Coleambally IRRIGATION

ANNUAL COMPLIANCE REPORT 2021/22

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The Annual Compliance Report 2021/22 is provided to meet the reporting requirements of Coleambally Irrigation Co-operative Limited (CICL) against operating licences:

- Combined Water Supply Work Approval and Water Use Approval 40CA401473 (Murrumbidgee regulated river water source) and Combined Water Supply Work Approval;
- Water Use Approvals for Groundwater extraction 40CA403808 and 40WA404593; and
- Environment Protection Licence No 4652.

I am pleased to advise that from 1 July 2021 to 30 June 2022, CICL has complied with all monitoring and reporting requirements of the:

- Combined Water Supply Work Approval and Water Use Approval 40CA401473, including the CICL Monitoring and Reporting Plan dated 16 March 2018;
- Groundwater Works Approvals 40CA403808, 40WA404593 and
- Environment Protection Licence No 4652.

To the best of my knowledge the information presented in this report is certified as being complete, true and accurate.

Clifford Ashby

Chief Executive Officer

5. Executive Summary

The 2021/22 irrigation season saw a continuation of the wet conditions experienced in the previous season. Rainfall recorded for the irrigation season far exceeded the long-term average and was the highest rainfall recorded between July and June since 2010/11.

The season commenced with a general security allocation of 30% that reached 100% by the 1st of November. The key water statistics for the preceding two seasons are provided in the following table:

Table 5.1: Water usage in Coleambally Irrigation Area of Operations

Key Statistics	2021/22	2020/21	2019/20
Final Allocation	100%	100%	11%
Metered Usage to Customers	249,873 ML	258,881 ML	26,948 ML

Rainfall totals in the district exceeded the seasonal average with 585.6 mm recorded for the water year compared to the Long Term Average (LTA) of 398.6 mm.

The total evaporation for the 2021/22 water year was 1,460.9 mm which was lower than the LTA of 1,736.7 mm. The area under supplied irrigation water was 57,808 ha, compared to 52,760 ha in the 2020/21 water year.

Table 5.2: Crop areas and total metered usage (ML)

Crop	Area (Ha)	Total metered usage (ML)
Rice	4,643	58,793
Horticulture	1,303	4,297
Other Summer Crops	24,656	118,614
Winter Crops	27,206	42,548
Stock and Garden	N/A	3,910
Undefined	N/A	21,711
Total	**57,808**	**249,873**

Note: The above cropped areas are based on customer supplied pre-season crop estimates. The quality of this data is assessed and controlled by CICL; however, the figures presented should only be viewed as an estimate.

The high rainfall rate contributed to an increase in average watertable heights. The area of land with the water table within 2 m of the surface has increased to 177 ha, from 61 ha in the previous season, but still only accounts for less than 1% of the Coleambally Irrigation Area.

There were 20 reportable water quality incidents in the 2021/22 season at licenced discharge points where pollutants exceeded Notifiable levels as part of routine monitoring.

