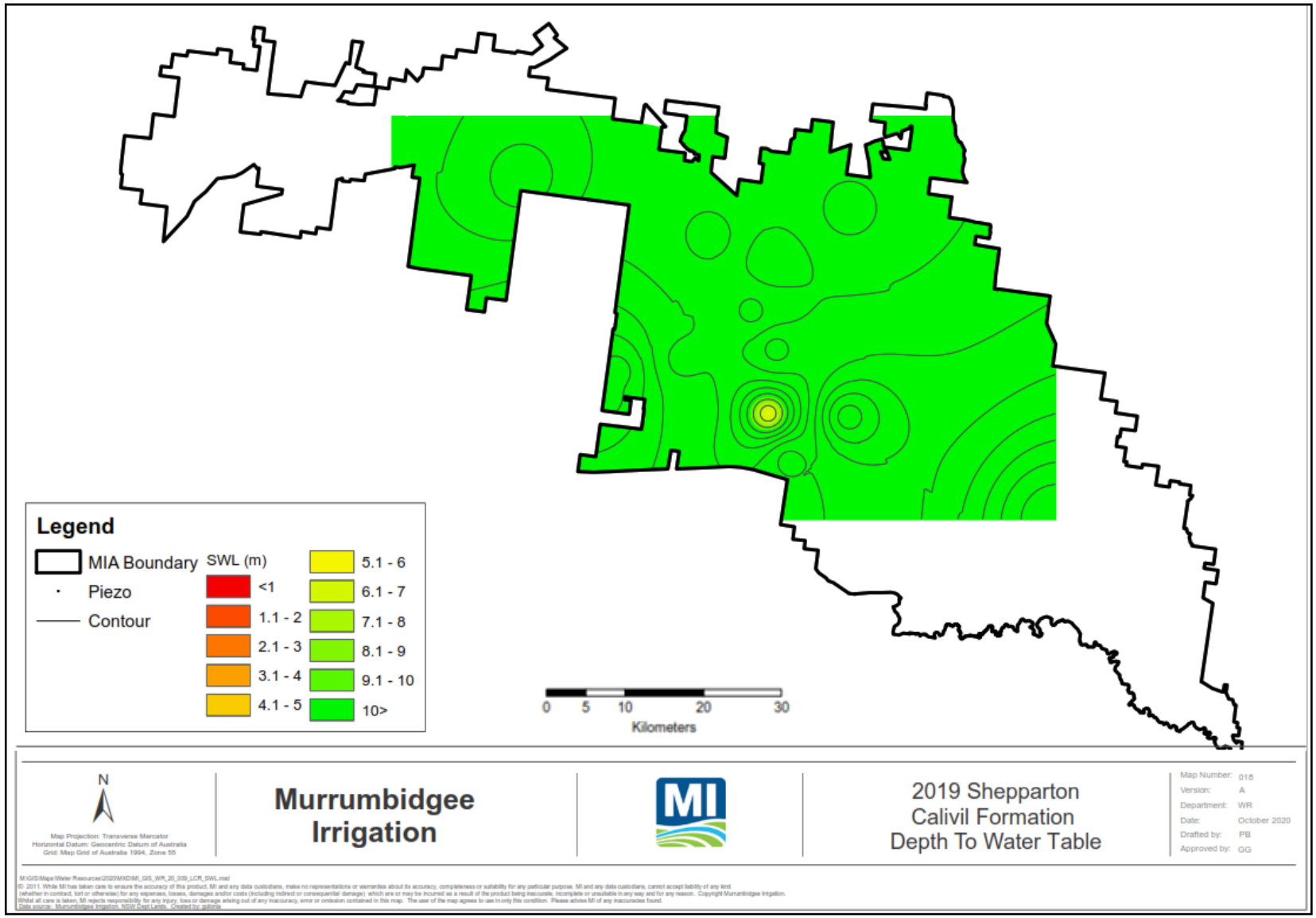

Figure 20 Calivil Formation - depth to water table, September 2019

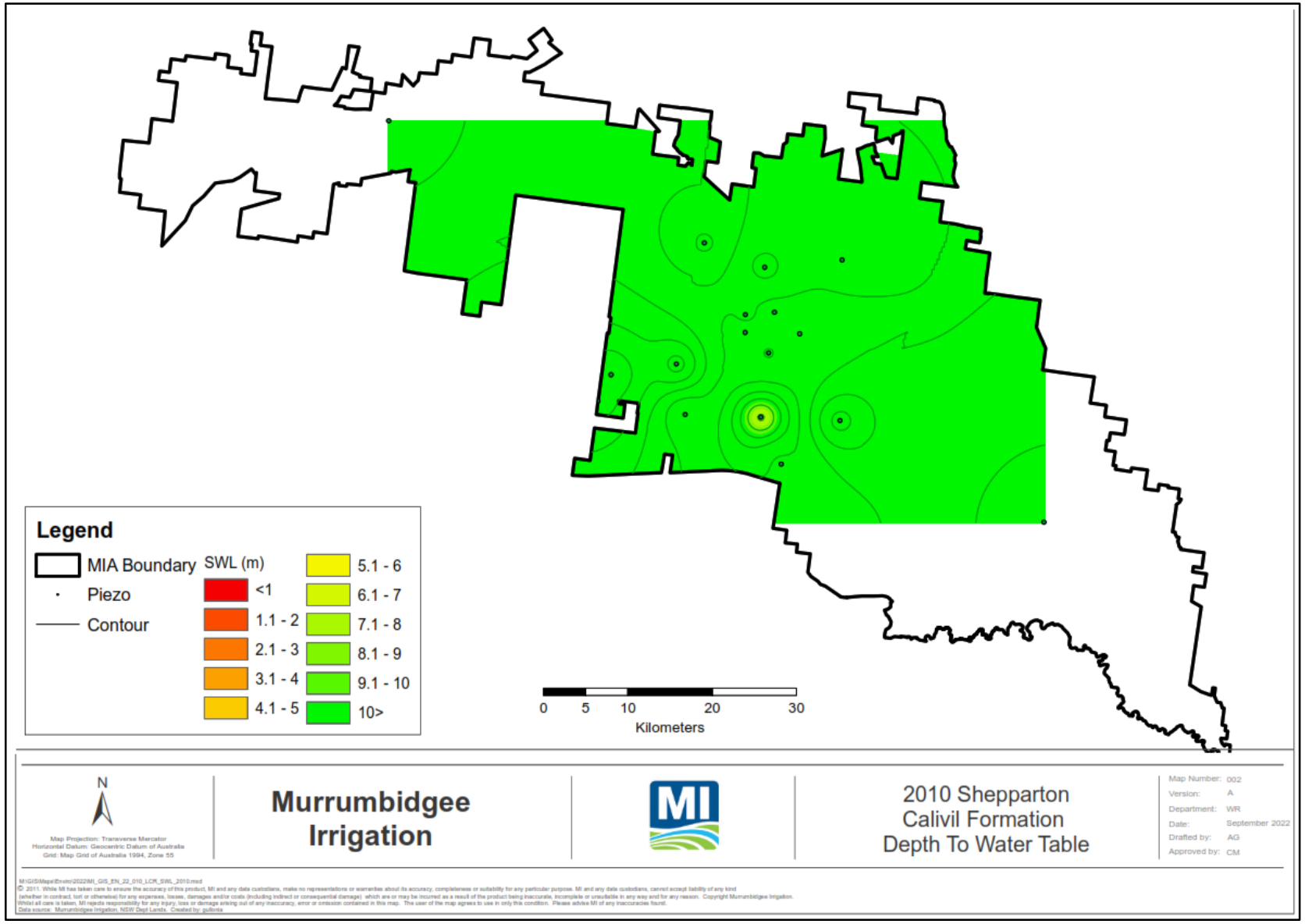

Figure 21 Calivil Formation - depth to water table, September 2010

7 Tubewells

MI monitors the volume of water and salt load pumped from seven tubewells within the MIA when operational. The locations of the tubewells are shown in **Figure 5**.

No tubewells were operated during the 2022/23 reporting period.

MI is collaborating with the Department of Planning and Environment – Water (DPE Water) to pursue the rationalisation of our groundwater network as detailed under section 6. It will include DPE Water issuing MI a water supply work approval and a specific purpose access licence for the tubewell sites.

8 New measures to limit groundwater recharge and discharge of salt

No new measures were implemented for 2022/23.

9 Environmental protection and management

9.1 Discharge of noxious aquatic weeds

During 2022/23 irrigation year, there were no known actual or potential discharge of Class 1, 2 or 3 declared aquatic weeds from MI's Area of Operation.

9.2 Discharge of blue-green algae

There was one discharge event that contained a red alert level of blue green algae from MI's area of operation during 2022/23. The event was reported to the Minister's nominated contact officer within 24 hours of receiving the result. The event was:

- 30 January 2023 at POINT 7 ROCUDG – Cudgel Creek downstream of Roaches Escape

ENVIRONMENTAL PROTECTION LICENCE 4651

10 Statement of compliance

MI has fulfilled the compliance requirements as set out in EPL 4651 for 2022/23. A summary of the compliance requirements is cross referenced to this report and listed in **Table 23**.

No non-compliances were recorded and reported on during 2022/23.

Quality assurance and control procedures are in place to ensure data integrity and all compliance obligations are fulfilled. This includes using a NATA accredited laboratory for water sample analysis and contracting an external hydrological service provider to manage and maintain automated monitoring stations at discharge points. Internal Standard Operating Procedures (**SOPs**) for monitoring and reporting are reviewed and updated regularly.

MI has in place a process to receive complaints from members of the public in relation to MI's activities via the business telephone number. Contact information for complaints can be found on MI's website (https://www.mirrigation.com.au/company/contact).

Table 23 EPL 4651 monitoring and reporting requirements

Licence section	Requirement	Compliant	Included in this report
Administrative Conditions	1	Yes	No, not applicable
Discharges to Air and Water and Applications to Land	2	Yes	N/A
Limit Conditions	3	Yes	N/A
Operating Conditions	4	Yes	N/A
Maintain a Chemical Contingency Plan	O3.1	Yes	No, see: https://www.mirrigation.com.au/water/water-quality
Maintain a Chemical Control Plan	O3.5	Yes	
Maintain Pollution Incident Response Management Plan	Required for all EPL holders under the *Protection of Environment Operations Act 1997*	Yes	
Monitoring and Recording Conditions	5	Yes	10. Statement of Compliance
Monitoring Records	M1	Yes	No - available upon request from EPA
Requirement to monitor concentration of pollutants discharged	M2	Yes	11. EPL Monitoring and Reporting
Testing Methods	M3	Yes	No - Internal documents
Recording of pollution complaints	M4	Yes	No - available upon request from EPA
Telephone complaints line	M5	Yes	10. Statement of Compliance
Requirement to monitor volume or mass	M6	Yes	11. EPL Monitoring and Reporting

Licence section	Requirement	Compliant	Included in this report
Other Monitoring and recording conditions	M7	Yes	9.1. Noxious Weed Management
Annual return documents	R1	Yes	Submitted 28 August 2023
Annual system performance report	R4 Summary R2, R3 & R5	Yes	a) 3. Reporting on water management b) 11. EPL monitoring and reporting & 11.2 Water quality monitoring c) 11.3. Summary of events d) 12. Proposed changes

11 EPL monitoring and reporting

Under MI's EPL 4651, five locations (**Figure 2**) are licensed to allow water to be discharged outside MI's Area of Operation, with the condition that all flows are recorded, and specified water quality parameters are monitored. These discharge points are listed below:

- POINT 4 LAG - Gogeldrie Main Drain at Gooragool Lagoon
- POINT 5 GMSRR – Gogeldrie Main Southern Drain River Road
- POINT 6 YMS – Yanco Main Southern Drain
- POINT 7 ROCUDG – Cudgel Creek Roaches Escape
- POINT 15 MIRFLD – Mirrool Creek Floodway Wyvern Station

11.1 System performance

Table 24 presents total diversions into the MIA and total water discharged from the MIA for 2022/23 compared to previous years. In 2022/23 118,046 ML was discharged, an increase of 109,451 ML compared to the previous reporting period of 2021/22.

The volume discharged in 2022/23 is comparable to the volume discharged during the 2016/17 comparison year. This is due to flood events occurring in both 2016/17 and 2022/23 during which large volumes of water were discharged to the Mirrool Creek Floodway (**MIRFLD**) to mitigate floodwaters entering the system from the upper catchment. Diversions are lower in 2022/23 than they were in the 2016/17 comparison year due to consecutive years of above average rainfall in 2021/22 and 2022/23 contributing to lower demand on water delivery.

Table 24 Total water volumes

Year	Diversions (ML)	Discharged (ML)
2022/23	613,614	118,046
2021/22	684,959	8,595
2020/21	880,456	900
2019/20	349,523	127
2016/17	780,083	122,092

11.2 Water quality monitoring

Monthly summaries for each monitoring point are presented in **Table 25** to **Table 29.** Monitoring consisted of thirty-nine sampling events, with two Notification level detections and seven Action level detections.

Diuron was the only chemical detected above licence limits in 2022/23. Chemical detections were found at two of the five licenced sites, Point 4 – LAG, and Point 5 – GMSRR.

