2024 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.

Table of contents

List of figures

List of tables

Abbreviations

AFFRA	Acoustic Flowmeter For Remote Areas
ACR	Annual Compliance Report
ANZECC	Australian and New Zealand Environment and Conservation Council
BBS	Barren Box Storage
CSIRO	Commonwealth Scientific Investigation and Research Organisation
DPHI	NSW Department of Planning, Housing and Infrastructure
DQP	Duly Qualified Person
EC	Electrical Conductivity
DCCEEW	Department of Climate Change, Energy, Environment and Water
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
NATA	National Association of Testing Authorities
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 2023/24 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 Climate Change, Energy, Environment and Water (DCCEEW) 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

At the time of the creation of this Annual Compliance Report (ACR), MI was awaiting a formal response from NRAR regarding the submission of MI's 2022/23 Annual Compliance Report. MI has therefore not made any changes to the style of reporting from the prior reporting period. Any future comments received from NRAR will be incorporated into future ACRs.

MI has met the conditions of the Monitoring and Reporting Plan dated 16 March 2018 for our Combined Approval in 2023/24 except for condition 2.17 Groundwater and Tubewells. MI is working with the Department on this condition. 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 thread 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 operations
	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
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 2023/24 that required notification to the Minister. The significant events are detailed in **Attachment A:** Significant events for 2023/24.

When a significant event occurs MI lodge an S91i - self reporting form and engages 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
2023/24	1

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 2023/24. 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 2** 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 that 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

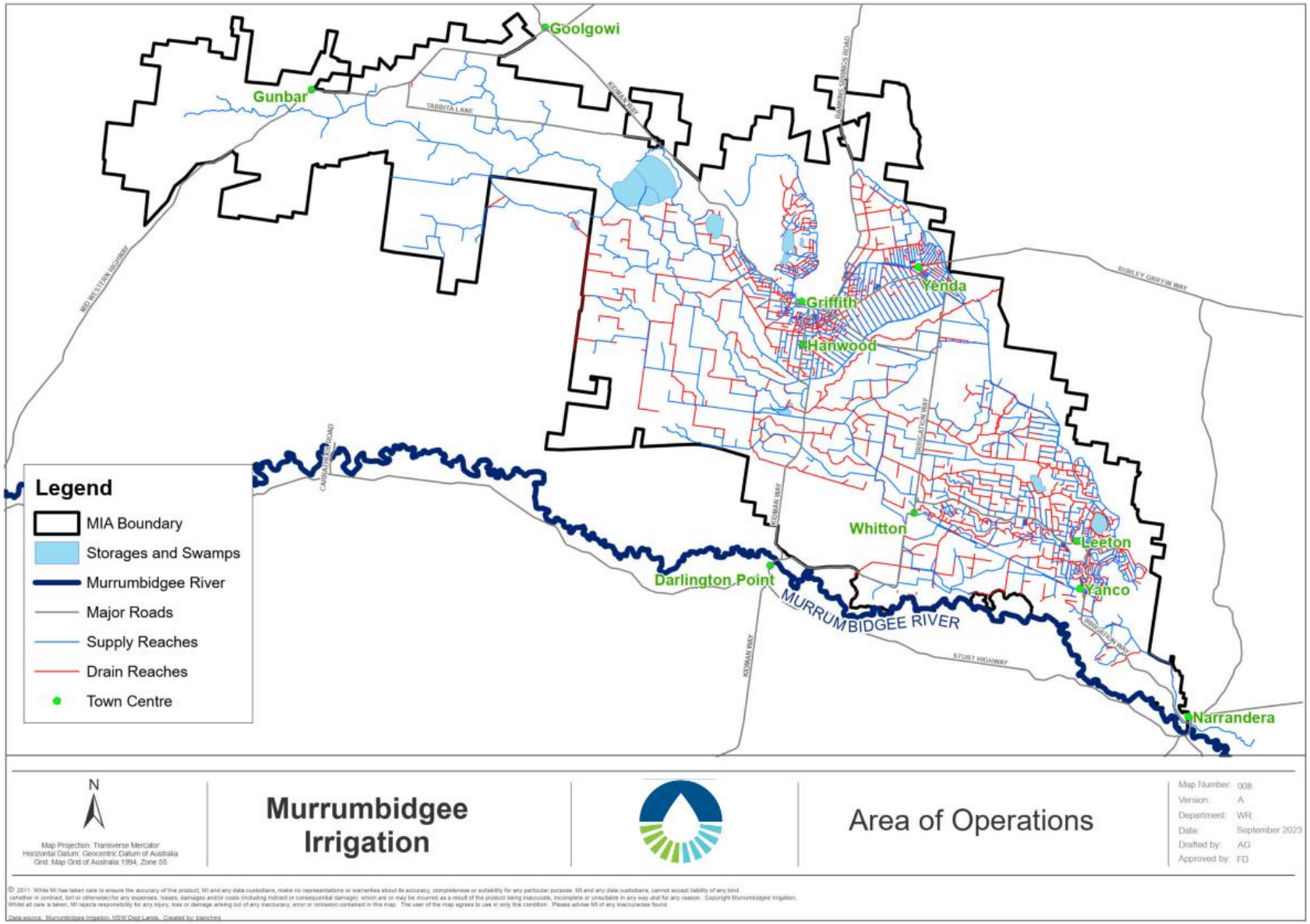

Figure 1 - Murrumbidgee Irrigation's Area of Operations

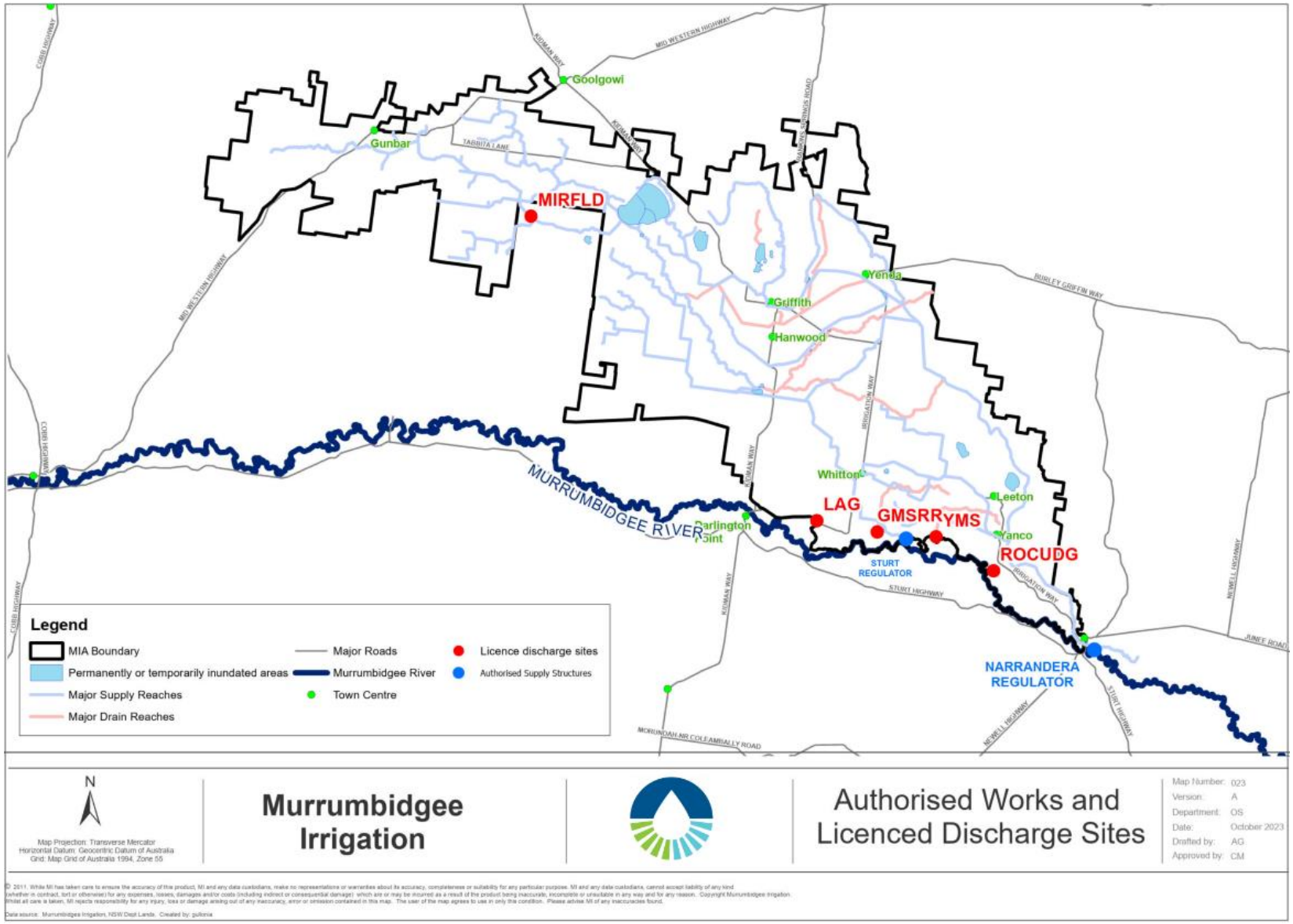

Figure 2 - Location of authorised supply works and licence discharge points

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 2016/17 reference year has been retained for this report because it had similar allocations and diversions to 2023/24 as well as similar climatic conditions and deliveries to the past few years. The total rainfall in 2016/17 is very similar to the average total rainfall received in 2020/21 to 2023/24.

3.1 Climate conditions

Rainfall data recorded at the Bureau of Meteorology (BOM) site 075041-Griffith Airport is presented in **Table 3** for 2023/24. Rainfall data from the DPI Beelbangera weather station was not used in this report due to an anomaly in the rainfall data; however, evapotranspiration (ETo) data from the DPI Beelbangera weather station has been utilised. Past climate data was obtained from CSIRO Griffith weather station, however from 2022 public access to this data was disabled. The DPI Beelbangera weather station correlates well with past CSIRO data, so it was chosen for data moving forward.

The annual rainfall decreased in 2023/24 by 172mm from the prior reporting year. Both 2021/22 and 2022/23 experienced heavy rainfall which contributed to a flood event during 2022. **Table 3** shows a correlation between lower annual rainfall and higher ETo, including in 2023/24, signifying more moderate climatic conditions and fewer periods of surface inundation during these years.

Table 3 - Local weather station rainfall and ETo

Year	Total rainfall (mm)	Total ETo (mm)	Station
2023/24	492*	1,289**	*BOM **DPI Beelbangera
2022/23	664	1,159	DPI Beelbangera
2021/22	652	1,158	DPI Beelbangera
2020/21	441	1,646	CSIRO Griffith
Surface water reference year			
2016/17	556	1,593	CSIRO Griffith
Groundwater reference year			
2012/13	307	1,821	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 2023/24 reporting year, Ventia completed 12 gaugings at NARREG and 15 gaugings at STURT. Several gaugings completed by Ventia were affected by weed interference with the AFFRA meters. This resulted in some gaugings of the STURT AFFRA meter falling outside of the ±5% range, causing the site to be in an S91i for a substantial portion of the year. Logbooks of gate flows were submitted during this time to supplement the AFFRA readings until the gauging issues could be fully rectified and a validation could be completed.

MI completed 2 additional gaugings at NARREG and 5 additional gaugings at STURT in 2023/24 to verify the accuracy of the AFFRA meter readings. MI has also taken action to reduce weed interference and improve

the efficiency of reactive maintenance of the AFFRA meters by implementing a regular maintenance schedule and displaying real time sensor interference (gain) in MI's Scada software.

The calibration report summary for the NARREG AFFRA unit is presented in **Table 4** and the STURT AFFRA unit presented in **Table 5**, including additional gaugings completed by MI. 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 (%)
23/08/2023	13:45	950.400	890.784	-6.27
27/09/2023	08:46	1503.878	1500.250	-0.24
26/10/2023	07:06	2401.834	2352.845	-2.04
29/11/2023	06:58	719.366	686.880	-4.52
13/12/2023	11:18	5633.5	5556.822	-1.36
20/12/2023	07:15	4060.368	3299.616	-18.74
23/01/2024	13:24	3158.870	3054.845	-3.29
21/02/2024	07:41	3037.392	2802.816	-7.72
20/03/2024	08:04	1375.142	1227.917	-10.71
24/04/2024	08:20	1068.163	1023.926	-4.14
29/05/2024	12:35	278.986	213.408	-23.51
29/05/2024	14:01	269.136	207.360	-22.95*
30/05/2024	13:00	472.522	459.541	-2.747
26/06/2024	10:41	506.995	461.981	-8.88

*Measurement was performed on windy day
Supplementary gauging performed by MI have been shaded light grey.

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 (%)
23/08/2023	10:04	527.040	582.422	-9.51
24/08/2023	16:29	393.638	428.112	-8.05
5/09/2023	10:43	575.856	567.246	-1.50
15/09/2023	10:47	411.610	452.650	-9.07
15/09/2023	12:07	465.005	504.058	-7.75
21/09/2023	10:07	824.256	887.846	-7.16
26/09/2023	12:39	2104.618	2288.650	-8.04
31/10/2023	09:14	956.448	963.792	-0.76

Date	Time (24hr)	Calibration measurements: Q measured discharge ML/day	AFFRA sensor: Q recorded mean ML/day	Deviation (%)
28/11/2023	08:27	719.971	775.354	-7.14
28/11/2023	09:21	719.021	759.283	-5.30
14/12/2023	10:03	1916.352	1819.888	-5.03
18/12/2023	09:57	2593.382	2502.313	-3.51
19/12/2023	10:16	1649.376	1688.083	-2.29
2/01/2024	12:39	800.841	738.953	-7.73
23/01/2024	08:12	783.648	821.750	-4.64
20/02/2024	10:36	1247.962	1343.866	-7.14
21/02/2024	10:19	1392.807	1278.807	-8.18
19/03/2024	08:10	573.091	530.669	7.99
19/03/2024	08:57	497.664	521.424	-4.56
23/04/2024	07:52	233.280	226.541	2.97

Supplementary gauging performed by MI have been shaded light grey.

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 797,951 ML includes an environmental water diversion volume of 3,082 ML diverted on behalf of the Department of Climate Change, Energy, Environment and Water (DCCEEW).

Table 6 – Monthly summaries of water diversions delivered to customers, 2023/24

Month	STURT	NARREG	Total diversion	Delivered to customers
Jul-23	222	875	1,097	2,090
Aug-23	12,937	29,570	42,507	34,970
Sep-23	19,635	51,423	71,058	68,527
Oct-23	21,428	65,813	87,241	85,064
Nov-23	24,378	71,782	96,160	90,398
Dec-23	33,586	97,711	131,297	124,654
Jan-24	20,628	67,098	87,726	93,222
Feb-24	32,331	88,225	120,556	118,486
Mar-24	23,979	69,679	93,658	81,205
Apr-24	6,263	27,686	33,949	24,381
May-24	6,107	16,195	22,302	22,740
Jun-24	0	10,400	10,400	9,780

Total	**201,494**	**596,457**	**797,951**	**755,515**

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 2023/24 are compared to previous years in **Table 7**. Announced allocations indicate 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 2023/24 compared to previous years

Year	Announced allocation (%) general / high	Diversions (ML)	Deliveries (ML)	Rainfall (mm)	ETo (mm)
2023/24	100/100	797,951	755,515	492	1,289
2022/23	100/100	613,614	586,611	664	1,159
2021/22	100/100	684,959	646,082	652	1,158
2020/21	100/100	880,456	748,988	441	1,646
2016/17	100/100	780,083	621,094	556	1,593

Note: All figures in ML

Decreased rainfall for 2023/24 from the prior reporting year aligns with an increase in diversions and deliveries for the 2023/24 reporting year. The diversion volume in 2023/24 experienced a slight increase of 17,868ML compared to 2016/17. However, the total deliveries were 134,421ML higher in 2023/24 than during 2016/17 owing to less rainfall in the MIA during 2023/24 and increased water efficiency.

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
2023/24	371,082	239,689	19,699	6,384	161,097
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

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

3.4 Environmental diversions

At the request of DCCEEW, 3,082 ML of environmental water was delivered in 2023/24 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 2023/24

Month	Tuckerbill Swamp	Cudgel Creek	Turkey Flats	Yanco Ag	Nericon Swamp	Total
Jul-23	0	0	0	0	0	**0**
Aug-23	0	0	0	0	0	**0**

Sep-23	0	179	0	0	0	**179**
Oct-23	210	0	120	200	31	**561**
Nov-23	326	92	259	0	101	**778**
Dec-23	0	143	0	0	0	**143**
Jan-24	0	87	0	0	0	**87**
Feb-24	0	127	0	0	45	**172**
Mar-24	0	117	31	93	30	**271**
Apr-24	386	0	88	0	102	**576**
May-24	200	0	0	0	94	**294**
Jun-24	0	0	0	0	21	**21**
Total (ML)	**1,122**	**746**	**498**	**293**	**423**	**3,082**

Approximately 6,018 ML was diverted to the Barren Box Storage and Wetland (BBSW) in May and June 2024 due to the BBS Active and Intermediate cells being at capacity.

3.5 Water discharged from area of operations

Monthly discharge volumes for each discharge monitoring point are shown in **Table 10**. A total of 5,219 ML was discharged from MI's Area of Operations during 2023/24.

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

Month	LAG (41010940)	ROCUDG (41010005)	YMS (410083)	GMSRR (41010921)	MIRFLD (41010163)
Jul-23	19[R]	1,564[R]	0	0[V]	23
Aug-23	19[R]	40	0	1	0
Sep-23	85[R]	87[R]	0	3[V]	2
Oct-23	206[R]	136[R]	0	5[V]	12
Nov-23	37[R]	0[R]	0	0[V]	0
Dec-23	898[R]	0[R]	0	31[R]	0
Jan-24	641[R]	205[R]	0	15[V]	0
Feb-24	116[R]	41[R]	0	2[K]	0
Mar-24	51[R]	1[R]	0	1[K]	0
Apr-24	167[R]	10[R]	0	0	0
May-24	238[R]	0[R]	0	0[V]	387
Jun-24	37[R]	35[R]	0	0[V]	103
Total	**2,515**	**2,119**	**0**	**58**	**527**

Note: All figures in ML
R Rating table extrapolated
V Operational data
K Minor editing

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

The 2023/24 reporting year recorded significantly less water discharged than the prior reporting year. The difference is due to the activation of the floodway during 2022/23 for flood mitigation purposes.

Table 11 – Monthly discharge volumes (ML) recorded at monitoring points

Year	Total discharged (ML)
2023/24	5,219
2022/23	118,046
2021/22	8,595
2020/21	900
2016/17	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 the 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 797,951 ML for 2023/24 were used to generate water deliveries of 752,430 ML to customers, 3,082 ML for environmental water diversions, and an additional 6,018 ML to the Barren Box Wetland cell.

Table 12 - Annual water balance as at 1 July 2024 and prior years

Condition	Source	2023/24	2022/23	2021/22	2020/21	2016/17
2.10 (a) (b) (c)	River diversions	797,951	613,614	684,959	880,456	780,083
2.12 (c)	Internal storage (July 1)	35,219	39,152	35,402	4,724	29,042
2.12 (b)	Water captured (estimate)	14,443	156,269	15,113	5,870	171,376
	Total	**847,613**	**809,035**	**735,474**	**891,050**	**980,501**
	Applications					
2.10 (d)	Deliveries to customers (river and storages)	752,430	585,774	645,499	748,988	670,319
2.11 (a)	Discharges (without credit)	11,237+	48,086	12,872	4,822	121,363
2.11 (b)	Environmental water diversions	3,082	837	583	3,483	986
2.12 (b) loss	Overland flood discharge	0	112,116	0	0	27,555
2.12 (b) loss	Conveyance	42,436	27,003	37,368	98,355	127,960
2.12 (c)	Internal storage (June 30)	38,429	35,219	39,152	35,402	32,318
	Total	**847,613**	**809,035**	**735,474**	**891,050**	**980,501**

Note: All figures in ML.
+ includes 6,018 ML for BBS Wetland Cell for 2023/24

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 2023/24. 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 2023/24

Crop / purpose	Area (ha)	Volume delivered (ML)	Crop water use (ML/ha)
Citrus	7,343	31,479	4
Cotton	11,382	109,775	10
Environment	1	3,082	2,778
Industrial	26	8,815	335
Nuts	8,075	52,477	7
Other crops	1	1000	1000
Other fruits	1,002	4,027	4
Plantation	87	69	1
Rice	21,280	253,500	12
Stock & Domestic	296	7,642	26
Summer cereals	2,466	26,219	11
Summer oilseeds	303	2,104	7
Summer pasture	1,941	10,366	5
Town supply	3	8,244	2,748
Vegetables	1,986	7,911	4
Vines	15,421	51,419	3
Winter cereals	54,202	97,504	2
Winter oilseeds	5,509	9,549	2
Winter pasture	7,120	16,852	2
Not defined*	-	53,481	-
Total	**138,443**	**755,515**	

*No crop type assigned.

A comparison of crop water use for 2023/24 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 2023/24. Rice crops continued to account for the highest volume of water deliveries in the MIA, followed by cereals and oil seeds, and cotton. This is consistent with water usage trends in 2021/22 and 2020/21.

Cereals and oil seeds saw the greatest increase in water deliveries from the 2022/23 financial year, with an 85,417 ML increase, followed by cotton which increased by 38,502 ML. A reduction in annual rainfall led to greater reliance on irrigation in 2023/24 compared to 2022/23. Likewise, while flood events during 2022/23 restricted land access, broad acre crops had better on farm access for field preparation, cropping and harvest, during 2023/24.

Figure 3 shows this reporting year's water deliveries correlate with the 2020/21 and 2021/22 reporting years, along with similarities in water delivery trends for 2022/23 and 2016/17. Like 2022/23, the 2016/17 comparison year recorded below average water deliveries for cereal and oil seeds, further demonstrating the influence of flood events on the irrigation needs of these crop types. **Figure 3** also indicates that crops requiring less than 30,000 ML total deliveries and permanent plantings have the most consistent irrigation requirements. Greater variability can be seen in broad acre crops which are more influenced by seasonal climatic conditions.

Table 14 - Total deliveries to major crop types 2023/24 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+
2023/24	253,500	27,218	135,375	7,911	86,925	16,458	109,775	1,069	52,477
2022/23	259,067	22,559	49,958	6,587	78,050	13,383	71,273	3,168	41,562
2021/22	240,205	16,526	106,741	7,321	75,756	12,422	99,949	2,969	45,055
2020/21	250,516	25,742	151,247	11,587	121,579	27,092	62,778	56,611	
2016/17	304,200	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'.

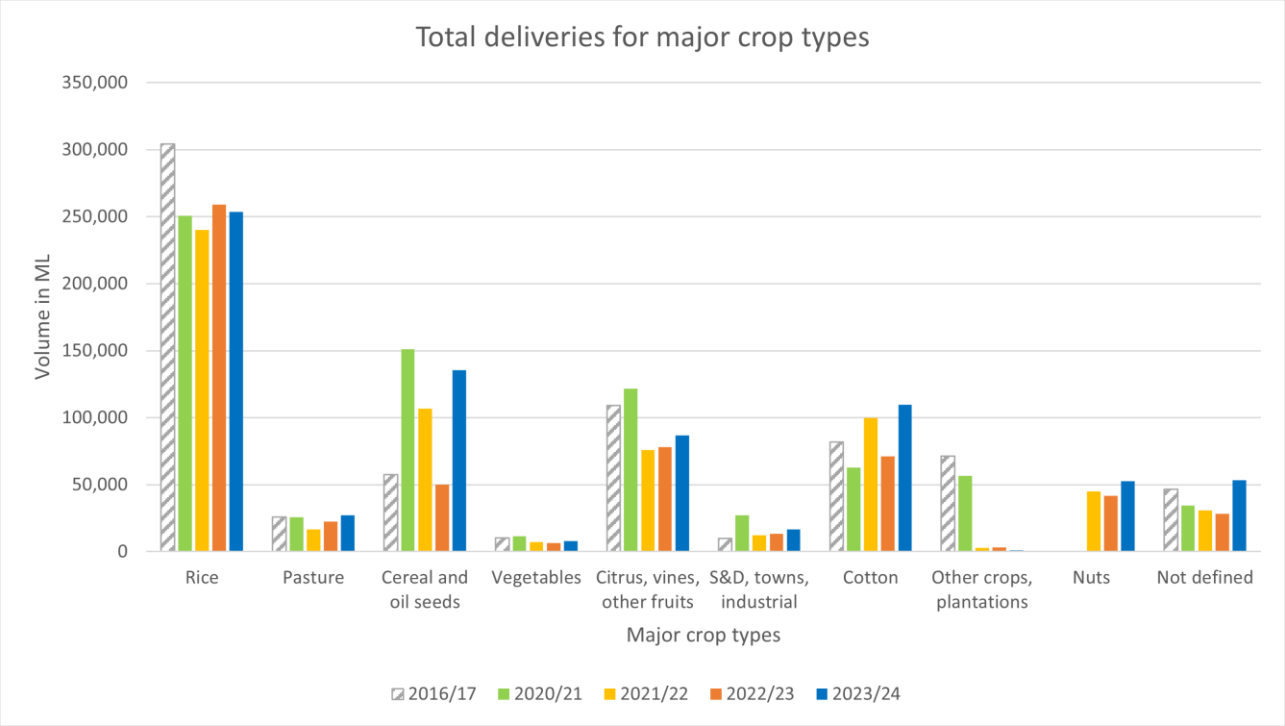

Figure 3 – Comparison of total water deliveries to major crop types

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.

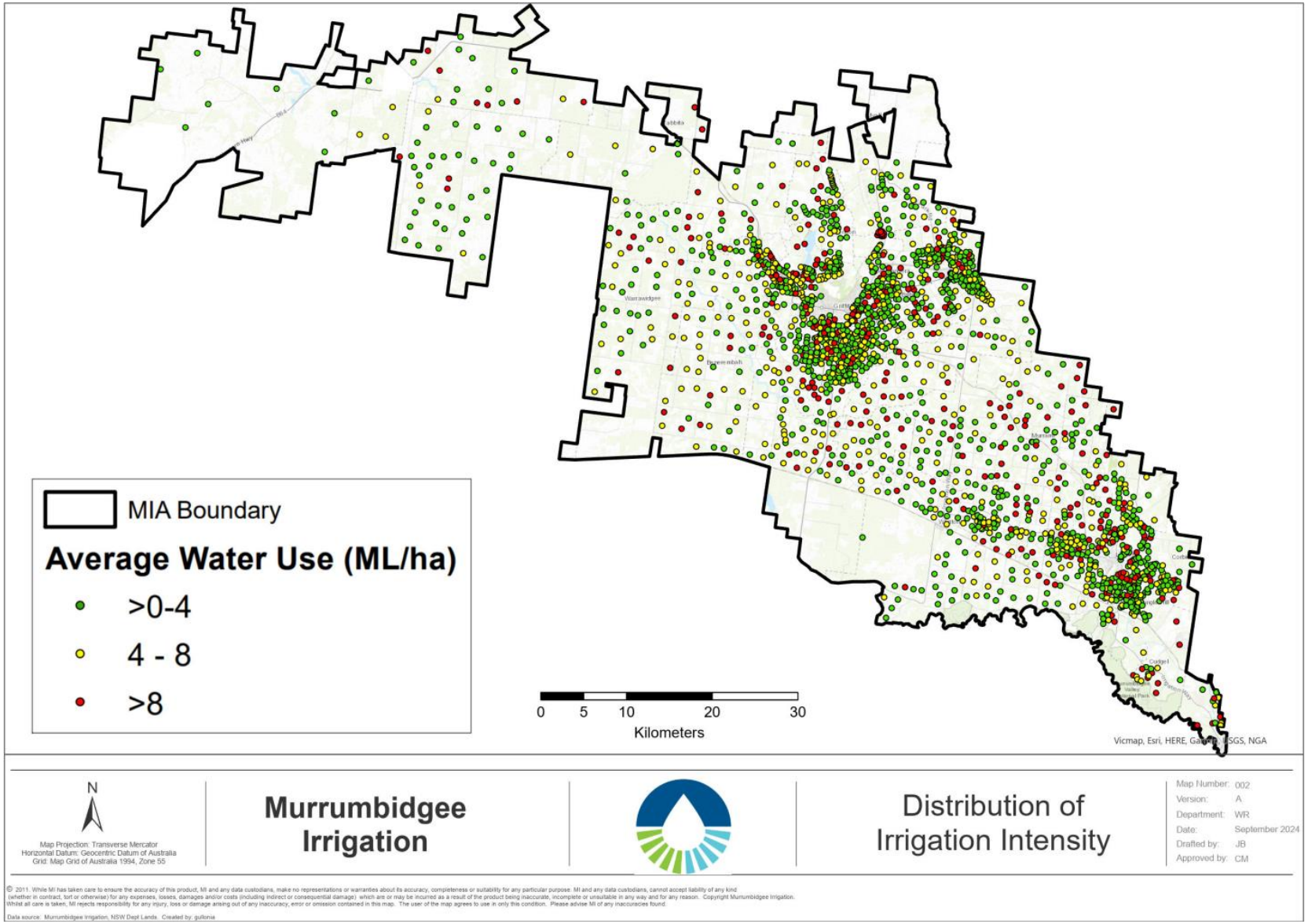

Figure 4 - Distribution of irrigation intensity across the MIA

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 loads for 2023/24

Month	STURT			NARREG		
	Flow (ML)	Mean EC (µS/cm)	Salt (t)	Flow (ML)	Mean EC (µS/cm)	Salt (t)
Jul-23	222	169	24*	875	272	45
Aug-23	12,937	171	1,383V	29,570	191	3,437
Sep-23	19,635	221	2,482V	51,423	215~	6,211~
Oct-23	21,428	124	1,669K	65,813	82.3~	2,411~
Nov-23	24,378	105	1,605K	71,782	101	4,117
Dec-23	33,586	159	3,505	97,711	119	3,704
Jan-24	20,628	178	2,465K	67,098	163	6,718
Feb-24	32,331	154	2,881K	88,225	146	7,302
Mar-24	23,979	147	2,063	69,679	162	5,038
Apr-24	6,263	172	696K	27,686	173	2,893
May-24	6,107	207	798V	16,195	201	2,085K
Jun-24	0	239	0	10,400	275	1,667K
Total	201,494		19,571	596,457		45,628

V Operational data
K Minor editing
~ Reliable Interpolation
* Manually calculated salt load

The total extracted salt loads for 2023/24 compared to prior years is presented in **Table 16**.