6. Plans of the Area of Operations, Authorised Works and Monitoring Sites

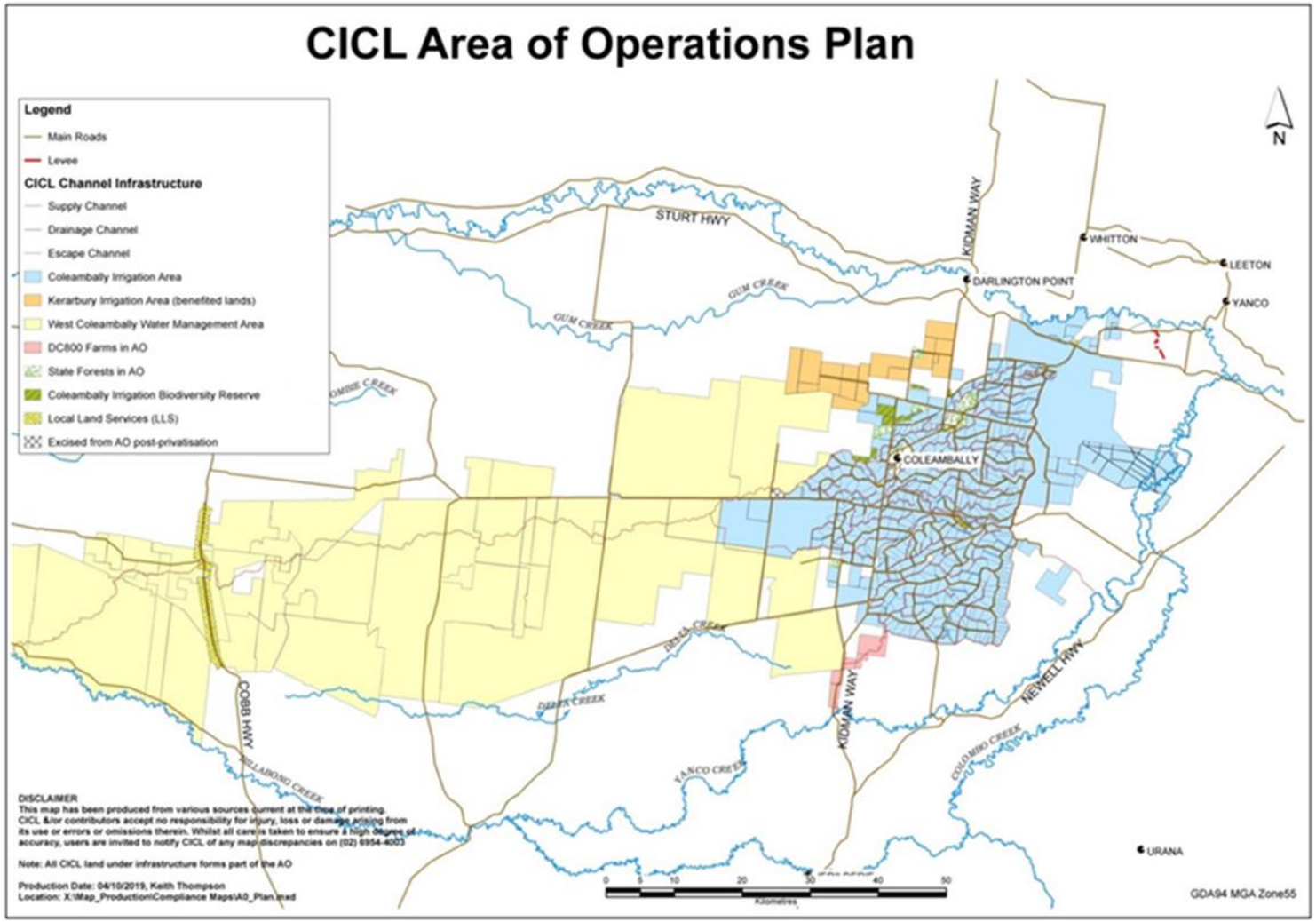
6.1 Coleambally Irrigation Area of Operations

The following section is provided to satisfy condition 2.1 of the CICL Monitoring and Reporting Plan, which requires a plan to be presented of the Area of Operations as existing at 30 June including any amendments made by the inclusion and exclusion of lands.

The Coleambally Irrigation Area of Operations is located between the towns of Darlington Point and Jerilderie, New South Wales, in the southern Murray-Darling Basin of Australia as depicted in Figure 6.1.

From the 1 July 2021 to 30 June 2022 there were no requests made to the Minister to include or exclude land from the Area of Operations.

Figure 6.1: Current Area of Operations of CICL including benefited lands[1]



[1]*The term "benefited lands" is given to land that receives a benefit from our licence and/or licenced works but which are not defined as being within the Area of Operations.*

6.2 Plans of Works and Monitoring Sites

The following section is provided to satisfy condition 2.2 of the CICL Monitoring and Reporting Plan, which requires a plan (or plans) to be presented showing the current location of works listed in Schedule 1 of the CICL Monitoring and Reporting Plan and all monitoring sites listed in Attachments 1 and 2 of the Plan as at 30 June, including the location and extent of areas that are permanently or temporarily inundated to store or dispose of water, the boundary of the Area of Operations, the major supply and drainage channels and the major watercourses located within and adjacent to the Area of Operations.

The Combined Approval 40CA401473 and the Groundwater Work Approvals 40CA403808 and 40WA404593 include three water extraction works, namely: Coleambally Main Canal Off-take, Col Bore and Hort Bore.

The CICL Monitoring and Reporting Plan also includes four drainage discharge points; Coleambally Catchment Drain (CCD), Drainage Canal DC800 (DC800A), Coleambally Outfall Drain A (CODA) and Coleambally Outfall Drain D (CODD).

Figure 6.2 illustrates the location of all authorised water supply works and discharge monitoring sites as well as the location of the Kerarbury Channel Off-take Regulator, which supplies water to the benefited lands of the Kerarbury Irrigation Area. This map also includes the location and extent of the Coleambally Main Canal Off-stream Storage, the boundary of the Area of Operations, the channel and drainage network and the location of adjacent watercourses.

A total of 737 piezometers are located across the Area of Operations to monitor groundwater conditions in the shallow Shepparton Formation aquifer. The distribution of piezometers across the Area of Operations is shown in Figure 6.3.