Table 25 Monitoring results for Point 4 - LAG

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-22	3.3	1	1	25/07/2023 Notification level Diuron (0.304µg/L)
Aug-22	0	0	0	-
Sep-22	0	0	0	-
Oct-22	0	1	0	Due diligence samples taken during flood event
Nov-22	0	1	0	Due diligence samples taken during flood event
Dec-22	757.6	1	0	-
Jan-23	617.2	1	0	-
Feb-23	836.8	0	0	No sample taken. Flows throughout the month did not trigger an alarm.
Mar-23	946.6	1	1	30/03/2023 Notification level Diuron (0.895µg/L)
Apr-23	756.2	0	0	No sample taken. Flows throughout the month did not trigger an alarm.
May-23	31.3	2	0	-
Jun-23	13.8	1	0	-
Total	**3,962.8**	**9**	**2**	

Table 26 Monitoring results for Point 5 - GMSRR

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-22	0.6	0	0	-
Aug-22	0.6	0	0	-
Sep-22	0	0	0	-
Oct-22	0	0	0	-
Nov-22	0	0	0	-
Dec-22	201	3	0	-
Jan-23	1.2	3	0	-
Feb-23	10.5	1	1	11/02/2023 Action level Diuron (3.06µg/L)
Mar-23	12.9	6	6	01/03/2023 Action level Diuron (20.3µg/L) 02/03/2023 Action level Diuron (11.8µg/L) 06/03/2023 Action level Diuron (9.97µg/L) 07/03/2023 Action level Diuron (5.97µg/L) 10/03/2023 Action level Diuron (1.7µg/L) 15/03/2023 Action level Diuron (1.85µg/L)
Apr-23	0	0	0	-

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
May-23	1.5	0	0	-
Jun-23	5.6	0	0	No samples taken. Low flow did not trigger an alarm.
Total	**233.9**	**13**	**7**	

Table 27 Monitoring results for Point 6 - YMS

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-22	0	0	0	-
Aug-22	0	0	0	-
Sep-22	0	0	0	-
Oct-22	0	0	0	-
Nov-22	0	0	0	-
Dec-22	0	0	0	-
Jan-23	0	0	0	-
Feb-23	0	0	0	-
Mar-23	0	0	0	-
Apr-23	0	0	0	-
May-23	0	0	0	-
Jun-23	0	0	0	-
Total	**0**	**0**	**0**	

Table 28 Monitoring results for Point 7 - ROCUDG

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-22	0	0	0	-
Aug-22	0	0	0	-
Sep-22	0	0	0	-
Oct-22	0	0	0	-
Nov-22	0	0	0	-
Dec-22	151	3	0	-
Jan-23	87.6	2	0	-
Feb-23	8.1	1	0	-
Mar-23	1,248	3	0	-
Apr-23	190	1	0	-
May-23	33.6	0	0	No sample taken. Low flows did not trigger an alarm.
Jun-23	14.1	0	0	Sample taken in July 2023.
Total	**1,732.3**	**10**	**0**	

Table 29 Monitoring results for Point 15 – MIRFLD

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-22	0	0	0	-
Aug-22	7,459.6	2	0	-
Sep-22	13,053.1	1	0	Due Diligence samples taken during flood event
Oct-22	34,712	1	0	Due Diligence samples taken during flood event
Nov-22	44,340	1	0	Due Diligence samples taken during flood event
Dec-22	10,744	0	0	-
Jan-23	2.8	0	0	Low flow did not trigger an alarm. Rainfall and sudden reduction in demand downstream led to supply water overtopping the structure.
Feb-23	0.1	0	0	-
Mar-23	652.5	1	0	-
Apr-23	1,152.5	1	0	-
May-23	0	0	0	-
Jun-23	0	0	0	-
Total	**112,116.6**	**7**	**0**	

Figure 22 provides a comparison of annual rainfall received, compared to the number of chemical detections and sampling events for the last four years.

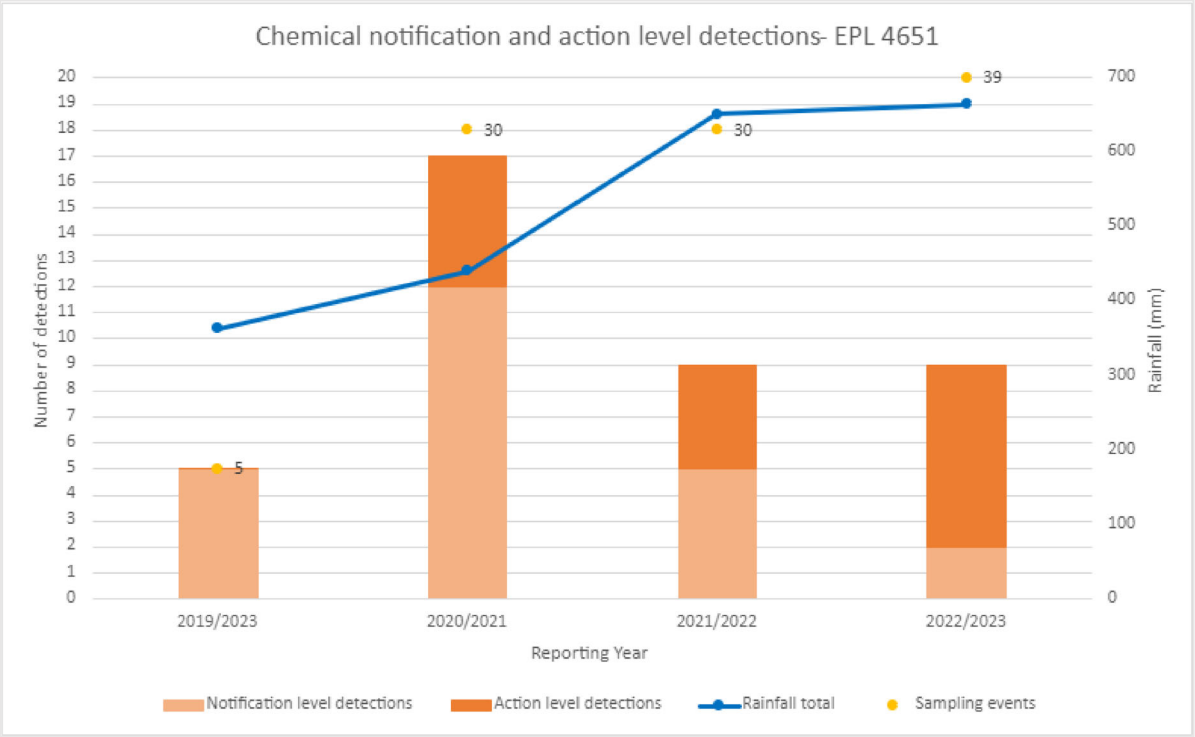

Figure 22 Comparison of irrigation drainage water notification trends

Figure 22 shows a clear trend in improving water quality management by MI and its customers. While the number of sampling events and annual rainfall has increased compared to the previous reporting year, the number of chemical detections has remained consistent with the previous reporting year. All

action level exceedances recorded in 2022/23 occurred during a single exceedance event at GMSRR during February and March 2023, where multiple sample events were triggered by a single source of drainage water. Therefore, there were three separate exceedance events recorded during 2022/23.

Overall, in the 2022/23 financial year Diuron accounted for all reports to the EPA.

MI has provided Chemical Fact Sheets to our customers via our website to raise awareness in the MIA on the risks of chemical use and the need to comply with MI's Drainage Use Rules. Where investigations have been undertaken, direct contact with customers occurs via phone calls, letters, emails and in-field meetings to raise awareness on MI's EPL requirements, Drainage Use Rules and the need for customers to comply with all pesticide legislative requirements, including using chemicals in accordance with their approved labels. A decrease in the percentage detections compared to the number of samples taken in 2022/23 suggests that MI's efforts to raise awareness may be having a positive effect.

11.3 Summary of events

Table 30 contains a summary of all events that have been reported on during 2022/23. No events occurred that triggered notification of environmental harm or a written report to the EPA under the EPL. A total of 9 exceedances were recorded during 2022/23 reporting period.

Table 30 Summary of events 2022/23

Year	Notification of environmental harm	Written report (of an event)	Exceedances
2022/23	0	0	9

12 Proposed changes

MI proposed an administrative change to Condition R5.1 to update the EPA contact e-mail address. MI received a 'NOTICE OF VARIATION OF LICENCE No. 4651' in June 2023. MI does not propose any further changes at this time.

Attachment A: Significant events for 2022/23

Murrumbidgee Irrigation notified the minister of four significant events during 2022/23 reporting year. Each significant event details are outlined below in below **Table 31**. Each significant event was notified to the minister using the S91i process.

Table 31 Summary of significant events 2022/23

Date lodged	Reference	Site	Event details	Occurrence	Corrected by	Date closed
5/9/2022	CS0474414	Sturt (17959)	River was running to low for the AFFRA unit, causing incorrect flow rates to be registered		Once the river was refilled, correct flows were recorded	13/9/2022
23/9/22	CS0478032	Narrandera (6944)	Stream gauging found the AFFRA unit to be 20% difference between what was measured and what was being recorded below 200ML/d		Certificate of Validation provided, updated flow index equation to meter unit	23/12/2022
12/1/2023	CS0503689	Narrandera (6944)	AFFRA unit had weed build up causing the sensors to read the flow rate incorrectly.		Weeds were removed, and scheduled inspections occurred weekly	31/5/2023
31/1/2023	CS0507800	Sturt (17959)	When gauged the AFFRA unit was found to be 8.9% out		Certificate of Validation provided, updated flow index equation to meter unit	17/3/2023

Attachment B: VENTIA flow, EC, and salt load monitoring financial year report

MURRUMBIDGEE IRRIGATION - FLOW, EC & SALT LOAD MONITORING FINANCIAL YEAR 2022/2023 REPORT

Issue	**1.2**
Issued Date	**11/09/2023**

Prepared	Ping Yao (Environmental Scientist)
Reviewed	Matthew Bamford (*Area Manager*)
Approved	Matthew Bamford (*Area Manager*)

DOCUMENT CONTROL & DISTRIBUTION LIST

Report No.	RPT0619

Contact for Enquiries and Proposed Changes

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Designation	Area Manager
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Email	Matthew.Bamford@ventia.com

Document Control

Amendment	Date	Page	Description	Authorised
0.1	11/07/2023	-	Draft	Matthew Bamford
1.0	31/07/2023		For Client to Review	Matthew Bamford
1.1	31/08/2023		Final	Matthew Bamford
1.2	11/09/2023		Revision	Matthew Bamford

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Murrumbidgee Irrigation Limited	Sam Yenamandra
Murrumbidgee Irrigation Limited	Cindy McDonald
Murrumbidgee Irrigation Limited	Chris Palmer
Murrumbidgee Irrigation Limited	Jim Hocking
Ventia Utility Services	Matthew Bamford

The above notification list is a minimum controlled distribution and it is the responsibility of the persons receiving the notification to further notify other Ventia personnel within their area if required.

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1.0 Introduction

Ventia Utility Services is contracted by Murrumbidgee Irrigation (MI) to conduct continuous level/flow and salinity monitoring at a range of locations distributed across their area of operations.

This report presents monthly statistics and annual summaries of total flow and salt loads derived from the monitoring at drain sites and supply sites for the 2022/2023 financial year. Site 410083 contains no flow or salt load data as the rating table was suspended as of the 01/06/2010 to present due to the installation of new gates.

This report contains information relating to Murrumbidgee Irrigation Compliance sites, 410083, 41010005, 41010921 and 41010940. Also reported on are the two offtake sites being 410127 and 410129. An annual site summary can be found in this report on all sites maintained by Ventia field staff.

All data reported is extracted from the Ventia Hydstra software archive to an accuracy of three (3) significant figures.

A data extraction process called HYTAB is used when extracting the data. HYTAB utilises a configuration file provided by MI to format the data. This file stipulates reporting to four (4) significant figures. Using four significant figures implies an unrealistic level of accuracy for the data collection processes undertaken. Ventia data reporting standards recommend a maximum of three (3) significant figures.

2.0 Annual Flow Summaries

2.1 Compliance Sites

Site 410083 YANCO MAIN SOUTHERN DRAIN AT OUTFALL (YMS) Site 410083
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	1
2	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	2
3	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	3
4	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	4
5	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	5
6	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	6
7	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	7
8	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	8
9	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	9
10	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	10
11	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	11
12	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	12
13	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	13
14	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	14
15	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	15
16	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	16
17	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	17
18	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	18
19	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	19
20	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	20
21	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	21
22	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	22
23	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	23
24	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	24
25	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	25
26	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	26
27	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	27
28	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	28
29	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S		[ ]S	[ ]S	[ ]S	[ ]S	29
30	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S		[ ]S	[ ]S	[ ]S	[ ]S	30
31	[ ]S	[ ]S		[ ]S		[ ]S	[ ]S		[ ]S		[ ]S		31
Mean	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Median	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Max.Daily	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Min.Daily	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Inst.Max	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Inst.Min	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Total	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Max.Water Leve	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Min.Water Leve	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	

Summaries

Annual Mean	[ ]S
Ann. Median	[ ]S
Annual Total	[ ]S

	Maximum	Minimum
Daily Mean	[ ]S	[ ]S
Instant	[ ]S	[ ]S
Monthly	[ ]S	[ ]S

Notes

All recorded data is continuous and reliable except where the following tags are used...
S ... Rating table suspended
All Totals are in megalitres
Figures refer to period ending 2400 hours.

Rating Tables

Table	From	To	Max.Disch Reliable
23	01/06/2010	Present	

The rating table for this site was suspended by Ventia on the 01/06/2010 as new gates were installed by Murrumbidgee Irrigation. Ventia does not currently supply flow data for this site.

Site 41010005 CUDGEL CREEK AT ROACHES OUTFALL (ROCUDG) Site 41010005
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.4?	6.2	[ ]T	29.9	1.0	0.6	1
2	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	2.8?	1.7	55.3	22.8	1.1	0.5	2
3	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.3?	0.2R	79.2N	16.6	1.1	0.5	3
4	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.9?	0.0R	83.8N	11.4	1.0	0.4	4
5	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.4?	0.0R	84.7N	6.8	0.9	0.3R	5
6	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.8?	0.0R	89.3N	4.0	0.8	0.4R	6
7	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	31.9?	1.7R	0.0R	93.8N	3.2	0.8	0.3R	7
8	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	21.2?	1.8R	0.0R	95.2N	2.7	0.7	0.6	8
9	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	13.9?	1.9?	0.0R	96.8N	2.1	0.7	0.5	9
10	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	11.4?	2.4?	0.0R	92.1N	1.9	0.9	0.4	10
11	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	9.1?	3.1?	0.0R	70.0N	1.7	1.1	0.4	11
12	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	7.1?	3.2?	0.0R	36.2	2.0	1.4	0.3R	12
13	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	3.9?	8.8?	0.0R	16.4	3.3	1.6	0.3R	13
14	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.0?	11.1?	0.0R	8.9	7.3	1.6	0.2R	14
15	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.6?	10.4?	0.0R	6.4	9.9	1.5	0.2R	15
16	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.8?	[ ]B	0.0R	4.5	14.4	1.4	0.1R	16
17	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	3.3?	[ ]B	0.0R	2.8	13.0	1.3	0.1R	17
18	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	3.1?	[ ]B	0.0R	1.7	8.8	1.2	0.1R	18
19	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.5?	[ ]B	0.0R	1.8	6.5	1.2	0.1R	19
20	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.3?	[ ]B	0.0R	7.6	5.1	1.2	0.1R	20
21	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.4?	[ ]B	0.0R	21.1	3.3	1.3	0.1R	21
22	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.2?	0.9?	[ ]T	26.6	2.3	1.3	0.1R	22
23	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.2?	1.9?	[ ]T	37.7	1.8	1.2	0.1R	23
24	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	2.6?	3.5?	[ ]T	39.8	1.7	1.1	0.1R	24
25	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	3.0?	2.6	[ ]T	36.3	1.5	1.0	0.1R	25
26	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	3.7?	1.6	[ ]T	29.4	1.3	1.1	0.0R	26
27	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.6?	1.3R	[ ]T	22.8	1.3	0.9	0.0R	27
28	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	4.6?	1.2R	[ ]T	17.6	1.2	0.8	0.1R	28
29	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	3.0?	0.5R		23.9	1.1	0.8	5.7	29
30	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	3.4?	0.8R		32.5	1.0	0.7	1.2R	30
31	0.0R	[ ]B		[ ]B		4.0?	6.0		34.1		0.7		31
Mean	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[6.0]	[3.5]	[0.4]	[41.6]	6.3	1.1	0.5R	
Median	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[3.3]	[2.6]	[0.0]	[33.3]	3.3	1.1	0.2R	
Max.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[31.9]	[11.1]	[6.2]	[96.8]	29.9	1.6	5.7R	
Min.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[1.2]	[0.5]	[0.0]	[1.7]	1.0	0.7	0.0R	
Inst.Max	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[41.4]	[14.1]	[8.4]	[98.8]	32.1	1.7	7.7R	
Inst.Min	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.4]	[0.3]	[0.0]	[0.6]	0.9	0.6	0.0R	
Total	[0.000]	[0.000]	[ ]B	[ ]B	[ ]B	[151.0]	[87.56]	[8.061]	[1248]	190.0	33.61	14.08 R	
Max.Water Leve	[0.257]	[0.227]	[ ]B	[ ]B	[ ]B	[0.502]	[0.420]	[0.395]	[0.665]	0.478	0.346	0.391R	
Min.Water Leve	[0.186]	[0.184]	[ ]B	[ ]B	[ ]B	[0.319]	[0.312]	[0.037]	[0.326]	0.334	0.328	0.268R	

Summaries

Annual Mean	[8.4]
Ann. Median	[1.6]
Annual Total	[1733]

	Maximum	Minimum
Daily Mean	[96.8]	[0.0]
Instant	[98.8]	[0.0]
Monthly	[1248]	[0.000]

Notes

All recorded data is continuous and reliable except where the following tags are used...