During 2023/24, an estimated 65,199 tonnes of salt was imported into MI's area of operations from the Murrumbidgee River. An increase of 7,658 tonnes of salt was imported into MI's area of operations compared to 2022/23. This coincides with an increase of 184,337ML in diversions in 2023/24.

Table 16 - Extracted salt load (t) for 2023/24 compared to prior years

Year	Diversions (ML)	Extracted salt load (t)		
		Sturt	NARREG	Total
2023/24	797,951	19,571	45,628	65,199
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
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 per 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 are 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 1,064 tonnes were discharged from MI's area of operations through the five discharge monitoring points in 2023/24.

Table 17 - Monthly summary of flow, EC, and salt loads at monitoring points for 2023/24

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-23	-	308	193	383	-
Aug-23	-	655	425	872	-
Sep-23	-	539	123	831	-
Oct-23	-	112[V]	31[V]	219[V]	-
Nov-23	-	117	23	228	-
Dec-23	-	281	106	465	-
Jan-24	-	212	65	361	-
Feb-24	-	217	129	391	-
Mar-24	-	207	149	324	-
Apr-24	-	316	186	462	-
May-24	-	305	175	388	-
Jun-24	-	278	137	366	-
Total	0				0
Gooragool Lagoon Escape (LAG) 41010940					
Jul-23	19[R]	318	29.8	536	3[R]

Month	Flow (ML)	Mean EC (µS/cm)	Min EC (µS/cm)	Max EC (µS/cm)	Salt load (t)
Aug-23	19[R]	221[K]	25.1[K]	520[K]	2[R]
Sep-23	85[R]	255[V]	92.6[V]	591[V]	11[R]
Oct-23	206[R]	395	179	675	35
Nov-23	37[R]	476	157	1,060	19
Dec-23	898[R]	405	168	955	155[R]
Jan-24	641[R]	287	128	577	111[R]
Feb-24	116[R]	376[K]	201[K]	766[K]	31[R]
Mar-24	51[R]	341	133	668	11
Apr-24	167[R]	602	483	731	55
May-24	238[R]	223.3	130.9	448.4	34
Jun-24	37[R]	188.2	166.9	199.6	4.5
Total	**2,515**				**471.5**
Gogeldrie Main Southern Escape (GMSRR) 41010921					
Jul-23	0[V]	48.6	32.4	85.9	0
Aug-23	1	170	155	194	0
Sep-23	3[V]	341	289	471	1
Oct-23	5[V]	308	216	484	1
Nov-23	0[V]	230	131	345	0
Dec-23	31[R]	200	102	290	3
Jan-24	15[V]	580	130	925	4
Feb-24	2[K]	232	206	262	0
Mar-24	1[K]	-[T]	-[T]	-[T]	-[T]
Apr-24	0	-[T]	-[T]	-[T]	-[T]
May-24	0[V]	113	85.7	150	0
Jun-24	0[V]	262	71.9	298	0
Total	**58[R]**				**9**
Cudgel Creek Escape (ROCUDG) 41010005					
Jul-23	1,564[R]	213	156	259	201[R]
Aug-23	40	200	113	347	4
Sep-23	87[R]	201[?]	157[?]	350[?]	11[R]
Oct-23	136[R]	194[V]	76.7[V]	250[V]	8[R]
Nov-23	0[R]	147	106	199	0
Dec-23	0[R]	-[T]	-[T]	-[T]	-[T]
Jan-24	205[R]	304	271	369	37
Feb-24	41[R]	297	66.9	408	7

Month	Flow (ML)	Mean EC (µS/cm)	Min EC (µS/cm)	Max EC (µS/cm)	Salt load (t)
Mar-24	1[R]	310	76.4	338	0
Apr-24	10[R]	219	190	247	1
May-24	0[R]	201	191	226	0
Jun-24	35[R]	177	156	196	3
Total	**2,119**				**272**
Mirrool Creek Floodway (MIRFLD) 41010163					
Jul-23	23	1161	1161	1161	17.2
Aug-23	0				
Sep-23	2				
Oct-23	12	494.4	494.4	494.4	3.8
Nov-23	0				
Dec-23	0	470.95	460.5	481.4	0.1
Jan-24	0				
Feb-24	0				
Mar-24	0				
Apr-24	0				
May-24	387	1104.8	1104.8	1104.8	273.4
Jun-24	103	256.7	256.7	256.7	17
Total	**527**				**311.5**

Supplementary field measurements have been shaded in grey. Due to sensor malfunction, field measurements taken during discharge were used to interpolate mean, min and max EC.
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.

A significant decrease in salt discharge tonnage in 2023/24 corresponds with a reduction in water discharged when compared to the prior reporting year. However, a combination of higher river diversions as shown in (**Table 16**), and lower discharges (**Table 18**), lead to an increase in the salt load percentage in 2023/24 when compared to prior reporting years. This is consistent with the 2016/17 reference year which had similar river diversions, with additional inputs via the Mirrool Creek during the flood event, leading to a similar salt load percentage.

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 2023/24 compared to prior years

Year	Water discharged (ML)	Discharged Salt load (t)	Salt load/volume discharged (t/ML)
2023/24	5,219	1,064	0.204
2022/23	118,046+	18,464	0.156
2021/22	8,595	1,555	0.181
2020/21	900	88.5	0.098
2016/17	122,092+	34,230	0.280

+ Flood events

5.3 Salt load summary

The salt loads presented in **Table 19** displays 65,199 tonnes of salt were received through diversions recorded at MI's authorised supply works (NARREG and STURT). A total of 1,064 tonnes were discharged from the area of operations and an estimated 64,135 tonnes were retained within the MIA.

Table 19 – Salt load summary for 2023/24

Extracted	Salt load (t)
STURT	19,571
NARREG	45,628
Total extracted	**65,199**
Discharged	**Salt load (t)**
YMS	0
GMSRR	9
LAG	471.5
ROCUDG	272
MIRFLD	311.5
Total discharged	**1,064**
Retained	**Salt load (t)**
MIA	**64,135**

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 noted in their review of the 2021/22 Annual Compliance Report that MI is non-compliant with Condition 2.17 regarding having 90% of our piezometer network usable. NRAR acknowledged that MI is working toward compliance with DCCEEW. MI has not received feedback from the 2022/23 ACR at the time of creation of this report.

A rationalisation of MI's groundwater network is currently underway, including tubewell sites. MI engaged a specialist consultant to undertake this investigation and assist in any application for amending the network under our Combined Approval. An application to amend MI's Combined Approval was lodged during 2023/24 with the Department. MI is awaiting final approval for the rationalisation, with the intention of reporting on the reduced network of 300 piezometers in 2024/25.

6.1 Groundwater monitoring and reporting

Groundwater monitoring was completed in the last quarter of 2023. 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 include an increasing number of piezometers found to be destroyed by land development or other activities outside of MI's control. Weather conditions and difficult to access locations also impacted the number of piezometers that were read. Where access was available, a concerted effort was made during the 2023 monitoring rounds to validate where piezometers were destroyed or not found. Of the piezometers available to be read, 99% were read in 2023.

Table 20 provides a status summary of the groundwater piezometers monitored in 2023.

A total of 543 piezometers were read during the monitoring, an increase of 3 from the prior year. The total piezometers read equates to 84.71% of the network.

Table 20 – Groundwater piezometer status summary 2023

Total bores	Total destroyed+	Dry, flooded or blocked	Total read	Total unable to read
641	94	23	543	4

Note: + piezometers damaged or destroyed in the field due to land development or other uses or actions.

Depth to water table data is reported for 2023, 2022, 2021, 2020, and 2012. The groundwater data is likely to be most influenced by the prior year's climatic and land conditions. The 2012/13 groundwater comparison year has been chosen due to the climatic conditions recorded in 2011/12 and 2012/13 which are similar to the climatic conditions of 2022/23 and 2023/24. Both 2023/24 and 2012/13 record a drop in total rainfall when compared to the preceding reporting years. Flood events were recorded in the MIA in both the 2022/23 and 2011/12 reporting years, including above average rainfall and saturated catchments which are likely to have impacted the groundwater readings of 2012 and 2023.

The number of piezometers read within depth ranges for 2023 are shown in **Table 21**. along with the three prior reporting years and the 2012 reference year. **Table 22** provides a comparison of the three depth class areas relative to the prior three years and the historical reference year.

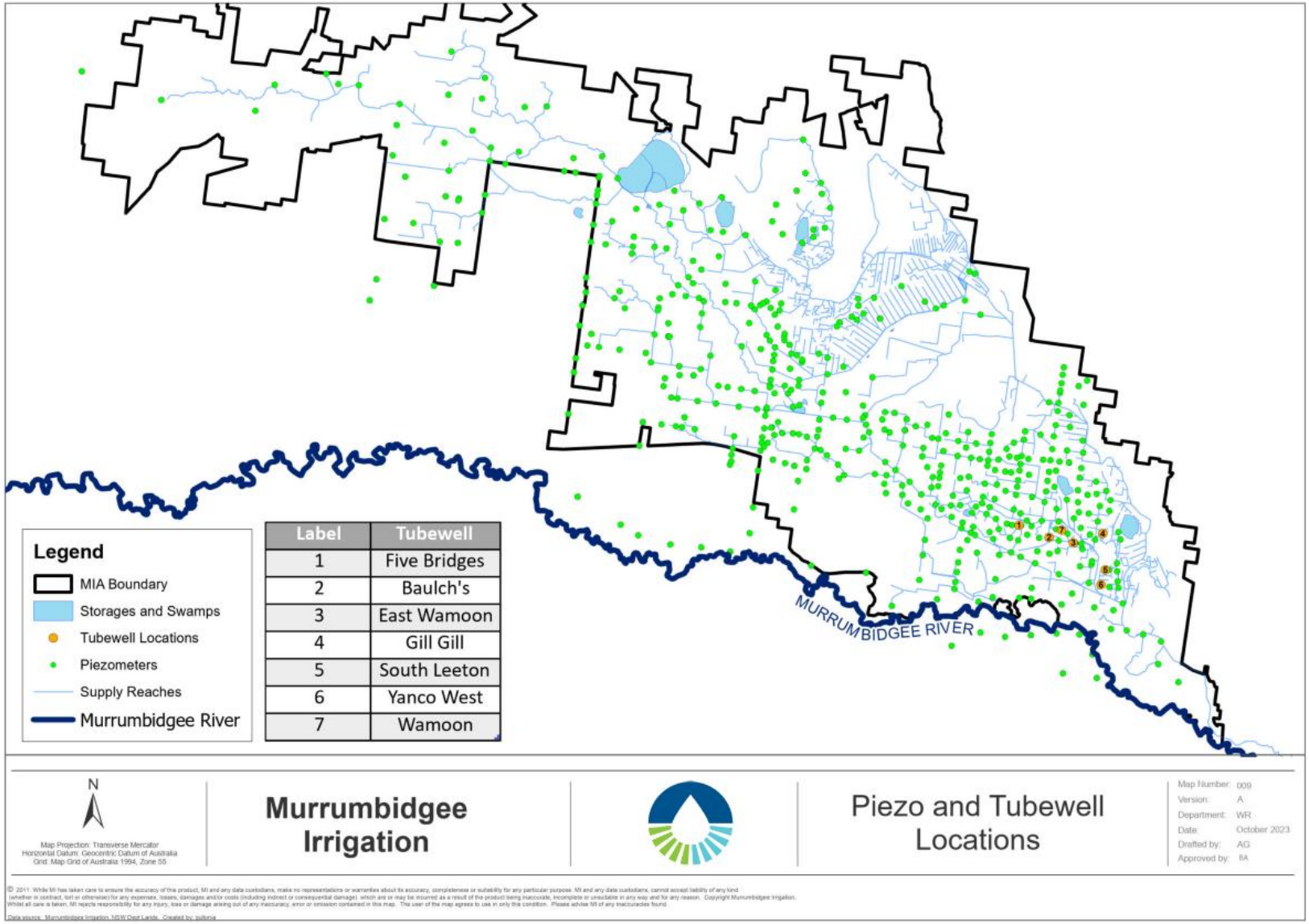

Figure 5 - Location of piezometers and tubewells in the MIA 2023/24

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
2023	67	134	342	12%	25%	63%	543
2022	52	110	378	10%	21%	70%	540
2021	23	100	431	4%	18%	78%	665
2020	12	86	437	2%	16%	82%	535
2012+	54	157	408	9%	23%	66%	619

+ excludes piezometers that became inactive following a groundwater network rationalisation in 2015.

Table 22 – Change in groundwater depth

ground-water depth range (m)	Depth to water table area (ha)					Change in depth [+ = rising] [- = falling]			
	2023	2022	2021	2020	2012	2023 vs 2022	2023 vs 2021	2023 vs 2020	2023 vs 2012
<2M	10,891.7	11,103.4	3803	178	14,112.8	-212	7,089	10,714	-3,221
2-4M	70,457	57,736	50,627	24,392	64,120.83	12,721	19,830	46,065	6,336
>4M	288,773	301,290.8	306,618	336,117	291,811.5	-12,518	-17,845	-47,344	-3,039
Total	370,121.7	370,130.2	361,048	360,687	370,045.13				

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 37% of the network recording standing water levels within 4 meters of the surface level. This has resulted in a 7% decrease in SWLs recorded at depths greater than 4m compared to the prior reporting year. Localised flooding and extended periods of inundation in 2022 are likely to have influenced standing water levels during this time.

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.

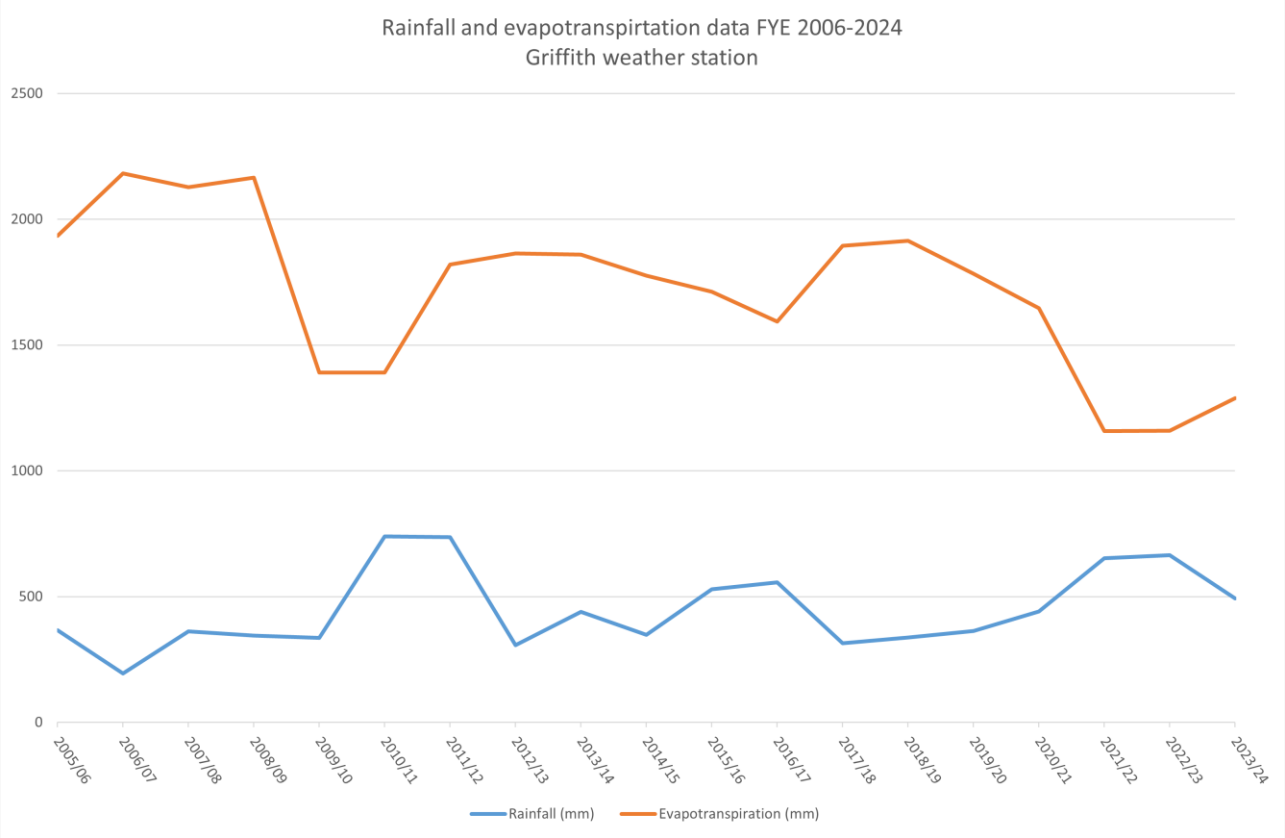

Figure 6 - Rainfall and evapotranspiration data FYE 2006-2024 - Griffith weather station

Figure 6 shows similar climatic patterns in the lead up to both 2012/13 and 2023/24, with rainfall decreasing while evapotranspiration increases. Despite similar climatic conditions, the MIA encompassed a greater land area in 2012/13 than in 2023/24, with a more widely spread water delivery network. In addition, water delivery in the MIA in 2023/24 was more efficient than in 2012/13, with 95% of diversions from the river being delivered to MI customers in the current reporting year, compared to 87% in 2012/13. This increase in productive water use within a more concentrated area may contribute to a greater influence on groundwater trends in 2023 than there had been in 2012.

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 2012. While the extent of groundwater within 2m of the surface has decreased in hectares from 2022 to 2023, and from 2012, the extent of groundwater within 4m of the surface has increased in 2023. This rise is consistent with above average rainfall and saturated catchments in the preceding year, followed by a reduction in rainfall in 2023, allowing groundwater recharge to occur in the 2-4m depth range.

In 2015, approval was given for the groundwater piezometer network to be reduced. As a result, in 2023 piezometer readings in some areas are indicative of a larger area than they had been in 2012, influencing the interpretation of the depth to water table area.

6.2 Groundwater salinity

Groundwater salinity was not requested by the Minister for 2023/2024 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, with more of MI's area of operation falling within 3m of the surface. Likewise, less of the area of operation has groundwater levels of deeper than 7.1m - 8m.

In 2023, thirty-three piezometers in the Shallow Shepparton Formation experienced a rise of more than 1 m in SWL from the prior year. When compared to 2012 (**Figure 11**), 2023 groundwater piezometers show a higher number of standing water levels within 4 m of the surface level. Compared to the prior reporting year, both 2012/13 and 2023/24 saw low annual rainfall, high river diversions and high deliveries. While **Table 21** shows that the percentage of piezometer readings at each depth range is similar in 2012 and 2023, overall, **Figure 7** and **Figure 11** indicate that the groundwater level is rising.

Short term influences on rising groundwater in the Shallow Shepparton Formation include an increase of 168,904 ML water deliveries to customers in 2023/24 from the prior year. Most of this water went to broad acre cropping, which typically requires consistent watering to maintain soil moisture. Long term factors include above average rainfall in the prior two years leading to saturated catchments. Prolonged flooding of local water bodies during 2022 allowed captured flood waters to slowly precipitate through the ground surface to the water table. Rising groundwater levels in 2023 were largely influenced by water usage and the climatic conditions in the preceding year.