Figure 6.2: CICL Works Plan

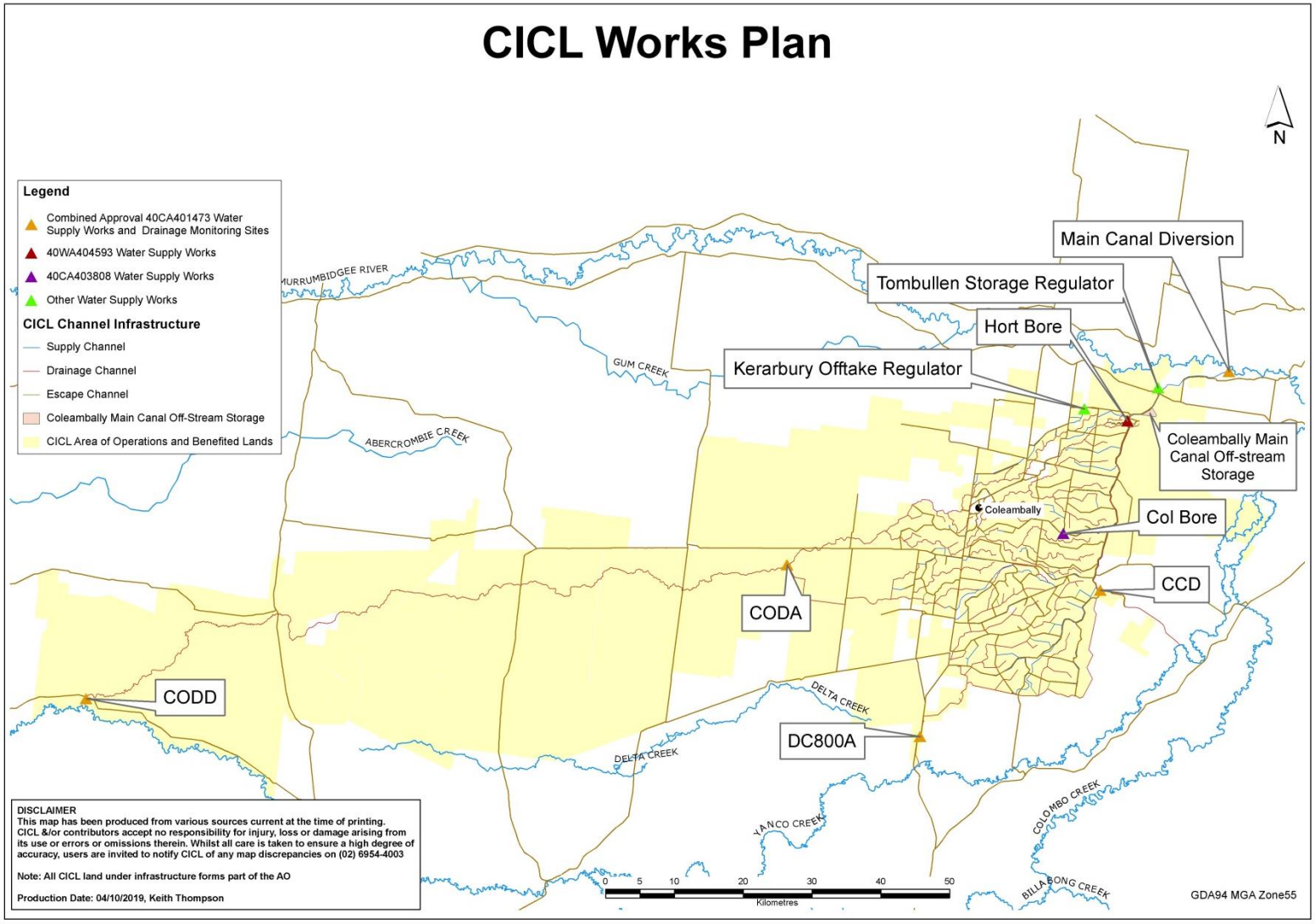
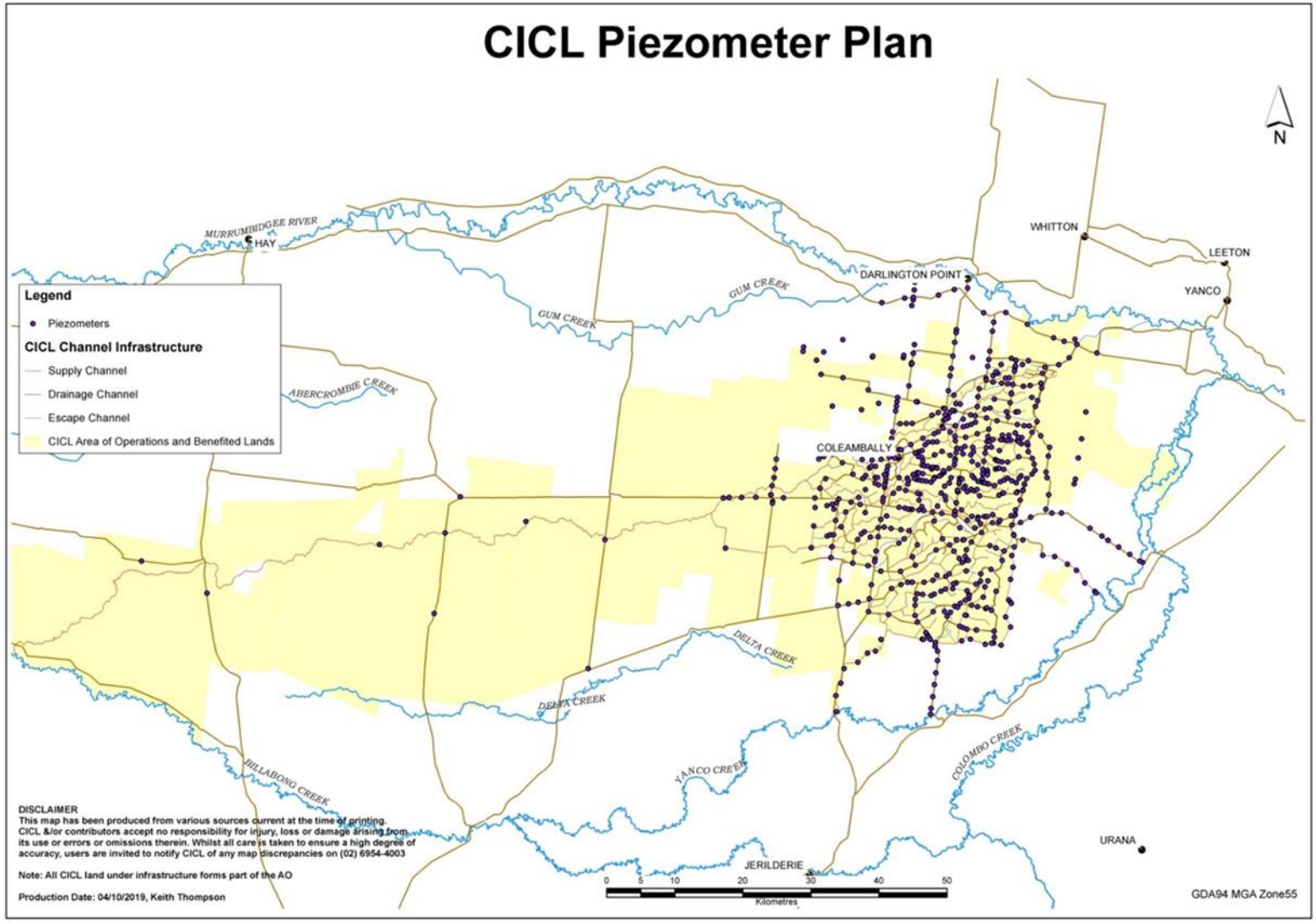