? ... Irregular data use with caution
B ... Backed-up stage
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
T ... Probe out of water/below instrument th
All Totals are in megalitres
Figures refer to period ending 2400 hours.

Rating Tables

Table	From	To	Max.Disch Reliable
21	01/07/2019	Present	74.5

41010005 experienced its highest flows in March 2023.

Site 41010921 GOGELDRIE MAIN SOUTHERN DRAIN AT RIVER ROAD (GMSRR) Site 41010921
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.1	0.9	0.0	0.0	0.9	1
2	0.1	0.1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.3	0.0	0.0	0.8	2
3	0.0	0.4	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.2	0.0	0.0	0.7	3
4	0.0	0.1	[ ]B	[ ]B	[ ]B	165 R	[ ]*	0.0	0.3	0.0	0.0	0.5	4
5	0.0	0.0	[ ]B	[ ]B	[ ]B	23.0R	[ ]*	0.1	0.2	0.0	0.0	0.4	5
6	0.0	0.0	[ ]B	[ ]B	[ ]B	3.2?	[ ]*	0.1	0.8	0.0	0.0	0.5	6
7	0.0	0.0	[ ]B	[ ]B	[ ]B	2.1?	[ ]*	0.3	0.7	0.0	0.0	0.5	7
8	0.0	[ ]B	[ ]B	[ ]B	[ ]B	1.1?	[ ]*	0.6	0.6	0.0	0.0	0.5	8
9	0.0	[ ]B	[ ]B	[ ]B	[ ]B	1.0?	[ ]*	1.2	0.9	0.0	0.0	0.4	9
10	0.0	[ ]B	[ ]B	[ ]B	[ ]B	2.9?	[ ]*	1.2	0.5	0.0	0.0	0.3	10
11	0.0	[ ]B	[ ]B	[ ]B	[ ]B	1.9?	[ ]*	0.7	0.4	0.0	0.0	0.1	11
12	0.0	[ ]B	[ ]B	[ ]B	[ ]B	0.8?	[ ]*	0.2	0.6	0.0	0.0	0.0	12
13	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.5	0.7	0.0	0.0	0.0	13
14	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.8	0.9	0.0	0.0	0.0	14
15	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.6	1.1	0.0	0.0	0.0	15
16	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.3	1.0	0.0	0.0	0.0	16
17	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.3	0.7	0.0	0.0	0.0	17
18	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.2	0.6	0.0	0.0	0.0	18
19	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.9	0.4	0.0	0.0	0.0	19
20	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.8	0.2	0.0	0.0	0.0	20
21	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	[ ]M	0.1	0.0	0.0	0.0	21
22	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	[ ]M	0.0	0.0	0.0	0.0	22
23	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.5	0.1	0.0	0.1	0.0	23
24	0.1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.4	0.1	0.0	0.2	0.0	24
25	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.0	0.0	0.0	0.0	25
26	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.1	0.0	0.0	0.0	0.0	0.0	26
27	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.5	0.0	0.0	0.0	0.0	28
29	0.1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0		0.4	0.0	0.0	0.0	29
30	0.1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.4		0.3	0.0	0.4	0.0	30
31	0.0	[ ]B		[ ]B		[ ]*	0.7		0.1		0.8		31
Mean	0.0	[0.1]	[ ]B	[ ]B	[ ]B	[22.3]	[0.2]	[0.4]	0.4	0.0	0.0	0.2	
Median	0.0	[0.0]	[ ]B	[ ]B	[ ]B	[2.1]	[0.1]	[0.3]	0.4	0.0	0.0	0.0	
Max.Daily	0.1	[0.4]	[ ]B	[ ]B	[ ]B	[165]	[0.7]	[1.2]	1.1	0.0	0.8	0.9	
Min.Daily	0.0	[0.0]	[ ]B	[ ]B	[ ]B	[0.8]	[0.0]	[0.0]	0.0	0.0	0.0	0.0	
Inst.Max	2.2	[4.9]	[ ]B	[ ]B	[ ]B	[284]	[2.6]	[3.4]	4.2	0.1	0.9	0.9	
Inst.Min	0.0	[0.0]	[ ]B	[ ]B	[ ]B	[0.0]	[0.0]	[0.0]	0.0	0.0	0.0	0.0	
Total	0.561	[0.623]	[ ]B	[ ]B	[ ]B	[201.0]	[1.245]	[10.48]	12.93	0.030	1.484	5.589	
Max.Water Leve	0.302	[0.376]	[ ]B	[ ]B	[ ]B	[1.365]	[0.315]	[0.340]	0.361	0.179	0.241	0.242	
Min.Water Leve	0.000	[0.000]	[ ]B	[ ]B	[ ]B	[0.086]	[-0.001]	[-0.067]	0.121	0.039	0.045	0.037	

Summaries

Annual Mean	[1.2]
Ann. Median	[0.0]
Annual Total	[233.9]

	Maximum	Minimum
Daily Mean	[165]	[0.0]
Instant	[284]	[0.0]
Monthly	[201.0]	[0.030]

Notes

All recorded data is continuous and reliable except where the following tags are used...

* ... Debris Effecting Sensor
? ... Irregular data use with caution
B ... Backed-up stage
M ... Equipment malfunction
R ... Rating table extrapolated
All Totals are in megalitres
Figures refer to period ending 2400 hours.

Rating Tables

Table	From	To	Max.Disch Reliable
15	30/05/2018	Present	41.8

41010921 experienced its highest flows in December 2022.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	22.1	18.9	42.0R	33.5N	3.2	0.9	1
2	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	21.0	11.3	41.0R	22.7N	2.1	0.6	2
3	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	18.5	7.8	44.5R	42.5R	1.0	0.7	3
4	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	16.2	9.2	44.2R	46.4R	0.7	0.4	4
5	0.0	[ ]B	[ ]B	[ ]B	[ ]B	12.3	17.1	8.6	31.8N	50.3R	0.5	1.8	5
6	0.0	[ ]B	[ ]B	[ ]B	[ ]B	4.6	23.0	8.3	37.6R	44.4R	0.5	1.0	6
7	0.0	[ ]B	[ ]B	[ ]B	[ ]B	9.1	22.2	43.2R	28.7	43.1N	0.4	0.7	7
8	0.0	[ ]B	[ ]B	[ ]B	[ ]B	4.4	20.2	57.9R	27.4	42.6N	0.3	1.2	8
9	0.0	[ ]B	[ ]B	[ ]B	[ ]B	25.3N	18.8	51.8R	28.9	37.3N	0.2	1.4	9
10	0.0	[ ]B	[ ]B	[ ]B	[ ]B	38.9N	17.1	45.1R	28.8	41.6R	0.1	0.8	10
11	0.0	[ ]B	[ ]B	[ ]B	[ ]B	45.4R	18.9	40.7N	27.0	44.0R	0.1	0.5	11
12	0.0	[ ]B	[ ]B	[ ]B	[ ]B	35.4R	23.6	37.0N	30.1	39.5R	0.8	0.4	12
13	0.0	[ ]B	[ ]B	[ ]B	[ ]B	32.0N	32.3N	35.8N	30.9	23.1	1.1	0.3	13
14	0.0	[ ]B	[ ]B	[ ]B	[ ]B	32.1	15.5	34.6N	29.2N	19.9	0.8	0.2	14
15	0.0	[ ]B	[ ]B	[ ]B	[ ]B	33.4N	16.1	33.4N	41.3R	18.0	0.8	0.2	15
16	0.0	[ ]B	[ ]B	[ ]B	[ ]B	34.0N	14.3	32.3	37.8R	26.5N	0.7	0.1	16
17	0.0	[ ]B	[ ]B	[ ]B	[ ]B	33.7N	12.4	31.1	33.9N	28.6	0.6	0.1	17
18	0.0	[ ]B	[ ]B	[ ]B	[ ]B	34.8N	11.9	30.0	36.5N	25.6	0.5	0.1	18
19	0.0	[ ]B	[ ]B	[ ]B	[ ]B	42.3N	27.4N	29.0	32.0	22.0	0.4	0.1	19
20	0.0	[ ]B	[ ]B	[ ]B	[ ]B	38.0N	16.6	40.4R	30.1N	20.9	0.4	0.2	20
21	0.0	[ ]B	[ ]B	[ ]B	[ ]B	35.0N	12.2	34.5N	33.4N	18.5	0.4	0.2	21
22	0.0	[ ]B	[ ]B	[ ]B	[ ]B	43.6R	9.7	26.3	28.1	15.4	0.4	0.2	22
23	0.0	[ ]B	[ ]B	[ ]B	[ ]B	49.7R	27.0	22.5	26.9	11.2	0.3	0.2	23
24	1.3	[ ]B	[ ]B	[ ]B	[ ]B	25.5	26.5	27.7N	27.9	8.2	0.3	0.2	24
25	0.9	[ ]B	[ ]B	[ ]B	[ ]B	20.6	30.5N	35.4N	26.8	6.8	0.5	0.1	25
26	0.5	[ ]B	[ ]B	[ ]B	[ ]B	20.2	12.1	27.9	21.9	6.2	1.7	0.1	26
27	0.3	[ ]B	[ ]B	[ ]B	[ ]B	18.8	15.5	25.7	21.0	5.6	3.6	0.1	27
28	0.2	[ ]B	[ ]B	[ ]B	[ ]B	17.4	27.6	30.4N	[ ]M	4.6	1.3	0.3	28
29	0.1	[ ]B	[ ]B	[ ]B	[ ]B	18.6	16.1		[ ]M	3.8	2.8	0.5	29
30	0.0	[ ]B	[ ]B	[ ]B	[ ]B	25.8	31.9R		37.9R	3.4	2.2	0.3	30
31	[ ]B	[ ]B		[ ]B		26.6	22.6		39.2N		2.5		31
Mean	[0.1]	[ ]B	[ ]B	[ ]B	[ ]B	[28.1]	19.9R	29.9R	[32.6]	25.2R	1.0	0.5	
Median	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[32.0]	18.8R	30.8R	[30.9]	22.9R	0.6	0.3	
Max.Daily	[1.3]	[ ]B	[ ]B	[ ]B	[ ]B	[49.7]	32.3R	57.9R	[44.5]	50.3R	3.6	1.8	
Min.Daily	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[4.4]	9.7R	7.8R	[21.0]	3.4R	0.1	0.1	
Inst.Max	[2.4]	[ ]B	[ ]B	[ ]B	[ ]B	[67.7]	46.7R	72.1R	[56.4]	55.6R	5.9	2.5	
Inst.Min	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[3.1]	7.9R	6.9R	[20.4]	3.0R	0.0	0.0	
Total	[3.251]	[ ]B	[ ]B	[ ]B	[ ]B	[757.6]	617.2 R	836.8 R	[946.6]	756.2 R	31.30	13.83	
Max.Water Leve	[0.515]	[ ]B	[ ]B	[ ]B	[ ]B	[1.055]	0.929R	1.080R	[0.989]	0.984R	0.578	0.516	
Min.Water Leve	[0.331]	[ ]B	[ ]B	[ ]B	[ ]B	[0.532]	0.608R	0.594R	[0.740]	0.529R	0.382	0.383	

Summaries

Annual Mean [16.9]
Ann. Median [16.2]
Annual Total [3963]

	Maximum	Minimum
Daily Mean	[57.9]	[0.0]
Instant	[72.1]	[0.0]
Monthly	[946.6]	[3.251]

Notes

All recorded data is continuous and reliable except where the following tags are used...
B ... Backed-up stage
M ... Equipment malfunction
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
All Totals are in megalitres
Figures refer to period ending 2400 hours.

Rating Tables

Table	From	To	Max.Disch Reliable
25	01/07/2019	Present	33.5

41010940 experienced its highest flows in March 2023.