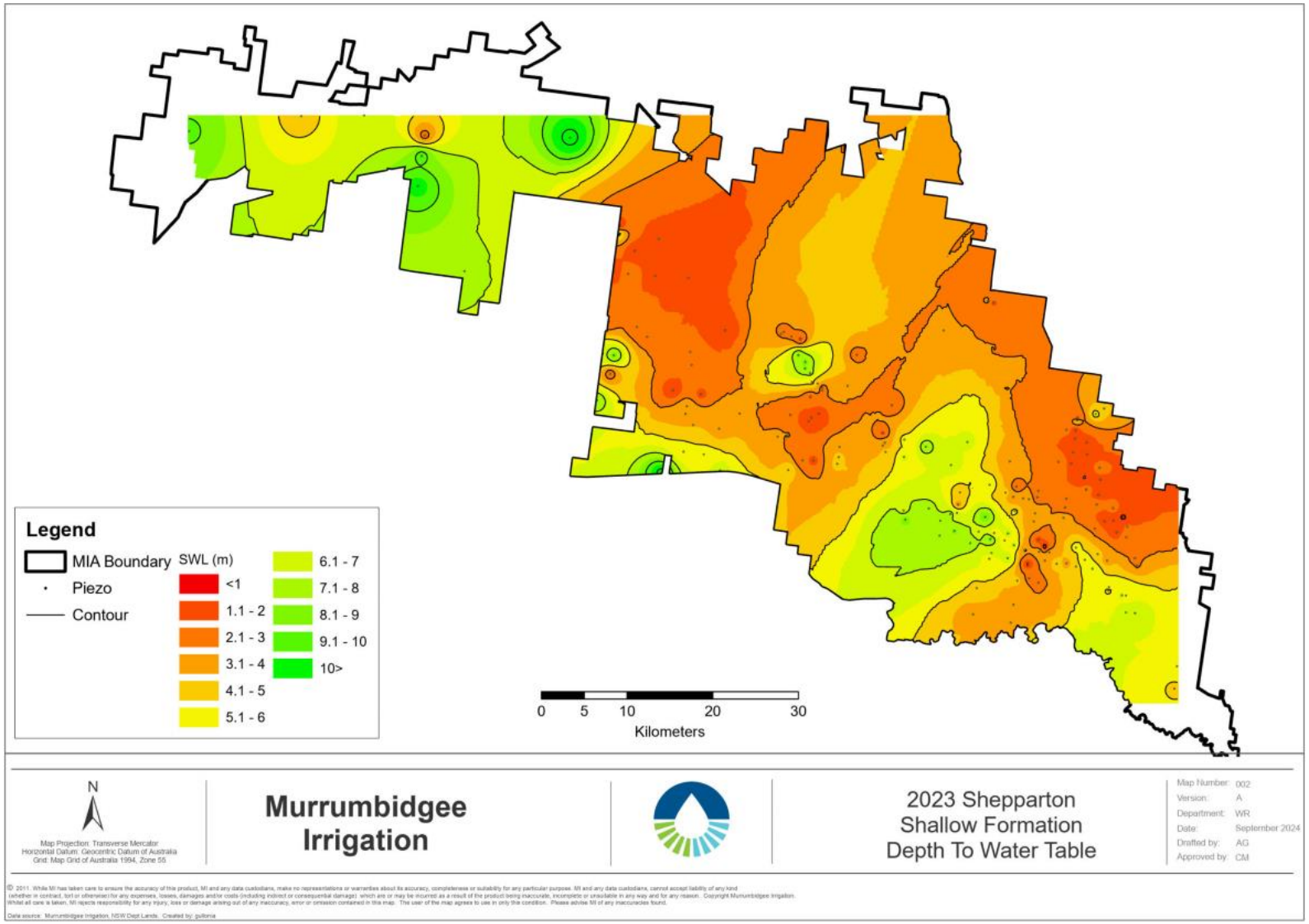

Figure 7 - Shallow Shepparton Formation – depth to water table 2023

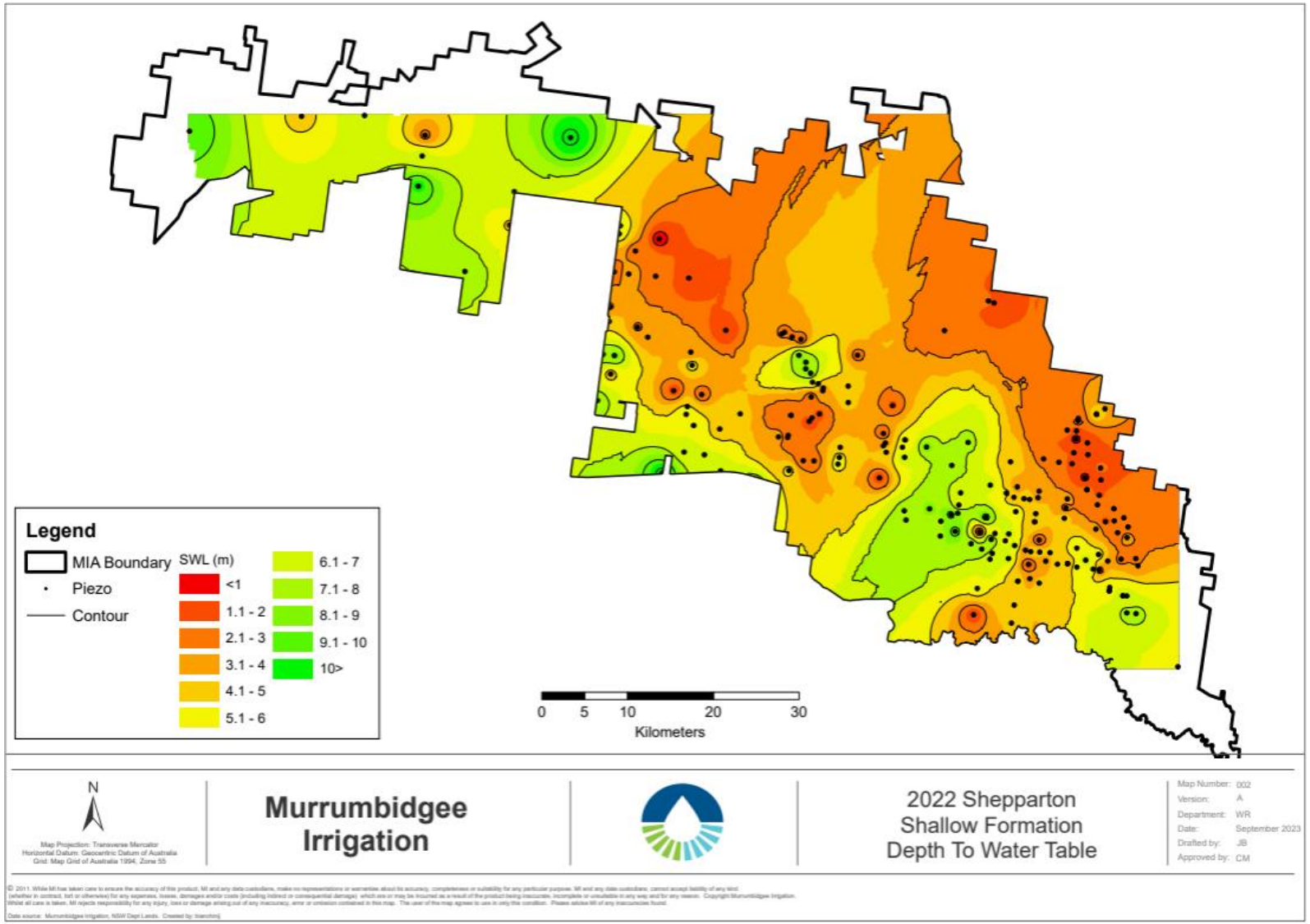

Figure 8 - Shallow Shepparton Formation – depth to water table 2022

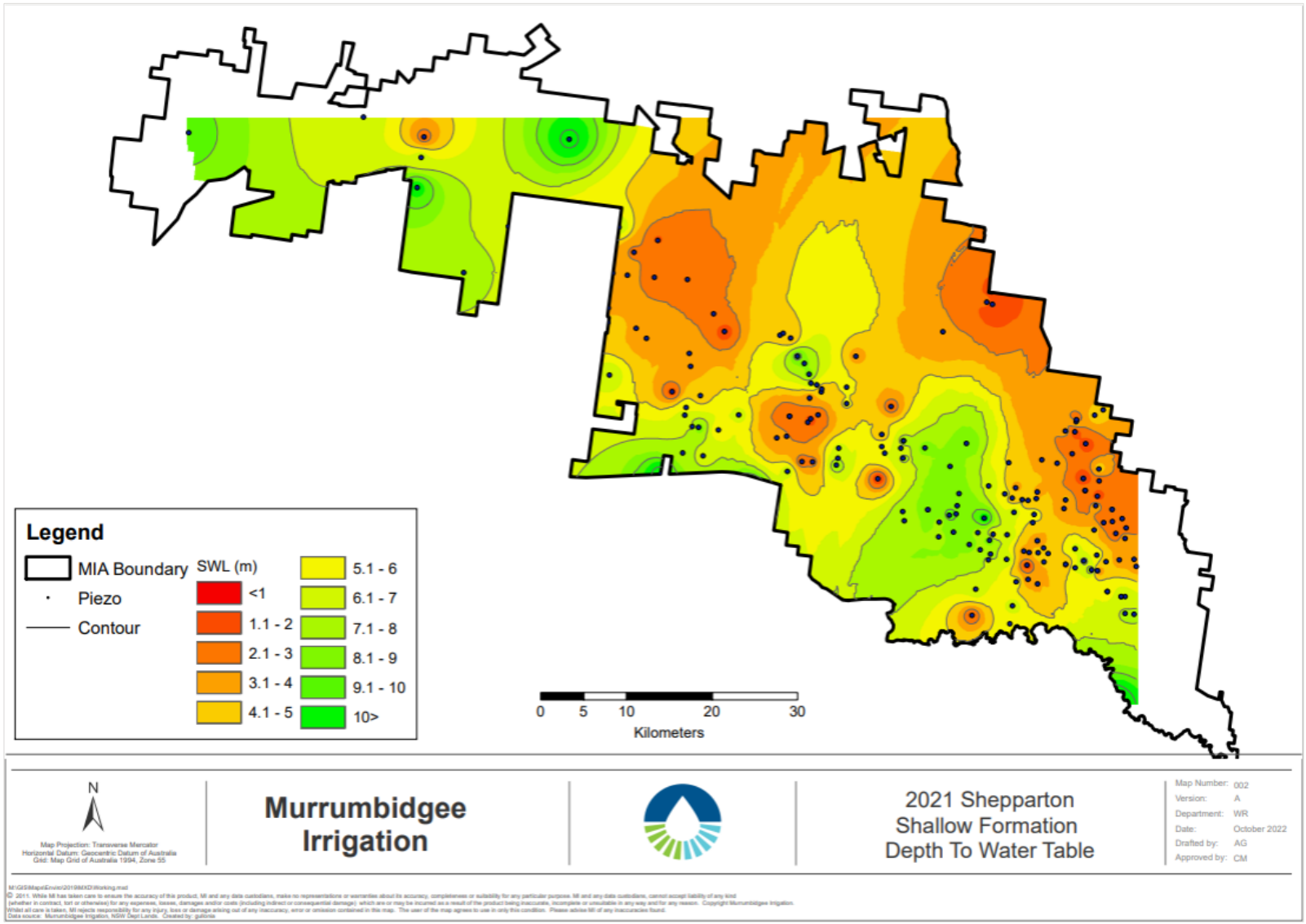

Figure 9 - Shallow Shepparton Formation – depth to water table 2021

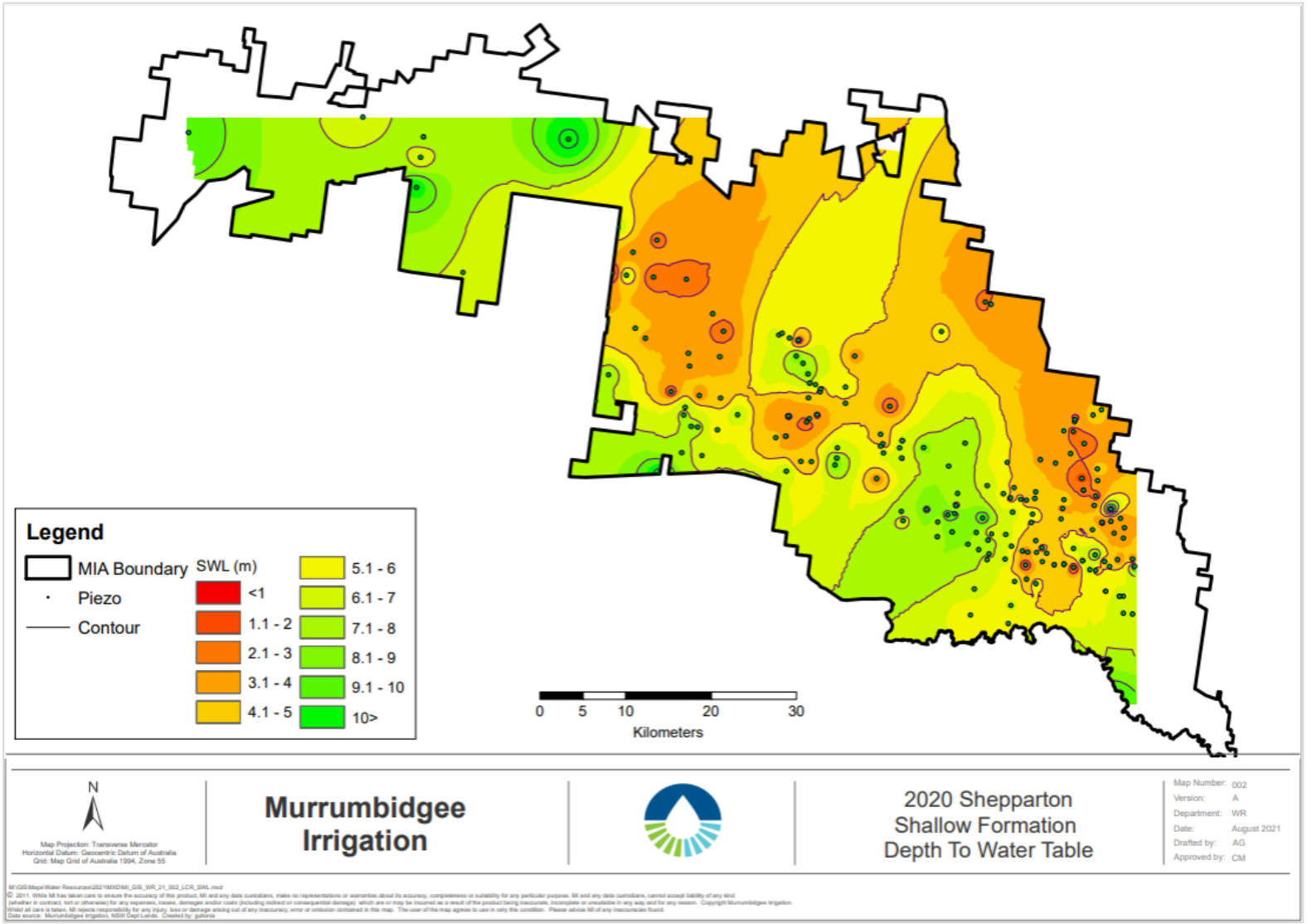

Figure 10 - Shallow Shepparton Formation – depth to water table 2020

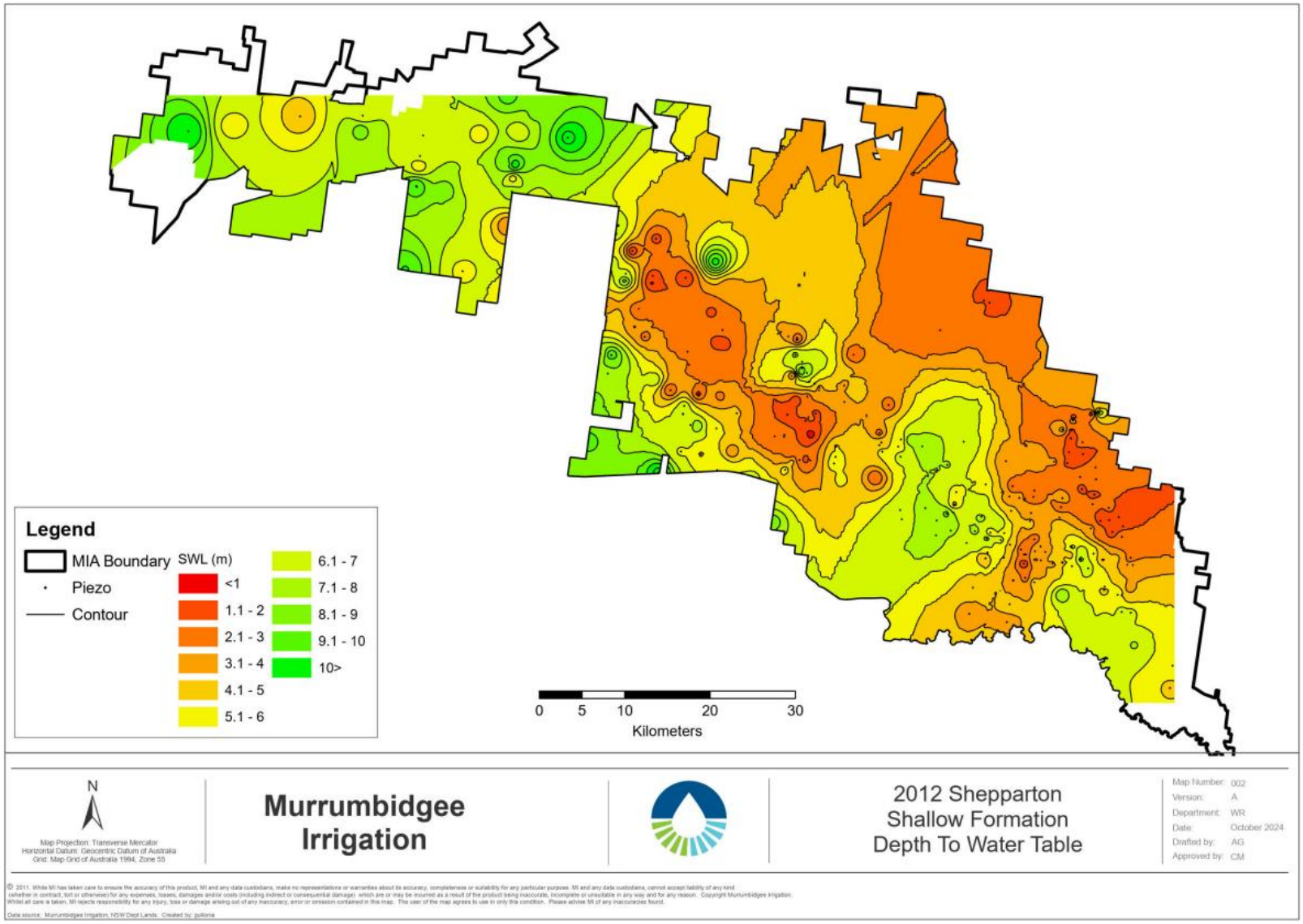

Figure 11 - Shallow Shepparton Formation – depth to water table 2012

6.4 Deep Shepparton Formation

Depth to water table for piezometers in the deep Shepparton Formation are presented in **Figure 12** 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, a number of piezometers in the deep Shepparton Formation recorded rising SWLs in 2023, with 115 piezometers recording a rise greater than 1m since 2022. Twelve piezometers had a rise in SWL of more than 5m.

A comparison of 2023 (**Figure 12**) and 2022 (**Figure 13**) demonstrates an increase in groundwater levels within 3 m of the surface. The number of piezometers recorded within 7 m of the surface in 2023 has also increased compared to 2012, with areas of shallow groundwater recorded in similar locations to where they had been in 2012 (**Figure 16**), but spreading to cover a larger section of the MIA in 2023 (**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 2023 in this formation include consecutive years of high river diversions, as well as above average annual rainfall and saturated catchments in the preceding years. 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.

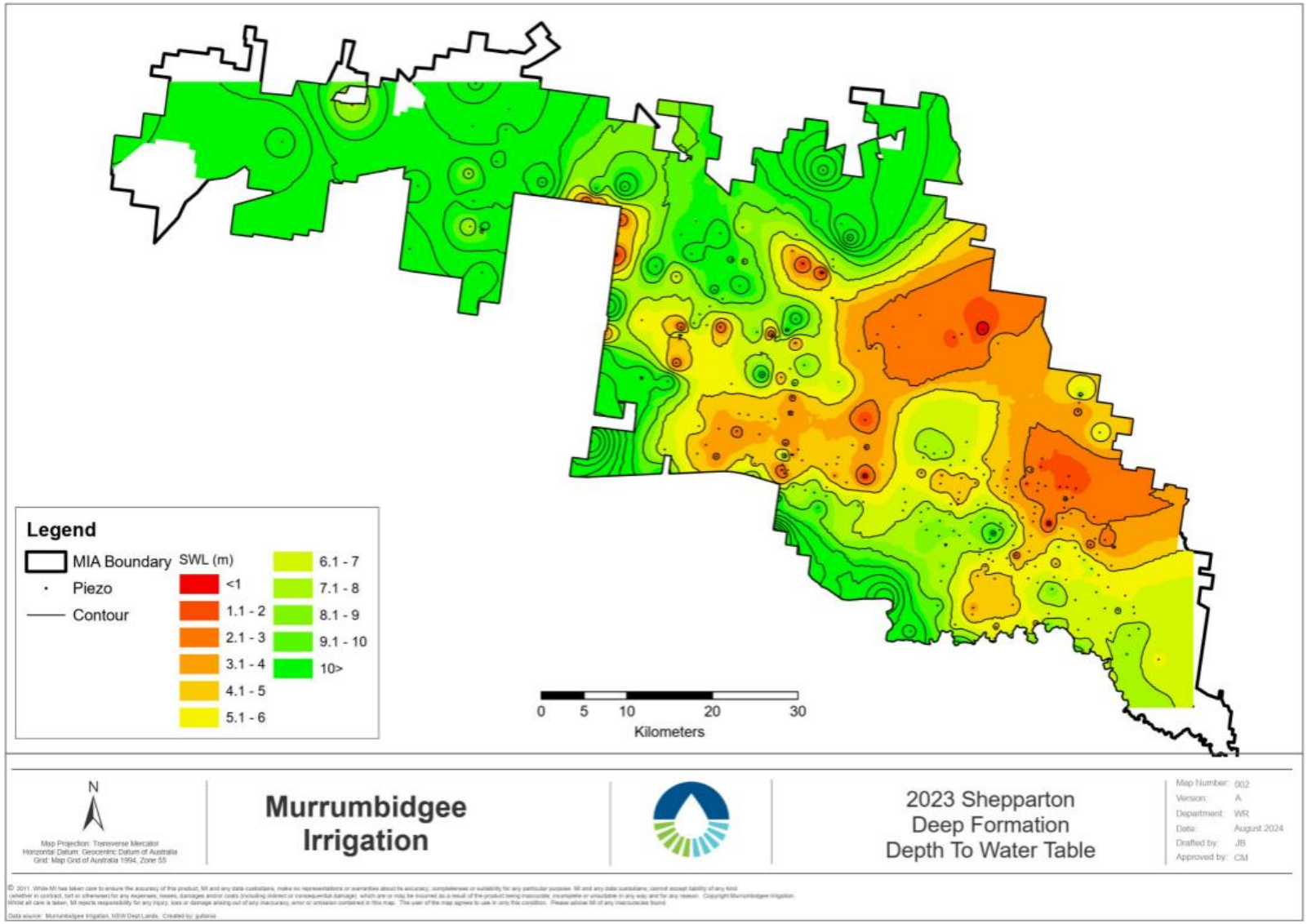

Figure 12 - Deep Shepparton Formation - depth to water table 2023

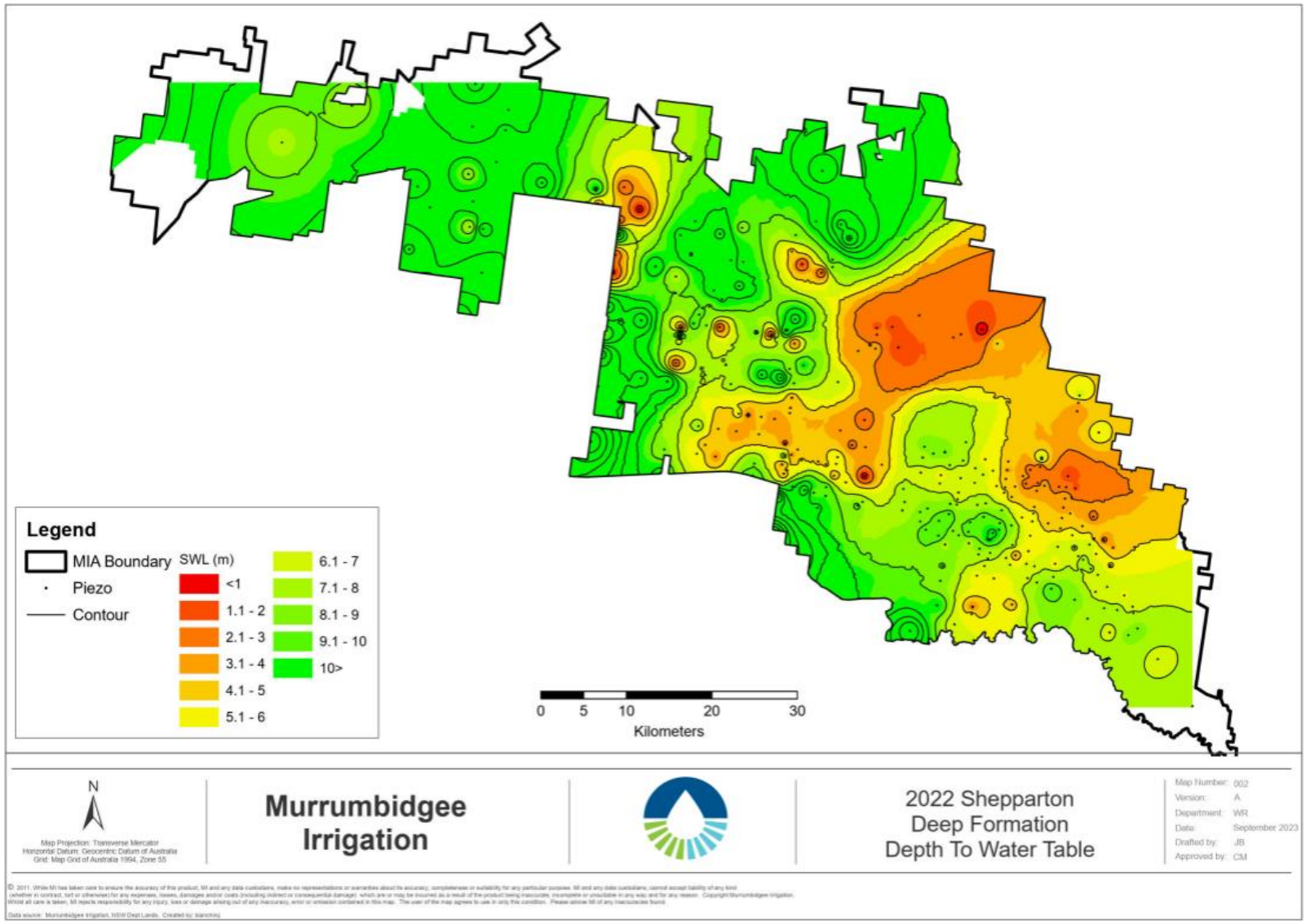

Figure 13 - Deep Shepparton Formation - depth to water table 2022

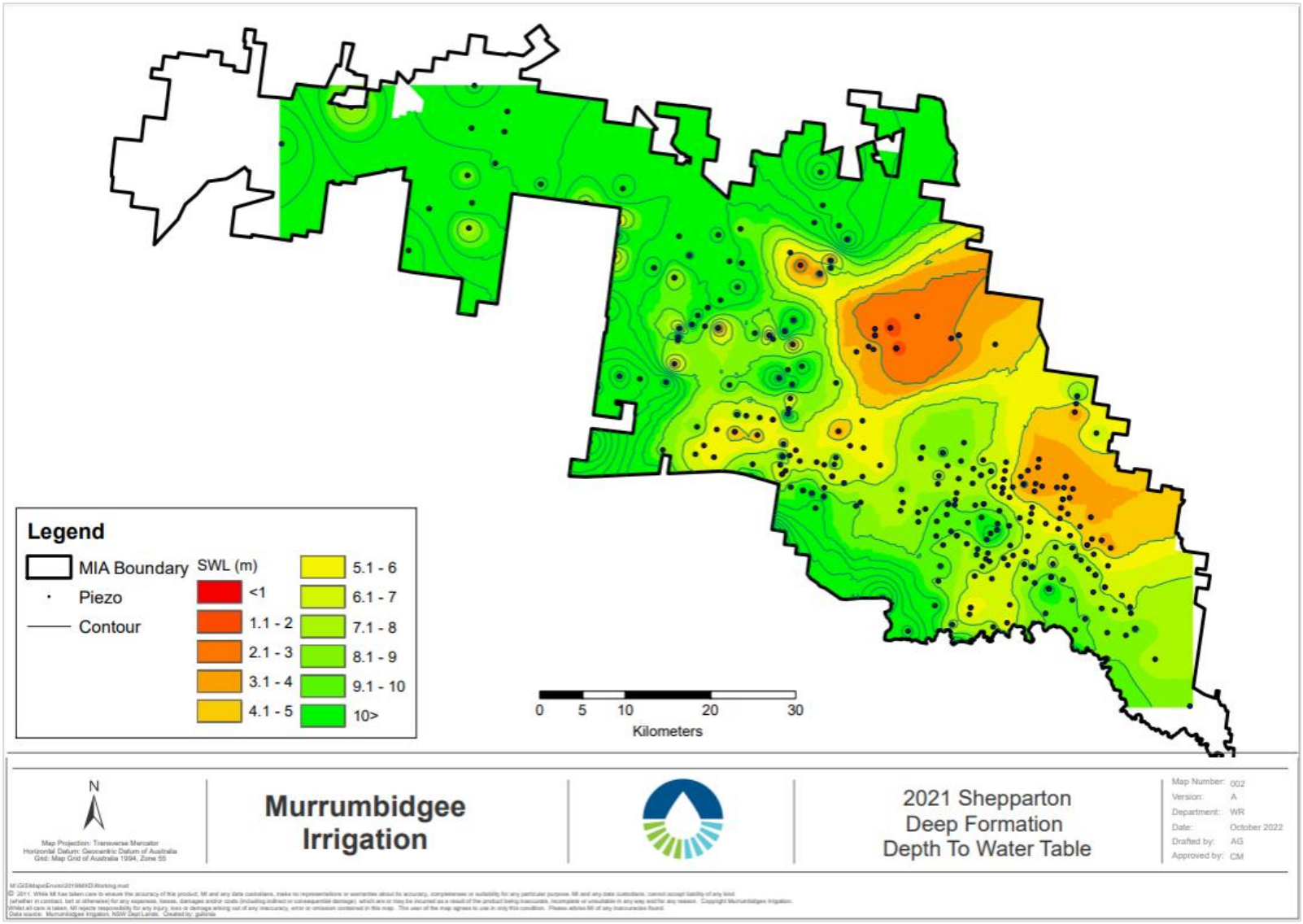

Figure 14 - Deep Shepparton Formation - depth to water table 2021

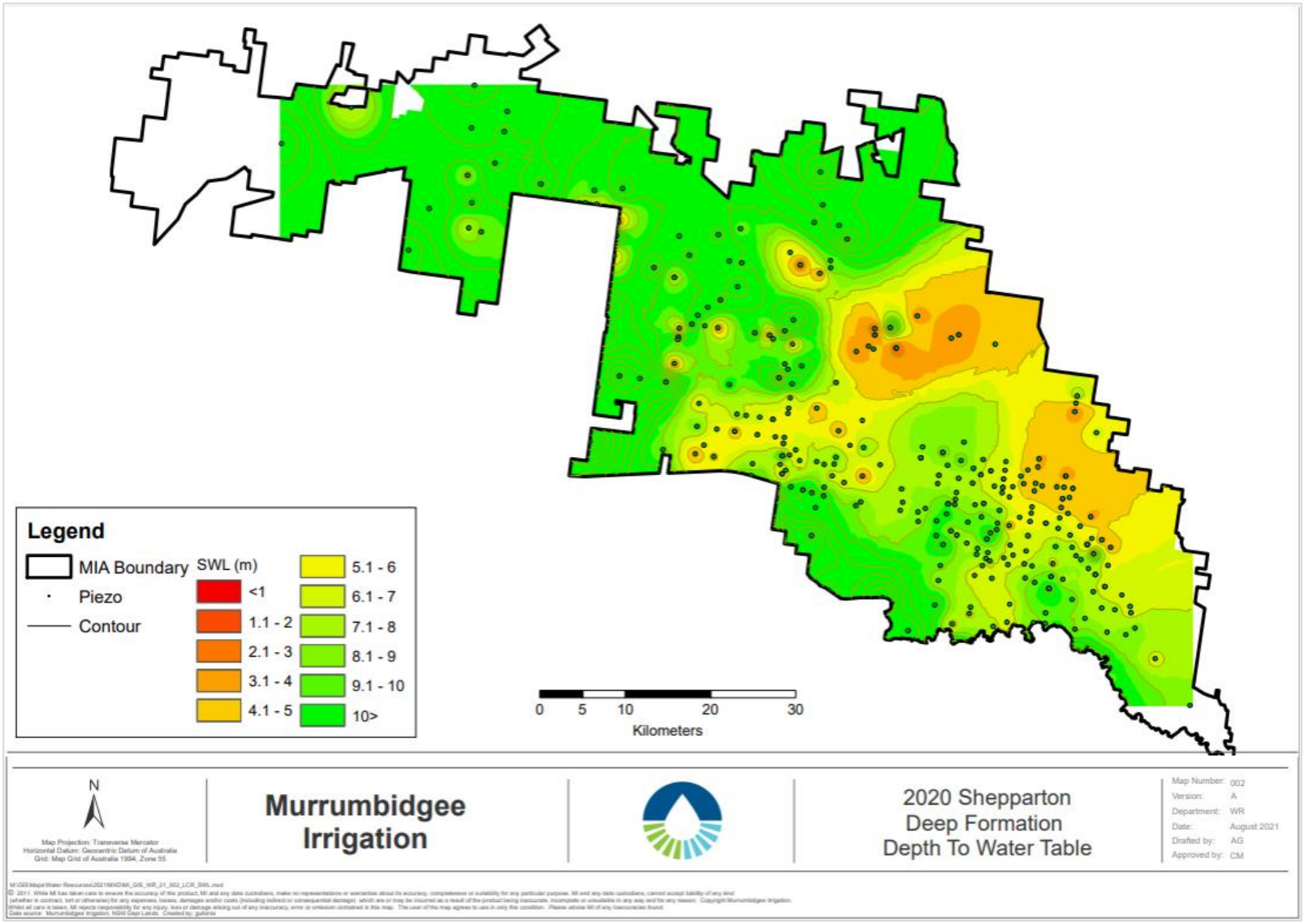

Figure 15 - Deep Shepparton Formation - depth to water table 2020

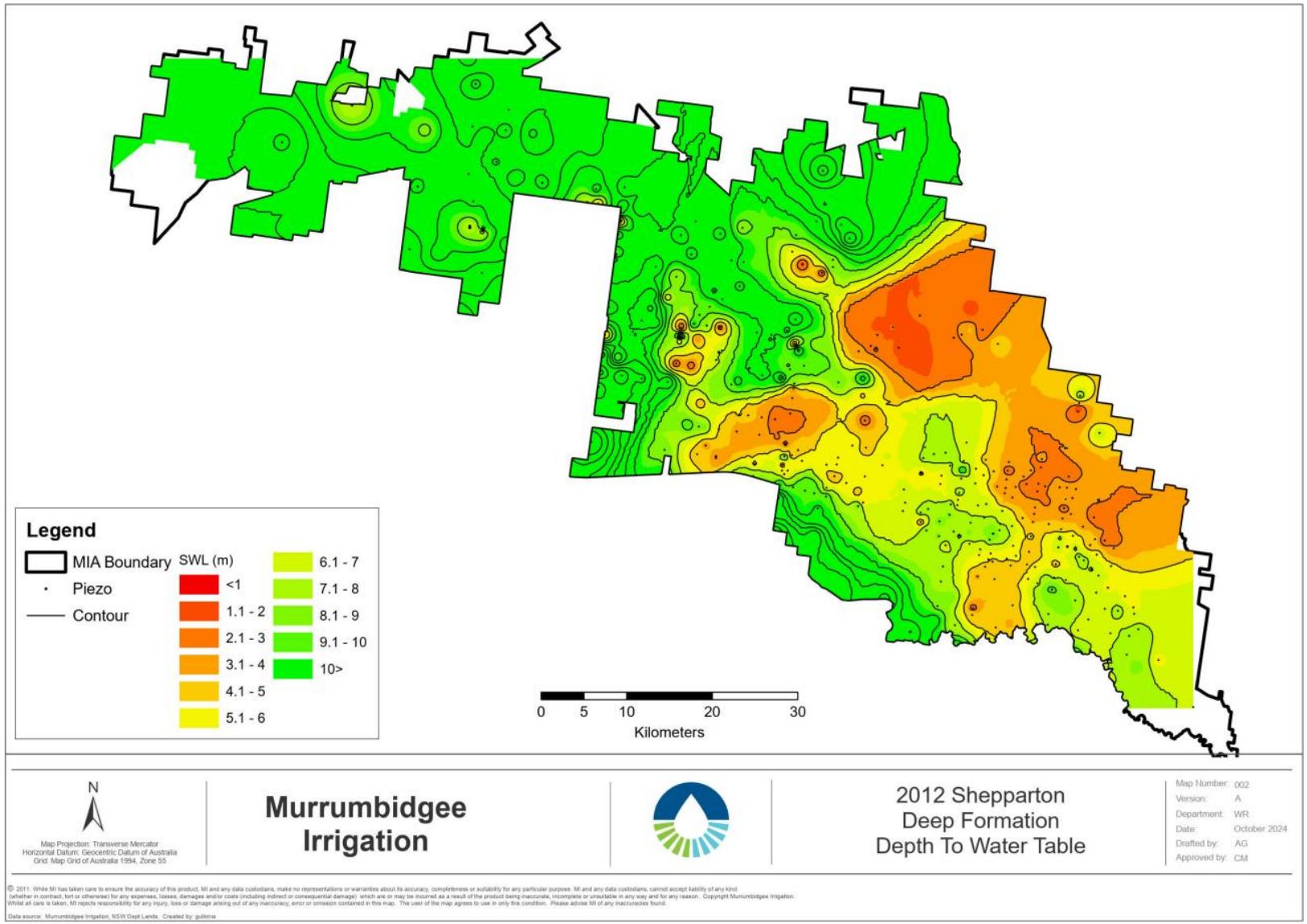

Figure 16 - Deep Shepparton Formation - depth to water table 2012

6.5 Calivil Formation

Depth to water table for piezometers in the Calivil Formation are presented in **Figure 17** to **Figure 21.**

Level trends in this formation generally represents drawdown from the shallow and deep Shepparton aquifers. **Figure 17** (2023) shows a small increase in piezometers recording a SWL between 7.1 m and 10 m deep compared to **Figure 18** (2022). There is also a slight decrease in SWLs within 6 m of the surface. In all reporting years, including the baseline year of 2012, the majority of piezometers record a SWL of greater than 10 m deep. Overall, the levels in this aquifer remain consistent.