Figure 6.3: CICL Piezometer Plan

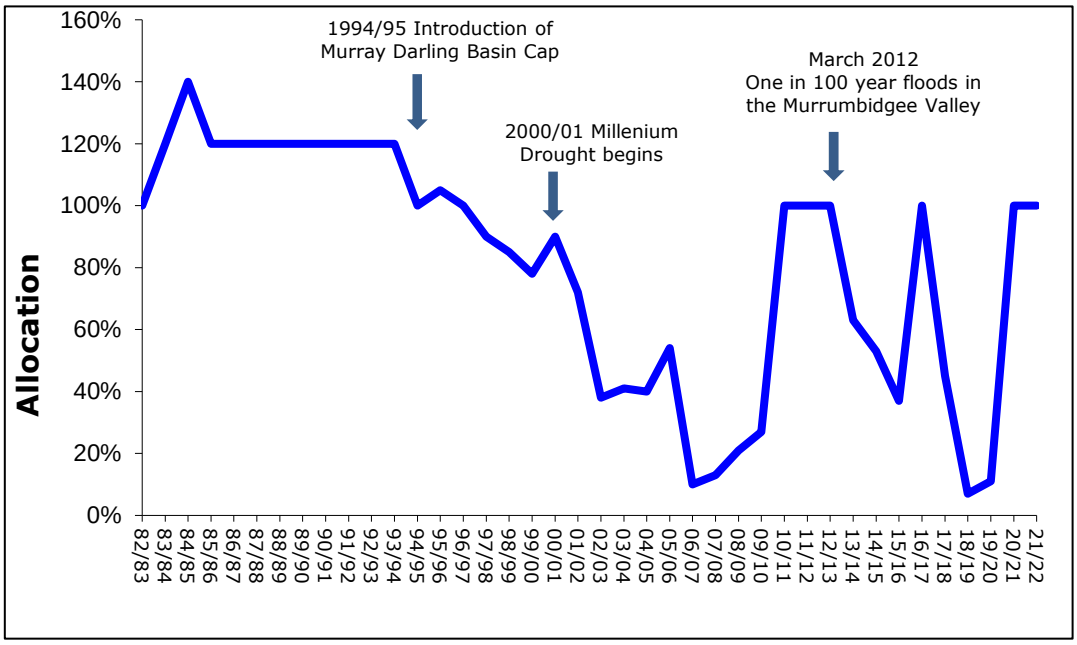


7.1 Water Allocation

The following section is provided to satisfy condition 2.5 of the CICL Monitoring and Reporting Plan, which requires commentary on the trends evident from the discharge, groundwater, extraction and water use monitoring data in the context of climate and water allocation conditions.