2.2 Offtake Sites

Site 410127 MAIN CANAL AT NARRANDERA REGULATOR Site 410127
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	213 V	264	407	140	71.1	2290	4060	1490	3470 V	336 K	534	647 V	1
2	80.0V	264	281	445	118	2350	3950	1910	3280 V	364 K	538	487 V	2
3	13.1V	229	87.5	353	205	2270	3750	2390	3360 V	335 K	560	573 V	3
4	39.5V	113	264	170	105	2970	3800	2750	3350 V	492 K	533	386 V	4
5	136 V	0.6	106	0.0	87.6	3140	3910	3090	3820 V	528 K	653	326 V	5
6	9.5V	0.0	246	0.0	96.4	2890	3760	3100	3230 V	534 K	588	264 V	6
7	7.7V	98.5	109	0.0	142	2620	4020	3370	2780 V	787 K	476	54.3V	7
8	159 V	72.5	141	0.0	168	2850	4390	3630	3130 V	467 K	460	277 V	8
9	192 V	17.7	56.4	20.8	284	2580	3870	3670	3000 V	609 K	342	177 V	9
10	166 V	23.3	130	78.7	544	2600	4390	3320	2830 V	450 K	441	213 V	10
11	182 V	159	131	47.0	615	3070	4170	3760	2870 V	479 K	545	325 V	11
12	243 V	165	61.9	81.5	685	2510	3960	4650	3530 V	503 K	461	150 V	12
13	214 V	110	73.5	131	397	1980	4250	4040	2990 V	317 K	652	204 V	13
14	183 V	35.5	71.9	94.9	57.7	2230	4470	3750	2690 V	335 K	709	119 V	14
15	180 V	211	77.4	40.4	143	2540	4960	4220	3170 V	362 K	577	165 V	15
16	208 V	137	67.3	11.4	152	2720	5190	4080	3070 V	346 K	562	192 V	16
17	237 V	5.4	115	13.0	263	3520	4560	4630	3250 V	195 K	739	186 V	17
18	247 V	394	81.8	13.0	420	3890	4740	4300	3340 V	336 K	754	119 V	18
19	249 V	46.8	105	13.0	353	3480	4380	4700	3090 V	266 K	617	145 V	19
20	312 V	0.0	142	13.0	405	3250	4240	4640	2900 V	342 K	689	148 V	20
21	282 V	435	400	13.0	371	3220	4240	3770	1810 V	396	936	293 V	21
22	217 V	90.7	35.9	78.8	556	3650	3960	4080	1280 V	362	454	114 V	22
23	87.1V	328	71.2	102	624	3110	3150	3650 V	1340 V	471	628	0.0	23
24	243 V	12.9	53.8	68.2	1210	3250	3600	3610 V	1190 V	390	1180	0.0	24
25	302 V	154	91.3	35.6	925	3470	3520	3920 V	1110 V	406	834 V	0.0	25
26	277 V	117	90.0	0.0	1270	2910	3360	4340 V	1080 V	418	1250 V	0.0	26
27	299 V	269	28.6	0.0	1510	3340	3700	3820 V	1150 V	579	968 V	0.0	27
28	327 V	271	64.7	27.9	1930	3700	3490	3440 V	746 V	657	894 V	0.0	28
29	312 V	42.5	53.4	63.7	1300	3780	3790		892 V	414	887 V	0.0	29
30	362 V	226	92.5	52.6	1770	3550	2020		348 K	686	588 V	0.0	30
31	388 V	125		0.0		3880	1740		434 K		830 V		31
Mean	205 V	143	124	68.0	559	3020	3920	3650 V	2400 K	439 K	674 V	186 V	
Median	214 V	117	90.7	35.6	384	3070	3960	3760 V	2900 K	410 K	617 V	157 V	
Max.Daily	388 V	435	407	445	1930	3890	5190	4700 V	3820 K	787 K	1250 V	647 V	
Min.Daily	7.7V	0.0	28.6	0.0	57.7	1980	1740	1490 V	348 K	195 K	342 V	0.0V	
Inst.Max	919 V	690	757	776	2430	5060	5840	6490 V	4360 K	1110 K	1740 V	922 V	
Inst.Min	0.0V	0.0	0.0	0.0	0.0	87.0	843	1120 V	75.9K	18.5K	199 V	0.0V	
Total	6367V	4418	3735	2107	16780	93600	121400	102100V	74550K	13170K	20880V	5565V	
Max.Discharge	919.274V	690.081	757.424	776.148	2432.123	5057.760	5837.875	6486.403V	4360.668K	1111.704K	1741.395V	921.990V	
Min.Discharge	0.000V	0.000	0.000	0.000	0.000	87.025	843.336	1115.848V	75.864K	18.465K	198.665V	0.000V	

Summaries

Annual Mean	1270 K
Ann. Median	414 K
Annual Total	464700K

	Maximum	Minimum
Daily Mean	5190 K	0.0K
Instant	6490 K	0.0K
Monthly	121400K	2107K

Notes

All recorded data is continuous and reliable
except where the following tags are used...
K ... Minor editing
V ... Operational Data
All Totals are in megalitres
Figures refer to period ending 600 hours.

410127 experienced its highest flows in January 2023.

Site 410129 STURT CANAL AT OFFTAKE Site 410129
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	315 V	283 V	0.6	3.3V	40.3V	762 K	1220 K	428	1470 V	14.2K	2.1K	447 V	1
2	21.4V	136 V	74.5	6.2V	13.0V	839 K	1180 K	484	1300 V	16.8K	7.0K	471 V	2
3	0.0	19.2V	184	3.5V	31.3V	896 K	1120 K	658	1130 V	0.8K	8.8K	436 V	3
4	0.0	9.1V	110	178 V	19.5V	1040 K	1010 K	680	1010 V	1.6K	13.9K	220 V	4
5	0.0	13.5V	68.9	43.6V	2.4V	1310 K	891 K	821	1100 V	1.4K	6.6K	256 V	5
6	0.0	80.8V	71.8	6.4V	7.4V	1220 K	1150 K	1010	932 V	0.9K	44.6K	280 V	6
7	0.0	139 V	0.1	14.5V	24.2V	1230 K	1020 K	1270	902 V	0.7K	227 K	184 V	7
8	0.0	17.6V	0.3	17.7V	1.6V	1330 K	1100 K	1200	828 V	15.8K	253 K	146 V	8
9	0.0	142 V	0.0	7.1V	82.6V	1190 K	1200 K	1240	964 V	20.7K	199 K	132 V	9
10	0.0	25.4V	0.0	17.0V	118 V	1010 K	1410 K	1360	1110 V	5.3K	214 K	194 V	10
11	0.0	72.0V	0.0	4.1V	114 V	962 K	1570 K	1360	1040 V	11.8K	113 K	2.7V	11
12	0.0	7.2V	0.0	10.6V	85.8V	997 K	1250 K	1470	900 V	2.9K	193 K	0.0	12
13	0.0	5.4V	0.0	13.7V	12.8V	836 K	1690 K	1630	1100 V	11.2K	161 K	0.0	13
14	28.6V	15.1V	0.0	37.6V	30.3V	906 K	1780 K	1480	910 V	5.7K	134 K	0.0	14
15	155 V	24.8V	0.0	30.2V	37.9V	756 K	1720 K	1160	976 V	2.3K	175 K	0.0	15
16	77.1V	6.2V	0.0	1.7V	22.3V	854 K	1950 K	1180	869 V	10.5K	206 K	0.0	16
17	0.0	6.0V	0.0	5.8V	27.9V	1050 K	1690 K	1270	713 V	10.6K	148 K	0.0	17
18	0.0	1.4V	0.0	0.2V	136 V	1340 K	1510 K	1010	914 V	0.0K	14.2K	0.0	18
19	0.0	7.5V	0.0	1.4V	227 V	1240 K	1190 K	1330	1050 V	75.5K	375 K	0.0	19
20	0.0	13.1V	0.0	1.9V	196 V	1370 K	969 K	1320	1040 V	5.8K	352 K	0.0	20
21	0.0	2.0V	81.8	3.4V	294 V	1530 K	997 K	1230	679 V	4.2K	352 K	0.0	21
22	0.0	0.0	0.0	12.1V	241 V	1440 K	893 K	1280	505 V	2.9K	295 K	0.0	22
23	0.0	17.0V	0.0	58.1V	246 V	1140 K	890 K	1090 V	467 V	1.8K	304 K	0.0	23
24	0.0	10.5V	0.0	35.9V	225 K	791 K	933 K	997 V	433 V	6.3K	251 K	0.0	24
25	0.0	14.4V	0.0	40.7V	216 K	1150 K	920 K	1170 V	370 V	1.0K	471 V	0.0	25
26	94.8V	5.3	0.0	32.8V	281 K	1030 K	1040 K	1280 V	385 V	0.0K	482 V	0.0	26
27	23.7V	0.5	0.0	23.3V	322 K	1120 K	1060	1270 V	278 V	84.3K	397 V	0.0	27
28	9.4V	7.0	0.0	32.9V	415 K	1310 K	1220	1060 V	198 V	62.0K	419 V	0.0	28
29	419 V	10.1	0.0	28.0V	484 K	1370 K	1280		166 V	13.3K	445 V	0.0	29
30	632 V	26.2	1.4V	13.4V	567 K	1270 K	764		41.8K	2.8K	355 V	0.0	30
31	661 V	27.4		5.3V		1340 K	384		20.5K		505 V		31
Mean	78.6V	36.9V	19.8V	22.3V	151 K	1120 K	1190 K	1130 V	768 K	13.1K	230 K	92.3V	
Median	0.0V	13.5V	0.0V	13.4V	100 K	1140 K	1150 K	1210 V	902 K	5.5K	214 K	0.0V	
Max.Daily	661 V	283 V	184 V	178 V	567 K	1530 K	1950 K	1630 V	1470 K	84.3K	505 K	471 V	
Min.Daily	0.0V	0.0V	0.0V	0.2V	1.6K	756 K	384 K	428 V	20.5K	0.0K	2.1K	0.0V	
Inst.Max	1910 V	2410 V	305 V	1860 V	791 K	2030 K	2480 K	1900 V	1790 K	598 K	874 K	1010 V	
Inst.Min	0.0V	0.0V	0.0V	0.0V	0.0K	0.0K	0.0K	338 V	0.0K	0.0K	0.0K	0.0V	
Total	2436V	1145V	594V	690V	4523K	34620K	36990K	31750V	23800K	393K	7123K	2769V	
Max.Discharge	1906.273V	2408.761V	305.406V	1860.877V	791.448K	2034.290K	2480.820K	1899.098V	1792.560K	598.329K	874.336K	1006.583V	
Min.Discharge	0.000V	0.000V	0.000V	0.000V	0.000K	0.000K	0.000K	337.739V	0.000K	0.000K	0.000K	0.000V	

Summaries

Annual Mean	402 K
Ann. Median	84.3K
Annual Total	146800K

	Maximum	Minimum
Daily Mean	1950 K	0.0K
Instant	2480 K	0.0K
Monthly	36990K	393K

Notes

All recorded data is continuous and reliable
except where the following tags are used...
K ... Minor editing
V ... Operational Data
All Totals are in megalitres
Figures refer to period ending 600 hours.

410129 experienced its highest flows in January 2023.

3.0 Annual Salt Load Summaries

3.1 Compliance Sites

Site 410083 YANCO MAIN SOUTHERN DRAIN AT OUTFALL (YMS) Site 410083
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]S	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	1
2	[ ]S	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	2
3	[ ]S	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	3
4	[ ]T	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	4
5	[ ]T	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	5
6	[ ]T	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	6
7	[ ]T	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	7
8	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	8
9	[ ]T	[ ]T	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	9
10	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	10
11	[ ]S	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	11
12	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	12
13	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	13
14	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	14
15	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	15
16	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	16
17	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	17
18	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	18
19	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	19
20	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	20
21	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	21
22	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	22
23	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	23
24	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	24
25	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	25
26	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	26
27	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	27
28	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	28
29	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S		[ ]S	[ ]S	[ ]S	[ ]S	29
30	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S		[ ]S	[ ]S	[ ]S	[ ]S	30
31	[ ]T	[ ]S		[ ]S		[ ]S	[ ]S		[ ]S		[ ]S		31
Mean	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Median	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Max.Daily	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Min.Daily	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Inst.Max	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Inst.Min	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Total	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Max.EC@25C	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	
Min.EC@25C	[ ]T	[ ]S	[ ]T	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	

Summaries

Annual Mean	[ ]S
Ann. Median	[ ]S
Annual Total	[ ]S

	Maximum	Minimum
Daily Mean	[ ]S	[ ]S
Instant	[ ]S	[ ]S
Monthly	[ ]S	[ ]S

Notes

All recorded data is continuous and reliable
except where the following tags are used...
S ... Rating table suspended
T ... Probe out of water/below instrument th
All Totals are in tonnes
Figures refer to period ending 2400 hours.

No salt loads can be produced for site 410083 as no flows are calculated by Ventia.

Site 41010005 CUDGEL CREEK AT ROACHES OUTFALL (ROCUDG) Site 41010005
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.9?	1.8?	[ ]T	2.5	0.1	0.1	1
2	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.6?	0.5?	9.5?	1.8	0.1	0.1	2
3	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.9?	0.0R	13.6N	1.4	0.1	0.1	3
4	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	1.0?	0.0R	14.4N	1.0	0.1	0.0	4
5	[ ]B	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	1.0?	0.0R	13.3N	0.6	0.1	0.0R	5
6	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	0.0R	13.2N	0.3	0.1	0.0R	6
7	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	4.1?	0.4R	0.0R	13.1N	0.3	0.1	0.0R	7
8	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.7?	0.4R	0.0R	12.9N	0.2	0.1	0.1	8
9	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.8?	0.5?	0.0R	12.8N	0.2	0.1	0.1	9
10	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.5?	0.6?	0.0R	12.0N	0.2	0.1	0.1	10
11	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	1.2?	0.8?	0.0R	8.9N	0.1	0.1	0.0	11
12	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.9?	0.8?	0.0R	4.5?	0.2	0.1	0.0R	12
13	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.5?	2.3?	0.0R	2.0?	0.3	0.1	0.0R	13
14	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.3?	2.9?	0.0R	1.1?	0.6	0.2	0.0R	14
15	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.2?	2.8?	0.0R	0.8?	0.9	0.1	0.0R	15
16	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	[ ]B	0.0R	0.5?	1.2	0.1	0.0R	16
17	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.5?	[ ]B	0.0R	0.3?	1.1	0.1	0.0R	17
18	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	[ ]B	0.0R	0.2?	0.8	0.1	0.0R	18
19	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	[ ]B	0.0R	0.2?	0.5	0.1	0.0R	19
20	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.3?	[ ]B	[ ]T	0.8?	0.4	0.1	0.0R	20
21	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	[ ]B	[ ]T	2.1?	0.3	0.1	0.0R	21
22	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.2?	0.3?	[ ]T	2.6?	0.2	0.1	0.0R	22
23	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	0.6?	[ ]T	3.6?	0.2	0.1	0.0R	23
24	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.4?	1.0?	[ ]T	3.7?	0.2	0.1	0.0R	24
25	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.5?	0.8?	[ ]T	3.2?	0.1	0.1	0.0R	25
26	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.6?	0.5?	[ ]T	2.6?	0.1	0.1	0.0R	26
27	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.8?	0.4R	[ ]T	1.9?	0.1	0.1	0.0R	27
28	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.8?	0.4R	[ ]T	1.4?	0.1	0.1	0.0R	28
29	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.5?	0.1R		2.0?	0.1	0.1	0.5	29
30	0.0R	[ ]B	[ ]B	[ ]B	[ ]B	0.6?	0.2R		2.7	0.1	0.1	0.1R	30
31	0.0R	[ ]B		[ ]B		0.8?	1.7?		2.8		0.1		31
Mean	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.8]	[0.9]	[0.1]	[5.4]	0.5	0.1	0.0R	
Median	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.5]	[0.6]	[0.0]	[2.7]	0.3	0.1	0.0R	
Max.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[4.1]	[2.9]	[1.8]	[14.4]	2.5	0.2	0.5R	
Min.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.2]	[0.1]	[0.0]	[0.2]	0.1	0.1	0.0R	
Inst.Max	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[5.3]	[3.8]	[2.4]	[15.3]	2.6	0.2	0.7R	
Inst.Min	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.0]	[0.1]	[0.0]	[0.1]	0.1	0.0	0.0R	
Total	[0]	[0]	[ ]B	[ ]B	[ ]B	[21]	[22]	[2]	[162]	16	3	1R	
Max.EC@25C	[169]	[176]	[ ]B	[ ]B	[ ]B	[321]	[595]	[501]	[295]	156	179	227R	
Min.EC@25C	[160]	[162]	[ ]B	[ ]B	[ ]B	[209]	[319]	[461]	[129]	128	118	145R	

Summaries

Annual Mean	[1.1]
Ann. Median	[0.2]
Annual Total	[228]

	Maximum	Minimum
Daily Mean	[14.4]	[0.0]
Instant	[15.3]	[0.0]
Monthly	[162]	[0]

Notes

All recorded data is continuous and reliable except where the following tags are used...
? ... Irregular data use with caution
B ... Backed-up stage
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
T ... Probe out of water/below instrument th
All Totals are in tonnes
Figures refer to period ending 2400 hours.