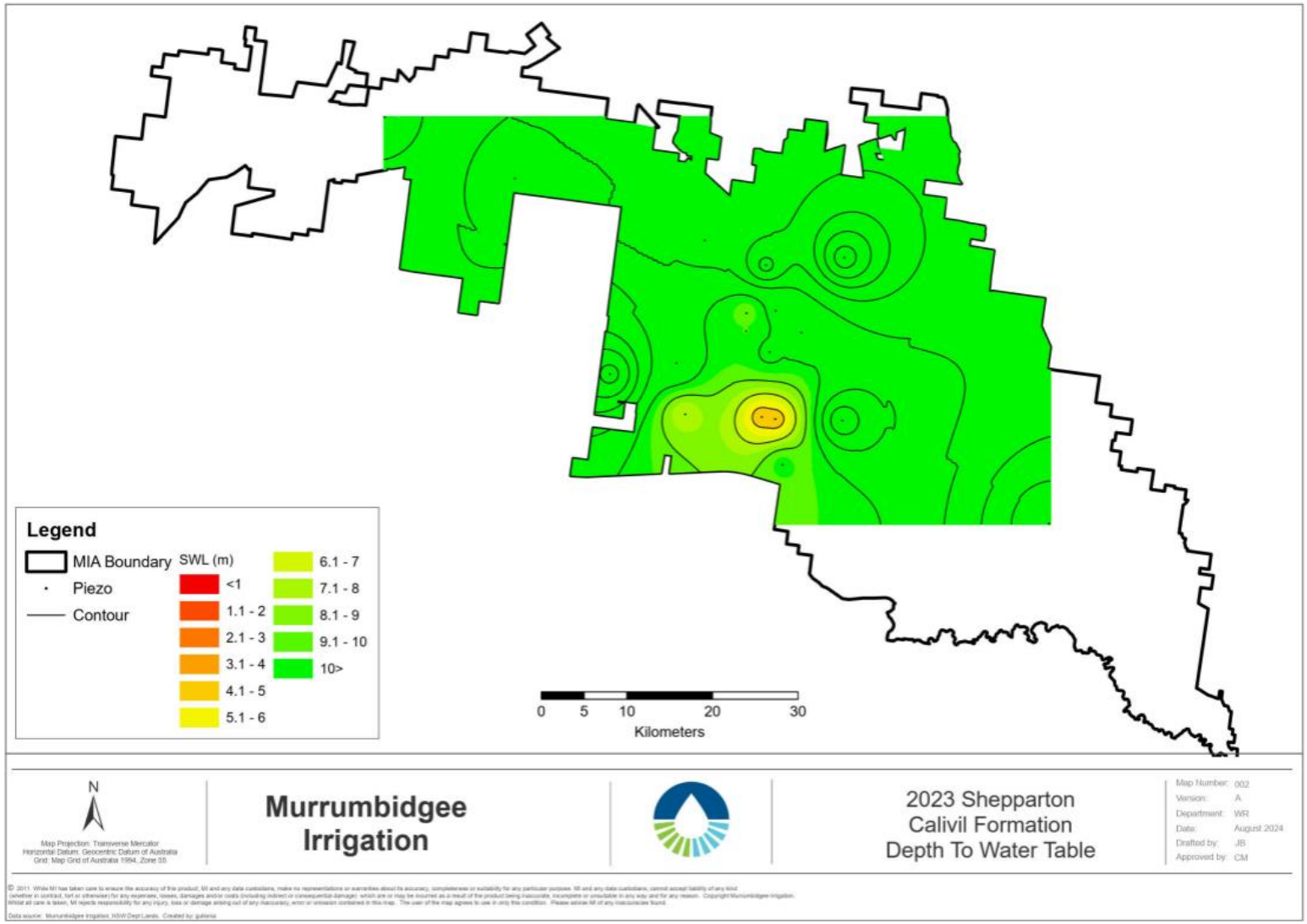

Figure 17 - Calivil Formation – depth to water table 2023

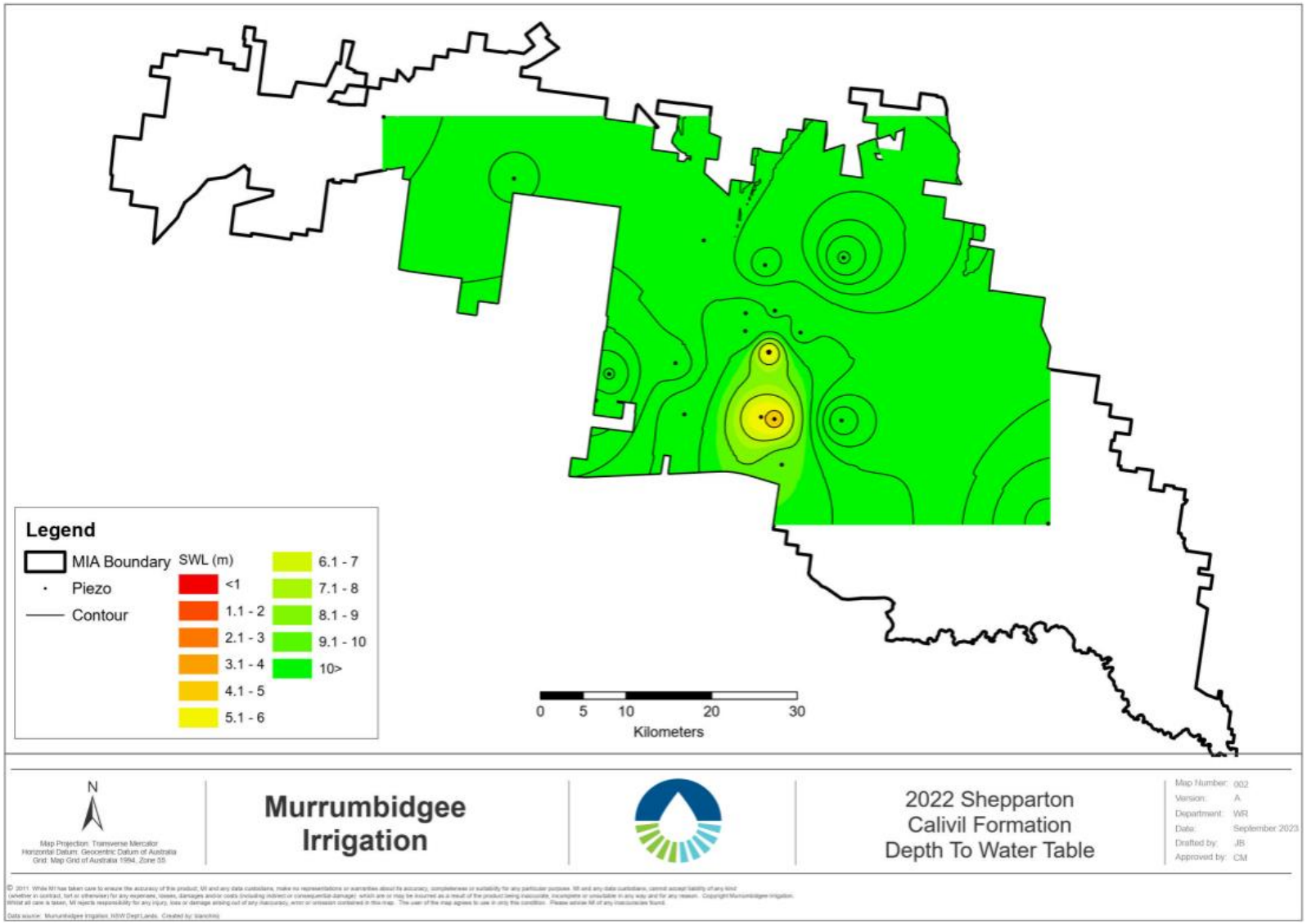

Figure 18 - Calivil Formation – depth to water table 2022

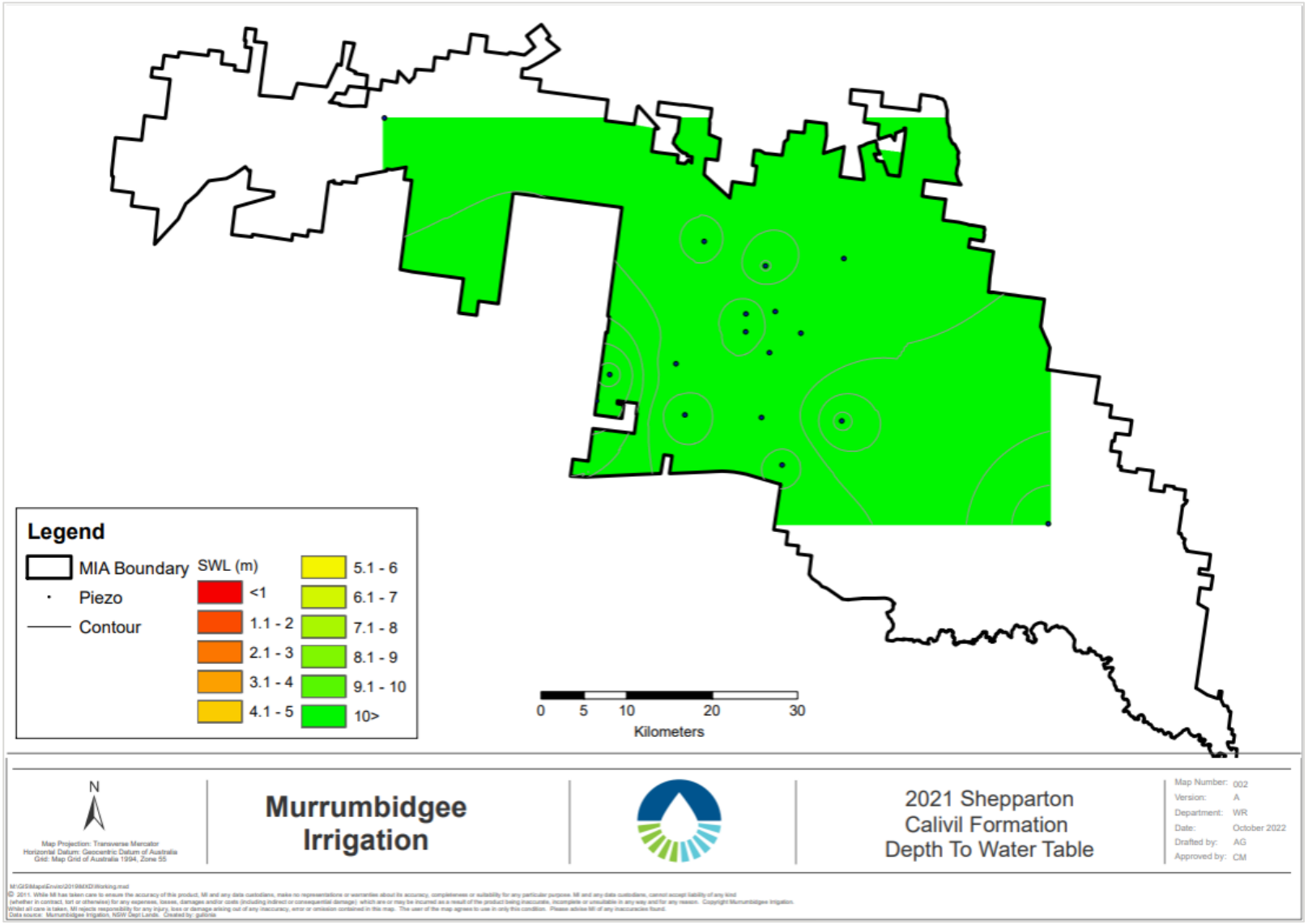

Figure 19 - Calivil Formation – depth to water table 2021

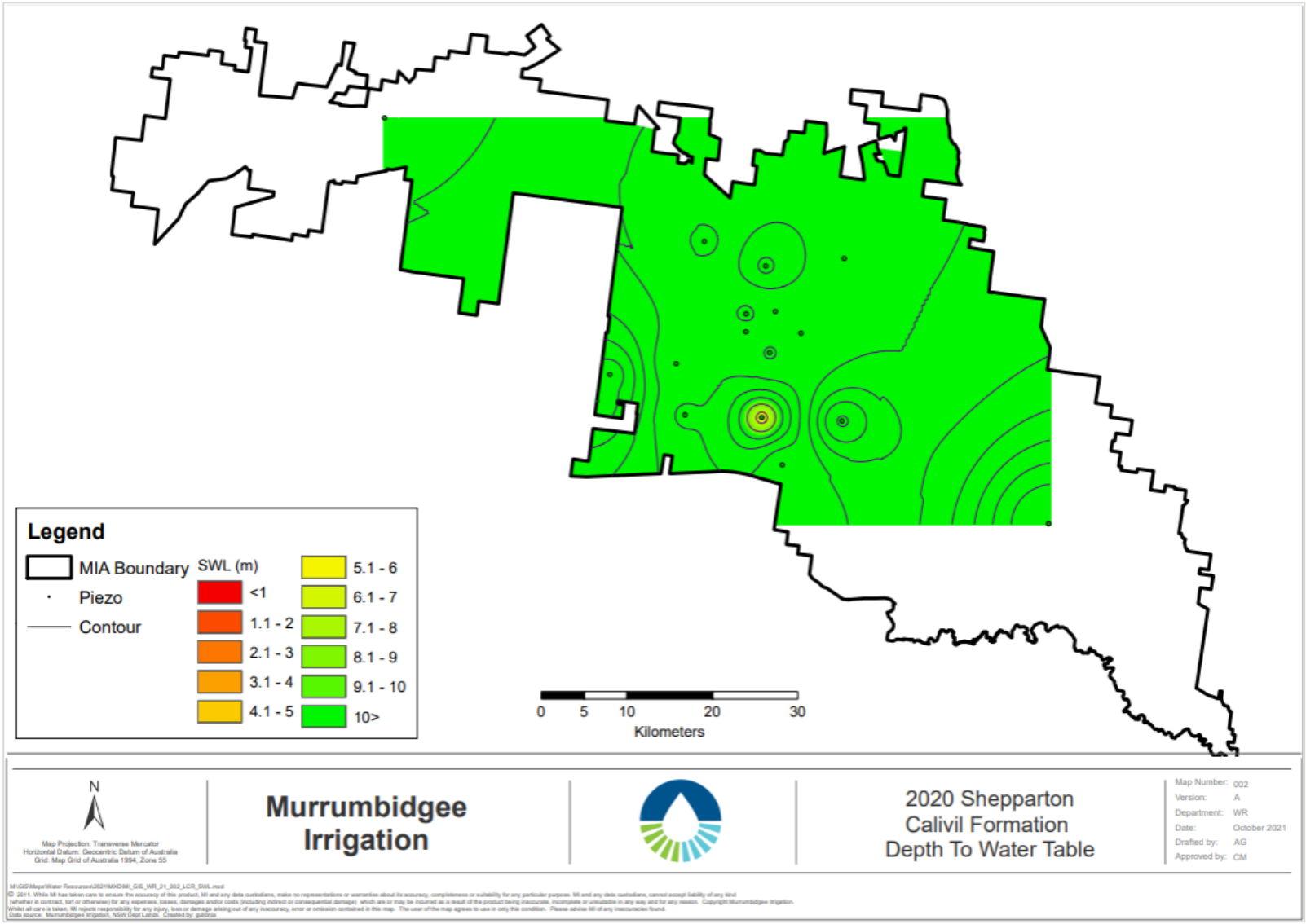

Figure 20 - Calivil Formation – depth to water table 2020

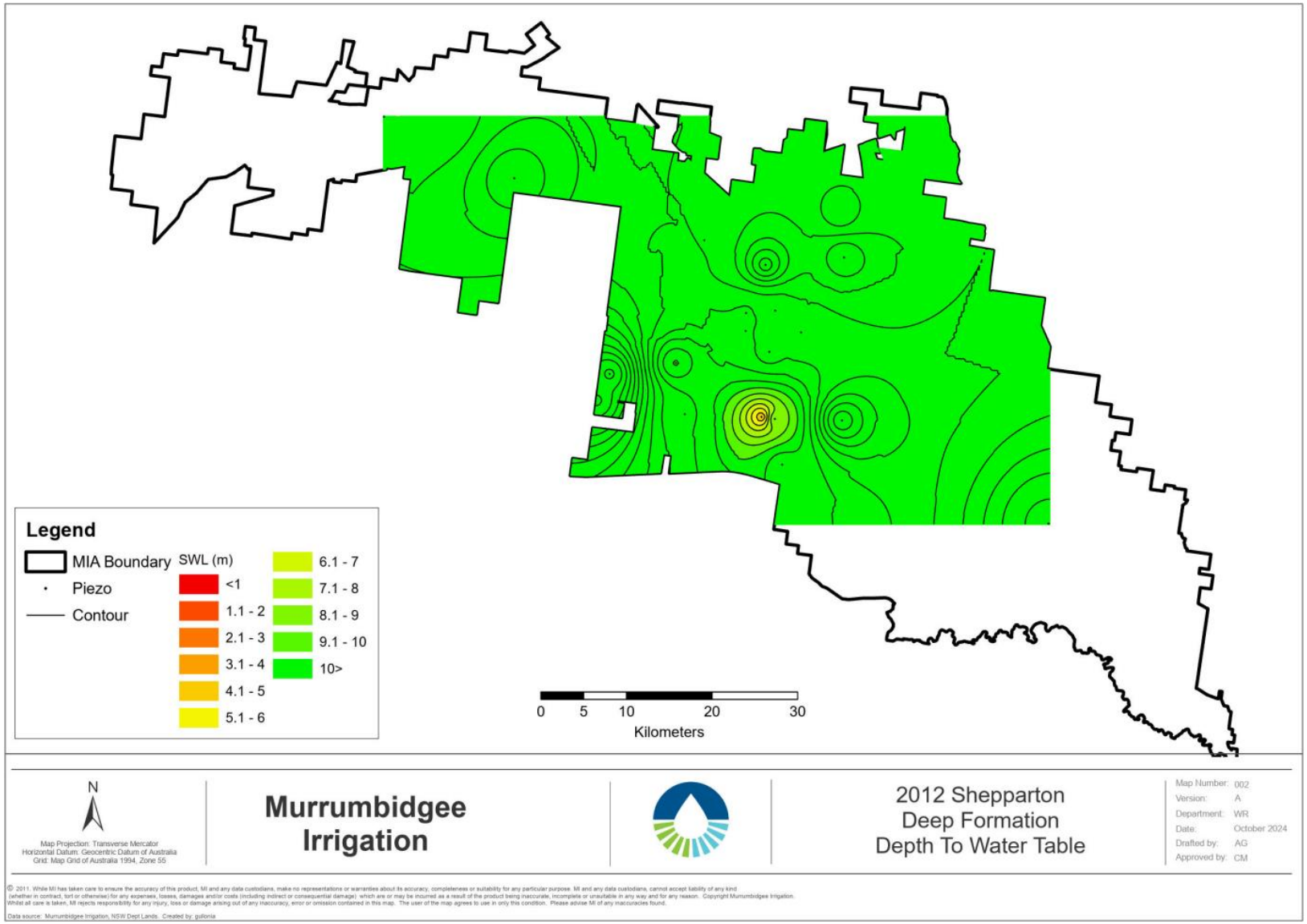

Figure 21 - Calivil Formation – depth to water table 2012

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 2023/24 reporting period.

MI is collaborating with the DCCEEW to pursue the rationalisation of our groundwater network as detailed under section 6. It will include DCCEEW 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 2023/24.

9 Environmental protection and management

9.1 Discharge of noxious aquatic weeds

During 2023/24 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 were no discharge events that contained a red alert level of blue green algae from MI's area of operation during the 2023/24 reporting year.

ENVIRONMENTAL PROTECTION LICENCE 4651

10 Statement of compliance

MI has fulfilled the compliance requirements as set out in EPL 4651 for 2023/24. A summary of the compliance requirements is cross referenced to this report and listed in **Table 23**.

No non-compliances were recorded and reported during 2023/24.

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 concerning 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
Other Monitoring and recording conditions	M7	Yes	9.1 Discharge of noxious aquatic weeds
Annual return documents	R1	Yes	Submitted 29 August 2024
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 2023/24 compared to previous years. 2023/24 saw an increase in river diversions coupled with a significant decrease in the volume of water discharged compared to the prior year. This is the result of dryer conditions and 100% allocations in 2023/24, leading to customers keeping more water stored on farm for agricultural use. A similar trend can be seen in 2020/21 and 2021/22. In contrast, high volumes of water were discharged in 2016/17 and 2022/23 due to flood events where saturated land and full storages led to increased runoff and drainage flows throughout the MIA. The return to more moderate climatic conditions in 2023/24 led to an increase in productive irrigation water use in the MIA.

Table 24 - Total water volumes

Year	Diversions (ML)	Discharged (ML)
2023/24	797,951	5,219
2022/23	613,614	118,046
2021/22	684,959	8,595
2020/21	880,456	900
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 sixty-three sampling events, with ten Notification level detections and eleven Action level chemical detections.

Diuron, simazine and metolachlor were detected above licence limits in 2023/24. Diuron was detected most frequently and was the only chemical detected above EPL action level limits. 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-23	19	2	3	05/07/24 Notification level Diuron (0.542µg/L) 07/07/23 Action level Diuron (1.58µg/L) 07/07/23 Notification level Metolachlor (0.816µg/L)
Aug-23	19	2	0	-
Sep-23	85	4	2	25/09/23 Notification level Metolachlor (0.464µg/L) 26/09/23 Notification level Metolachlor (1.52 µg/L)
Oct-23	206	2	0	-
Nov-23	37	0	0	Flow commencing late November was captured in samples taken in early December.
Dec-23	898	5	1	11/12/23 Notification level Diuron (0.311µg/L)
Jan-24	641	4	0	-
Feb-24	116	4	0	-
Mar-24	51	2	0	-
Apr-24	167	3	3	11/04/24 Action level Diuron (67.9µg/L) 29/04/24 Action level Diuron (15.7µg/L) 29/04/24 Notification level Simazine (6.73µg/L)
May-24	238	6	5	02/05/24 Notification level Diuron (0.308µg/L) 10/05/24 Action level Diuron (1.14µg/L) 17/05/24 Action level Diuron (2.04µg/L) 31/05/24 Action level Diuron (1.06µg/L) 31/05/24 Notification level Simazine (3.75µg/L)
Jun-24	37	2	2	03/06/24 Action level Diuron (24.5µg/L) 05/6/24 Action level Diuron (4.73µg/L)
Total	**2515**	**36**	**16**	

Table 26 - Monitoring results for Point 5 – GMSRR

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-23	0	0	0	-
Aug-23	1	1	0	-
Sep-23	3	0	0	Flow in late September remained below 2ML
Oct-23	5	2	1	03/10/23 Notification level Metolachlor (2.15µg/L)
Nov-23	0	0	0	-
Dec-23	31	3	2	01/12/23 Action level Diuron (1.46µg/L) 19/12/23 Action level Diuron (18.5µg/L*)

Jan-24	15	2	2	03/01/24 Action level Diuron (2.47µg/L) 03/01/24 Notification level Metolachlor (0.696µg/L)
Feb-24	2	1	0	-
Mar-24	1	1	0	-
Apr-24	0	0	0	-
May-24	0	0	0	-
Jun-24	0	0	0	-
Total	**58**	**10**	**5**	

Table 27 - Monitoring results for Point 6 – YMS

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-23	0	0	0	-
Aug-23	0	0	0	-
Sep-23	0	0	0	-
Oct-23	0	0	0	-
Nov-23	0	0	0	-
Dec-23	0	0	0	-
Jan-24	0	0	0	-
Feb-24	0	0	0	-
Mar-24	0	0	0	-
Apr-24	0	0	0	-
May-24	0	0	0	-
Jun-24	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-23	1564	1	0	-
Aug-23	40	1	0	-
Sep-23	87	1	0	-
Oct-23	136	1	0	-
Nov-23	0	0	0	-
Dec-23	0	0	0	-

Jan-24	205	1	0	-
Feb-24	41	2	0	-
Mar-24	1	0	0	Flow remained below 2ML during March
Apr-24	10	1	0	-
May-24	0	0	0	-
Jun-24	35	1	0	-
Total	**2119**	**9**	**0**	

Table 29 - Monitoring results for Point 15 – MIRFLD

Month	Discharged (ML)	Sampling events	Detections	Chemical detection details
Jul-23	23	2	0	Due diligence sample taken
Aug-23	0	0	0	-
Sep-23	2	1	0	Due diligence sample taken
Oct-23	12	1	0	-
Nov-23	0	0	0	-
Dec-23	0	2	0	-
Jan-24	0	0	0	-
Feb-24	0	0	0	-
Mar-24	0	0	0	-
Apr-24	0	0	0	-
May-24	387	1	0	-
Jun-24	103	1	0	-
Total	**527**	**8**	**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.