The 2021/22 irrigation season saw a closing allocation of 100%. The season's starting general security water allocation was 30% but carryover (Valley average 26%) was available. The prior season's opening allocation was 10% plus carryover (Valley average 18%). The final allocation for the year of 100%, announced in early November 2021, compared to 100% announced in mid January in the previous year.

Figure 7.1: Annual general security allocations in the Murrumbidgee Valley since 1982/83



7.2 Surface and Groundwater Extraction

The following section is provided to satisfy condition 2.10 of the CICL Monitoring and Reporting Plan, which requires reconciled monthly water volumes in megalitres extracted under licences held by CICL or any other licences nominating CICL authorised water supply works and deliveries to customers.

Table 7.1: 2021/22 Water (ML) taken through Water Supply Works against Water Access Licences

Surface Water Licences (Works Approval 40CA401473)	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total (ML)
High Security Access Licence **40AL401469**	0	1,886	0	0	107	0	0	0	0	0	0	0	1,993
High Security Access Licence **40AL417488**	0	4,561	1,442	0	316	0	0	0	0	0	0	0	6,319
General Security Access Licence **40AL401471**	0	0	0	0	0	0	33,383	49,824	23,961	8,895	6,962	0	123,025
General Security Access Licence **40AL405267**	0	0	0	0	0	0	0	0	0	1,698	0	0	1,698
High Security Access Licence **40AL401470**	0	70	0	0	0	0	0	0	0	0	0	0	70
High Security S & T Access Licence **40AL418050**	0	3,269	0	0	0	0	0	0	0	0	0	0	3,269
Conveyance Access Licence **40AL402990**	0	0	9,695	31,930	7,871	51,531	11,315	0	0	0	0	0	112,342
Supplementary Access Licence **40AL402991**	0	12,000	0	0	1,200	0	0	0	0	0	0	0	13,200
Total	0	21,786	11,137	31,930	9,494	51,531	44,698	49,824	23,961	10,593	6,962	0	261,916
Aquifer Access Licence 40AL403806	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Total (ML)**
Col Bore (Works Approval **40CA403808**)	0	0	0	0	0	0	148	378	271	0	0	0	797
Hort Bore (Works Approval **40WA404593**)	0	8	3	0	0	5	0	0	0	0	0	4	20
Total	0	8	3	0	0	5	148	378	271	0	0	4	817
Authorised Credits													426
Environmental/River Operational	0	10,036	1,767	0	649	9,834	6,653	12,625	12,555	4,322	4,152	0	62,593
Combined Total	0	31,830	12,907	31,930	10,143	61,370	51,499	62,827	36,787	14,915	11,114	4	325,752

Note: Monthly water volumes for surface water licences are reported in calendar month and aquifer access licence monthly volumes are reported in mid-month.

Tables 7.2 to 7.4 are provided to satisfy condition 2.5 of the CICL Monitoring and Reporting Plan, which requires discussion of the trends evident from extraction data in the context of comparable data for at least the two previous years and a year at least five years prior.

For all three extraction points 2021/22 data is compared with the previous two seasons' data and with the 2015/16 season. Table 7.2 shows monthly extraction at the Coleambally Main Canal Off-take.

Table 7.2: Monthly extractions (ML) at Main Canal Off-take (calendar month)

Month	2021/22	2020/21	2019/20	2015/16
July	0	0	0	9,702
August	31,822	28,362	7,231	21,519
September	12,904	27,429	5,938	28,766
October	31,930	25,571	6,765	46,097
November	10,159	49,860	11,259	23,409
December	61,470	60,112	8,670	52,397
January	51,466	62,369	9,840	47,695
February	62,536	44,015	3,986	35,315
March	36,551	42,353	6,930	27,313
April	14,979	15,084	14,183	16,132
May	11,118	13,974	7,288	1,467
June	0	0	0	0
Total	**324,935**	**369,129**	**82,090**	**309,812**

Tables 7.3 and 7.4 show monthly extractions from both Col Bore and Hort Bore. The Hort Bore is primarily used to supply high security water on demand outside of the normal CICL irrigation supply period.

The Col Bore was constructed by a qualified driller, as indicated by the construction log and in accordance with conditions (MW7040-00001) as confirmed during the *NRAR Compliance Audit and Inspection: Col Bore and Hort Bore* undertaken July 2020.

The Hort Bore was constructed in accordance with conditions (MW7040-00001) as confirmed during the *NRAR Compliance Audit and Inspection: Col Bore and Hort Bore* undertaken July 2020.

Due to the difference between WaterNSW and CICL's timing of reading the meters, there are immaterial differences between invoiced and reported figures.

Groundwater bore usage is largely influenced by the value of temporary surface water relative to pumping costs. Consequently extractions from both the Col Bore and Hort Bore in the 2021/22 season were low compared to 2020/21.