Site 41010921 GOGELDRIE MAIN SOUTHERN DRAIN AT RIVER ROAD (GMSRR) Site 41010921
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.2	0.0	[ ]T	[ ]T	1
2	0.0	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	2
3	0.0	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	3
4	0.0	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	4
5	0.0	0.0	[ ]B	[ ]B	[ ]B	3.5R	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	5
6	0.0	0.0	[ ]B	[ ]B	[ ]B	0.5?	[ ]*	0.0	0.2	0.0	[ ]T	[ ]T	6
7	0.0	0.0	[ ]B	[ ]B	[ ]B	0.3?	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	7
8	0.0	[ ]T	[ ]B	[ ]B	[ ]B	0.2?	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	8
9	0.0	[ ]B	[ ]B	[ ]B	[ ]B	0.2?	[ ]*	0.2	0.1	0.0	[ ]T	[ ]T	9
10	0.0	[ ]B	[ ]B	[ ]B	[ ]B	0.5?	[ ]*	0.2	0.1	0.0	[ ]T	[ ]T	10
11	0.0	[ ]B	[ ]B	[ ]B	[ ]B	0.3?	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	11
12	0.0	[ ]B	[ ]B	[ ]B	[ ]B	0.1?	[ ]*	0.0	0.1	0.0	[ ]T	[ ]T	12
13	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	13
14	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	14
15	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.2	0.0	[ ]T	[ ]T	15
16	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	16
17	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.1	0.0	[ ]T	[ ]T	17
18	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.0	0.1	0.0	[ ]T	[ ]T	18
19	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.0	0.0	[ ]T	[ ]T	19
20	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.0	0.0	[ ]T	[ ]T	20
21	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	[ ]M	0.0	0.0	[ ]T	[ ]T	21
22	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	[ ]M	0.0	0.0	[ ]T	[ ]T	22
23	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.0	[ ]T	[ ]T	[ ]T	23
24	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.1	0.0	[ ]T	[ ]T	[ ]T	24
25	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	[ ]*	0.0	0.0	[ ]T	[ ]T	[ ]T	25
26	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	[ ]T	26
27	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.0	0.0	[ ]T	[ ]T	[ ]T	27
28	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0	0.1	0.0	[ ]T	[ ]T	[ ]T	28
29	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.0		0.0	[ ]T	[ ]T	[ ]T	29
30	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	[ ]*	0.1		0.0	[ ]T	[ ]T	[ ]T	30
31	[ ]T	[ ]B		[ ]B		[ ]*	0.1		0.0		[ ]T		31
Mean	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.7]	[0.0]	[0.1]	0.1	[0.0]	[ ]T	[ ]T	
Median	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.3]	[0.0]	[0.1]	0.0	[0.0]	[ ]T	[ ]T	
Max.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[3.5]	[0.1]	[0.2]	0.2	[0.0]	[ ]T	[ ]T	
Min.Daily	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.1]	[0.0]	[0.0]	0.0	[0.0]	[ ]T	[ ]T	
Inst.Max	[0.1]	[0.0]	[ ]B	[ ]B	[ ]B	[11.5]	[0.4]	[0.6]	0.8	[0.0]	[ ]T	[ ]T	
Inst.Min	[0.0]	[0.0]	[ ]B	[ ]B	[ ]B	[0.0]	[0.0]	[0.0]	0.0	[0.0]	[ ]T	[ ]T	
Total	[0]	[0]	[ ]B	[ ]B	[ ]B	[6]	[0]	[2]	2	[0]	[ ]T	[ ]T	
Max.EC@25C	[188]	[103]	[ ]B	[ ]B	[ ]B	[292]	[308]	[498]	369	[865]	[ ]T	[ ]T	
Min.EC@25C	[153]	[74]	[ ]B	[ ]B	[ ]B	[233]	[188]	[192]	153	[69]	[ ]T	[ ]T	

Summaries

Annual Mean [0.1]
Ann. Median [0.0]
Annual Total [10]

	Maximum	Minimum
Daily Mean	[3.5]	[0.0]
Instant	[11.5]	[0.0]
Monthly	[6]	[0]

Notes

All recorded data is continuous and reliable except where the following tags are used...
* ... Debris Effecting Sensor
? ... Irregular data use with caution
B ... Backed-up stage
M ... Equipment malfunction
R ... Rating table extrapolated
T ... Probe out of water/below instrument th
All Totals are in tonnes
Figures refer to period ending 2400 hours.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	3.2	[ ]*	[ ]*	2.6N	0.4	0.1	1
2	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.4	[ ]*	[ ]*	1.9N	0.3	0.1	2
3	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	3.1	[ ]*	[ ]*	3.0R	0.1	0.1	3
4	0.0	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	2.5	[ ]*	[ ]*	4.5R	0.1	0.1	4
5	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	2.7	3.0	[ ]*	[ ]*	5.2R	0.1	0.2	5
6	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	1.3	3.8	[ ]*	[ ]*	4.3R	0.1	0.1	6
7	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	2.5	3.9	[ ]*	[ ]*	3.7N	0.1	0.1	7
8	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	1.2	3.4	[ ]*	[ ]*	3.1N	0.1	0.1	8
9	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	4.9N	3.3	[ ]*	[ ]*	3.1N	0.0	0.2	9
10	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	8.4N	3.1	[ ]*	[ ]*	4.2R	0.0	0.1	10
11	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	8.0R	3.3	[ ]*	[ ]*	4.2R	0.0	0.1	11
12	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	5.0R	3.6	[ ]*	[ ]*	3.8R	0.2	0.1	12
13	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	5.4N	4.0N	[ ]*	[ ]*	2.2	0.2	0.1	13
14	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	4.8	1.9	[ ]*	[ ]*	2.0	0.2	0.0	14
15	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.0N	2.4	[ ]*	[ ]*	1.9	0.2	0.0	15
16	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	7.0N	2.7	[ ]*	[ ]*	3.0N	0.1	0.0	16
17	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.7N	1.8	[ ]*	[ ]*	2.9	0.1	0.0	17
18	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.6N	1.4	[ ]*	[ ]*	2.6	0.1	0.0	18
19	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.7N	3.6N	[ ]*	[ ]*	2.3	0.1	0.0	19
20	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	7.0N	2.2	[ ]*	[ ]*	2.3	0.1	0.0	20
21	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.3N	1.3	[ ]*	[ ]*	1.9	0.1	0.0	21
22	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	6.5R	1.2	[ ]*	[ ]*	1.7	0.1	0.0	22
23	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	8.1R	3.5	[ ]*	[ ]*	1.1	0.1	0.1	23
24	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	4.2	3.0	[ ]*	[ ]*	0.9	0.1	0.0	24
25	0.3	[ ]B	[ ]B	[ ]B	[ ]B	3.6	[ ]*	[ ]*	[ ]*	0.8	0.1	0.0	25
26	0.2	[ ]B	[ ]B	[ ]B	[ ]B	3.2	[ ]*	[ ]*	[ ]*	0.7	0.3	0.0	26
27	0.1	[ ]B	[ ]B	[ ]B	[ ]B	3.2	[ ]*	[ ]*	[ ]*	0.7	0.7	0.0	27
28	0.1	[ ]B	[ ]B	[ ]B	[ ]B	2.6	[ ]*	[ ]*	[ ]*	0.6	0.3	0.1	28
29	0.0	[ ]B	[ ]B	[ ]B	[ ]B	2.7	[ ]*		[ ]M	0.4	0.5	0.1	29
30	0.0	[ ]B	[ ]B	[ ]B	[ ]B	4.4	[ ]*		3.3R	0.4	0.4	0.1	30
31	[ ]B	[ ]B		[ ]B		4.3	[ ]*		2.9N		0.2		31
Mean	[0.1]	[ ]B	[ ]B	[ ]B	[ ]B	[4.9]	[2.8]	[ ]*	[3.1]	2.4R	0.2	0.1	
Median	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[4.9]	[3.1]	[ ]*	[3.1]	2.3R	0.1	0.1	
Max.Daily	[0.3]	[ ]B	[ ]B	[ ]B	[ ]B	[8.4]	[4.0]	[ ]*	[3.3]	5.2R	0.7	0.2	
Min.Daily	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[1.2]	[1.2]	[ ]*	[2.9]	0.4R	0.0	0.0	
Inst.Max	[0.5]	[ ]B	[ ]B	[ ]B	[ ]B	[13.9]	[9.1]	[ ]*	[4.3]	6.9R	1.1	0.4	
Inst.Min	[0.0]	[ ]B	[ ]B	[ ]B	[ ]B	[0.6]	[0.8]	[ ]*	[2.0]	0.3R	0.0	0.0	
Total	[1]	[ ]B	[ ]B	[ ]B	[ ]B	[134]	[68]	[ ]*	[6]	72R	5	2	
Max.EC@25C	[612]	[ ]B	[ ]B	[ ]B	[ ]B	[675]	[554]	[ ]*	[177]	257R	514	967	
Min.EC@25C	[9]	[ ]B	[ ]B	[ ]B	[ ]B	[182]	[138]	[ ]*	[85]	46R	73	47	

Summaries

Annual Mean	[1.9]
Ann. Median	[1.0]
Annual Total	[288]

	Maximum	Minimum
Daily Mean	[8.4]	[0.0]
Instant	[13.9]	[0.0]
Monthly	[134]	[1]

Notes

All recorded data is continuous and reliable except where the following tags are used...
* ... Debris Effecting Sensor
B ... Backed-up stage
M ... Equipment malfunction
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
T ... Probe out of water/below instrument th
All Totals are in tonnes
Figures refer to period ending 2400 hours.

3.2 Offtake Sites

Site 410127 MAIN CANAL AT NARRANDERA REGULATOR Site 410127
Variable 803.00 Salt Transport (calc from MDFs) (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	20.6V	20.9	45.3	14.7	7.3	230	430	124	239 V	33.2K	81.3	67.3V	1
2	7.6V	21.8	31.4	49.0	12.1	229	403	168	230 V	35.4K	82.5	50.9V	2
3	1.3V	20.5	10.0	44.6	21.1	229	374	206	241 V	32.0K	92.6	60.2V	3
4	3.8V	9.9	30.9	22.5	11.0	300	361	229	234 V	47.1K	91.3	41.0V	4
5	12.9V	0.0	12.9	0.0	9.4	307	363	254	252 V	50.2K	111	34.4V	5
6	1.0V	0.0	30.2	0.0	10.6	293	366	283	211 V	51.0K	101	28.6V	6
7	0.8V	8.7	13.8	0.0	15.3	277	411	316	181 V	77.2K	83.8	5.8V	7
8	14.8V	6.3	17.8	0.0	18.4	317	423	361	208 V	51.3K	83.8	30.0V	8
9	17.6V	1.5	7.3	3.0	30.7	301	364	357	200 V	72.7K	62.9	18.3V	9
10	15.1V	2.0	16.5	10.7	54.9	305	414	322	190 V	61.6K	81.3	21.1V	10
11	16.6V	13.2	17.0	6.5	58.9	373	378	352	191 V	71.9K	97.9	29.9V	11
12	22.2V	13.5	8.0	11.1	66.4	305	357	408	240 V	75.1K	81.9	13.0V	12
13	19.4V	8.7	9.7	18.2	38.9	230	342	378	213 V	47.0K	115	17.6V	13
14	16.6V	2.9	9.4	12.9	5.6	254	345	311	200 V	48.0K	124	10.0V	14
15	16.4V	19.5	10.5	5.7	14.2	286	416	337	257 V	51.2K	126	14.1V	15
16	18.8V	25.2	9.1	1.6	14.8	305	417	352	257 V	48.2K	132	16.5V	16
17	21.7V	1.0	15.4	1.9	25.5	391	356	391	273 V	27.9K	128	16.7V	17
18	22.8V	75.4	11.0	2.0	43.4	419	368	366	282 V	49.4K	118	11.0V	18
19	23.4V	9.5	14.0	2.0	39.9	369	338	389	270 V	41.8K	94.9	13.9V	19
20	32.3V	0.0	18.8	1.8	45.6	367	325	375	243 V	55.9K	104	14.5V	20
21	33.5V	86.4	55.9	1.4	42.4	337	324	295	157 V	68.6	137	[ ]T	21
22	26.6V	15.5	5.1	7.8	65.2	378	314	319	124 V	66.5	69.9	[ ]T	22
23	10.5V	43.0	9.6	10.5	73.0	321	256	267 V	159 V	88.9	103	[ ]T	23
24	29.1V	1.4	7.2	6.9	146	338	288	250 V	160 V	73.1	181	[ ]T	24
25	33.8V	17.9	12.1	3.5	122	358	286	266 V	136 V	72.8	112 V	[ ]T	25
26	28.7V	13.3	11.1	0.0	172	319	278	294 V	119 V	72.6	156 V	[ ]T	26
27	29.7V	30.1	3.4	0.0	208	398	303	261 V	121 V	99.1	119 V	[ ]T	27
28	31.5V	30.3	7.8	2.9	261	418	279	238 V	77.3V	126	112 V	[ ]T	28
29	28.2V	4.6	6.1	6.6	161	433	303		89.8V	82.2	109 V	[ ]T	29
30	30.6V	24.9	9.8	5.3	202	405	161		35.3K	122	66.8V	[ ]T	30
31	31.1V	14.0		0.0		425	141		43.0K		89.8V		31
Mean	20.0V	17.5	15.6	8.2	66.5	330	338	302 V	188 K	63.3K	105 V	[25.7]	
Median	20.6V	13.3	11.0	3.5	41.1	319	356	313 V	200 K	58.7K	103 V	[17.9]	
Max.Daily	33.8V	86.4	55.9	49.0	261	433	430	408 V	282 K	126 K	181 V	[67.3]	
Min.Daily	0.8V	0.0	3.4	0.0	5.6	229	141	124 V	35.3K	27.9K	62.9V	[5.8]	
Inst.Max	89.3V	128	86.9	76.1	329	596	535	531 V	346 K	173 K	216 V	[93.9]	
Inst.Min	0.0V	0.0	0.0	0.0	0.0	11.0	67.1	91.4V	8.3K	2.7K	32.5V	[0.0]	
Total	619V	542	467	253	1996	10220	10480	8469V	5833K	1900K	3250V	[515]	
Max.EC@25C	206V	348	237	263	232	207	183	169V	237K	337K	425V	[186]	
Min.EC@25C	132V	130	175	163	157	159	124	112V	107K	158K	175V	[139]	

Summaries

	Maximum	Minimum
Annual Mean	[125]	
Ann. Median	[61.6]	
Annual Total	[44540]	
Daily Mean	[433]	[0.0]
Instant	[596]	[0.0]
Monthly	[10480]	[253]

Notes
All recorded data is continuous and reliable except where the following tags are used...
K ... Minor editing
T ... Probe out of water/below instrument th
V ... Operational Data
All Totals are in tonnes
Figures refer to period ending 600 hours.