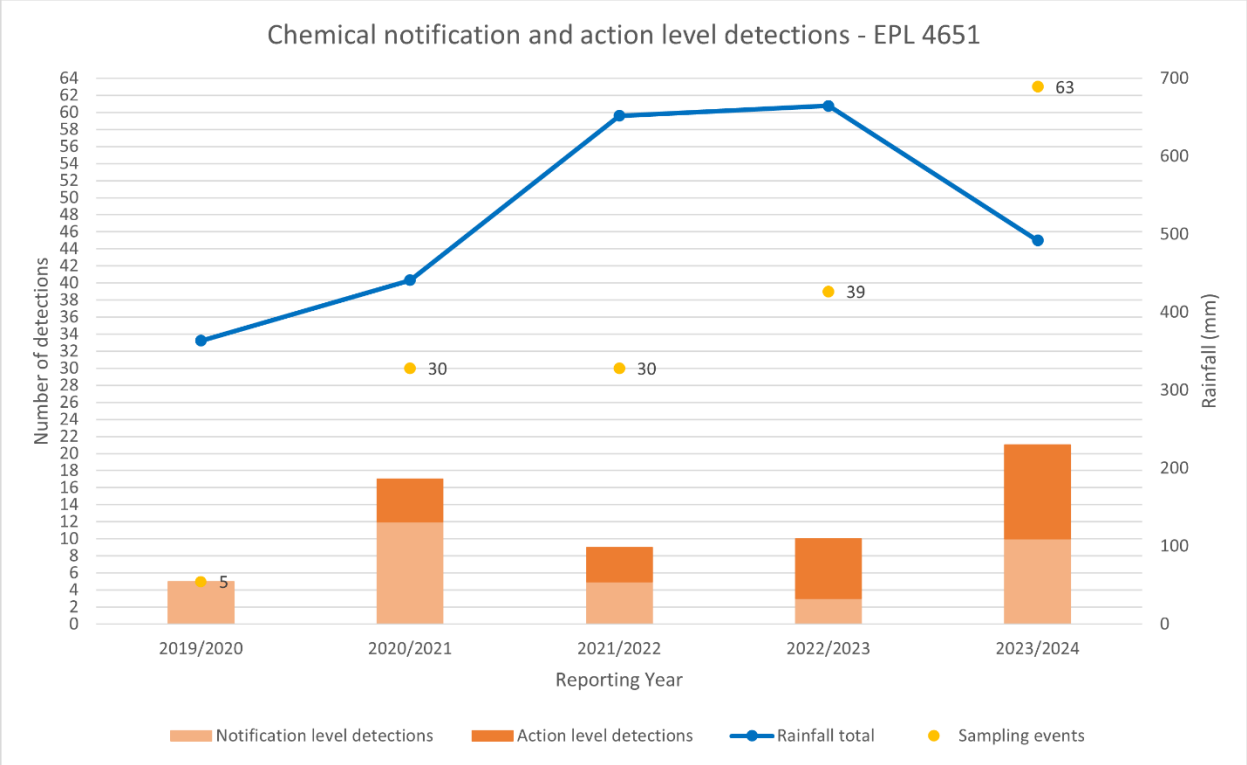

Figure 22 - Comparison of irrigation drainage water notification trends

Figure 22 shows that the number of sampling events during 2023/24 increased significantly from previous reporting years, despite lower annual rainfall. This was due to low flows through compliance monitoring locations resulting in multiple compliance alarms being triggered during customer drainage. Ongoing gauging efforts also contributed to additional sample events at GMSRR and LAG.

Accordingly, the number of chemical detections increased in 2023/24 compared to prior reporting years, with 33% of sample events detecting an EPL exceedance. However, additional sample events lead to multiple chemical detections contributing to the same exceedance events at both LAG and GMSRR. Twenty-one detections contributed to a total of seven exceedance events recorded in 2023/24, three of which were notification events only, which is consistent with the prior reporting year.

Four exceedance investigation reports were submitted to the EPA in 2023/24 for exceedance events where diuron was detected at an action level.

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 of 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. Improvements in the percentage detections compared to the number of samples taken in 2023/24 suggest that MI's efforts to raise awareness may be having a positive effect.

11.3 Summary of events

Table 30 - Summary of events 2023/24

Year	Notification of environmental harm	Written report (of an event)	Exceedances
2023/24	0	0	21

12 Proposed changes

During 2023/24 MI proposed administrative changes to several conditions outlined below. MI received a notice of variation of Licence No. 4651 on 28 November 2023.

The following variations have been made to the licence:

- Updated Condition A3.1 to include ‘Barren Box Storage Wetland’
- Updated Condition O3.6 to update the best management references for weed infestations
- Updated Condition R4.1 to include ‘info@epa.nsw.gov.au
- Updated Condition P1.2 reference document and coordinates for the monitoring points.

MI does not propose any further changes at this time.

Attachment A: Significant events for 2023/24

Murrumbidgee Irrigation notified the minister of one significant event during 2023/24 reporting year. The significant event details are outlined below in **Table 31**. The significant event was notified to the minister using the S91i process.

Table 31 - Summary of significant events 2023/24

Date lodged	Reference	Site	Event details	Occurrence	Corrected by	Date closed
25/08/2023	CS0571282	Sturt (17959)	Meter out of tolerance by 11%		Review of flow index equation and operations of structure at low flows.	Currently open

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

MURRUMBIDGEE IRRIGATION - FLOW, EC & SALT LOAD MONITORING FINANCIAL YEAR 2023/2024 REPORT

Issue	**1.2**
Issued Date	**30/09/2024**

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

DOCUMENT CONTROL & DISTRIBUTION LIST

Report No.	RPT0654

Contact for Enquiries and Proposed Changes

If you have any questions regarding this document, please contact:

Name	Matthew Bamford
Designation	Area Manager
Phone	03 5824 3122
Email	Matthew.Bamford@ventia.com

Document Control

Version	Date	Description	By	Authorised
0.1	07/08/2024	Draft	Ping Yao	Matthew Bamford
0.2	21/08/2024	For Client to Review	Ping Yao	Matthew Bamford
1.0	23/08/2024	Final	Ping Yao	Matthew Bamford
1.1	17/09/2024	Revision	Ping Yao	Matthew Bamford
1.2	30/09/2024	Revision	Ping Yao	Matthew Bamford

Notification / Distribution List

Section/Group	Contact
Murrumbidgee Irrigation Limited	Lindsay Golsby-Smith
Murrumbidgee Irrigation Limited	Paul Blumer
Murrumbidgee Irrigation Limited	Sam Yenamandra
Murrumbidgee Irrigation Limited	Cindy McDonald
Murrumbidgee Irrigation Limited	Chris Palmer
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.

TABLE OF CONTENTS

1.0 Introduction

Ventia Utility Services Pty Ltd (Ventia) 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 2023/2024 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.

Daily figures refer to the period ending at midnight (24:00) for the compliance sites, while the cutoff time for the two offtake sites (Narrandera and Stuart) has been 6:00 a.m. as required by MI since July 2023.

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 2023/24
Year 2023/24

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	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	12
13	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	13
14	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	14
15	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	15
16	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	16
17	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	17
18	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	18
19	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	19
20	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	20
21	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	21
22	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	22
23	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	23
24	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	24
25	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	25
26	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	[ ]S	26
27	[ ]S	[ ]S	[ ]S	[ ]S	[ ]U	[ ]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	[ ]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
U ... Lost data (NRE approved)
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. Data between 12 and 27 November 2023 was lost due to the theft of the site battery and vandalism of the logger box. Data between 21 and 24 April 2024 was lost due to the theft of the site battery again.

Site 41010005 CUDGEL CREEK AT ROACHES OUTFALL (ROCUDG) Site 41010005
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	27.7R	0.0R	0.0R	0.1R	0.0R	0.0R	0.0R	0.0R	0.1R	0.0R	0.0R	0.0R	1
2	151 R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.4R	0.0R	0.0R	0.0R	2
3	136 R	0.0R	0.0R	0.1R	0.0R	0.0R	0.0R	0.0R	0.3R	0.0R	0.0R	0.0R	3
4	73.6N	0.0R	0.0R	0.4R	0.0R	0.0R	0.0R	0.0R	0.2R	0.0R	0.0R	0.0R	4
5	28.6	0.0R	0.0R	0.5	0.0R	0.0R	4.8R	0.0R	0.1R	0.0R	0.0R	0.0R	5
6	17.8	0.0R	0.0R	0.5	0.0R	0.0R	12.1K	0.0R	0.1R	0.0R	0.0R	0.0R	6
7	11.5	0.0R	0.0R	0.3R	0.0R	0.0R	12.7K	0.0R	0.0R	0.5R	0.0R	0.0R	7
8	7.2	0.0R	0.0R	0.2R	0.0R	0.0R	15.1K	0.0R	0.0R	2.3	0.0R	0.0R	8
9	50.2N	0.0R	0.0R	0.2R	0.0R	0.0R	15.1K	0.0R	0.0R	2.1	0.0R	0.0R	9
10	110 R	0.0R	0.0R	0.1R	0.0R	0.0R	19.2K	0.0R	0.0R	1.2	0.0R	0.0R	10
11	125 R	0.0R	0.0R	0.0R	0.0R	0.0R	30.2K	0.0R	0.0R	1.1	0.0R	0.0R	11
12	128 R	0.0R	0.0R	0.0R	0.0R	0.0R	36.6K	0.0R	0.0R	0.9	0.0R	0.0R	12
13	125 R	0.5R	0.0R	0.0R	0.0R	0.0R	29.7K	0.0R	0.0R	0.5	0.0R	0.0R	13
14	120 R	[ ]X	0.0R	0.0R	0.0R	0.0R	15.5K	7.2	0.0R	0.4	0.0R	0.0R	14
15	117 R	[ ]X	0.0R	0.0R	0.0R	0.0R	3.1K	7.6	0.0R	0.3R	0.0R	0.0R	15
16	99.5N	25.3	0.0R	0.0R	0.0R	0.0R	2.1K	6.0	0.0R	0.2R	0.0R	0.0R	16
17	71.0N	7.0	0.0R	0.0R	0.0R	0.0R	2.1K	4.8	0.0R	0.1R	0.0R	0.0R	17
18	61.7	3.3	0.7R	0.0R	0.0R	0.0R	1.7K	4.0	0.0R	0.1R	0.0R	0.0R	18
19	52.1	1.5	20.1	0.0R	0.0R	0.0R	1.7K	3.2	0.0R	0.0R	0.0R	0.0R	19
20	30.2	0.7	25.6	0.0R	0.0R	0.0R	1.4K	2.6V	0.0R	0.0R	0.0R	1.0R	20
21	14.6	0.4R	13.2	0.0R	0.0R	0.0R	0.9K	1.9V	0.0R	0.0R	0.0R	25.1?	21
22	5.2	0.4R	8.5	0.0R	0.0R	0.0R	0.6K	1.6V	0.0R	0.0R	0.0R	2.3?	22
23	0.3R	0.4R	6.2	0.0R	0.0R	0.0R	0.3R	0.9V	0.0R	0.0R	0.0R	0.6?	23
24	0.0R	0.2R	4.6	0.0R	0.0R	0.0R	0.1R	0.4R	0.0R	0.0R	0.0R	0.5?	24
25	0.0R	0.1R	3.2	84.1R	0.0R	0.0R	0.1R	0.2R	0.0R	0.0R	0.0R	0.5?	25
26	0.0R	0.1R	2.2	48.4R	0.0R	0.0R	0.0R	0.1R	0.0R	0.0R	0.0R	0.6?	26
27	0.1R	0.0R	1.3	1.0V	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.8	27
28	0.1R	0.0R	0.6	0.3R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	1.1	28
29	0.1R	0.0R	0.3R	0.1R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	1.0	29
30	0.0R	0.0R	0.2R	0.0R	0.0R	0.0R	0.0R		0.0R	0.0R	0.0R	1.1	30
31	0.0R	0.0R		0.0R		0.0R	0.0R		0.0R		0.0R		31
Mean	50.5R	[1.4]	2.9R	4.4R	0.0R	0.0R	6.6R	1.4R	0.0R	0.3R	0.0R	1.2R	
Median	28.6R	[0.0]	0.0R	0.0R	0.0R	0.0R	1.4R	0.0R	0.0R	0.0R	0.0R	0.0R	
Max.Daily	151 R	[25.3]	25.6R	84.1R	0.0R	0.0R	36.6R	7.6R	0.4R	2.3R	0.0R	25.1R	
Min.Daily	0.0R	[0.0]	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	
Inst.Max	162 R	[69.3]	29.9R	148 R	0.0R	0.0R	38.2R	8.6R	0.4R	2.7R	0.0R	42.2R	
Inst.Min	0.0R	[0.0]	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	0.0R	
Total	1564 R	[39.92]	86.84 R	136.3 R	0.000R	0.000R	205.2 R	40.64 R	1.261R	9.827R	0.000R	34.72 R	
Max.Water Leve	0.928R	[0.568]	0.472R	0.863R	0.253R	0.124R	0.494R	0.396R	0.321R	0.356R	0.143R	0.504R	
Min.Water Leve	0.254R	[0.204]	0.166R	0.132R	0.115R	0.120R	0.121R	0.079R	0.074R	0.078R	0.111R	0.117R	

Summaries

Annual Mean	[5.8]
Ann. Median	[0.0]
Annual Total	[2119]

	Maximum	Minimum
Daily Mean	[151]	[0.0]
Instant	[162]	[0.0]
Monthly	[1564]	[0.000]

Notes

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

? ... Irregular data use with caution
K ... Minor editing
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
V ... Operational Data
X ... Rating table exceeded
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 July 2023. Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	0.0	0.0	0.7V	0.0	3.4	0.0	0.0	0.0	0.0	0.0	0.0V	1
2	0.0	0.0	0.0	0.1V	0.0	0.5	0.4	0.0	0.0	0.0	0.0	0.0V	2
3	0.0	0.0	0.0	0.0V	0.0	0.1	5.5	0.0	0.0	0.0	0.0	0.0V	3
4	0.0V	0.0	0.0	0.1V	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0V	4
5	0.0V	0.0	0.0	0.2V	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	5
6	0.0V	0.0	0.0	0.2V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6
7	0.0V	0.0	0.0	0.3V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7
8	0.0	0.0	0.0	0.3V	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	8
9	0.0	0.0	0.0	0.4V	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	9
10	0.0	0.0	0.0	0.3V	0.0	0.0	0.3	0.0	0.0	0.0	0.0V	0.0	10
11	0.0	0.0	0.0	0.3V	0.0	4.7R	0.0	0.0	0.0	0.0	0.0V	0.0	11
12	0.0	0.0	0.0	0.3V	0.0	18.3R	0.0	0.0	0.0	0.0	0.0V	0.0	12
13	0.0	0.0	0.0	0.3V	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	13
14	0.0	0.0	0.0	0.9V	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	14
15	0.0	0.0	0.0	0.6V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15
16	0.0	0.0	0.0	0.1V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16
17	0.0	0.0	0.0	0.0V	0.1V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17
18	0.0	0.0	0.0	0.0	0.1V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18
19	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.5K	0.0	0.0	0.0	19
20	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.3V	0.0	0.0	0.0	20
21	0.0	0.6	0.0	0.0	0.0	0.1	0.0	1.1K	0.0	0.0	0.0	0.0	21
22	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5K	0.0	0.0	0.0	0.0	22
23	0.0	0.0	0.0	0.0	0.0	0.0	6.3V	0.1K	0.0	0.0	0.0	0.0	23
24	0.0	0.0	0.0	0.0	0.0	0.0	0.7V	0.0K	0.0	0.0	0.0	0.0	24
25	0.0	0.0	0.5	0.0	0.0	0.0	0.1V	0.0	0.0	0.0	0.0	0.0	25
26	0.0	0.0	0.6V	0.0	0.0	0.0	0.0V	0.0	0.0	0.0	0.0	0.0	26
27	0.0	0.0	0.3V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27
28	0.0	0.0	0.3V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28
29	0.0	0.0	0.4V	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29
30	0.0	0.0	0.8V	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	30
31	0.0	0.0		0.0		0.0	0.0		0.0		0.0V		31
Mean	0.0V	0.0	0.1V	0.2V	0.0V	1.0R	0.5V	0.1K	0.0K	0.0	0.0V	0.0V	
Median	0.0V	0.0	0.0V	0.0V	0.0V	0.0R	0.0V	0.0K	0.0K	0.0	0.0V	0.0V	
Max.Daily	0.0V	0.6	0.8V	0.9V	0.1V	18.3R	6.3V	1.1K	0.5K	0.0	0.0V	0.0V	
Min.Daily	0.0V	0.0	0.0V	0.0V	0.0V	0.0R	0.0V	0.0K	0.0K	0.0	0.0V	0.0V	
Inst.Max	0.0V	2.9	0.9V	1.3V	0.7V	36.1R	10.9V	1.4K	1.1K	0.0	0.0V	0.0V	
Inst.Min	0.0V	0.0	0.0V	0.0V	0.0V	0.0R	0.0V	0.0K	0.0K	0.0	0.0V	0.0V	
Total	0.000V	0.757	2.931V	5.223V	0.229V	30.50 R	15.46 V	1.754K	0.820K	0.000	0.000V	0.002V	
Max.Water Leve	0.110V	0.396	0.273V	0.308V	0.255V	0.742R	0.562V	0.316K	0.288K	0.057	0.148V	0.171V	
Min.Water Leve	0.039V	0.044	0.048V	0.042V	0.040V	0.037R	0.036V	0.029K	0.028K	0.028	0.033V	0.035V	

Summaries

Annual Mean	0.2R
Ann. Median	0.0R
Annual Total	57.68 R

	Maximum	Minimum
Daily Mean	18.3R	0.0R
Instant	36.1R	0.0R
Monthly	30.50 R	0.000R

Notes

All recorded data is continuous and reliable except where the following tags are used...
K ... Minor editing
R ... Rating table extrapolated
V ... Operational Data
All Totals are in megalitres
Figures refer to period ending 2400 hours.

Rating Tables

Table	From	To	Max.Disch Reliable
15	30/05/2018	01/01/2023	41.8
16	01/01/2023	Present	31.1

41010921 experienced its highest flows in December 2023. Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.1R	0.0R	13.4R	0.3R	0.1R	26.7R	0.1R	19.2R	0.3?	0.2R	0.3	34.2R	1
2	0.1R	0.0R	17.1R	3.6R	0.1R	1.5R	4.4R	29.2R	0.2R	0.2R	7.8R	1.5R	2
3	0.1R	0.0R	30.9R	30.4R	0.1R	0.3R	108 R	3.7R	0.3R	3.9R	2.1R	0.2R	3
4	0.2R	0.0R	0.2R	40.8R	0.1R	0.2R	80.3R	0.4	0.4?	5.3R	0.4	0.1R	4
5	7.1R	0.0R	0.1R	59.3R	0.0R	0.1R	41.8R	0.3	0.4?	1.3K	0.3R	0.3R	5
6	0.8	0.0R	0.1R	21.2R	0.0R	70.5R	9.8R	0.2R	0.4?	25.0R	0.3	0.1R	6
7	5.3R	0.0R	0.1R	0.3R	0.0R	54.2R	20.4R	2.2R	0.4?	60.3R	0.4	0.1R	7
8	3.1R	0.0R	0.1R	0.2R	0.0R	24.6R	36.1R	16.4R	0.4?	35.8R	0.4	0.1R	8
9	0.3	0.0R	0.0R	0.1R	0.0R	4.7R	75.8R	27.7R	0.4?	9.0R	2.0R	0.1R	9
10	0.2R	0.0R	0.0R	0.1R	0.0R	2.6R	32.1R	8.9R	0.4?	0.4K	5.7R	0.1R	10
11	0.2R	0.0R	0.0R	0.1R	0.0R	0.4	3.0R	2.6	0.3?	0.3K	56.8R	0.1R	11
12	0.1R	0.0R	0.0R	0.0R	0.0R	0.3	0.4	0.4	0.4?	0.3K	85.4R	0.1R	12
13	0.1R	0.1R	0.0R	0.0R	0.0R	44.8R	0.4	0.4	0.4?	0.2R	44.4R	0.0R	13
14	0.1R	0.3R	0.0R	0.0R	0.0R	42.9R	0.3	0.4	5.4R	0.2R	13.4R	0.0R	14
15	0.1R	0.2R	0.0R	0.0R	0.0R	23.0R	0.3	0.4	9.4R	0.2R	0.5	0.0R	15
16	0.1R	0.1R	0.0R	0.0R	0.0R	15.7R	9.8R	0.4	3.7?	0.1R	0.3	0.0R	16
17	0.1R	0.1R	0.0R	0.0R	0.0R	42.8R	36.3R	0.4	11.2R	0.1R	0.2R	0.0R	17
18	0.1R	0.1R	0.0R	0.0R	0.0R	33.6R	40.6R	0.4	11.3R	0.1R	0.1R	0.0R	18
19	0.1R	0.1R	0.2R	0.0R	0.0R	178 R	64.2R	0.3?	2.1K	0.1R	0.1R	0.0R	19
20	0.1R	0.1R	0.2R	0.0R	0.0R	107 R	39.3R	0.3?	0.4K	0.1R	0.1R	0.0R	20
21	0.1R	0.1R	0.3R	0.0R	0.1R	79.6R	14.1R	0.3R	0.3K	0.1R	0.1R	0.0R	21
22	0.1R	0.1R	0.3K	0.0R	0.1R	58.9R	4.5R	0.2R	0.3K	0.0R	0.1R	0.0R	22
23	0.1R	0.3R	0.3K	0.0R	0.1R	42.5R	2.9R	0.3R	0.3K	0.0R	0.1R	0.0R	23
24	0.1R	0.4K	2.8R	0.0R	0.1R	29.1R	0.5	0.3?	0.3K	0.0R	0.1R	0.0R	24
25	0.1R	3.0R	0.6	0.0R	0.1R	10.7R	0.4	0.3?	0.3K	0.0R	0.1R	0.0R	25
26	0.0R	1.0K	1.8R	49.2R	0.0R	1.4	4.3R	0.3?	0.3K	0.0R	0.0R	0.0R	26
27	0.0R	1.1K	15.7R	0.4R	0.0R	0.4	6.1R	0.3?	0.2R	0.3R	4.8R	0.0R	27
28	0.0R	0.3K	0.4R	0.1R	0.1R	0.3R	0.5	0.3?	0.2R	0.4	1.5R	0.0R	28
29	0.0R	0.2R	0.4	0.0R	2.0R	0.2R	0.4	0.3?	0.2R	8.9R	0.2R	0.0R	29
30	0.0R	1.1K	0.3	0.0R	34.0R	0.2R	2.8		0.2R	14.1R	0.2R	0.0R	30
31	0.0R	10.4R		0.1R		0.2R	1.1R		0.2R		9.7R		31
Mean	0.6R	0.6R	2.8R	6.6R	1.2R	29.0R	20.7R	4.0R	1.6R	5.6R	7.7R	1.2R	
Median	0.1R	0.1R	0.2R	0.0R	0.0R	15.7R	4.5R	0.4R	0.4R	0.2R	0.3R	0.0R	
Max.Daily	7.1R	10.4R	30.9R	59.3R	34.0R	178 R	108 R	29.2R	11.3R	60.3R	85.4R	34.2R	
Min.Daily	0.0R	0.0R	0.0R	0.0R	0.0R	0.1R	0.1R	0.2R	0.2R	0.0R	0.0R	0.0R	
Inst.Max	17.9R	14.9R	61.9R	141 R	40.3R	204 R	126 R	39.3R	19.4R	74.0R	101 R	45.4R	
Inst.Min	0.0R	0.0R	0.0R	0.0R	0.0R	0.1R	0.1R	0.1R	0.2R	0.0R	0.0R	0.0R	
Total	19.03 R	19.25 R	85.40 R	206.2 R	36.96 R	897.7 R	641.4 R	116.4 R	51.02 R	166.9 R	237.7 R	37.12 R	
Max.Water Leve	0.578R	0.572R	0.663R	0.807R	0.622R	0.922R	0.780R	0.620R	0.581R	0.685R	0.734R	0.632R	
Min.Water Leve	0.361R	0.328R	0.241R	0.250R	0.266R	0.405R	0.394R	0.411R	0.416R	0.345R	0.372R	0.354R	

Summaries

Annual Mean	6.9R
Ann. Median	0.2R
Annual Total	2515 R

	Maximum	Minimum
Daily Mean	178 R	0.0R
Instant	204 R	0.0R
Monthly	897.7 R	19.03 R

Notes

All recorded data is continuous and reliable except where the following tags are used...
? ... Irregular data use with caution
K ... Minor editing
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	21/04/2023	33.5
26	21/04/2023	Present	6.6

41010940 experienced its highest flows in December 2023.

A significant change in the rating table was identified prior to the month of March, causing some inaccuracy to discharge values, before and thereafter. Due to unsuitable site conditions (weed and silt build up) along with low flow events, valid gauging measurements were difficult to obtain. As a result, the site produced flow data on occasion that was inaccurate, when in fact the site was observed to be in pool conditions. Gauging measurements were captured in both March and May 2024, and grouped with prior measurements in 2023 to form the basis of the recently updated rating table.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	590	951	2210	2370	407	2740	3600 K	2930 K	1530	1010	17.6K	1
2	0.0	1090	1080	1660	2710	274	2390	3690 K	3140 K	1500	1190	253 K	2
3	0.0	1700	1190	1220	3090	605	1940	3710 K	3370 K	1410	981	198 K	3
4	0.0	1340	865	702	3010	634	2120	3560 K	3020 K	1340	1040	77.4K	4
5	0.0	374	1170	60.1	3010	1270	2180	2770 K	2670 K	1020	836	19.2K	5
6	0.0	631	1190	451	2650	2300	2100	1250 K	2810 K	230	1010	211 K	6
7	0.0	407	1380	512	2620	3180	1940	1470 K	3090 K	515	482	245 K	7
8	0.0	687	1320	836	2690	2930	461	2060 K	3090 K	592	58.9	258 K	8
9	0.0	1120	1020	740	3050	2490	484	2420 K	3070 K	465	502	232 K	9
10	0.0	869	1710	1430	2670	3150	633	2760 K	3170 K	614	909	4.1K	10
11	0.0	1110	1220	1880	3220	3180	1120	3300 K	3140 K	591	914	83.7K	11
12	0.0	998	1340	2030	3750	4270	1250	2890 K	2480 K	809	183	178 K	12
13	0.0	925	1680	2270	3130	4560	1900	3100 K	2790 K	789	188	255 K	13
14	0.0	167	1880	2460	2790	4960	2150	3480 K	2700 K	813	199	80.0K	14
15	0.0	0.0	1640	2790	2900	4550	2460	3350 K	2220 K	682	300	137 K	15
16	0.0	0.0	1710	2720	2840	4740	2130	2760 K	2330 K	819	217	86.1K	16
17	0.0	66.8	1920	2140	3250	5080	1350	3200 K	1690 K	926	462	134 K	17
18	0.0	898	1920	2690	3170	4890	984	3500 K	1450 K	913	325	117 K	18
19	0.0	1440	1630	2640	3630	4370	1240	3130 K	1240 K	1040	234	249 K	19
20	0.0	978	1710	2410	2990	4350	1530	2890 K	1310 K	749	397	331 K	20
21	0.0	1490	2150	2850	2070	4290	2050	2970 K	1600 K	1120	383	450 K	21
22	0.0	1200	2090	3580	1730	3860	2420	3180 K	1840	975	486	615 K	22
23	0.0	1270	2360	2880	2050	3870	2600	3550 K	1720 K	853	567	665 K	23
24	0.0	1130	2290	2380	1680	3600	3160 K	3330 K	1950 K	1090	590	645 K	24
25	0.0	1060	2060	2890	1140	3310	3790 K	3510 K	1610	1090	664	588 K	25
26	0.0	1200	1870	2890	1490	2180	3240 K	3210 K	1570	1140	701	915 K	26
27	0.0	1110	2080	2540	1610	2380	2940 K	3260 K	1780	989	576	592 K	27
28	0.0	1170	2250	2860	1720	2020	3470 K	3520 K	1730	1330	908	707	28
29	0.0	1210	2180	3240	589	2630	2750 K	3480 K	1930	1200	644	713	29
30	89.3	1370	2150	2920	153	2260	3230 K		1650	1040	258 K	661	30
31	184	1480		2720		2780	3470 K		1870		427 K		31
Mean	8.8	939	1670	2120	2460	3080	2140 K	3070 K	2290 K	939	569 K	324 K	
Median	0.0	1090	1710	2410	2700	3180	2130 K	3210 K	2220 K	951	502 K	247 K	
Max.Daily	184	1700	2360	3580	3750	5080	3790 K	3710 K	3370 K	1530	1190 K	915 K	
Min.Daily	0.0	0.0	865	60.1	153	274	461 K	1250 K	1240 K	230	58.9K	4.1K	
Inst.Max	226	2170	3420	5580	4840	6210	4620 K	5850 K	4120 K	1900	1540 K	1270 K	
Inst.Min	0.0	0.0	640	0.0	0.0	0.0	0.0K	790 K	853 K	18.5	0.0K	0.0K	
Total	274	29100	50030	65600	73760	95370	66230K	88910K	70960K	28160	17640K	9718K	
Max.Discharge	225.611	2167.560	3419.642	5578.804	4839.378	6205.255	4616.411K	5849.850K	4120.178K	1901.209	1541.436K	1265.642K	
Min.Discharge	0.000	0.000	639.795	0.000	0.000	0.000	0.000K	790.497K	853.095K	18.487	0.000K	0.000K	

Summaries

Annual Mean	1630 K
Ann. Median	1400 K
Annual Total	595700K

	Maximum	Minimum
Daily Mean	5080 K	0.0K
Instant	6210 K	0.0K
Monthly	95370K	274K

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

410127 experienced its highest flows in December 2023.