Table 7.3: Monthly extractions (ML) at Col Bore (mid-month)

Month	2021/22	2020/21	2019/20	2015/16
July	0	0	0	0
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	30	0	2
December	0	437	0	481
January	148	83	0	364
February	378	251	0	363
March	271	10	0	476
April	0	0	177	0
May	0	0	97	0
June	0	0	0	95
Total	**797**	**811**	**274**	**1,781**

Table 7.4: Monthly extractions (ML) at Hort Bore (mid-month)

Month	2021/22	2020/21	2019/20	2015/16
July	0	0	7	0
August	8	2	4	0
September	3	3	7	0
October	0	44	0	559
November	0	88	432	120
December	5	57	129	1
January	0	37	109	0
February	0	276	264	0
March	0	102	141	744
April	0	0	32	404
May	0	0	4	0
June	4	11	18	0
Total	**20**	**620**	**1,147**	**1,828**

7.3 Estimated Annual Evaporation and Rainfall

The following section is provided to satisfy condition 2.13 a) and b) of the CICL Monitoring and Reporting Plan, which requires estimated annual volumes for rainfall and evapo-transpiration.

CICL records both rainfall and evaporation at the CICL Depot. Table 7.5 shows annual rainfall and evaporation was recorded as 585.6 mm and 1,460.9 mm respectively, this represents 147% and 84% of the long-term average (LTA).

Table 7.5: Rainfall and evaporation recorded at CICL Depot weather station in 2021/22 (calendar month)

Month	Rain (mm)	LTA Rain (mm)	Evap (mm)	LTA Evap (mm)
July	40.0	32.5	32.2	38.9
August	17.9	34.2	57.7	64.7
September	85.2	33.1	85.2	101.8
October	26.0	38.5	147.7	164.0
November	103.9	32.1	132.3	211.2
December	57.6	31.1	245.6	261.6
January	108.2	34.6	225.2	274.1
February	2.9	28.3	216.1	224.5
March	30.2	30.2	161.8	183.9
April	55.6	31.6	81.3	111.2
May	41.4	35.0	48.0	63.2
June	16.7	37.4	27.8	37.6
Total	**585.6**	**398.6**	**1,460.9**	**1,736.7**

7.4 Water Discharge

The following section is provided to satisfy condition 2.11 of the CICL Monitoring and Reporting Plan, which requires a report on the monthly water volumes in megalitres from discharge monitoring sites. This section is also provided to satisfy condition 2.5 which requires a discussion of the trends evident from discharge monitoring sites from at least the two previous years and a year at least five years prior.

Tables 7.6 to 7.9 show monthly average drainage flows at four discharge monitoring points. For all four discharge monitoring points 2021/22 data is compared with the previous two seasons' data and with the 2015/16 season.

The licenced discharge monitoring points have WaterNSW gauge sites present. However the flow data obtained from the sites is generally not considered to be accurate. In addition to backwater impacts from downstream creek levels, weed growth and backwater from downstream structures may impact the accuracy of the stage-discharge rating curves particularly at CODA (410110), CCD (410191) and CODD (410133). At each of these sites the flow volumes are substituted with data from adjacent CICL FlumeGate regulators.

Table 7.10 shows the monthly total volume of water supplied through the Boona and Argoon escapes which supply planned releases of water through CODA and CODWonga. This table is provided to satisfy condition M2.5 of EPL 4652, which requires samples of irrigation wastewater for the months specified under condition M2.3 except when water discharged through the drainage system is comprised entirely of supply water.

Table 7.11 shows the monthly total volume of water released without credit, released from drains and released to customers to satisfy condition 2.11 of the CICL Monitoring and Reporting Plan.

Table 7.6: Monthly flow readings (ML) at CCD FlumeGate escape on the Coleambally Catchment Drain (substituted for CCD (410191)) (calendar month)

Month	2021/22	2020/21	2019/20	2015/16
July	0	0	0	0
August	49	0	0	5,710
September	64	1,959	0	587
October	83	2,161	0	2,333
November	30	1,677	0	782
December	2,859	4,554	1,527	3,102
January	4,992	1,439	3,711	2,952
February	5,829	1,638	945	2,101
March	626	2,522	1,251	4,856
April	852	1,592	11	2,752
May	85	1,889	0	70
June	964	0	0	86
Total	**16,433**	**19,431**	**7,445**	**25,331**
Average	**1,369**	**1,619**	**620**	**2,111**
Median	**356**	**1,658**	**0**	**2,217**

Note: The Coleambally Catchment Drain is used to deliver water into Yanco Creek for WaterNSW

Table 7.7: Monthly flow readings (ML) at DC800A (410108) on the Drainage Channel DC800 (calendar month)