Site 410129 STURT CANAL AT OFFTAKE Site 410129
Variable 803.00 Salt Transport (calc from MDFs) (t/d) in tonnes/day, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	26.5V	19.6V	0.1	0.4V	4.5V	80.6K	111 K	29.2	84.4V	1.3K	0.4	44.1V	1
2	1.9V	9.3V	7.9	0.7V	1.4V	89.5K	103 K	32.9	74.9V	1.7K	1.3	44.4V	2
3	0.0	1.3V	20.9	0.4V	3.5V	97.8K	98.0K	43.0	66.4V	0.1K	1.5	36.1V	3
4	0.0	0.6V	12.3	21.1V	2.2V	116 K	86.4K	45.0	61.7V	0.2K	2.3	17.0V	4
5	0.0	0.9V	7.4	4.7V	0.3V	151 K	73.0K	54.9	71.1V	0.1K	1.1	21.1V	5
6	0.0	5.5V	7.7	0.7V	0.9V	142 K	96.0K	84.3	62.8V	0.1K	7.2	24.8V	6
7	0.0	9.4V	0.0	1.6V	2.9V	146 K	87.4K	105	59.0V	0.1K	40.2	16.4V	7
8	0.0	1.1V	0.0	2.0V	0.2V	162 K	93.0K	99.7	54.9V	1.7K	47.7	11.5V	8
9	0.0	8.0V	0.0	0.8V	9.0V	144 K	103 K	109	65.2V	2.1K	37.6	12.3V	9
10	0.0	1.7V	0.0	1.9V	12.5V	120 K	121 K	121	76.2V	0.5K	39.0	17.2V	10
11	0.0	6.8V	0.0	0.4V	11.9V	116 K	139 K	121	72.4V	1.2K	20.1	0.2V	11
12	0.0	0.7V	0.0	1.1V	8.8V	120 K	110 K	131	62.0V	0.3K	33.8	0.0	12
13	0.0	0.4V	0.0	1.4V	1.3V	98.5K	141 K	144	76.5V	1.2K	30.0	0.0	13
14	2.9V	1.4V	0.0	3.8V	3.1V	106 K	143 K	131	66.9V	0.6K	29.7	0.0	14
15	13.6V	2.2V	0.0	3.1V	3.8V	84.9K	134 K	93.1	71.9V	0.3K	42.3	0.0	15
16	6.5V	0.6V	0.0	0.2V	2.3V	94.2K	150 K	83.1	62.6V	1.2K	37.8	[ ]T	16
17	0.0	0.6V	0.0	0.6V	2.8V	114 K	121 K	96.8	52.7V	1.3K	24.7	[ ]T	17
18	0.0	0.1V	0.0	0.0V	14.2V	145 K	104 K	75.8	69.5V	0.0K	2.3	[ ]T	18
19	0.0	0.7V	0.0	0.1V	24.2V	131 K	80.6K	101	97.6V	8.3	56.8	[ ]T	19
20	[ ]T	1.3V	0.0	0.2V	21.3V	147 K	64.1K	97.6	96.0V	0.6	51.8	[ ]T	20
21	[ ]T	0.2V	9.6	0.4V	32.2V	169 K	65.5K	89.0	63.7V	0.5	56.9	[ ]T	21
22	[ ]T	0.0	0.0	1.3V	27.0V	148 K	59.4K	87.5	50.4V	0.3	48.3	[ ]T	22
23	0.0	1.7V	0.0	6.4V	28.6V	114 K	61.0K	71.2V	47.2V	0.2	44.4	[ ]T	23
24	0.0	1.0V	0.0	3.9V	26.0K	78.6K	65.6K	63.4V	44.1V	0.8	34.2	[ ]T	24
25	0.0	1.5V	0.0	4.6V	24.1K	115 K	61.8K	73.6V	38.2V	0.1	63.5V	[ ]T	25
26	6.9V	0.6	0.0	3.7V	30.7K	102 K	68.7K	80.0V	40.0V	0.0	63.2V	[ ]T	26
27	1.7V	0.0	0.0	2.6V	35.1K	108 K	71.0	75.1V	29.0V	13.1	48.3V	[ ]T	27
28	0.7V	0.7	0.0	3.6V	45.2K	123 K	81.8	61.1V	18.8V	10.9	51.2V	[ ]T	28
29	30.9V	1.0	0.0	3.1V	52.3K	120 K	85.4		14.7V	2.3	52.2V	0.0	29
30	44.9V	2.8	0.2V	1.5V	60.2K	120 K	50.2		4.0K	0.5	37.1V	0.0	30
31	44.6V	2.9		0.6V		128 K	25.0		1.9K		50.5V		31
Mean	[6.5]	2.7V	2.2V	2.5V	16.4K	120 K	92.1K	85.7V	56.7K	1.7	34.1	[14.4]	
Median	[0.0]	1.1V	0.0V	1.4V	10.4K	120 K	87.4K	85.9V	62.6K	0.5	37.8	[12.3]	
Max.Daily	[44.9]	19.6V	20.9V	21.1V	60.2K	169 K	150 K	144 V	97.6K	13.1	63.5	[44.4]	
Min.Daily	[0.0]	0.0V	0.0V	0.0V	0.2K	78.6K	25.0K	29.2V	1.9K	0.0	0.4	[0.0]	
Inst.Max	[125]	152 V	34.6V	212 V	85.4K	223 K	195 K	175 V	127 K	88.5	126	[95.4]	
Inst.Min	[0.0]	0.0V	0.0V	0.0V	0.0K	0.0K	0.0K	22.2V	0.0K	0.0	0.0	[0.0]	
Total	[181]	85V	66V	77V	492K	3731K	2855K	2399V	1757K	52	1057	[245]	
Max.EC@25C	[270]	176V	207V	200V	196K	204K	153K	160V	183K	305	441	[181]	
Min.EC@25C	[111]	105V	165V	161V	167K	143K	107K	95V	93K	161	164	[119]	

Summaries

Annual Mean	[37.2]
Ann. Median	[12.3]
Annual Total	[13000]

	Maximum	Minimum
Daily Mean	[169]	[0.0]
Instant	[223]	[0.0]
Monthly	[3731]	[52]

Notes

All recorded data is continuous and reliable except where the following tags are used...
K ... Minor editing
T ... Probe out of water/below instrument th
V ... Operational Data
All Totals are in tonnes
Figures refer to period ending 600 hours.

4.0 Annual EC Summaries

4.1 Compliance Sites

Site 410083 YANCO MAIN SOUTHERN DRAIN AT OUTFALL (YMS) Site 410083
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	272 V	[ ]T	209	[ ]T	105	133	186	220	131	223	239	251	1
2	258 V	[ ]T	211	[ ]T	90.6	141	220	225	138	214	268	240	2
3	284 V	[ ]T	[ ]T	[ ]T	122	147	198	224	150	198	279	234	3
4	[ ]T	[ ]T	[ ]T	[ ]T	160	243	187	236	161	193	283	237	4
5	[ ]T	[ ]T	[ ]T	[ ]T	151	313	170	231	163	230	302	246	5
6	[ ]T	[ ]T	[ ]T	[ ]T	149	294	175	159	151	233	314	244	6
7	[ ]T	[ ]T	[ ]T	[ ]T	139	231	182	157	145	267	321	245	7
8	[ ]T	[ ]T	[ ]T	140	131	225	194	161	150	267	328	242	8
9	[ ]T	[ ]T	[ ]T	153	130	221	195	164	147	269	310	253	9
10	[ ]T	272	[ ]T	163	127	225	200	167	157	286	290	259	10
11	686 V	274	[ ]T	166	125	222	200	172	159	292	268	248	11
12	[ ]T	276	[ ]T	163	125	236	219	174	159	257	275	247	12
13	[ ]T	269	[ ]T	181	111	247	195	175	170	125	296	257	13
14	[ ]T	252	[ ]T	138	104	259	211	184	162	184	292	258	14
15	[ ]T	215	[ ]T	131	120	262	254	193	161	202	203	249	15
16	[ ]T	193	313	168	135	268	243	183	165	133	266	238	16
17	[ ]T	195	295	165	138	283	169	174	169	149	380	235	17
18	[ ]T	193	287	162	138	297	155	175	169	190	360	233	18
19	[ ]T	195	282	161	145	240	151	174	172	177	319	231	19
20	[ ]T	203	280	161	164	231	171	170	173	165	331	235	20
21	[ ]T	208	270	163	162	250	183	158	174	163	397	247	21
22	[ ]T	210	264	169	162	248	164	158	173	165	384	246	22
23	[ ]T	209	258	148	159	226	168	173	167	179	343	239	23
24	[ ]T	208	275	147	150	219	161	176	164	206	349	240	24
25	[ ]T	204	258	143	142	239	161	175	178	220	329	244	25
26	[ ]T	202	[ ]T	149	138	255	182	143	222	226	305	249	26
27	[ ]T	202	[ ]T	158	136	293	214	150	246	226	279	255	27
28	[ ]T	203	[ ]T	159	156	241	174	158	233	231	262	250	28
29	[ ]T	205	[ ]T	162	146	226	161		166	236	256	252	29
30	[ ]T	203	[ ]T	169	136	255	139		181	242	257	222	30
31	[ ]T	205		157		237	152		210		265		31
Mean	[375]	[218]	[267]	[157]	137	239	185	179	170	212	302	244	
Median	[278]	[205]	[273]	[161]	138	240	182	174	165	217	296	245	
Max.Daily	[686]	[276]	[313]	[181]	164	313	254	236	246	292	397	259	
Min.Daily	[258]	[193]	[209]	[131]	90.6	133	139	143	131	125	203	222	
Inst.Max	[732]	[323]	[331]	[188]	191	397	294	255	258	320	405	268	
Inst.Min	[246]	[190]	[202]	[101]	74.2	128	131	133	109	80.1	188	206	

Summaries

Annual Mean	[210]
Ann. Median	[203]

	Maximum	Minimum
Daily Mean	[686]	[90.6]
Instant	[732]	[74.2]

Notes

All recorded data is continuous and reliable except where the following tags are used...
T ... Probe out of water/below instrument th
V ... Operational Data

Figures refer to period ending 2400 hours.

Site 41010005 CUDGEL CREEK AT ROACHES OUTFALL (ROCUDG) Site 41010005
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	164	[ ]B	[ ]B	[ ]B	200	322 ?	481 ?	[ ]T	137	135	177	1
2	[ ]B	164	[ ]B	[ ]B	[ ]B	202	327 ?	476 ?	286 ?	135	141	196	2
3	[ ]B	169	[ ]B	[ ]B	[ ]B	203	333 ?	476 ?	287 ?	138	146	205	3
4	[ ]B	171	[ ]B	[ ]B	[ ]B	206	342 ?	473 ?	286 ?	141	142	212	4
5	[ ]B	169	[ ]B	[ ]B	[ ]B	210	377 ?	469 ?	262 ?	144	137	208	5
6	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	211	396 ?	467 ?	246 ?	145	133	212	6
7	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	213	397 ?	470 ?	233 ?	146	129	218	7
8	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	213	405 ?	472 ?	225 ?	143	123	218	8
9	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	213	406 ?	468 ?	220 ?	140	138	207	9
10	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	216	415 ?	468 ?	217 ?	138	144	190	10
11	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	218	417 ?	469 ?	211 ?	138	132	175	11
12	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	215	426 ?	469 ?	205 ?	140	138	168	12
13	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	215	436 ?	470 ?	202 ?	142	148	163	13
14	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	214 ?	437 ?	474 ?	198 ?	145	155	164	14
15	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	216 ?	441 ?	473 ?	194 ?	147	156	167	15
16	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	221 ?	[ ]B	473 ?	191 ?	144	156	167	16
17	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	227 ?	[ ]B	475 ?	187 ?	143	152	166	17
18	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	237 ?	[ ]B	475 ?	184 ?	143	153	168	18
19	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	243 ?	[ ]B	474 ?	180 ?	141	146	166	19
20	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	249 ?	[ ]B	[ ]T	174 ?	137	150	163	20
21	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	260 ?	[ ]B	[ ]T	168 ?	138	157	165	21
22	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	257 ?	484 ?	[ ]T	163 ?	140	153	162	22
23	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	267 ?	489 ?	[ ]T	158 ?	142	146	166	23
24	163	[ ]B	[ ]B	[ ]B	[ ]B	273 ?	491 ?	[ ]T	154 ?	146	127	172	24
25	164	[ ]B	[ ]B	[ ]B	[ ]B	279 ?	491 ?	[ ]T	149 ?	147	131	173	25
26	166	[ ]B	[ ]B	[ ]B	[ ]B	285 ?	489 ?	[ ]T	145 ?	148	141	167	26
27	166	[ ]B	[ ]B	[ ]B	[ ]B	292 ?	502 ?	[ ]T	140 ?	150	143	152	27
28	166	[ ]B	[ ]B	[ ]B	[ ]B	297 ?	493 ?	[ ]T	136 ?	152	151	153	28
29	166	[ ]B	[ ]B	[ ]B	[ ]B	304 ?	485 ?		137 ?	149	157	148	29
30	164	[ ]B	[ ]B	[ ]B	[ ]B	311 ?	481 ?		137	139	158	152	30
31	163	[ ]B		[ ]B		316 ?	476 ?		136		169		31
Mean	[165]	[168]	[ ]B	[ ]B	[ ]B	241 ?	[430]	[472]	[194]	143	145	177	
Median	[165]	[169]	[ ]B	[ ]B	[ ]B	221 ?	[436]	[473]	[189]	143	146	167	
Max.Daily	[166]	[171]	[ ]B	[ ]B	[ ]B	316 ?	[502]	[481]	[287]	152	169	218	
Min.Daily	[163]	[164]	[ ]B	[ ]B	[ ]B	200 ?	[322]	[467]	[136]	135	123	148	
Inst.Max	[169]	[176]	[ ]B	[ ]B	[ ]B	321 ?	[595]	[501]	[295]	156	179	227	
Inst.Min	[160]	[162]	[ ]B	[ ]B	[ ]B	198 ?	[319]	[461]	[129]	128	118	145	

Summaries

Annual Mean	[236]
Ann. Median	[174]

	Maximum	Minimum
Daily Mean	[502]	[123]
Instant	[595]	[118]

Notes

All recorded data is continuous and reliable
except where the following tags are used...
? ... Irregular data use with caution
B ... Backed-up stage
T ... Probe out of water/below instrument th

Figures refer to period ending 2400 hours.