Site 410129 STURT CANAL AT OFFTAKE Site 410129
Variable 141.00 Stream Discharge (Ml/d) in megalitres/day, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	221	428 V	794	753 K	0.0	905	1100 K	910	381	237 V	0.0	1
2	0.0	302	529 V	586	881 K	0.0	830	1150 K	955	459	239 V	0.0	2
3	0.0	316	645 V	226	1000 K	440	783	1070 K	1040	458	172 V	0.0	3
4	0.0	180	576 V	66.0	962 K	779	817	1120 K	1140	475	163 V	0.0	4
5	0.0	217	743 V	0.0	901 K	1040	762	987 K	1110	205	158 V	0.0	5
6	0.0	220	582 V	29.0	1050 K	771	570	445 K	1050	0.0	255 V	0.0	6
7	0.0	278	559 V	230	1050 K	1140	308	551 K	1240	0.0	214 V	0.0	7
8	0.0	541	550 V	266	1030 K	890	218	899 K	1130	16.0	194 V	0.0	8
9	0.0	815	328 V	363	1100 K	944	34.4	1180 K	1080	12.7	279 V	0.0	9
10	0.0	892	249 V	629	937 K	1080	59.9	1080 K	1000	0.0K	224 V	0.0	10
11	0.0	625	327 V	576	1060 K	1020	286	955 K	928	0.0K	68.7V	0.0	11
12	0.0	517	294 V	435	1100 K	1230	308	1090 K	824	0.0K	0.0	0.0	12
13	0.0	482	335 V	538	962 K	1750	358	910 K	804	226	2.1V	0.0	13
14	0.0	377	359 V	790	823 K	1710	592	864 K	863	182	2.3V	0.0	14
15	0.0	372	385 V	994	788 K	1730	659	1070 K	1020	127	6.7V	0.0	15
16	0.0	293	420 V	992	802 K	1510	556	1330 K	838	10.2	0.0	0.0	16
17	0.0	210	404 V	793	764 K	1430	72.1	1360 K	585	4.7	0.8V	0.0	17
18	0.0	168	402 V	939	845 K	1600	30.9	1360 K	465	10.0	206 V	0.0	18
19	0.0	207	472 V	1010	982 K	1680	166	1300 K	550	357	183 V	0.0	19
20	0.0	298	632 V	891	970 K	1460	174	1330 K	653	315	200 V	0.0	20
21	0.0	847	842 V	775	850 K	1370	298	1340 K	635	290	358 V	0.0	21
22	0.0	872	1000 V	861	501 K	1220	425	1210	653	335	401 V	0.0	22
23	0.0	749	981 V	752	820 K	1110	764	1260	672	292	391 V	0.0	23
24	0.0	455 V	1160 V	940	634 K	1000	1110 K	1370	745	286 V	591 V	0.0	24
25	0.0	419 V	1130 V	989 K	676 K	827	1530 K	1160	669	292 V	546 V	0.0	25
26	0.0	287 V	1050 V	1060 K	706 K	758	1670 K	1300	607	323 V	428 V	0.0	26
27	0.0	266 V	976 V	731 K	812 K	721	1380 K	1400	595	330 V	457 V	0.0	27
28	0.0	248 V	1020	1070 K	804 K	851	1170 K	1240	471	356 V	290 V	0.0	28
29	0.0	259 V	1010	1080 K	386 K	913	1110 K	1120	391	399 V	33.3V	0.0	29
30	0.0	353 V	929	1040 K	67.6	800	1230 K		495	299 V	0.0	0.0	30
31	0.0	450 V		994 K		916	1230 K		419		0.0		31
Mean	0.0	411 V	644 V	692 K	834 K	1050	658 K	1120 K	791	215 K	203 V	0.0	
Median	0.0	316 V	568 V	790 K	847 K	1020	592 K	1150 K	804	288 K	200 V	0.0	
Max.Daily	0.0	892 V	1160 V	1080 K	1100 K	1750	1670 K	1400 K	1240	475 K	591 V	0.0	
Min.Daily	0.0	168 V	249 V	0.0K	67.6K	0.0	30.9K	445 K	391	0.0K	0.0V	0.0	
Inst.Max	0.0	1190 V	2180 V	1630 K	1490 K	2770	1900 K	1810 K	1530	687 K	876 V	0.0	
Inst.Min	0.0	0.0V	58.0V	0.0K	0.0K	0.0	0.0K	170 K	321	0.0K	0.0V	0.0	
Total	0	12740V	19320V	21440K	25030K	32680	20410K	32540K	24520	6440K	6301V	0	
Max.Discharge	0.000	1185.287V	2178.718V	1629.017K	1493.614K	2770.638	1896.744K	1807.810K	1526.312	687.090K	875.820V	0.000	
Min.Discharge	0.000	0.000V	57.950V	0.000K	0.000K	0.000	0.000K	170.004K	321.296	0.000K	0.000V	0.000	

Summaries

Annual Mean	550 K
Ann. Median	471 K
Annual Total	201400K

	Maximum	Minimum
Daily Mean	1750 K	0.0K
Instant	2770 K	0.0K
Monthly	32680K	0K

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 December 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 2023/24
Year 2023/24

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

Summaries

	Maximum	Minimum
Annual Mean	[ ]S	
Ann. Median	[ ]S	
Annual Total	[ ]S	
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 threshold
U ... Lost data (NRE approved)
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. Data between 12 and 27 November 2023 was lost due to the theft of the site battery and vandalism of the logger box. Data between 21 and 24 April 2024 was lost due to the theft of the site battery again.

Site 41010005 CUDGEL CREEK AT ROACHES OUTFALL (ROCUDG) Site 41010005
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	3.6R	0.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	1
2	18.5R	0.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	0.0R	0.1R	[ ]T	0.0R	[ ]T	2
3	16.6R	0.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	0.0R	0.1R	[ ]T	0.0R	[ ]T	3
4	9.1N	0.0R	0.0R	0.1R	0.0R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	4
5	3.7	0.0R	0.0R	0.1	0.0R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	[ ]T	[ ]T	5
6	2.4	0.0R	0.0R	0.1	0.0R	[ ]T	2.1K	[ ]T	0.0R	[ ]T	[ ]T	[ ]T	6
7	1.6	0.0R	0.0R	0.0R	0.0R	[ ]T	2.2K	[ ]T	0.0R	[ ]T	[ ]T	[ ]T	7
8	1.0	0.0R	0.0R	0.0R	0.0R	[ ]T	2.6K	[ ]T	0.0R	0.3	[ ]T	[ ]T	8
9	6.6N	0.0R	0.0R	0.0R	0.0R	[ ]T	2.7K	[ ]T	0.0R	0.3	[ ]T	[ ]T	9
10	14.5R	0.0R	0.0R	0.0R	0.0R	[ ]T	3.5K	[ ]T	0.0R	0.2	[ ]T	[ ]T	10
11	16.6R	0.0R	0.0R	0.0R	0.0R	[ ]T	5.6K	[ ]T	0.0R	0.1	[ ]T	[ ]T	11
12	17.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	6.9K	[ ]T	0.0R	0.1	[ ]T	[ ]T	12
13	16.2R	0.1R	0.0R	0.0R	[ ]T	[ ]T	5.7K	[ ]T	0.0R	0.1	[ ]T	[ ]T	13
14	15.4R	[ ]X	0.0R	0.0R	[ ]T	[ ]T	2.9K	1.4	0.0R	0.1	[ ]T	[ ]T	14
15	15.1R	[ ]X	0.0R	0.0R	[ ]T	[ ]T	0.6K	1.4	[ ]T	0.0R	[ ]T	[ ]T	15
16	13.2N	2.3	0.0R	0.0R	[ ]T	[ ]T	0.4K	1.1	[ ]T	0.0R	[ ]T	[ ]T	16
17	9.3N	0.6	0.0R	0.0R	[ ]T	[ ]T	0.4K	0.8	[ ]T	0.0R	[ ]T	[ ]T	17
18	8.0	0.3	0.1R	0.0R	[ ]T	[ ]T	0.3K	0.7	[ ]T	0.0R	[ ]T	[ ]T	18
19	6.6	0.1	2.1	0.0R	[ ]T	[ ]T	0.3K	0.5	[ ]T	0.0R	[ ]T	[ ]T	19
20	3.7	0.1	2.9	0.0R	[ ]T	[ ]T	0.3K	0.5V	[ ]T	0.0R	[ ]T	[ ]T	20
21	1.8	0.0R	1.7	0.0R	[ ]T	[ ]T	0.2K	0.3V	[ ]T	0.0R	[ ]T	2.4?	21
22	0.6	0.0R	1.2	0.0R	[ ]T	[ ]T	0.1K	0.3V	[ ]T	0.0R	[ ]T	0.2?	22
23	0.0R	0.0R	1.0	0.0R	[ ]T	[ ]T	0.1R	0.2V	[ ]T	0.0R	[ ]T	0.1?	23
24	0.0R	0.0R	0.7	0.0R	[ ]T	[ ]T	0.0R	0.1R	[ ]T	0.0R	[ ]T	0.0?	24
25	0.0R	0.0R	0.5	4.9R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	0.1?	25
26	0.0R	0.0R	0.3?	2.3R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	0.1?	26
27	0.0R	0.0R	0.2	0.1V	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	0.1	27
28	0.0R	0.0R	0.1?	0.0R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	0.1	28
29	0.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	0.0R	0.0R	[ ]T	0.0R	[ ]T	0.1	29
30	0.0R	0.0R	0.0R	0.0R	[ ]T	[ ]T	0.0R		[ ]T	0.0R	[ ]T	0.1	30
31	0.0R	0.0R		0.0R		[ ]T	0.0R		[ ]T		[ ]T		31
Mean	6.5R	[0.1]	0.4R	0.2R	[0.0]	[ ]T	[1.4]	[0.3]	[0.0]	[0.1]	[0.0]	[0.3]	
Median	3.7R	[0.0]	0.0R	0.0R	[0.0]	[ ]T	[0.3]	[0.1]	[0.0]	[0.0]	[0.0]	[0.1]	
Max.Daily	18.5R	[2.3]	2.9R	4.9R	[0.0]	[ ]T	[6.9]	[1.4]	[0.1]	[0.3]	[0.0]	[2.4]	
Min.Daily	0.0R	[0.0]	0.0R	0.0R	[0.0]	[ ]T	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	
Inst.Max	19.7R	[6.4]	3.7R	10.1R	[0.0]	[ ]T	[7.4]	[1.7]	[0.1]	[0.4]	[0.0]	[4.0]	
Inst.Min	0.0R	[0.0]	0.0R	0.0R	[0.0]	[ ]T	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	
Total	201R	[4]	11R	8R	[0]	[ ]T	[37]	[7]	[0]	[1]	[0]	[3]	
Max.EC@25C	259R	[347]	350R	250R	[199]	[ ]T	[369]	[408]	[338]	[247]	[226]	[196]	
Min.EC@25C	156R	[113]	157R	77R	[106]	[ ]T	[271]	[67]	[76]	[190]	[191]	[156]	

Summaries

Annual Mean	[1.2]
Ann. Median	[0.0]
Annual Total	[272]

	Maximum	Minimum
Daily Mean	[18.5]	[0.0]
Instant	[19.7]	[0.0]
Monthly	[201]	[0]

Notes
All recorded data is continuous and reliable
except where the following tags are used...
? ... Irregular data use with caution
K ... Minor editing
N ... Rating Extrapol. within x1.5 max flow
R ... Rating table extrapolated
T ... Probe out of water/below instrument threshold
V ... Operational Data
X ... Rating table exceeded
All Totals are in tonnes
Figures refer to period ending 2400 hours.

Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]T	[ ]T	[ ]T	0.2V	[ ]T	0.3	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	0.0V	1
2	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	0.0V	2
3	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.0	2.0	[ ]T	[ ]T	[ ]T	[ ]T	0.0V	3
4	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.0	0.3	[ ]T	[ ]T	[ ]T	[ ]T	0.0V	4
5	0.0V	[ ]T	[ ]T	0.0V	[ ]T	0.0	0.1	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	5
6	0.0V	[ ]T	[ ]T	0.0V	[ ]T	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	6
7	0.0V	[ ]T	[ ]T	0.0V	[ ]T	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	7
8	0.0	[ ]T	[ ]T	0.0V	[ ]T	[ ]T	0.3	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	8
9	0.0	[ ]T	[ ]T	0.0V	[ ]T	[ ]T	0.2	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	9
10	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	[ ]T	0.1	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	10
11	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.5R	[ ]T	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	11
12	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	1.9R	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	12
13	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.1	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	13
14	[ ]T	[ ]T	[ ]T	0.2V	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	14
15	[ ]T	[ ]T	[ ]T	0.1V	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	15
16	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	16
17	[ ]T	[ ]T	[ ]T	0.0V	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	17
18	[ ]T	[ ]T	[ ]T	0.0	0.0V	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	18
19	[ ]T	[ ]T	[ ]T	0.0	0.0	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	19
20	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	0.1	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	20
21	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	21
22	[ ]T	0.0	[ ]T	[ ]T	[ ]T	0.0	0.0	0.1K	[ ]T	[ ]T	[ ]T	[ ]T	22
23	[ ]T	0.0	[ ]T	[ ]T	[ ]T	0.0	0.8V	0.0K	[ ]T	[ ]T	[ ]T	[ ]T	23
24	[ ]T	0.0	[ ]T	[ ]T	[ ]T	0.0	0.1V	0.0K	[ ]T	[ ]T	[ ]T	[ ]T	24
25	[ ]T	0.0	[ ]T	[ ]T	[ ]T	0.0	0.0V	0.0	[ ]T	[ ]T	[ ]T	[ ]T	25
26	[ ]T	0.0	0.1V	[ ]T	[ ]T	0.0	0.0V	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	26
27	[ ]T	0.0	0.1V	[ ]T	[ ]T	0.0	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	27
28	[ ]T	[ ]T	0.1V	[ ]T	[ ]T	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	28
29	[ ]T	[ ]T	0.1V	[ ]T	0.0	[ ]T	0.0	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	29
30	[ ]T	[ ]T	0.2V	[ ]T	0.0	[ ]T	0.0		[ ]T	[ ]T	[ ]T	[ ]T	30
31	[ ]T	[ ]T		[ ]T		[ ]T	[ ]T		[ ]T		[ ]T		31
Mean	[0.0]	[0.0]	[0.1]	[0.0]	[0.0]	[0.2]	[0.2]	[0.0]	[ ]T	[ ]T	[0.0]	[0.0]	
Median	[0.0]	[0.0]	[0.1]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[ ]T	[ ]T	[0.0]	[0.0]	
Max.Daily	[0.0]	[0.0]	[0.2]	[0.2]	[0.0]	[1.9]	[2.0]	[0.1]	[ ]T	[ ]T	[0.0]	[0.0]	
Min.Daily	[0.0]	[0.0]	[0.1]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[ ]T	[ ]T	[0.0]	[0.0]	
Inst.Max	[0.0]	[0.0]	[0.2]	[0.4]	[0.1]	[4.3]	[3.8]	[0.1]	[ ]T	[ ]T	[0.0]	[0.0]	
Inst.Min	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[0.0]	[ ]T	[ ]T	[0.0]	[0.0]	
Total	[0]	[0]	[1]	[1]	[0]	[3]	[4]	[0]	[ ]T	[ ]T	[0]	[0]	
Max.EC@25C	[86]	[194]	[471]	[484]	[345]	[290]	[925]	[262]	[ ]T	[ ]T	[150]	[298]	
Min.EC@25C	[32]	[155]	[289]	[216]	[131]	[102]	[130]	[206]	[ ]T	[ ]T	[86]	[72]	

Summaries

Annual Mean	[0.1]
Ann. Median	[0.0]
Annual Total	[9]

	Maximum	Minimum
Daily Mean	[2.0]	[0.0]
Instant	[4.3]	[0.0]
Monthly	[4]	[0]

Notes
All recorded data is continuous and reliable
except where the following tags are used...
K ... Minor editing
R ... Rating table extrapolated
T ... Probe out of water/below instrument threshold
V ... Operational Data
All Totals are in tonnes
Figures refer to period ending 2400 hours.

Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 804.00 Salt Transport (t/d) in tonnes/day, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0R	0.0R	1.1R	0.0R	0.0R	12.8R	0.0R	5.8R	0.0?	0.1R	[ ]M	[ ]M	1
2	0.0R	0.0R	1.8R	0.5R	0.0R	0.7R	0.6R	8.3R	0.0R	0.1R	[ ]M	[ ]M	2
3	0.0R	0.0R	4.8R	7.9R	0.0R	0.1R	15.9R	0.8R	0.0R	1.3R	[ ]M	[ ]M	3
4	0.0R	0.0R	0.0R	8.6R	0.0R	0.1R	13.0R	0.1	0.1?	1.9R	[ ]M	[ ]M	4
5	1.0R	0.0R	0.0R	12.6R	0.0R	0.1R	6.8R	0.1	0.1?	0.6	[ ]M	[ ]M	5
6	0.1	0.0R	0.0R	4.6R	0.0R	9.2R	1.4R	0.1R	0.1?	10.2R	[ ]M	[ ]M	6
7	0.9R	0.0R	0.0R	0.1R	0.0R	13.4R	3.2R	0.6R	0.1?	23.1R	[ ]M	[ ]M	7
8	0.6R	0.0R	0.0R	0.0R	0.0R	6.9R	6.2R	4.2R	0.0?	14.0R	[ ]M	[ ]M	8
9	0.1	0.0R	0.0R	0.0R	0.0R	1.0R	8.8R	7.0R	0.0?	3.5R	[ ]M	[ ]M	9
10	0.0R	0.0R	0.0R	0.0R	[ ]T	0.6R	2.6R	2.1R	0.0?	0.2	[ ]M	[ ]M	10
11	0.0R	0.0R	0.0R	0.0R	[ ]T	0.1	0.3R	0.6	0.0?	0.1	[ ]M	[ ]M	11
12	0.0R	0.0R	0.0R	0.0R	[ ]T	0.1	0.1	0.1	0.0?	0.1	[ ]M	[ ]M	12
13	0.0R	0.0R	0.0R	0.0R	[ ]T	7.6R	0.0	0.1	0.1?	0.1R	[ ]M	[ ]M	13
14	0.0R	0.0R	0.0R	0.0R	[ ]T	6.7R	0.0	0.1	1.2R	0.1R	[ ]M	[ ]M	14
15	0.0R	0.0R	0.0R	0.0R	[ ]T	4.3R	0.0	0.1	2.1R	0.1R	[ ]M	[ ]M	15
16	0.0R	0.0R	0.0R	0.0R	[ ]T	3.3R	1.6R	0.1	0.8?	0.0R	[ ]M	[ ]M	16
17	0.0R	0.0R	0.0R	[ ]T	[ ]T	7.6R	8.0R	0.1	2.2R	0.0R	[ ]M	[ ]M	17
18	0.0R	0.0R	0.0R	[ ]T	[ ]T	8.1R	13.4R	0.1	2.4R	[ ]*	[ ]M	[ ]M	18
19	0.0R	0.0R	0.0R	[ ]T	[ ]T	26.7R	13.9R	0.1?	0.6K	[ ]*	[ ]M	[ ]M	19
20	0.0R	0.0R	0.0R	[ ]T	[ ]T	12.3R	7.9R	0.1?	0.1K	[ ]*	[ ]M	[ ]M	20
21	0.0R	0.0R	0.0R	[ ]T	0.0R	10.4R	2.0R	0.1R	0.1K	[ ]*	[ ]M	[ ]M	21
22	0.0R	0.0R	0.0K	[ ]T	0.0R	8.7R	0.7R	0.0R	0.1K	[ ]*	[ ]M	[ ]M	22
23	0.0R	0.0R	0.0K	[ ]T	0.0R	6.8R	0.6R	0.0R	[ ]*	[ ]M	[ ]M	[ ]M	23
24	0.0R	0.0K	0.3R	[ ]T	0.0R	5.7R	0.1	0.1?	[ ]*	[ ]M	[ ]M	[ ]M	24
25	0.0R	0.2R	0.1	[ ]T	0.0R	1.8R	0.1	0.1?	[ ]*	[ ]M	[ ]M	[ ]M	25
26	0.0R	0.1K	0.3R	[ ]T	0.0R	0.2	0.9R	0.1?	[ ]*	[ ]M	[ ]M	[ ]M	26
27	0.0R	0.1K	2.0R	0.1R	0.0R	0.1	1.3R	0.0?	[ ]*	[ ]M	[ ]M	[ ]M	27
28	0.0R	0.0K	0.1R	0.0R	0.0R	0.0R	0.1	0.0?	[ ]*	[ ]M	[ ]M	[ ]M	28
29	0.0R	0.0R	0.1	0.0R	0.4R	0.0R	0.1	0.0?	[ ]*	[ ]M	[ ]M	[ ]M	29
30	0.0R	0.1K	0.1	0.0R	18.3R	0.0R	0.6	0.1R	[ ]M	[ ]M	[ ]M	[ ]M	30
31	0.0R	1.1R		0.0R		0.0R	0.3R	0.1R		[ ]M			31
Mean	0.1R	0.1R	0.4R	[1.6]	[1.0]	5.0R	3.6R	1.1R	[0.4]	[3.3]	[ ]M	[ ]M	
Median	0.0R	0.0R	0.0R	[0.0]	[0.0]	3.3R	0.9R	0.1R	[0.1]	[0.1]	[ ]M	[ ]M	
Max.Daily	1.0R	1.1R	4.8R	[12.6]	[18.3]	26.7R	15.9R	8.3R	[2.4]	[23.1]	[ ]M	[ ]M	
Min.Daily	0.0R	0.0R	0.0R	[0.0]	[0.0]	0.0R	0.0R	0.0R	[0.0]	[0.0]	[ ]M	[ ]M	
Inst.Max	3.0R	2.0R	10.7R	[15.5]	[21.3]	48.5R	20.0R	13.5R	[3.9]	[27.6]	[ ]M	[ ]M	
Inst.Min	0.0R	0.0R	0.0R	[0.0]	[0.0]	0.0R	0.0R	0.0R	[0.0]	[0.0]	[ ]M	[ ]M	
Total	3R	2R	11R	[35]	[19]	155R	111R	31R	[11]	[55]	[ ]M	[ ]M	
Max.EC@25C	536R	520R	591R	[675]	[1059]	955R	577R	766R	[668]	[731]	[ ]M	[ ]M	
Min.EC@25C	30R	25R	93R	[179]	[157]	168R	128R	201R	[133]	[483]	[ ]M	[ ]M	

Summaries

Annual Mean	[1.6]
Ann. Median	[0.1]
Annual Total	[433]

	Maximum	Minimum
Daily Mean	[26.7]	[0.0]
Instant	[48.5]	[0.0]
Monthly	[155]	[2]

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

The EC sensor provided negative readings since May 2024. It was confirmed to be malfunctioning during the June visit, and an urgent replacement was organised. Ventia field staff attempted to install the new EC sensor in July, but the attempt failed because the cables were stuck inside the piping. The new sensor was successfully installed on August 13, 2024.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]T	126	116	122 ~	110 ~	23.0	153	464 K	155 K	219	99.3	2.6K	1
2	[ ]T	158	140	112 ~	130 ~	15.8	141	472 K	152 K	205	119	36.8K	2
3	[ ]T	182	160	91.3~	184 ~	34.8	131	477 K	157 K	174	100	28.8K	3
4	[ ]T	144	119	47.5~	186	37.4	155	455 K	143 K	162	108	12.4K	4
5	0.0	34.1	172	14.6~	178	79.6	159	356 K	134 K	118	87.3	3.0K	5
6	0.0	58.0	193	23.7~	160	170	162	159 K	145 K	24.1	106	33.2K	6
7	0.0	37.1	238	43.9~	164	[ ]*	134	185 K	161 K	50.8	51.2	39.7K	7
8	0.0	65.3	251	46.9~	167	[ ]*	29.6	251 K	[ ]*	54.9	6.1	42.4K	8
9	0.0	104	179	53.5~	191	[ ]*	30.7	264 K	[ ]*	40.9	53.9	37.9K	9
10	0.0	86.5	257	76.7~	168	[ ]*	40.4	258 K	210 K	51.6	99.5	0.7K	10
11	0.0	114	155	89.0~	204	[ ]*	73.6	258 K	230 K	50.3	104	13.5K	11
12	0.0	105	157	87.1~	239	[ ]*	87.1	214 K	[ ]*	72.6	20.8	28.6K	12
13	0.0	89.5	193	77.9~	201	[ ]*	151	238 K	[ ]*	75.5	21.8	40.2K	13
14	0.0	15.9	218	79.6~	178	[ ]*	[ ]*	283 K	[ ]*	68.4	23.4	12.7K	14
15	0.0	0.0	200	95.5~	186	533	254	259 K	201 K	55.2	35.0	22.7K	15
16	0.0	0.0	222	99.1~	190	[ ]*	222	179 K	216 K	66.9	25.5	14.3K	16
17	0.0	6.3	259	92.4~	227	[ ]*	139	251 K	148 K	87.4	58.3	22.1K	17
18	0.0	85.8	259	90.5~	229	522	105	253 K	126 K	114	42.3	18.7K	18
19	0.0	131	222	88.4~	[ ]*	434	141	226 K	113 K	141	28.2	40.0K	19
20	0.0	95.3	237	92.7~	[ ]*	385	187	202 K	127 K	99.7	50.2	51.8K	20
21	0.0	173	299	91.2~	130	328	273	201 K	192 K	[ ]*	47.7	64.8K	21
22	0.0	187	280	79.3~	107	281	307	214 K	240	99.3	61.6	102 K	22
23	0.0	216	309	73.1~	121	[ ]*	314	240 K	230	89.4	71.5	126 K	23
24	0.0	198	290	57.6~	96.6	[ ]*	373 K	[ ]*	263	122	76.4	123 K	24
25	0.0	170	231	70.4~	64.9	[ ]*	447 K	201 K	219	105	88.2	113 K	25
26	0.0	168	183	75.9~	81.9	129	464 K	185 K	213	109	98.0	177 K	26
27	0.0	116	190	57.8~	87.4	143	458 K	182 K	247	94.3	81.7	101 K	27
28	0.0	118	192 ~	77.4~	94.2	132	459 K	191 K	241	126	128	124	28
29	0.0	127	156 ~	94.3~	33.8	160	324 K	185 K	270	116	91.2	122	29
30	14.8	159	134 ~	99.7~	8.8	132	370 K		234	101	37.6K	112	30
31	30.6	171		110 ~		164	433 K		272		63.1K		31
Mean	[1.7]	111	207 ~	77.8~	[147]	[206]	[224]	[261]	[194]	[99.7]	67.3K	55.6K	
Median	[0.0]	116	197 ~	79.6~	[165]	[151]	[161]	[239]	[206]	[99.3]	63.1K	38.8K	
Max.Daily	[30.6]	216	309 ~	122 ~	[239]	[533]	[464]	[477]	[272]	[219]	128 K	177 K	
Min.Daily	[0.0]	0.0	116 ~	14.6~	[8.8]	[15.8]	[29.6]	[159]	[113]	[24.1]	6.1K	0.7K	
Inst.Max	[38.2]	259	439 ~	129 ~	[313]	[660]	[694]	[620]	[377]	[283]	167 K	263 K	
Inst.Min	[0.0]	0.0	103 ~	9.8~	[0.0]	[0.0]	[0.0]	[101]	[88.6]	[2.6]	0.0K	0.0K	
Total	[45]	3437	6211~	2411~	[4117]	[3704]	[6718]	[7302]	[5038]	[2893]	2085K	1667K	
Max.EC@25C	[293]	390	332~	133~	[123]	[202]	[270]	[222]	[245]	[251]	250K	349K	
Min.EC@25C	[259]	142	133~	40~	[80]	[91]	[89]	[85]	[76]	[132]	142K	231K	

Summaries

Annual Mean	[135]
Ann. Median	[116]
Annual Total	[45630]

	Maximum	Minimum
Daily Mean	[533]	[0.0]
Instant	[694]	[0.0]
Monthly	[7302]	[45]

Notes
All recorded data is continuous and reliable except where the following tags are used...
* ... Debris Effecting Sensor
K ... Minor editing
T ... Probe out of water/below instrument th
~ ... Reliable Interpolation
All Totals are in tonnes
Figures refer to period ending 600 hours.