Month	2021/22	2020/21	2019/20	2015/16
July	94	28	72	105
August	149	694	22	192
September	757	1,099	1,099	475
October	434	657	2,058	770
November	2,405	893	862	315
December	2,152	2,850	1,953	984
January	3,792	2,432	2,249	1,463
February	4,269	1,215	398	945
March	1,626	2,250	617	2,333
April	2,214	567	316	579
May	222	140	712	317
June	1,579	687	319	2,652
Total	**19,693**	**13,512**	**10,677**	**11,130**
Average	**1,641**	**1,126**	**890**	**928**
Median	**1,603**	**793**	**664**	**674**

Note: DC800 is also used to deliver water into Yanco Creek for WaterNSW

Table 7.8: Monthly flow readings (ML) at CODWonga FlumeGate on the Coleambally Outfall Drain (substituted for CODA (410110)) (calendar month)

Month	2021/22	2020/21	2019/20	2015/16
July	41	32	0	116
August	872	184	0	471
September	802	542	0	1,095
October	203	0	291	558
November	2,580	1,288	2,122	1,142
December	2,734	2,052	0	1,426
January	2,310	0	452	741
February	1,742	2,829	0	742
March	3,442	3,824	1,720	2,557
April	1,082	1,342	1,055	3,652
May	22	323	0	268
June	2,273	642	1,752	3,982
Total	**18,103**	**13,058**	**7,392**	**16,750**
Average	**1,509**	**1,088**	**616**	**1,396**
Median	**1,412**	**592**	**146**	**918**

Note: The Coleambally Outfall Drain is also used to supply customers with water

Table 7.9: Monthly flow readings (ML) at CODOaklands FlumeGate on the Coleambally Outfall Drain (substituted for CODD (410133)) (calendar month)

Month	2021/22	2020/21	2019/20	2015/16
July	19	0	0	3
August	0	0	0	0
September	0	0	0	0
October	0	0	0	0
November	0	0	0	4
December	22	72	0	147
January	75	2	0	0
February	0	0	0	0
March	11	112	0	181
April	0	0	72	8
May	0	0	0	0
June	0	74	7	247
Total	**127**	**260**	**79**	**590**
Average	**11**	**22**	**7**	**49**
Median	**0**	**0**	**0**	**1**

Note: The CODOaklands FlumeGate is also used to supply customers with water

Table 7.10: Monthly flow (ML) at Boona and Argoon FlumeGate escapes 2021/22

Month	Boona FlumeGate Escape	Argoon FlumeGate Escape
July	0	0
August	114	1,033
September	26	160
October	0	122
November	37	2,525
December	6	2,910
January	161	1,278
February	103	1,854
March	191	3,009
April	59	954
May	154	62
June	259	874
Total	**1,110**	**14,781**

Table 7.11: 2021/22 Volumes (ML) released without credit, released from drain and released to customers

Month	Released without credit from escapes (calendar month)	Discharged for environmental or river operational purposes (calendar month)	Delivered to CICL Customers (mid-month)
July	0	0	0
August	48	10,036	5
September	267	1,767	16,716
October	113	0	12,977
November	30	649	31,097
December	0	9,834	20,813
January	0	6,653	45,177
February	0	12,625	61,629
March	0	12,555	32,399
April	0	4,322	16,464
May	95	4,152	8,000
June	2,181	0	4,596
Total	**2,734**	**62,593**	**249,873**

7.5 Distribution of Irrigation Intensity

The following section is provided to satisfy condition 2.13 i) of the CICL Monitoring and Reporting Plan, which requires a report on the distribution of irrigation intensity in at least three intensity ranges for the main supply sub-divisions.

The irrigation intensity for the main supply sub-divisions is represented in Table 7.12.

The Coleambally Irrigation Area consists of all farms with access to the CICL drainage network and is comprised of farmland that has historically been the most intensively irrigated farmland within the Area of Operations.

The West Coleambally Water Management Area is comprised of landholdings that have access to the supply network from the Coleambally Outfall Drain and has historically been the least intensively irrigated farmland within the Area of Operations.

Coleambally External refers to those landholders that are situated adjacent to the Coleambally Irrigation Area but do not have access to the CICL drainage network.

Table 7.12: 2021/22 Regional distribution of irrigation intensity (ML/ha)

Region	Use (ML)	Area (ha)	Intensity (ML/ha)	% of use
Coleambally Irrigation Area	177,860	79,495	>1ML	71
West Coleambally Water Management Area	8,612	313,578	<0.1ML	4
Coleambally External	63,401	71,129	>0.1ML<1ML	25
Total	**249,873**	**464,202**		**100**

7.6 Crop Water Use

The following section is provided to satisfy conditions 2.5 and 2.13 c) through to h) of the CICL Monitoring and Reporting Plan, which requires discussion of the trends evident in the estimated annual water deliveries for rice, horticulture, other summer crops, winter crops, domestic and stock uses, and their estimated annual crop area.

Table 7.13 shows the estimated annual values for water deliveries for crop types, with the applicable areas for the water uses estimated from locally relevant crop water use factors.