Site 41010921 GOGELDRIE MAIN SOUTHERN DRAIN AT RIVER ROAD (GMSRR) Site 41010921
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	184	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	361	284	296	182	[ ]T	[ ]T	1
2	179	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	367	284	291	211	[ ]T	[ ]T	2
3	178	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	362	292	278	292	[ ]T	[ ]T	3
4	175	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	362	287	288	244	[ ]T	[ ]T	4
5	175	96.6	[ ]B	[ ]B	[ ]B	255	341	292	314	429	[ ]T	[ ]T	5
6	176	93.8	[ ]B	[ ]B	[ ]B	256	309	307	309	808	[ ]T	[ ]T	6
7	178	88.5	[ ]B	[ ]B	[ ]B	255	364	289	285	773	[ ]T	[ ]T	7
8	178	[ ]T	[ ]B	[ ]B	[ ]B	245	313	273	245	672	[ ]T	[ ]T	8
9	177	[ ]B	[ ]B	[ ]B	[ ]B	252	243	314	233	612	[ ]T	[ ]T	9
10	176	[ ]B	[ ]B	[ ]B	[ ]B	268	317	317	261	556	[ ]T	[ ]T	10
11	176	[ ]B	[ ]B	[ ]B	[ ]B	277	460	312	300	521	[ ]T	[ ]T	11
12	178	[ ]B	[ ]B	[ ]B	[ ]B	274	558	306	327	503	[ ]T	[ ]T	12
13	176	[ ]B	[ ]B	[ ]B	[ ]B	274	624	307	309	445	[ ]T	[ ]T	13
14	173	[ ]B	[ ]B	[ ]B	[ ]B	278	609	285	291	479	[ ]T	[ ]T	14
15	171	[ ]B	[ ]B	[ ]B	[ ]B	284	551	280	261	726	[ ]T	[ ]T	15
16	178	[ ]B	[ ]B	[ ]B	[ ]B	285	538	291	236	655	[ ]T	[ ]T	16
17	174	[ ]B	[ ]B	[ ]B	[ ]B	289	464	306	200	453	[ ]T	[ ]T	17
18	166	[ ]B	[ ]B	[ ]B	[ ]B	298	411	322	186	343	[ ]T	[ ]T	18
19	169	[ ]B	[ ]B	[ ]B	[ ]B	308	315	263	213	574	[ ]T	[ ]T	19
20	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	314	177	216	210	650	[ ]T	[ ]T	20
21	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	314	173	[ ]M	199	648	[ ]T	[ ]T	21
22	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	307	105	[ ]M	206	633	[ ]T	[ ]T	22
23	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	291	140	478	231	[ ]T	[ ]T	[ ]T	23
24	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	322	182	470	263	[ ]T	[ ]T	[ ]T	24
25	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	340	221	399	263	[ ]T	[ ]T	[ ]T	25
26	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	351	224	372	277	[ ]T	[ ]T	[ ]T	26
27	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	349	214	348	258	[ ]T	[ ]T	[ ]T	27
28	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	348	234	325	239	[ ]T	[ ]T	[ ]T	28
29	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	341	255		197	[ ]T	[ ]T	[ ]T	29
30	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	346	230		190	[ ]T	[ ]T	[ ]T	30
31	[ ]T	[ ]B		[ ]B		331	276		187		[ ]T		31
Mean	[176]	[93.0]	[ ]B	[ ]B	[ ]B	[298]	332	[316]	253	[519]	[ ]T	[ ]T	
Median	[176]	[93.8]	[ ]B	[ ]B	[ ]B	[291]	315	[306]	261	[538]	[ ]T	[ ]T	
Max.Daily	[184]	[96.6]	[ ]B	[ ]B	[ ]B	[351]	624	[478]	327	[808]	[ ]T	[ ]T	
Min.Daily	[166]	[88.5]	[ ]B	[ ]B	[ ]B	[245]	105	[216]	186	[182]	[ ]T	[ ]T	
Inst.Max	[188]	[103]	[ ]B	[ ]B	[ ]B	[377]	664	[498]	369	[865]	[ ]T	[ ]T	
Inst.Min	[153]	[74.2]	[ ]B	[ ]B	[ ]B	[233]	92.3	[192]	153	[69.1]	[ ]T	[ ]T	

Summaries

Annual Mean	[311]
Ann. Median	[287]

	Maximum	Minimum
Daily Mean	[808]	[88.5]
Instant	[865]	[69.1]

---------- Notes ----------
All recorded data is continuous and reliable
except where the following tags are used...
B ... Backed-up stage
M ... Equipment malfunction
T ... Probe out of water/below instrument th

Figures refer to period ending 2400 hours.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	244	[ ]*	[ ]*	133	218	155	1
2	[ ]B	[ ]B	[ ]B	[ ]B	[ ]B	411	188	[ ]*	[ ]*	144	229	174	2
3	104	[ ]B	[ ]B	[ ]B	[ ]B	385	281	[ ]*	[ ]*	117	242	160	3
4	22.0	[ ]B	[ ]B	[ ]B	[ ]B	398	258	[ ]*	[ ]*	160	266	193	4
5	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	367	292	[ ]*	[ ]*	174	292	226	5
6	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	466	275	[ ]*	[ ]*	160	303	186	6
7	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	461	293	[ ]*	[ ]*	145	292	222	7
8	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	457	280	[ ]*	[ ]*	122	376	173	8
9	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	373	300	[ ]*	[ ]*	138	418	239	9
10	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	363	303	[ ]*	[ ]*	167	377	281	10
11	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	292	277	[ ]*	[ ]*	159	326	293	11
12	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	244	249	[ ]*	[ ]*	161	368	316	12
13	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	284	202	[ ]*	[ ]*	157	314	316	13
14	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	252	210	[ ]*	[ ]*	170	319	317	14
15	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	300	235	[ ]*	[ ]*	174	318	345	15
16	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	342	311	[ ]*	[ ]*	187	320	341	16
17	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	333	251	[ ]*	[ ]*	168	323	362	17
18	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	316	190	[ ]*	[ ]*	168	334	377	18
19	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	264	217	[ ]*	[ ]*	172	354	348	19
20	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	310	230	[ ]*	[ ]*	183	358	371	20
21	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	302	181	[ ]*	[ ]*	173	366	383	21
22	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	248	207	[ ]*	[ ]*	187	365	381	22
23	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	274	212	[ ]*	[ ]*	173	344	370	23
24	[ ]T	[ ]B	[ ]B	[ ]B	[ ]B	280	192	[ ]*	[ ]*	186	316	385	24
25	594	[ ]B	[ ]B	[ ]B	[ ]B	295	[ ]*	[ ]*	[ ]*	189	316	412	25
26	602	[ ]B	[ ]B	[ ]B	[ ]B	268	[ ]*	[ ]*	[ ]*	197	253	419	26
27	589	[ ]B	[ ]B	[ ]B	[ ]B	289	[ ]*	[ ]*	[ ]*	197	310	446	27
28	570	[ ]B	[ ]B	[ ]B	[ ]B	250	[ ]*	[ ]*	[ ]*	203	328	364	28
29	557	[ ]B	[ ]B	[ ]B	[ ]B	245	[ ]*		[ ]M	192	325	359	29
30	546	[ ]B	[ ]B	[ ]B	[ ]B	281	[ ]*	146		193	253	362	30
31	[ ]B	[ ]B		[ ]B		268	[ ]*	121			145		31
Mean	[448]	[ ]B	[ ]B	[ ]B	[ ]B	[321]	[245]	[ ]*	[134]	168	312	309	
Median	[564]	[ ]B	[ ]B	[ ]B	[ ]B	[297]	[246]	[ ]*	[134]	171	319	343	
Max.Daily	[602]	[ ]B	[ ]B	[ ]B	[ ]B	[466]	[311]	[ ]*	[146]	203	418	446	
Min.Daily	[22.0]	[ ]B	[ ]B	[ ]B	[ ]B	[244]	[181]	[ ]*	[121]	117	145	155	
Inst.Max	[612]	[ ]B	[ ]B	[ ]B	[ ]B	[846]	[554]	[ ]*	[177]	257	514	967	
Inst.Min	[9.4]	[ ]B	[ ]B	[ ]B	[ ]B	[182]	[138]	[ ]*	[84.7]	46.4	73.3	47.1	

Summaries

	Maximum	Minimum
Annual Mean	[280]	
Ann. Median	[280]	
Daily Mean	[602]	[22.0]
Instant	[967]	[9.4]

Notes

All recorded data is continuous and reliable
except where the following tags are used...
* ... Debris Effecting Sensor
B ... Backed-up stage
M ... Equipment malfunction
T ... Probe out of water/below instrument th

Figures refer to period ending 2400 hours.

4.2 Offtake Sites

Site 410127 MAIN CANAL AT NARRANDERA REGULATOR Site 410127
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	161	132	184	176	171	167	176	138	115	165	255	174 V	1
2	163	137	187	183	172	163	171	147	117	162	256	174 V	2
3	164	146	191	210	171	168	166	143	119	161	276	175 V	3
4	162	147	195	224	175	168	158	139	116	159	286	177 V	4
5	159	149	202	233	180	163	155	137	110	159	284	176 V	5
6	159	147	205	238	182	168	162	152	109	159	285	180 V	6
7	160	146	211	235	184	176	171	156	108	164	293	180 V	7
8	156	143	214	238	184	186	161	166	111	184	303	181 V	8
9	152	142	215	235	185	195	156	162	112	198	307	172 V	9
10	151	141	216	228	168	196	157	162	112	228	307	165 V	10
11	152	139	217	221	159	202	151	156	111	250	299	154 V	11
12	152	136	219	225	161	203	150	146	113	250	296	146 V	12
13	151	134	221	230	163	194	134	156	119	247	296	144 V	13
14	151	132	222	227	164	190	128	138	124	242	291	141 V	14
15	151	217	225	227	166	188	140	133	135	236	368	144 V	15
16	151	318	225	233	163	187	134	144	140	232	395	143 V	16
17	152	313	224	243	162	185	130	141	140	238	292	151 V	17
18	154	317	223	255	170	180	130	142	141	245	261	154 V	18
19	157	332	222	259	189	176	129	138	146	261	256	158 V	19
20	172	335	222	226	188	188	128	134	139	272	252	163 V	20
21	198	330	232	180	191	174	127	131	146	288	244	[ ]T	21
22	204	277	234	169	196	172	132	130	161	304	256	[ ]T	22
23	203	228	225	171	195	172	135	122	196	313	272	[ ]T	23
24	199	198	225	166	199	174	133	116	224	313	260	[ ]T	24
25	186	195	221	165	219	172	135	113	204	299	224 V	[ ]T	25
26	172	191	206	171	226	183	138	113	185	289	209 V	[ ]T	26
27	165	188	198	178	229	199	136	114	176	283	206 V	[ ]T	27
28	160	186	200	175	225	189	133	115	173	321	208 V	[ ]T	28
29	151	187	188	174	206	191	133		168	330	204 V	[ ]T	29
30	141	185	177	171	191	191	132		169	302	189 V	[ ]T	30
31	134	183		171		181	135		165		180 V		31
Mean	163	198	211	208	185	182	144	139	142	242	268 V	[163]	
Median	159	185	216	224	183	183	135	139	139	246	272 V	[164]	
Max.Daily	204	335	234	259	229	203	176	166	224	330	395 V	[181]	
Min.Daily	134	132	177	165	159	163	127	113	108	159	180 V	[141]	
Inst.Max	206	348	237	263	232	207	183	169	237	337	425 V	[186]	
Inst.Min	132	130	175	163	157	159	124	112	107	158	175 V	[139]	

Summaries

Annual Mean	[188]
Ann. Median	[175]

	Maximum	Minimum
Daily Mean	[395]	[108]
Instant	[425]	[107]

Notes

All recorded data is continuous and reliable except where the following tags are used...
T ... Probe out of water/below instrument th
V ... Operational Data

Figures refer to period ending 600 hours.