The EC sensor malfunctioned between 28 September and 2 November 2023. Data from this period was adjusted based on the field readings from Ventia's visits. Logger data collection resumed after new sensors were installed on 2 November 2023.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	0.0	21.1	50.2V	49.9	56.2K	0.0	59.9	159 K	61.9	39.7	27.4V	0.0	1
2	0.0	28.3	65.5V	39.2	63.6K	0.0	56.8	165 K	65.8	48.3	27.7V	[ ]T	2
3	0.0	28.5	80.8V	14.7	70.5K	30.0	57.7	156 K	69.9	49.8	20.4V	[ ]T	3
4	0.0	16.5	73.9V	4.2	66.4K	60.2	64.6	161 K	72.4	53.7	19.4V	[ ]T	4
5	0.0	19.8	115 V	0.0	62.8K	74.9	62.6	140 K	65.2	21.8	18.8V	[ ]T	5
6	0.0	19.6	102 V	1.9	69.3K	57.5	45.2	61.7K	68.6	0.0	30.5V	[ ]T	6
7	0.0	24.0	104 V	15.0	70.8K	83.9	24.6	74.3K	89.8	0.0	25.6V	[ ]T	7
8	0.0	47.7	108 V	15.7	69.6K	75.7	17.9	106 K	80.3	1.7	23.5V	[ ]T	8
9	0.0	73.9	56.4V	22.4	74.9K	88.3	2.8	125 K	73.2	1.4	33.9V	[ ]T	9
10	0.0	89.8	40.0V	41.7	62.1K	111	5.0	108 K	66.2	0.0K	27.0V	[ ]T	10
11	0.0	64.2	44.8V	38.9	70.3K	109	23.3	90.0K	74.7	0.0K	8.3V	[ ]T	11
12	0.0	44.5	37.3V	29.0	73.7K	171	25.2	94.1K	74.5	0.0K	0.0	[ ]T	12
13	0.0	37.1	37.6V	39.5	64.5K	341	30.1	76.6K	69.6	21.9	0.3V	[ ]T	13
14	0.0	29.1	40.5V	65.3	53.3K	312	55.0	66.7K	73.1	14.0	0.3V	[ ]T	14
15	0.0	30.6	45.0V	105	49.8K	279	66.5	80.7K	88.7	9.9	0.8V	[ ]T	15
16	0.0	26.1	51.6V	95.8	50.0K	212	62.2	102 K	77.8	0.8	0.0	[ ]T	16
17	0.0	18.8	52.2V	60.7	49.0K	180	8.1	93.8K	55.3	0.4	0.1V	[ ]T	17
18	0.0	15.1	56.7V	81.4	53.9K	183	3.1	96.4K	44.5	0.8	24.8V	[ ]T	18
19	0.0	19.7	68.8V	81.6	64.2K	190	13.4	85.2K	54.8	34.3	22.9V	[ ]T	19
20	0.0	32.1	93.7V	67.9	62.9K	156	16.8	86.3K	68.3	34.4	25.0V	[ ]T	20
21	0.0	108	126 V	58.0	51.4K	135	39.7	88.1K	68.5	29.1	44.6V	[ ]T	21
22	0.0	128	145 V	66.9	29.5K	107	62.0	79.2	70.7	34.7	52.0V	[ ]T	22
23	0.0	130	139 V	56.7	45.8K	88.4	106	83.9	71.9	31.8	51.0V	[ ]T	23
24	0.0	78.9V	164 V	72.1	36.1K	68.4	148 K	92.1	78.2	32.1V	74.9V	[ ]T	24
25	0.0	60.4V	153 V	77.6K	37.0K	56.8	208 K	78.6	70.3	33.2V	70.8V	[ ]T	25
26	0.0	26.4V	123 V	84.0K	37.4K	51.3	224 K	79.6	63.9	38.8V	58.7V	[ ]T	26
27	0.0	25.1V	91.2V	56.1K	42.8K	47.3	223 K	91.4	62.6	39.2V	64.0V	[ ]T	27
28	0.0	23.1V	85.0	90.1K	42.7K	60.3	205 K	85.5	48.3	42.4V	40.9V	[ ]T	28
29	0.0	27.5V	72.1	82.3K	20.7K	64.7	179 K	75.5	39.1	46.9V	4.6V	0.0	29
30	0.0	37.9V	60.4	80.6K	3.8	52.9	186 K		51.0	34.8V	0.0	0.0	30
31	0.0	50.7V		75.1K		60.3	184 K		43.8		0.0		31
Mean	0.0	44.6V	82.7V	53.8K	53.5K	113	79.5K	99.3K	66.5	23.2K	25.7V	[0.0]	
Median	0.0	29.1V	73.0V	58.0K	55.1K	83.9	57.7K	90.0K	68.6	30.4K	24.8V	[0.0]	
Max.Daily	0.0	130 V	164 V	105 K	74.9K	341	224 K	165 K	89.8	53.7K	74.9V	[0.0]	
Min.Daily	0.0	15.1V	37.3V	0.0K	3.8K	0.0	2.8K	61.7K	39.1	0.0K	0.0V	[0.0]	
Inst.Max	0.0	165 V	215 V	144 K	110 K	434	311 K	213 K	117	79.2K	111 V	[0.0]	
Inst.Min	0.0	0.0V	9.7V	0.0K	0.0K	0.0	0.0K	26.0K	32.6	0.0K	0.0V	[0.0]	
Total	0	1383V	2482V	1669K	1605K	3505	2465K	2881K	2063	696K	798V	[0]	
Max.EC@25C	191	302V	353V	191K	130K	350	299K	250K	190	208K	238V	[275]	
Min.EC@25C	148	127V	102V	96K	85K	88	99K	97K	90	124K	180V	[165]	

Summaries

Annual Mean	[57.7]
Ann. Median	[52.0]
Annual Total	[19550]

	Maximum	Minimum
Daily Mean	[341]	[0.0]
Instant	[434]	[0.0]
Monthly	[3505]	[0]

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 threshold
V ... Operational Data
All Totals are in tonnes
Figures refer to period ending 600 hours.

Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	200	[ ]T	743	187	56.6V	137	206	289	196	244 V	346	174	1
2	218	[ ]T	677	169	74.9V	234	198	286	168	235 V	338	187	2
3	227	[ ]T	718	178	86.7V	288	178	306	159	242 V	340	216	3
4	224	[ ]T	762	169	105 V	275	126	328	165	305 V	325	220	4
5	259	[ ]T	744	167	93.0V	257	158	262	173	308 V	304	231	5
6	337	[ ]T	600	173	108 V	254	179	256	187	195 V	333	242	6
7	361	[ ]T	548	146	157 V	245	195	260	198	243 V	351	276	7
8	354	[ ]T	557	133	150 V	247	111	263	176	317 V	330	293	8
9	347	[ ]T	668	145	131 V	238	177	285	229	294 V	318	289	9
10	337	[ ]T	718	139	150 V	229	193	[ ]T	177	282 V	302	[ ]T	10
11	337	646	625	120	175 V	232	199	[ ]T	165	273 V	298	[ ]T	11
12	349	612	614	103	[ ]U	276	202	[ ]T	185	314 V	253	[ ]T	12
13	360	[ ]T	602	105	[ ]U	302	197	201	202	367 V	251	[ ]T	13
14	349	[ ]T	584	88.8	[ ]U	349	201	194	172	392 V	289	[ ]T	14
15	353	[ ]T	[ ]T	96.4	[ ]U	437	216	169	207	[ ]T	303	307	15
16	[ ]T	489	[ ]T	88.5	[ ]U	397	206	170	194	[ ]T	318	280	16
17	[ ]T	443	[ ]T	83.9	[ ]U	311	188	173	195	[ ]T	335	299	17
18	[ ]T	[ ]T	[ ]T	88.0	[ ]U	306	214	177	197	[ ]T	319	292	18
19	[ ]T	[ ]T	[ ]T	95.4	[ ]U	343	159	[ ]T	199 V	425 V	316	[ ]T	19
20	[ ]T	[ ]T	[ ]T	87.4	[ ]U	329	184	[ ]T	251 V	395 V	308	[ ]T	20
21	[ ]T	[ ]T	487	88.6	[ ]U	317	224	196	235 V	[ ]U	329	293	21
22	[ ]T	[ ]T	459	97.6	[ ]U	331	235	154	214 V	[ ]U	322	313	22
23	[ ]T	[ ]T	482	101	[ ]U	346	243	190	231 V	[ ]U	307	337	23
24	[ ]T	786	484	92.6	[ ]U	323	260	165	[ ]T	[ ]U	302	[ ]T	24
25	[ ]T	724	421	81.6	[ ]U	282	284	168	[ ]T	362	298	337	25
26	[ ]T	717	418	78.4V	[ ]U	266	[ ]T	176	[ ]T	360	292	350	26
27	[ ]T	[ ]T	358	87.2V	[ ]U	250	252	189	[ ]T	356	284	311	27
28	[ ]T	[ ]T	281	75.2V	177	228	260	194	259 V	349	280	283	28
29	[ ]T	[ ]T	245	56.5V	57.3	222	301	164	297 V	343	278	289	29
30	[ ]T	719	147	68.3V	123	232	322		286 V	345	274	289	30
31	[ ]T	755		85.1V		218	297		260 V		203		31
Mean	[308]	[655]	[539]	112 V	[117]	281	[212]	[217]	[207]	[316]	305	[278]	
Median	[337]	[717]	[571]	96.4V	[116]	275	[202]	[194]	[197]	[316]	307	[289]	
Max.Daily	[361]	[786]	[762]	187 V	[177]	437	[322]	[328]	[297]	[425]	351	[350]	
Min.Daily	[200]	[443]	[147]	56.5V	[56.6]	137	[111]	[154]	[159]	[195]	203	[174]	
Inst.Max	[383]	[872]	[831]	219 V	[228]	465	[361]	[391]	[324]	[462]	388	[366]	
Inst.Min	[193]	[425]	[123]	31.3V	[23.1]	106	[64.5]	[129]	[149]	[186]	175	[137]	

Summaries

Annual Mean	[275]
Ann. Median	[255]

	Maximum	Minimum
Daily Mean	[786]	[56.5]
Instant	[872]	[23.1]

Notes
All recorded data is continuous and reliable
except where the following tags are used...
T ... Probe out of water/below instrument threshold
U ... Lost data (NRE approved)
V ... Operational Data

Figures refer to period ending 2400 hours.

Data between 12 and 27 November 2023 was lost due to the theft of the site battery and vandalism of the logger box. Data between 21 and 24 April 2024 was lost due to the theft of the site battery again. Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	176	240	167	226	120	[ ]T	[ ]T	341	306 V	[ ]T	204	[ ]T	1
2	204	253	167	231	127	[ ]T	[ ]T	336	309 V	[ ]T	203	[ ]T	2
3	204	261	169	233	134	[ ]T	[ ]T	344	311 V	[ ]T	201	[ ]T	3
4	206	275	175	226	137	[ ]T	[ ]T	295	309 V	[ ]T	197	[ ]T	4
5	217	284	174	207	144	[ ]T	[ ]T	197	308 V	[ ]T	[ ]T	[ ]T	5
6	229	262	173	208	149	[ ]T	292	[ ]T	307 V	[ ]T	[ ]T	[ ]T	6
7	227	258	175	208	149	[ ]T	296	[ ]T	309 V	[ ]T	[ ]T	[ ]T	7
8	221	257	172	211	159	[ ]T	286	[ ]T	315 V	237	[ ]T	[ ]T	8
9	219	258	178	215	161	[ ]T	295	[ ]T	319	229	[ ]T	[ ]T	9
10	221	260	179	218	169	[ ]T	302	[ ]T	321	221	[ ]T	[ ]T	10
11	221	259	186	222	173	[ ]T	308	[ ]T	319	223	[ ]T	[ ]T	11
12	222	195	183	217	[ ]T	[ ]T	314	[ ]T	322	224	[ ]T	[ ]T	12
13	216	220	182	212	[ ]T	[ ]T	320	[ ]T	320	224	[ ]T	[ ]T	13
14	213	163	195	218	[ ]T	[ ]T	315	328	263	222	[ ]T	[ ]T	14
15	215	156	199 ?	218	[ ]T	[ ]T	306	300	[ ]T	222	[ ]T	[ ]T	15
16	222	155	193	213	[ ]T	[ ]T	292	294	[ ]T	223	[ ]T	[ ]T	16
17	219	151	213	214	[ ]T	[ ]T	287	290	[ ]T	225	[ ]T	[ ]T	17
18	216	155	200	217	[ ]T	[ ]T	287	285	[ ]T	224	[ ]T	[ ]T	18
19	211	150	178	220	[ ]T	[ ]T	291	283	[ ]T	224	[ ]T	[ ]T	19
20	207	164	191	225	[ ]T	[ ]T	293	285 V	[ ]T	225	[ ]T	[ ]T	20
21	210	170	216	227	[ ]T	[ ]T	297	288 V	[ ]T	224	[ ]T	162	21
22	207	173	245	220	[ ]T	[ ]T	298	290 V	[ ]T	224	[ ]T	162	22
23	211	168	255	223	[ ]T	[ ]T	302	291 V	[ ]T	225	[ ]T	163	23
24	208	151	255	221	[ ]T	[ ]T	303	290 V	[ ]T	218	[ ]T	167	24
25	206	152	256	136	[ ]T	[ ]T	308	292 V	[ ]T	202	[ ]T	176	25
26	198	157	252 ?	85.6V	[ ]T	[ ]T	309	294 V	[ ]T	200	[ ]T	187	26
27	192	162	241	95.6V	[ ]T	[ ]T	311	297 V	[ ]T	201	[ ]T	186	27
28	203	174	223 ?	104 V	[ ]T	[ ]T	316	303	[ ]T	204	[ ]T	184	28
29	221	173	218	113 V	[ ]T	[ ]T	323	303	[ ]T	210	[ ]T	187	29
30	236	168	221	115 V	[ ]T	[ ]T	331		[ ]T	205	[ ]T	193	30
31	229	165		118 V		[ ]T	335		[ ]T		[ ]T		31
Mean	213	200	201 ?	194 V	[147]	[ ]T	[304]	[297]	[310]	[219]	[201]	[177]	
Median	215	173	192 ?	217 V	[149]	[ ]T	[302]	[294]	[310]	[223]	[202]	[180]	
Max.Daily	236	284	256 ?	233 V	[173]	[ ]T	[335]	[344]	[322]	[237]	[204]	[193]	
Min.Daily	176	150	167 ?	85.6V	[120]	[ ]T	[286]	[197]	[263]	[200]	[197]	[162]	
Inst.Max	259	347	350 ?	250 V	[199]	[ ]T	[369]	[408]	[338]	[247]	[226]	[196]	
Inst.Min	156	113	157 ?	76.7V	[106]	[ ]T	[271]	[66.9]	[76.4]	[190]	[191]	[156]	

Summaries

	Maximum	Minimum
Annual Mean	[227]	
Ann. Median	[220]	
Daily Mean	[344]	[85.6]
Instant	[408]	[66.9]

Notes
All recorded data is continuous and reliable
except where the following tags are used...
? ... Irregular data use with caution
T ... Probe out of water/below instrument threshold
V ... Operational Data

Figures refer to period ending 2400 hours.

Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]T	[ ]T	[ ]T	447 V	[ ]T	162	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	224 V	1
2	[ ]T	[ ]T	[ ]T	385 V	[ ]T	157	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	288	2
3	[ ]T	[ ]T	[ ]T	400 V	[ ]T	152	639	[ ]T	[ ]T	[ ]T	[ ]T	275	3
4	[ ]T	[ ]T	[ ]T	310 V	[ ]T	167	724	[ ]T	[ ]T	[ ]T	[ ]T	262	4
5	52.3	[ ]T	[ ]T	258 V	[ ]T	183	795	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	5
6	43.6	[ ]T	[ ]T	253 V	[ ]T	[ ]T	821	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	6
7	59.8	[ ]T	[ ]T	231 V	[ ]T	[ ]T	779	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	7
8	41.6	[ ]T	[ ]T	221 V	[ ]T	[ ]T	758	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	8
9	45.7	[ ]T	[ ]T	226 V	[ ]T	[ ]T	777	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	9
10	[ ]T	[ ]T	[ ]T	233 V	[ ]T	[ ]T	802	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	10
11	[ ]T	[ ]T	[ ]T	243 V	[ ]T	147	[ ]T	[ ]T	[ ]T	[ ]T	113	[ ]T	11
12	[ ]T	[ ]T	[ ]T	244 V	[ ]T	186	438	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	12
13	[ ]T	[ ]T	[ ]T	244 V	[ ]T	222	434	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	13
14	[ ]T	[ ]T	[ ]T	279 V	[ ]T	228	544	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	14
15	[ ]T	[ ]T	[ ]T	367 V	[ ]T	241	634	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	15
16	[ ]T	[ ]T	[ ]T	367 V	[ ]T	247	654	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	16
17	[ ]T	[ ]T	[ ]T	370 V	[ ]T	257	677	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	17
18	[ ]T	[ ]T	[ ]T	381	267 V	[ ]T	673	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	18
19	[ ]T	[ ]T	[ ]T	400	317	[ ]T	666	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	19
20	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	211	665	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	20
21	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	226	644	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	21
22	[ ]T	188	[ ]T	[ ]T	[ ]T	235	298	219	[ ]T	[ ]T	[ ]T	[ ]T	22
23	[ ]T	175	[ ]T	[ ]T	[ ]T	270	226 V	228	[ ]T	[ ]T	[ ]T	[ ]T	23
24	[ ]T	166	[ ]T	[ ]T	[ ]T	257	344 V	237	[ ]T	[ ]T	[ ]T	[ ]T	24
25	[ ]T	164	[ ]T	[ ]T	[ ]T	175	433 V	244	[ ]T	[ ]T	[ ]T	[ ]T	25
26	[ ]T	163	344 V	[ ]T	[ ]T	135	492 V	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	26
27	[ ]T	163	324 V	[ ]T	[ ]T	139	440	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	27
28	[ ]T	[ ]T	316 V	[ ]T	[ ]T	[ ]T	426	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	28
29	[ ]T	[ ]T	308 V	[ ]T	173	[ ]T	445	[ ]T	[ ]T	[ ]T	[ ]T	[ ]T	29
30	[ ]T	[ ]T	414 V	[ ]T	164	[ ]T	446		[ ]T	[ ]T	[ ]T	[ ]T	30
31	[ ]T	[ ]T		[ ]T		[ ]T	[ ]T		[ ]T		[ ]T		31
Mean	[48.6]	[170]	[341]	[308]	[230]	[200]	[580]	[232]	[ ]T	[ ]T	[113]	[262]	
Median	[45.7]	[165]	[324]	[279]	[220]	[199]	[639]	[232]	[ ]T	[ ]T	[113]	[269]	
Max.Daily	[59.8]	[188]	[414]	[447]	[317]	[270]	[821]	[244]	[ ]T	[ ]T	[113]	[288]	
Min.Daily	[41.6]	[163]	[308]	[221]	[164]	[135]	[226]	[219]	[ ]T	[ ]T	[113]	[224]	
Inst.Max	[85.9]	[194]	[471]	[484]	[345]	[290]	[925]	[262]	[ ]T	[ ]T	[150]	[298]	
Inst.Min	[32.4]	[155]	[289]	[216]	[131]	[102]	[130]	[206]	[ ]T	[ ]T	[85.7]	[71.9]	

Summaries

Annual Mean	[332]
Ann. Median	[258]

	Maximum	Minimum
Daily Mean	[821]	[41.6]
Instant	[925]	[32.4]

Notes

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

Figures refer to period ending 2400 hours.

Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

Site 41010940 LAGOON DRAIN @ GOORAGOOL LAGOON (LAG) Site 41010940
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	287	121	162	247 V	479	790	294	498	244 K	548	[ ]M	[ ]M	1
2	330	190	174	211 V	414	804	245	466	237 K	531	[ ]M	[ ]M	2
3	321	184	222	428 V	385	872	249	371	208 K	554	[ ]M	[ ]M	3
4	255	162	253	359 V	391	924	270	422	268 K	610	[ ]M	[ ]M	4
5	241	132	289	354 V	432	890	270	506	310 K	689	[ ]M	[ ]M	5
6	278	207	320	387 V	493	330	241	514	264 K	691	[ ]M	[ ]M	6
7	272	202	294	380 V	580	422	263	472	235 K	639	[ ]M	[ ]M	7
8	295	216	292	459 V	614	399	298	444	214 K	650	[ ]M	[ ]M	8
9	293	237	287	475 V	601	336	188	419	208 K	644	[ ]M	[ ]M	9
10	266	249	247	413 V	[ ]T	382	139	391	203 K	600	[ ]M	[ ]M	10
11	273	326	303	420 V	[ ]T	508	174	382	184 K	573	[ ]M	[ ]M	11
12	298	311	308	450	[ ]T	491	248	338	215 K	573	[ ]M	[ ]M	12
13	331	242 K	350	437 V	[ ]T	299	214	433	292 K	570	[ ]M	[ ]M	13
14	394	219 K	359	378 V	[ ]T	260	248	560	364 K	577	[ ]M	[ ]M	14
15	353	270 K	365	384	[ ]T	317	238	381	379 K	581	[ ]M	[ ]M	15
16	347	307 K	305	402	[ ]T	345	257	303	353 K	587	[ ]M	[ ]M	16
17	369	267 K	248	[ ]T	[ ]T	300	372	275	334 K	620	[ ]M	[ ]M	17
18	344	268 K	219	[ ]T	[ ]T	410	555	306	369 K	[ ]*	[ ]M	[ ]M	18
19	413	289 K	200	[ ]T	[ ]T	255	359	333 K	493 K	[ ]*	[ ]M	[ ]M	19
20	446	287 K	212	[ ]T	[ ]T	189	328	339 K	547 K	[ ]*	[ ]M	[ ]M	20
21	347	289 K	202	[ ]T	457	218	234	342 K	569 K	[ ]*	[ ]M	[ ]M	21
22	386	256 K	189	[ ]T	444	244	241	335 K	569 K	[ ]*	[ ]M	[ ]M	22
23	363	221 K	177	[ ]T	417	268	312	323 K	[ ]*	[ ]M	[ ]M	[ ]M	23
24	420	169	177	[ ]T	449	325	276	339 K	[ ]*	[ ]M	[ ]M	[ ]M	24
25	360	165	191	[ ]T	459	284	337	358 K	[ ]*	[ ]M	[ ]M	[ ]M	25
26	306	209	290 V	[ ]T	485	276	363	325 K	[ ]*	[ ]M	[ ]M	[ ]M	26
27	287	161	227 V	290	451	281	352	260 K	[ ]*	[ ]M	[ ]M	[ ]M	27
28	254	187	230 V	339	389	286	285	228 K	[ ]*	[ ]M	[ ]M	[ ]M	28
29	245	199	275 V	385	207	291	283	240 K	[ ]*	[ ]M	[ ]M	[ ]M	29
30	250	141	277 V	514	903	294	333	586	[ ]M	[ ]M	[ ]M	[ ]M	30
31	232	166		584		274	432	532		[ ]M			31
Mean	318	221 K	255 V	[395]	[476]	405	287	376 K	[341]	[602]	[ ]M	[ ]M	
Median	306	216 K	250 V	[387]	[451]	317	270	358 K	[301]	[587]	[ ]M	[ ]M	
Max.Daily	446	326 K	365 V	[584]	[903]	924	555	560 K	[586]	[691]	[ ]M	[ ]M	
Min.Daily	232	121 K	162 V	[211]	[207]	189	139	228 K	[184]	[531]	[ ]M	[ ]M	
Inst.Max	536	520 K	591 V	[675]	[1060]	955	577	766 K	[668]	[731]	[ ]M	[ ]M	
Inst.Min	29.8	25.1K	92.6V	[179]	[157]	168	128	201 K	[133]	[483]	[ ]M	[ ]M	

Summaries

	Maximum	Minimum
Annual Mean	[350]	
Ann. Median	[315]	
Daily Mean	[924]	[121]
Instant	[1060]	[25.1]

Notes
All recorded data is continuous and reliable
except where the following tags are used...
* ... Debris Effecting Sensor
K ... Minor editing
M ... Equipment malfunction
T ... Probe out of water/below instrument threshold
V ... Operational Data

Figures refer to period ending 2400 hours.

The EC sensor provided negative readings since May 2024. It was confirmed to be malfunctioning during the June visit, and an urgent replacement was organised. Ventia field staff attempted to install the new EC sensor in July, but the attempt failed because the cables were stuck inside the piping. The new sensor was successfully installed on August 13, 2024. Operational data was used for flow events when the site was dry or when no logger readings were obtained during the visit.

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 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	[ ]T	353	204	131 ~	83.7~	93.6	92.9	215	88.2	239	164	250	1
2	[ ]T	245	215	128 ~	91.8~	95.6	98.3	213	80.7	227	166	242	2
3	[ ]T	178	224	124 ~	99.0~	96.0	112	214	77.5	206	170	244	3
4	[ ]T	175	229	120 ~	103	98.2	121	213	78.9	203	173	264	4
5	275	154	243	117 ~	98.8	104	122	214	83.8	190	174	268	5
6	269	153	271	113 ~	101	123	128	211	85.9	175	176	263	6
7	262	151	287	110 ~	104	[ ]*	114	210	86.8	164	176	270	7
8	270	158	314	106 ~	103	[ ]*	107	203	[ ]*	154	169	275	8
9	272	154	294	103 ~	104	[ ]*	106	183	[ ]*	146	179	271	9
10	276	164	251	99.1~	105	[ ]*	106	156	111	140	182	277	10
11	275	170	213	95.5~	105	[ ]*	110	131	122	142	190	269	11
12	273	176	195	92.0~	106	[ ]*	115	123	[ ]*	149	189	268	12
13	270	161	191	88.4~	107	[ ]*	132	128	[ ]*	159	193	262	13
14	272	158	193	84.9~	106	[ ]*	[ ]*	135	[ ]*	140	195	268	14
15	275	158	203	81.3~	107	195	172	129	151	135	195	273	15
16	265	160	216	77.7~	111	[ ]*	174	108	154	136	196	274	16
17	262	159	225	74.2~	116	[ ]*	172	131	146	157	209	275	17
18	265	159	225	70.6~	121	177	178	121	145	208	213	271	18
19	271	152	227	67.1~	[ ]*	166	189	120	152	227	201	268	19
20	276	162	231	63.5~	[ ]*	147	204	116	162	222	210	260	20
21	278	191	232	59.9~	105	128	222	113	196 K	[ ]*	209	240	21
22	272	259	223	56.4~	103	122	212	112	218	170	212	275	22
23	272	283	218	52.8~	98.8	[ ]*	202	113	223	175	211	316	23
24	274	292	211	49.3~	95.9	[ ]*	196	[ ]*	225	186	216	315	24
25	274	268	188	45.7~	94.6	[ ]*	197	95.8	227	162	221	319	25
26	276	238	163	42.2~	91.6	98.8	238	96.1	226	159	233	323	26
27	277	175	152	43.3~	90.6	101	259	93.3	231	159	236	285	27
28	276	168	142 ~	51.3~	91.0	109	221	90.7	232	158	235	292	28
29	277	175	138 ~	59.4~	96.4	102	196	88.6	233	161	236	285	29
30	275	193	135 ~	67.5~	94.3	97.0	191		236	162	244	284	30
31	276	191		75.6~		98.4	208		242		246		31
Mean	[272]	191	215 ~	82.3~	[101]	[119]	[163]	[146]	[162]	[173]	201	275	
Median	[274]	170	217 ~	77.7~	[103]	[103]	[173]	[128]	[153]	[162]	196	271	
Max.Daily	[278]	353	314 ~	131 ~	[121]	[195]	[259]	[215]	[242]	[239]	246	323	
Min.Daily	[262]	151	135 ~	42.2~	[83.7]	[93.6]	[92.9]	[88.6]	[77.5]	[135]	164	240	
Inst.Max	[293]	390	332 ~	133 ~	[123]	[202]	[270]	[222]	[245]	[251]	250	349	
Inst.Min	[259]	142	133 ~	40.0~	[79.7]	[91.3]	[89.2]	[85.2]	[75.6]	[132]	142	231	

Summaries

	Maximum	Minimum
Annual Mean	[177]	
Ann. Median	[174]	
Daily Mean	[353]	[42.2]
Instant	[390]	[40.0]

Notes
All recorded data is continuous and reliable except where the following tags are used...
* ... Debris Effecting Sensor
K ... Minor editing
T ... Probe out of water/below instrument th
~ ... Reliable Interpolation

Figures refer to period ending 600 hours.

The EC sensor malfunctioned between 28 September and 2 November 2023. Data from this period was adjusted based on the field readings from Ventia's visits. Logger data collection resumed after new sensors were installed on 2 November 2023.

Site 410129 STURT CANAL AT OFFTAKE Site 410129
Variable 820.00 Conductivity (µS/cm) in µS/cm@25°C, Available for release Year 2023/24
Year 2023/24

Day	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Day
1	150	165	195	106	124	93.3	110	240	113	174	193	186	1
2	149	156	206	111	120	97.3	114	240	115	175	194	[ ]T	2
3	150	151	209	108	117	110	123	242	112	181	197	[ ]T	3
4	151	152	215	106	115	128	131	239	106	187	199	[ ]T	4
5	149	152	256	106	116	121	137	236	98.0	176	199	[ ]T	5
6	150	148	293	110	110	124	132	231	109	174	200	[ ]T	6
7	150	145	312	108	113	123	134	225	121	175	200	[ ]T	7
8	150	147	327	98.5	112	141	137	197	119	172	202	[ ]T	8
9	151	151	283	102	113	156	137	176	114	174	202	[ ]T	9
10	153	168	269	110	110	171	137	167	110	175	202	[ ]T	10
11	158	170	228	112	111	179	135	157	135	175	200	[ ]T	11
12	161	142	212	111	111	232	136	143	151	176	198	[ ]T	12
13	163	129	187	122	112	325	140	140	144	166	197	[ ]T	13
14	165	129	188	137	108	303	154	129	141	128	196	[ ]T	14
15	167	137	195	176	105	269	168	126	146	129	199	[ ]T	15
16	170	148	205	160	104	235	187	128	154	128	197	[ ]T	16
17	177	149	215	127	107	209	166	115	158	129	199	[ ]T	17
18	177	149	235	145	106	189	147	118	160	133	201	[ ]T	18
19	178	159	243	135	109	188	132	110	166	158	209	[ ]T	19
20	178	180	247	126	108	178	160	108	173	182	208	[ ]T	20
21	177	211	249	125	101	164	221	109	180	167	208	[ ]T	21
22	179	245	241	129	98.4	145	243	109	180	173	216	[ ]T	22
23	181	290	235	125	93.3	133	232	111	179	181	217	[ ]T	23
24	183	287	235	127	94.9	114	221	112	175	188	211	[ ]T	24
25	185	242	227	131	91.3	114	226	113	175	189	216	[ ]T	25
26	184	152	194	132	88.3	112	223	102	176	200	228	[ ]T	26
27	186	157	156	128	87.7	109	271	109	176	197	233	[ ]T	27
28	186	157	138	139	88.6	118	292	115	171	198	235	[ ]T	28
29	189	177	119	126	90.0	118	268	113	166	196	231	264	29
30	190	179	108	129	89.5	110	253		172	194	229	266	30
31	187	188		126		110	249		174		213		31
Mean	169	171	221	124	105	159	178	154	147	172	207	[239]	
Median	170	156	221	126	108	133	154	128	154	175	202	[264]	
Max.Daily	190	290	327	176	124	325	292	242	180	200	235	[266]	
Min.Daily	149	129	108	98.5	87.7	93.3	110	102	98.0	128	193	[186]	
Inst.Max	191	302	353	191	130	350	299	250	190	208	238	[275]	
Inst.Min	148	127	102	96.2	85.1	88.4	98.8	97.3	89.7	124	180	[165]	

Summaries

Annual Mean [165]
Ann. Median [159]

	Maximum	Minimum
Daily Mean	[327]	[87.7]
Instant	[353]	[85.1]

Notes

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

Figures refer to period ending 600 hours.

5.0 Annual Site Summaries for sites affected by back-up

5.1 Compliance Sites:

No compliance sites were affected by backup during the reporting period of 2023/2024.

5.2 Offtake Sites:

No offtake sites were affected by backup during the reporting period of 2023/2024.

6.0 Site visited Summary

Table 1 summarises the visited records of all the MI sites monitored by Ventia staff during the 2023/24 financial year.

Table 1 Site visited summary during the 2023/24 financial year

Category	Site No.	Site Acronym	No. of Visits	No. of Data Downloads	Discharge Measurements		Sensor Changes	General Comments
					No. of Meas.	Comments		
Compliance sites	410083	YMS	12	12	0	N/A	0	No flow on site and the gate was shut throughout the monitoring year. Batteries was stolen twice (November 2023 and April 2024), and the logger box was damaged in November 2023, causing some data missing.
	41010005	ROCUDG	12	12	2	Both gaugings were performed at very low flow conditions.	1	Site was at low flow or pool only condition during the most visits and dry during November 2023 and January 2024. Rating table needs to be updated by acquiring good measurements. New EC sensor (S/N PC4EB-12620) was installed on 12 August 2024.
	41010921	GMSRR	12	12	3	Rating table at site is very old (2018) and will be updated when enough gauging data is collected.	0	Site was dry or pool only during the majority visits but flowing during the rest five visits.
	41010940	LAG	12	12	4	Gaugings were performed at very low flow conditions and affected by silt and heavy weed severely. Rating table requires additional updating by acquiring further good measurements	1	Site was dry or pool only during the majority visits and had small flow during the rest visits. Rating table needs to be updated by acquiring good measurements. New EC sensor (S/N PC4EB-12503) was installed on August 13, 2024.
Offtake sites	410127	Main Canal	12	12	12	Gauging was performed in each month except July 2023 when site was not flowing. Two gaugings were carried out in May 2024. Gaugings in February and March 2024 were considered as fair measurements due to the on-site major works and weed influences.	3	Site was flowing through out the financial year except pool only in July 2023. AFFRA system and WQ sensors performed well and provided good data. New EC (S/N PC4EB-7616), PH (S/N PPHRB-11313), and Turbidity (S/N PNEPB_TURB-11618) sensors were installed on 27 September 2023.
	410129	Sturt Canal	12	12	15	Gauging was performed during each visit except when the site was no flowing in July 2023, May and June 2024.	0	Site was flowing throughout the financial year except pool only in July 2023, May and June 2024. AFFRA system and WQ sensors performed well and provided good data.
N/A	410085	LMC	12	12	3	Weed on edges. Loose weed floating under and around boat.	0	Site was flowing throughout the monitoring year. Data during July 2023 was not recorded due to cables to both EC and Pressure sensor chewed by water rats.
	410174	MDJWE	12	12	6	Significant weed floating downstream and interfering with ADCP. Rating tables updated in July 2024	1	Site was flowing throughout the monitoring year. Data between December 2023 and January 2024 was not recorded due to gas line chewed by water rats. Rating table was updated to 14.0 in July 2024 after adding the good gauging results from this financial year. New EC sensor (S/N PC4EB-11318) was installed on 24 January 2024.
	41010955	MIRMCN	12	12	5	Two of five gaugings were considered as good measurements. The rest gaugings were performed at high flow situations. Gauging accuracy was likely affected by site conditions including high turbulence on drain edges, bridge pylon collecting debris, partial control blockage, and substantially weed drifting downstream.	1	Site was flowing throughout the financial year. Rating table needs to be updated by acquiring good measurements. New EC sensor (S/N PC4EB-11146) was installed on 2 November 2023.
	CD-2-1922	CD-2-1922	12	12	2	Two gaugings were performed on two days in November 2023. However, the quality of both measurements was not verified due to flowmeter on site was malfunction.	0	Site was dry or had very small flow throughout the monitoring year. Flowmeter has been malfunctioning since November 2023 and needs replacing.
	MS-2MDJY-01	MDJY	12	12	4	Four gaugings were performed. Rating table requires updating.	0	Site was flowing throughout the year. Rating table needs to be updated by acquiring good measurements.
Total					**56**		**7**	

7.0 EWA's 2023/2024

Table 2 EWA summary during the 2023/24 financial year

EWA REF		Site ID	Name	EXTRA WORKS DESCRIPTION	Issued by	Total Value (ex GST)	Status
		Multiple	Multiple	Ponsel C4E EC x 5 - Ponsel turb x 1 - Ponsel PH x 1 - New program and labour	PB	$21,022	Complete
		Multiple	Multiple	4G modem upgrades	PB	$2,135.29	Complete
		Roaches dam	Roaches dam	Roaches dam site installation	PB	$57,313.29	NYC
		Multiple	Multiple	Ponsel C4E EC X 2 including new programs and labour		$7,935	Complete

8.0 Measurement Summary

8.1 410127 MAIN CANAL @ NARRANDERA REGULATOR

Table 3 Measurement Summary at Narrandera during the 2023/24 financial year

Meas No.	Date	Time	AFFRA Sensor Q, (Ml/day)	Calibration Measurements Q, Measured Discharge (Ml/day)	Deviation (%)
128	23/08/2023	13:45	890.784	950.400	-6.27%
129	27/09/2023	8:46	1500.250	1503.878	-0.24%
130	26/10/2023	7:06	2352.845	2401.834	-2.04%
131	29/11/2023	6:58	686.880	719.366	-4.52%
132	20/12/2023	7:15	3299.616	4060.368	-18.74%
133	23/01/2024	13:24	3054.845	3158.870	-3.29%
134	21/02/2024	7:41	2802.816	3037.392	-7.72%
135	20/03/2024	8:04	1227.917	1375.142	-10.71%
136	24/04/2024	8:20	1023.926	1068.163	-4.14%
137	29/05/2024	12:35	213.408	278.986	-23.51%
138	29/05/2024	14:01	207.360	269.136	-22.95% *
139	26/06/2024	10:41	461.981	506.995	-8.88%

* Measurement was performed on windy days.

Discharge Measurement Summary

Date Measured: Wednesday, August 23, 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	PN
Boat/Motor	M9
Meas. Number	128

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

System Setup	
Tagline Azimuth (deg)	355.1
Salinity (ppt)	0.0
Rated Discharge (m3/s)	10.31
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	13.0

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 Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.28%
Velocity	0.07%	0.96%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	1.03%

Discharge Results	
Total Area	75.815
Mean Velocity	0.145
Total Width	32.000
Total Q	11.000
Maximum Measured Depth(m)	3.089
Maximum Measured Velocity(m/s)	0.207
Mean Flow Angle	-1.234
Rated Discharge	10.310
% difference Q	6.692
Water Temperature (Independent)	13.900
Mean Water Temperature	14.045
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, September 27, 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	PN GR
Boat/Motor	M9
Meas. Number	129

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

System Setup	
Tagline Azimuth (deg)	4.7
Salinity (ppt)	0.0
Rated Discharge (m3/s)	17.36
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	17.0

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 Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.38%
Velocity	0.06%	0.91%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	1.02%

Discharge Results	
Total Area	79.346
Mean Velocity	0.219
Total Width	31.500
Total Q	17.406
Maximum Measured Depth(m)	3.199
Maximum Measured Velocity(m/s)	0.287
Mean Flow Angle	-9.833
Rated Discharge	17.364
% difference Q	0.245
Water Temperature (Independent)	17.900
Mean Water Temperature	17.703
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Thursday, October 26, 2023

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

Site Information	
Site Name	Narrandera Main @ Offtake
Station Number	
Location	Cableway

Measurement Information	
Party	JN/GR
Boat/Motor	Boat
Meas. Number	130

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

System Setup	
Tagline Azimuth (deg)	353.3
Salinity (ppt)	0.1
Rated Discharge (m3/s)	27.23
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	18.0

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.34%
Velocity	0.06%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	0.43%

Discharge Results	
Total Area	75.071
Mean Velocity	0.370
Total Width	30.800
Total Q	27.799
Maximum Measured Depth(m)	3.094
Maximum Measured Velocity(m/s)	0.490
Mean Flow Angle	-0.907
Rated Discharge	27.232
% difference Q	2.082
Water Temperature (Independent)	18.000
Mean Water Temperature	16.969
Mean Weighted Gauge Height	5.178

Discharge Measurement Summary

Date Measured: Wednesday, November 29, 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	JN
Boat/Motor	eBoat
Meas. Number	131

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	7.95
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.47%
Velocity	0.14%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	0.54%

Discharge Results	
Total Area	69.163
Mean Velocity	0.120
Total Width	30.700
Total Q	8.326
Maximum Measured Depth(m)	2.879
Maximum Measured Velocity(m/s)	0.189
Mean Flow Angle	0.508
Rated Discharge	7.950
% difference Q	4.730
Water Temperature (Independent)	23.300
Mean Water Temperature	22.565
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, December 20, 2023

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

Site Information	
Site Name	Narranderra Canal
Station Number	410127
Location	cableway

Measurement Information	
Party	SM / JN
Boat/Motor	Boat
Meas. Number	132

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	38.19
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.25%
Velocity	--	--
Width	--	0.09%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.37%

Discharge Results	
Total Area	81.986
Mean Velocity	0.573
Total Width	31.200
Total Q	46.995
Maximum Measured Depth(m)	3.300
Maximum Measured Velocity(m/s)	0.763
Mean Flow Angle	2.809
Rated Discharge	38.190
% difference Q	23.056
Water Temperature (Independent)	23.400
Mean Water Temperature	22.816
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, January 23, 2024

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

Site Information	
Site Name	narrreg
Station Number	410127
Location	cableway

Measurement Information	
Party	MB/PN
Boat/Motor	M9
Meas. Number	133

System Information	
System Type	RS-M9
Serial Number	763
Firmware Version	4.10

System Setup	
Tagline Azimuth (deg)	9.3
Salinity (ppt)	0.0
Rated Discharge (m3/s)	35.36
Discharge Method	Mid-Section
Measurement Quality	Good

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	0.06%	0.89%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.60%	--
Instrument	0.25%	0.25%
Overall	1.63%	1.07%

Discharge Results	
Total Area	74.305
Mean Velocity	0.492
Total Width	30.500
Total Q	36.561
Maximum Measured Depth(m)	3.059
Maximum Measured Velocity(m/s)	0.655
Mean Flow Angle	-1.392
Rated Discharge	35.357
% difference Q	3.404
Water Temperature (Independent)	24.900
Mean Water Temperature	25.905
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Wednesday, February 21, 2024

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	JN
Boat/Motor	Boat
Meas. Number	134

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	32.44
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Results	
Total Area	74.496
Mean Velocity	0.472
Total Width	31.200
Total Q	35.155
Maximum Measured Depth(m)	3.062
Maximum Measured Velocity(m/s)	0.608
Mean Flow Angle	2.395
Rated Discharge	32.440
% difference Q	8.368
Water Temperature (Independent)	24.900
Mean Water Temperature	24.082
Mean Weighted Gauge Height	0.000

Discharge Uncertainty	ISO	Stats
Depth	0.10%	0.31%
Velocity	0.06%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	0.41%

Discharge Measurement Summary

Date Measured: Wednesday, March 20, 2024

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

Site Information	
Site Name	Narranderra
Station Number	410127
Location	Cableway

Measurement Information	
Party	JN/SM
Boat/Motor	Boat
Meas. Number	135

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	14.21
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Results	
Total Area	75.228
Mean Velocity	0.212
Total Width	30.500
Total Q	15.916
Maximum Measured Depth(m)	3.086
Maximum Measured Velocity(m/s)	0.270
Mean Flow Angle	2.516
Rated Discharge	14.212
% difference Q	11.992
Water Temperature (Independent)	23.000
Mean Water Temperature	23.114
Mean Weighted Gauge Height	5.204

Discharge Uncertainty	ISO	Stats
Depth	--	0.34%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.43%

Discharge Measurement Summary

Date Measured: Wednesday, April 24, 2024

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	JN SM
Boat/Motor	Boat
Meas. Number	136

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	11.85
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.66%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.71%

Discharge Results	
Total Area	71.160
Mean Velocity	0.174
Total Width	30.800
Total Q	12.363
Maximum Measured Depth(m)	2.960
Maximum Measured Velocity(m/s)	0.229
Mean Flow Angle	1.112
Rated Discharge	11.851
% difference Q	4.319
Water Temperature (Independent)	16.400
Mean Water Temperature	16.884
Mean Weighted Gauge Height	5.055

Discharge Measurement Summary

Date Measured: Wednesday, May 29, 2024

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	BC/SM
Boat/Motor	Boat
Meas. Number	137

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	2.47
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.49%
Velocity	0.21%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.65%	--
Instrument	0.25%	0.25%
Overall	1.69%	0.56%

Discharge Results	
Total Area	76.055
Mean Velocity	0.042
Total Width	30.400
Total Q	3.229
Maximum Measured Depth(m)	3.125
Maximum Measured Velocity(m/s)	0.095
Mean Flow Angle	1.991
Rated Discharge	2.470
% difference Q	30.728
Water Temperature (Independent)	12.700
Mean Water Temperature	12.582
Mean Weighted Gauge Height	5.239

Discharge Measurement Summary

Date Measured: Wednesday, May 29, 2024

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

Site Information	
Site Name	Narrandera
Station Number	4100127
Location	Cablway

Measurement Information	
Party	SM/BS
Boat/Motor	Boat
Meas. Number	138

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	2.40
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.46%
Velocity	0.18%	--
Width	0.10%	0.09%
# Cells	0.10%	--
# Stations	1.60%	--
Instrument	0.25%	0.25%
Overall	1.64%	0.53%

Discharge Results	
Total Area	75.196
Mean Velocity	0.041
Total Width	28.250
Total Q	3.115
Maximum Measured Depth(m)	3.145
Maximum Measured Velocity(m/s)	0.090
Mean Flow Angle	1.047
Rated Discharge	2.400
% difference Q	29.803
Water Temperature (Independent)	12.700
Mean Water Temperature	13.271
Mean Weighted Gauge Height	5.241

Discharge Measurement Summary

Date Measured: Wednesday, June 26, 2024

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	JN
Boat/Motor	Boat
Meas. Number	139

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

System Setup	
Tagline Azimuth (deg)	351.2
Salinity (ppt)	0.1
Rated Discharge (m3/s)	5.35
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	1.12%
Velocity	0.12%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	1.15%

Discharge Results	
Total Area	79.156
Mean Velocity	0.074
Total Width	31.000
Total Q	5.868
Maximum Measured Depth(m)	3.192
Maximum Measured Velocity(m/s)	0.101
Mean Flow Angle	1.253
Rated Discharge	5.347
% difference Q	9.753
Water Temperature (Independent)	8.500
Mean Water Temperature	9.502
Mean Weighted Gauge Height	5.317

8.2 410129 STURT CANAL @ OFFTAKE

Table 4 Measurement Summary at Sturt during the 2023/24 financial year

Meas No.	Date	Time	AFFRA Sensor Q, (Ml/day)	Calibration Measurements Q, Measured Discharge (Ml/day)	Deviation (%)
144	23/08/2023	10:04	582.422	527.040	-9.51%
145	24/08/2023	16:29	428.112	393.638	-8.05%
146	15/09/2023	10:47	452.650	411.610	-9.07%
147	15/09/2023	12:07	504.058	465.005	-7.75%
148	21/09/2023	10:07	887.846	824.256	-7.16%
149	26/09/2023	12:39	2288.650	2104.618	-8.04%
150	31/10/2023	9:14	963.792	956.448	-0.76%
151	28/11/2023	8:27	775.354	719.971	-7.14%
152	28/11/2023	9:21	759.283	719.021	-5.30%
153	19/12/2023	10:16	1688.083	1649.376	-2.29%
154	23/01/2024	8:12	821.750	783.648	-4.64%
155	20/02/2024	10:36	1343.866	1247.962	-7.14%
157	19/03/2024	8:10	530.669	573.091	7.99%
158	19/03/2024	8:57	521.424	497.664	-4.56%
159	23/04/2024	7:52	226.541	233.280	2.97%

* Measurement was performed on windy days.

Discharge Measurement Summary

Date Measured: Wednesday, August 23, 2023

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

Site Information	
Site Name	Sturt Main
Station Number	410129
Location	cableway

Measurement Information	
Party	PN
Boat/Motor	M9
Meas. Number	144

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)	6.10
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 Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.56%
Velocity	0.10%	1.24%
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.52%	--
Instrument	0.25%	0.25%
Overall	1.55%	1.39%

Discharge Results	
Total Area	64.386
Mean Velocity	0.105
Total Width	31.000
Total Q	6.741
Maximum Measured Depth(m)	3.045
Maximum Measured Velocity(m/s)	0.139
Mean Flow Angle	-3.212
Rated Discharge	6.100
% difference Q	10.506
Water Temperature (Independent)	11.900
Mean Water Temperature	11.530
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Thursday, August 24, 2023

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

Site Information	
Site Name	STURT
Station Number	410129
Location	CABLEWAY

Measurement Information	
Party	MB/PN
Boat/Motor	M9
Meas. Number	145

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

System Setup	
Tagline Azimuth (deg)	329.1
Salinity (ppt)	0.0
Rated Discharge (m3/s)	4.56
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	12.0

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 Uncertainty		
Category	ISO	Stats
Depth	0.11%	0.47%
Velocity	0.09%	0.96%
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.65%	--
Instrument	0.25%	0.25%
Overall	1.68%	1.10%

Discharge Results	
Total Area	65.834
Mean Velocity	0.075
Total Width	31.000
Total Q	4.955
Maximum Measured Depth(m)	3.101
Maximum Measured Velocity(m/s)	0.138
Mean Flow Angle	1.846
Rated Discharge	4.556
% difference Q	8.752
Water Temperature (Independent)	12.500
Mean Water Temperature	13.891
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Friday, September 15, 2023

Site Information	
Site Name	Sturt
Station Number	1
Location	US

Measurement Information	
Party	PB
Boat/Motor	Hydro/ M9
Meas. Number	146

System Information	
System Type	RS-M9
Serial Number	6604
Firmware Version	4.10
Software Version	4.2

System Setup	
Transducer Depth (m)	0.10
Screening Distance (m)	0.27
Salinity (ppt)	0.1
Magnetic Declination (deg)	11.0

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

Discharge Calculation Settings			
Track Reference	GPS-GGA	Left Method	Sloped Bank
Depth Reference	Vertical Beam	Right Method	Sloped Bank
Coordinate System	ENU	Top Fit Type	Power Fit
		Bottom Fit Type	Power Fit
		Start Gauge Height (m)	0.00
		End Gauge Height (m)	0.00

Discharge Results	
Width (m)	28.103
Area (m2)	64.206
Mean Speed (m/s)	0.082
Total Q (m3/s)	5.237
Maximum Measured Depth	3.098
Maximum Measured Speed	0.180

Discharge Measurement Summary

Date Measured: Thursday, September 21, 2023

Site Information	
Site Name	Sturt
Station Number	1
Location	US

Measurement Information	
Party	PB, CW
Boat/Motor	Hydro/M9
Meas. Number	147

System Information	
System Type	RS-M9
Serial Number	6604
Firmware Version	4.10
Software Version	4.2

System Setup	
Transducer Depth (m)	0.10
Screening Distance (m)	0.27
Salinity (ppt)	0.1
Magnetic Declination (deg)	11.2

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

Discharge Calculation Settings			
Track Reference	GPS-GGA	Left Method	Sloped Bank
Depth Reference	Bottom-Track	Right Method	Sloped Bank
Coordinate System	ENU	Top Fit Type	Power Fit
		Bottom Fit Type	Power Fit
		Start Gauge Height (m)	0.00
		End Gauge Height (m)	0.00

Discharge Results	
Width (m)	27.970
Area (m2)	64.249
Mean Speed (m/s)	0.160
Total Q (m3/s)	10.275
Maximum Measured Depth	3.238
Maximum Measured Speed	0.784

Discharge Measurement Summary

Date Measured: Tuesday, September 26, 2023

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

Site Information	
Site Name	Sturt
Station Number	410129
Location	cableway

Measurement Information	
Party	PN GR
Boat/Motor	M9
Meas. Number	149

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)	24.36
Discharge Method	Mid-Section
Measurement Quality	--
Temperature (C)	17.0

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 Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.37%
Velocity	0.07%	0.73%
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	64.734
Mean Velocity	0.409
Total Width	31.000
Total Q	26.489
Maximum Measured Depth(m)	3.002
Maximum Measured Velocity(m/s)	0.585
Mean Flow Angle	-3.752
Rated Discharge	24.359
% difference Q	8.742
Water Temperature (Independent)	17.700
Mean Water Temperature	18.906
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, October 24, 2023

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

Site Information	
Site Name	Sturt Main Canal @ Offtake
Station Number	410129
Location	Cableway

Measurement Information	
Party	JN/GR
Boat/Motor	Boat
Meas. Number	150

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	11.07
Discharge Method	Mid-Section
Measurement Quality	Excellent
Temperature (C)	18.0

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.11%	0.39%
Velocity	0.09%	--
Width	0.11%	0.11%
# Cells	0.11%	--
# Stations	1.60%	--
Instrument	0.25%	0.25%
Overall	1.64%	0.47%

Discharge Results	
Total Area	61.621
Mean Velocity	0.181
Total Width	28.100
Total Q	11.155
Maximum Measured Depth(m)	3.003
Maximum Measured Velocity(m/s)	0.259
Mean Flow Angle	-4.865
Rated Discharge	11.070
% difference Q	0.769
Water Temperature (Independent)	18.100
Mean Water Temperature	18.447
Mean Weighted Gauge Height	2.805

Discharge Measurement Summary

Date Measured: Tuesday, November 28, 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	JN/GR
Boat/Motor	eBoat
Meas. Number	151

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	8.33
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.37%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.46%

Discharge Results	
Total Area	63.801
Mean Velocity	0.141
Total Width	27.800
Total Q	8.974
Maximum Measured Depth(m)	3.082
Maximum Measured Velocity(m/s)	0.183
Mean Flow Angle	-2.308
Rated Discharge	8.333
% difference Q	7.687
Water Temperature (Independent)	23.000
Mean Water Temperature	23.260
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, November 28, 2023

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

Site Information	
Site Name	Sturt Offtake Gauging 2
Station Number	410129
Location	Cableway

Measurement Information	
Party	JN/GR
Boat/Motor	eBoat
Meas. Number	152

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	8.32
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.43%
Velocity	0.11%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.48%	--
Instrument	0.25%	0.25%
Overall	1.51%	0.50%

Discharge Results	
Total Area	64.147
Mean Velocity	0.137
Total Width	28.000
Total Q	8.788
Maximum Measured Depth(m)	3.086
Maximum Measured Velocity(m/s)	0.198
Mean Flow Angle	-2.981
Rated Discharge	8.322
% difference Q	5.601
Water Temperature (Independent)	23.000
Mean Water Temperature	23.395
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, December 19, 2023

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

Site Information	
Site Name	Sturt Offtake 2
Station Number	410127
Location	Cableway

Measurement Information	
Party	JN SM
Boat/Motor	Boat
Meas. Number	153

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	19.09
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.32%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.42%

Discharge Results	
Total Area	65.948
Mean Velocity	0.296
Total Width	28.300
Total Q	19.538
Maximum Measured Depth(m)	3.153
Maximum Measured Velocity(m/s)	0.420
Mean Flow Angle	-3.986
Rated Discharge	19.090
% difference Q	2.347
Water Temperature (Independent)	25.500
Mean Water Temperature	25.798
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, January 23, 2024

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	JN/SM
Boat/Motor	Boat
Meas. Number	154

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	9.07
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.36%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.45%

Discharge Results	
Total Area	66.010
Mean Velocity	0.144
Total Width	28.300
Total Q	9.511
Maximum Measured Depth(m)	3.137
Maximum Measured Velocity(m/s)	0.211
Mean Flow Angle	-1.205
Rated Discharge	9.070
% difference Q	4.862
Water Temperature (Independent)	23.200
Mean Water Temperature	23.447
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, February 20, 2024

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	JN
Boat/Motor	Boat
Meas. Number	155

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	14.44
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	0.10%	0.49%
Velocity	0.09%	--
Width	0.10%	0.10%
# Cells	0.10%	--
# Stations	1.40%	--
Instrument	0.25%	0.25%
Overall	1.44%	0.56%

Discharge Results	
Total Area	65.896
Mean Velocity	0.236
Total Width	28.500
Total Q	15.554
Maximum Measured Depth(m)	3.152
Maximum Measured Velocity(m/s)	0.336
Mean Flow Angle	-6.987
Rated Discharge	14.444
% difference Q	7.683
Water Temperature (Independent)	25.400
Mean Water Temperature	24.992
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, March 19, 2024

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	JN/SM
Boat/Motor	Boat
Meas. Number	157

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	5.76
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.50%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.57%

Discharge Results	
Total Area	61.208
Mean Velocity	0.100
Total Width	28.500
Total Q	6.142
Maximum Measured Depth(m)	2.976
Maximum Measured Velocity(m/s)	0.145
Mean Flow Angle	-5.511
Rated Discharge	5.760
% difference Q	6.633
Water Temperature (Independent)	22.500
Mean Water Temperature	22.834
Mean Weighted Gauge Height	2.715

Discharge Measurement Summary

Date Measured: Tuesday, March 19, 2024

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	JN/SM
Boat/Motor	Boat
Meas. Number	158

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

System Setup	
Tagline Azimuth (deg)	333.0
Salinity (ppt)	0.1
Rated Discharge (m3/s)	5.76
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.50%
Velocity	--	--
Width	--	0.10%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.57%

Discharge Results	
Total Area	59.898
Mean Velocity	0.101
Total Width	28.500
Total Q	6.035
Maximum Measured Depth(m)	2.901
Maximum Measured Velocity(m/s)	0.150
Mean Flow Angle	-4.459
Rated Discharge	5.760
% difference Q	4.774
Water Temperature (Independent)	22.800
Mean Water Temperature	22.996
Mean Weighted Gauge Height	0.000

Discharge Measurement Summary

Date Measured: Tuesday, April 23, 2024

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	JN SM
Boat/Motor	Boat
Meas. Number	159

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)	2.70
Discharge Method	Mid-Section
Measurement Quality	--

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

Discharge Calculation Settings	
Track Reference	Bottom-Track
Depth Reference	Vertical Beam

Discharge Uncertainty		
Category	ISO	Stats
Depth	--	0.24%
Velocity	--	--
Width	--	0.09%
# Cells	--	--
# Stations	--	--
Instrument	--	0.25%
Overall	--	0.36%

Discharge Results	
Total Area	33.296
Mean Velocity	0.079
Total Width	24.150
Total Q	2.622
Maximum Measured Depth(m)	1.892
Maximum Measured Velocity(m/s)	0.110
Mean Flow Angle	-3.123
Rated Discharge	2.700
% difference Q	-2.880
Water Temperature (Independent)	15.500
Mean Water Temperature	16.295
Mean Weighted Gauge Height	1.640

END OF REPORT