Site 410129 STURT CANAL AT OFFTAKE Site 410129
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2022/23
Year 2022/23

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	141	115	174	193	186	176	151	114	95.8	161	300	164	1
2	141	115	177	195	186	178	146	113	96.1	162	303	156	2
3	175	114	188	197	189	182	146	109	97.7	162	283	137	3
4	202	114	185	198	194	187	143	110	102	163	275	128	4
5	210	114	182	197	195	193	136	112	108	167	273	142	5
6	211	113	180	193	194	193	140	139	112	182	274	148	6
7	205	113	180	193	192	198	143	137	109	183	295	144	7
8	219	107	180	189	186	203	142	138	110	182	314	131	8
9	202	106	180	183	183	202	144	147	113	173	315	154	9
10	192	124	181	178	175	199	143	148	115	173	303	148	10
11	171	153	183	173	172	201	147	148	116	174	297	150	11
12	158	146	181	169	171	200	147	149	115	179	293	151	12
13	165	142	179	164	170	196	140	148	116	184	310	153	13
14	191	151	175	167	170	195	134	147	123	189	371	152	14
15	146	154	172	171	170	187	130	132	123	195	397	153	15
16	141	159	167	173	170	184	128	117	120	196	306	[ ]T	16
17	139	160	172	178	172	181	120	127	123	195	277	[ ]T	17
18	134	162	176	180	174	180	115	125	127	202	272	[ ]T	18
19	127	163	187	179	178	177	112	126	155	184	262	[ ]T	19
20	[ ]T	165	194	178	181	178	110	123	154	172	246	[ ]T	20
21	[ ]T	166	194	177	183	184	109	121	157	186	268	[ ]T	21
22	[ ]T	167	185	179	187	171	111	114	167	192	270	[ ]T	22
23	123	168	184	183	193	167	115	109	169	202	244	[ ]T	23
24	123	171	183	184	193	166	117	106	170	210	226	[ ]T	24
25	123	172	185	188	186	167	112	105	172	217	224	[ ]T	25
26	121	174	186	185	182	164	111	104	173	234	218	[ ]T	26
27	120	175	181	190	182	161	111	98.6	174	272	203	[ ]T	27
28	120	174	186	186	181	158	112	95.8	157	289	204	[ ]T	28
29	122	174	190	185	180	146	111		147	296	195	165	29
30	118	174	194	184	177	157	109		160	294	174	155	30
31	113	175		185		160	109		161		167		31
Mean	[155]	148	182	183	182	180	127	124	133	199	270	[149]	
Median	[141]	159	182	184	182	181	128	122	123	185	274	[151]	
Max.Daily	[219]	175	194	198	195	203	151	149	174	296	397	[165]	
Min.Daily	[113]	106	167	164	170	146	109	95.8	95.8	161	167	[128]	
Inst.Max	[270]	176	207	200	196	204	153	160	183	305	441	[181]	
Inst.Min	[111]	105	165	161	167	143	107	94.9	93.1	161	164	[119]	

Summaries

Annual Mean [171]
Ann. Median [172]

	Maximum	Minimum
Daily Mean	[397]	[95.8]
Instant	[441]	[93.1]

---------- Notes ----------
All recorded data is continuous and reliable
except where the following tags are used...
T ... Probe out of water/below instrument th

Figures refer to period ending 600 hours.

5.0 Annual Site Summaries for sites affected by back-up

5.1 Compliance Sites:

- 41010005 was affected by backup during the periods from 01/07/2022 to 23/07/2022; 06/08/2022 to 06/12/2022; and 16/01/2023 and 21/01/2023.
- 41010921 was affected by backup during the periods from 08/08/2022 to 03/12/2022.
- 41010940 was affected by backup during the periods from 01/07/2022 to 02/07/2022, 31/07/2022 to 04/12/2022.
- The remaining sites were not affected by backup during the report period of 2022/2023.

5.2 Offtake Sites:

No offtake sites were affected by backup during the reporting period of 2022/2023.

SIte No.	Site Acronym	No. of Visits	No. of Data Downloads	Discharge Measurements		Sensor Changes	General Comments
				No. of Meas.	Comments		
410083	YMS	8	8	0	No flow	1	Gate was shut throughout. 28/03/2023: Old sensor was replaced with a brand-new level sensor provided by MIA. Old sensor S/n 21503041. NEW SENSOR S/N PS5-000353.
410085	LMC	10	10	6		2	26/07/2022: New sensor installed Mindata 1500 ec analog sensor. 28/03/2023: New sensor installed. NEW SENSOR S/N PS- 000350 OLD SENSOR S/N 431977
410174	MDJWE	11	11	3		0	3 gaugings completed
41010005	ROCUDG	10	10	1	Backup	1	Site was backed up for a period of 6 months 29/03/2023: Sensor replaced with new PONSEL sensor. New sensor S/NPS5-000352. OLD sensor S/N 21418073. New gauge board sited and installed.
41010921	GMSRR	11	11	0	Backup/no flow	1	Site was either backed up or not flowing at each visit 29/03/2023: Sensor replaced. OLD sensor S/N 21635034. New Sensor S/NPS5-333351
41010940	LAG	11	11	2	Backup/flowing	0	Site was measured twice. Site was backed up for four months. Site was flowing or pool on the rest visits.
41010955	MIRMCN	11	11	3	High flow	0	This site was high flowing during the visits. Two in three gauging were good. Outgrowing weeds were cleared since May 2023.
410127	Main Canal	11	11	8	Flowing	0	Five of the measurements were valid. Two measurements with large difference were informed to MIA. One measurement was abandoned due to incorrect flow observations.
410129	Sturt Canal	11	11	5	Flowing	1	Good measurement performed. 28/06/2023: New water quality sensors were installed.
CD-2-1922	CD-2-1922	11	11	0	Low flow	0	Low flow, unable to measure. Rest all dry.
MS-2MDJY-01	MDJY	11	11	3	Flowing	1	Measured 3 times during the year. 29/03/2023: Sensor replaced. Old Sensor S/N 21407022. New Sensor S/N PS5-000349.
			TOTALS	31			
General Comments							

6.0 EWA's 2022/2023

EWA REF		Site ID	Name	EXTRA WORKS DESCRIPTION	Issued by	Total Value (ex GST)	Status
		410127	NARREG	Narrenda Regulator S91i Troubleshotting	PB	$3,999.66	Complete
		Multiple	Multiple	x 5 OTT PLS500 - Ponsel turbidity x 1 - Ponsel C4E EC x 1 - Ponsel PH x 1 - New program and labour	PB	$25,726.14	Complete
		Multiple	Multiple	Replacement gauge boards	PB	$1,939.08	NYC
		41010921	GMSRR	OTT SVR100 surface velocity radar and x 8 hours labour for Matt + x 8 hours labour for Tom, to be installed at GMSRR as a trial	PB	$15,103.00	Complete
		Multiple	Multiple	x 5 Ponsel C4E EC x - Ponsel turbidity x 1 - Ponsel PH x 1 - New program and labour	PB	$21,022	NYC

7.0 410127 MAIN CANAL @ NARRANDERA REGULATOR

7.1 Measurement Summary

Meas No.	Date	Time	Calibration Measurements Q, Measured Discharge (Ml/day)	AFFRA Sensor Q, (Ml/day)	Deviation (%)
123	14/12/2022	10:36	2310.336	2335.392	-1.074
124	24/01/2023	16:52	3091.133	3182.976	-2.885
125	22/02/2023	12:33	3800.909	3663.510	3.755
126	19/04/2023	10:59	333.418	310.040	7.544*
127	24/05/2023	11:51	920.246	979.073	-5.989

* Measurement was performed on windy days.

Discharge Measurement Summary

Date Measured: Wednesday, December 14, 2022

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Narandera regulator
Station Number	410127
Location	Cableway

Measurement Information	
Party	SH
Boat/Motor	M9
Meas. Number	123

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	347.6
Salinity (ppt)	0.0
Rated Discharge (m3/s)	27.03
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.27%
Velocity	0.09%	0.77%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	0.86%

Discharge Results	
Total Area	75.554
Mean Velocity	0.354
Total Width	31.000
Total Q	26.740
Maximum Measured Depth(m)	3.096
Maximum Measured Velocity(m/s)	0.472
Mean Flow Angle	8.308
Rated Discharge	27.030
% difference Q	-1.074
Water Temperature (Independent)	21.500
Mean Water Temperature	19.309
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, January 24, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Narrandera Offtake
Station Number	410127
Location	Cableway

Measurement Information	
Party	SH
Boat/Motor	M9
Meas. Number	124

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	347.6
Salinity (ppt)	0.0
Rated Discharge (m3/s)	36.84
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.26%
Velocity	0.08%	0.84%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	0.92%

Discharge Results	
Total Area	76.442
Mean Velocity	0.468
Total Width	30.500
Total Q	35.777
Maximum Measured Depth(m)	3.147
Maximum Measured Velocity(m/s)	0.612
Mean Flow Angle	6.067
Rated Discharge	36.840
% difference Q	-2.885
Water Temperature (Independent)	0.000
Mean Water Temperature	24.114
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, February 22, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Narrandera Main
Station Number	410127
Location	Cableway

Measurement Information	
Party	Paul N Tom G
Boat/Motor	M9
Meas. Number	125

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	358.7
Salinity (ppt)	0.0
Rated Discharge (m3/s)	42.40
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.34%
Velocity	0.15%	0.92%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	1.02%

Discharge Results	
Total Area	78.464
Mean Velocity	0.561
Total Width	31.000
Total Q	43.992
Maximum Measured Depth(m)	3.174
Maximum Measured Velocity(m/s)	0.717
Mean Flow Angle	-5.200
Rated Discharge	42.400
% difference Q	3.755
Water Temperature (Independent)	0.000
Mean Water Temperature	24.558
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, April 19, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Narrandera
Station Number	410127
Location	Cableway

Measurement Information	
Party	SM, PN
Boat/Motor	M9
Meas. Number	126

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	351.7
Salinity (ppt)	0.0
Rated Discharge (m3/s)	3.59
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.54%
Velocity	0.19%	1.83%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.44%	--
Instrument	0.25%	0.25%
Overall	1.48%	1.93%

Discharge Results	
Total Area	77.218
Mean Velocity	0.050
Total Width	33.000
Total Q	3.859
Maximum Measured Depth(m)	3.088
Maximum Measured Velocity(m/s)	0.081
Mean Flow Angle	13.479
Rated Discharge	3.588
% difference Q	7.544
Water Temperature (Independent)	18.000
Mean Water Temperature	18.307
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, May 24, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Narrandera 240523
Station Number	410127
Location	cway

Measurement Information	
Party	PN
Boat/Motor	M9
Meas. Number	127

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	353.3
Salinity (ppt)	0.0
Rated Discharge (m3/s)	11.33
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	11.0

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Results	
Total Area	73.193
Mean Velocity	0.146
Total Width	32.000
Total Q	10.651
Maximum Measured Depth(m)	2.992
Maximum Measured Velocity(m/s)	0.210
Mean Flow Angle	-0.237
Rated Discharge	11.330
% difference Q	-5.989
Water Temperature (Independent)	11.200
Mean Water Temperature	11.585
Mean Weighted Gauge Height	0.000

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.31%
Velocity	0.07%	0.82%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	0.91%

8.0 410129 STURT CANAL @ OFFTAKE

8.1 Measurement Summary

Meas No.	Date	Time	Calibration Measurements Q, Measured Discharge (Ml/day)	AFFRA Sensor Q, (Ml/day)	Deviation
139	13/12/2022	14:45	857.434	962.496	-10.919
140	25/01/2023	15:38	1068.077	1007.424	6.019
141	21/02/2023	12:42	1516.493	1463.616	3.613
142	18/04/2023	12:03	160.704	170.541	-5.724
143	23/05/2023	11:22	264.211	290.532	-8.982

Discharge Measurement Summary

Date Measured: Tuesday, December 13, 2022

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Sturt offtake
Station Number	410129
Location	Cbaleway

Measurement Information	
Party	Sh
Boat/Motor	M9
Meas. Number	139

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	336.0
Salinity (ppt)	0.0
Rated Discharge (m3/s)	11.14
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.11%	0.60%
Velocity	0.11%	1.37%
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.70%	--
Instrument	0.25%	0.25%
Overall	1.74%	1.52%

Discharge Results	
Total Area	51.006
Mean Velocity	0.195
Total Width	28.000
Total Q	9.924
Maximum Measured Depth(m)	2.606
Maximum Measured Velocity(m/s)	0.278
Mean Flow Angle	-3.696
Rated Discharge	11.140
% difference Q	-10.919
Water Temperature (Independent)	22.000
Mean Water Temperature	21.009
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, January 25, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Sturt Offtake
Station Number	410129
Location	CW

Measurement Information	
Party	SH
Boat/Motor	M9
Meas. Number	140

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.0
Rated Discharge (m3/s)	11.66
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.88%
Velocity	0.09%	0.97%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.56%	--
Instrument	0.25%	0.25%
Overall	1.59%	1.34%

Discharge Results	
Total Area	66.218
Mean Velocity	0.187
Total Width	29.000
Total Q	12.362
Maximum Measured Depth(m)	3.156
Maximum Measured Velocity(m/s)	0.282
Mean Flow Angle	-0.803
Rated Discharge	11.660
% difference Q	6.019
Water Temperature (Independent)	0.000
Mean Water Temperature	25.537
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, February 21, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Sturt Offtake
Station Number	410129
Location	cableway

Measurement Information	
Party	PN/TG
Boat/Motor	M9
Meas. Number	141

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.0
Rated Discharge (m3/s)	16.94
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty	ISO	Stats
Depth	0.11%	1.05%
Velocity	0.08%	1.23%
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.65%	--
Instrument	0.25%	0.25%
Overall	1.68%	1.63%

Discharge Results	
Total Area	62.871
Mean Velocity	0.279
Total Width	28.000
Total Q	17.552
Maximum Measured Depth(m)	3.071
Maximum Measured Velocity(m/s)	0.408
Mean Flow Angle	-3.115
Rated Discharge	16.940
% difference Q	3.613
Water Temperature (Independent)	0.000
Mean Water Temperature	25.316
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, April 18, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Sturt O/take
Station Number	410129
Location	cableway

Measurement Information	
Party	PN/SM
Boat/Motor	M9
Meas. Number	142

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.0
Rated Discharge (m3/s)	1.97
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Uncertainty	ISO	Stats
Depth	0.11%	0.53%
Velocity	0.19%	2.32%
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.56%	--
Instrument	0.25%	0.25%
Overall	1.60%	2.40%

Discharge Results	
Total Area	56.392
Mean Velocity	0.033
Total Width	30.000
Total Q	1.860
Maximum Measured Depth(m)	2.736
Maximum Measured Velocity(m/s)	0.063
Mean Flow Angle	6.304
Rated Discharge	1.970
% difference Q	-5.598
Water Temperature (Independent)	12.500
Mean Water Temperature	18.014
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, May 23, 2023

Recorded file is located under My Documents|SonTek Data|YYYY_MM_DD|StationaryDataFiles

Site Information	
Site Name	Sturt Offtake
Station Number	410129
Location	cableway

Measurement Information	
Party	PN
Boat/Motor	M9
Meas. Number	143

System Information	
System Type	RS-M9
Serial Number	2457
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.0
Rated Discharge (m3/s)	3.36
Discharge Method	Mid-Section
Measurement Quality	--

Units	
Distance	m
Velocity	m/s
Area	m2
Discharge	m3/s
Temperature	degC

Discharge Calculation Settings	
Track Reference	System (default)
Depth Reference	Vertical Beam

Discharge Results	
Total Area	53.492
Mean Velocity	0.057
Total Width	29.000
Total Q	3.058
Maximum Measured Depth(m)	2.663
Maximum Measured Velocity(m/s)	0.091
Mean Flow Angle	10.568
Rated Discharge	3.360
% difference Q	-8.982
Water Temperature (Independent)	11.000
Mean Water Temperature	10.608
Mean Weighted Gauge Height	0.000

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.11%	0.40%
Velocity	0.14%	1.23%
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.60%	--
Instrument	0.25%	0.25%
Overall	1.64%	1.32%

END OF REPORT