Table 7.13: 2021/22 Crop area, total crop use

Crop	Area (Ha)	Total ML
Rice	4,643	58,793
Horticulture	1,303	4,297
Other Summer Crops (including pasture)	24,656	118,614
Winter Crops	27,206	42,548
Stock and Garden	N/A	3,910
Undefined	N/A	21,711
Total	**57,808**	**249,873**

The crop area data is supplied by CICL's customers at the beginning of the irrigation season and is independently verified by various means, however, the data serves only as an approximation of the area irrigated.

The irrigated crop area within the Coleambally Area of Operations for the 2021/22 season increased by approximately 10% over the previous season, with cotton comprising the largest proportional change in crop area between the two seasons. Water use intensity for both winter and summer crops was down significantly, with rainfall and low evaporation rates contributing to lower metered water use to last season.

Table 7.14 on the following page indicates the change in area of seven major crops in the Coleambally Irrigation Area over the last 25 years.

Table 7.14: Crop areas and relative water usage over time

Season	Rice		Corn/Maize		Soybeans		Cotton		Wheat		Pasture		Canola		
	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Area (ha)	Proportion of delivery (%)	Total (%)
2021/22	4,643	23.5	4,583	10.3	153	0.4	13,298	31.8	16,275	10.9	5,485	3.8	5,425	3.9	84.6
2020/21	4,944	31.0	4,654	13.9	380	0.9	6,269	18.9	16,875	13.9	5,269	5.2	3,064	2.5	86.3
2019/20	320	3.4	856	9.2	0	0	934	10.0	2,147	23.0	2,285	24.4	566	6.1	76.1
2018/19	236	3.2	2,252	24.1	0	0	3,641	39.8	7,541	11.0	3,945	9.1	1,115	2.2	89.4
2017/18	6,869	35.0	4,442	14.0	2,393	1.0	5,796	21.0	6,387	6.0	3,921	5.0	2,323	2.0	88.0
2016/17	11,484	53.6	5,105	13.5	892	1.9	6,623	17.9	8,462	3.5	10,679	4.1	1,512	1.2	95.7
2015/16	3,603	34.6	8,462	13.5	1,883	3.0	5,105	20.6	11,484	14.8	6,623	7.0	892	0.1	94.0
2014/15	9,103	44.0	6,757	13.0	1,666	2.0	2,602	7.0	14,226	18.0	4,737	4.0	1,716	1.0	91.0
2013/14	12,500	43.6	4,358	8.4	1,734	2.4	5,587	6.9	15,071	9.8	5,264	2.8	2,540	1.5	75.4
2012/13	19,071	52.7	4,872	7.7	2,583	3.9	2,089	3.0	13,698	7.2	6,545	3.6	4,182	1.3	79.4
2011/12	16,745	62.1	4,767	8.2	2,238	2.7	5,280	7.9	15,989	8.7	7,472	4.0	5,244	1.6	91.2
2010/11	14,512	68.3	4,367	7.2	1,240	1.5	885	1.4	11,334	5.1	8,119	4.2	3,381	1.5	89.2
2009/10	3,668	46.0	311	2.0	495	1.0	0	0	10,635	10.0	6,903	12.0	2,523	2.0	73.0
2008/09	2,135	33.1	2,472	3.4	308	1.4	0	0	4,215	9.5	4,481	16.3	1,471	4.9	68.7
2007/08	90	1.4	941	1.2	152	0.7	0	0	6,575	20.0	5,004	20.0	1,584	6.1	49.4
2006/07	8,518	54.3	1,863	7.6	478	0.8	0	0	12,509	15.9	9,958	7.8	1,602	1.0	87.4
2005/06	18,025	62.8	3,306	7.0	2,106	2.9	0	0	13,610	8.4	15,440	8.7	1,748	0.9	90.6
2004/05	8,142	44.0	3,671	7.2	1,495	2.2	0	0	20,287	18.8	12,865	10.8	2,681	1.3	84.3
2003/04	12,597	55.8	3,545	5.7	1,938	3.5	0	0	21,192	15.0	12,131	7.5	1,763	0.7	88.0
2002/03	11,395	46.0	4,788	9.3	1,788	1.0	0	0	21,346	20.4	10,183	7.4	2,095	1.7	85.8
2001/02	27,493	67.5	3,808	4.2	3,297	3.4	0	0	21,103	9.2	11,581	6.1	2,191	0.6	91.0
2000/01	30,440	73.9	4,074	5.7	4,551	5.9	0	0	14,276	4.6	11,998	4.7	2,153	0.4	95.2
1999/00	24,138	77.7	1,178	3.1	2,185	3.9	0	0	12,649	6.1	7,485	4.4	2,152	0.7	95.9
1998/99	24,491	73.8	1,059	1.3	4,339	5.7	0	0	13,963	1.7	13,879	8.1	2,184	1.7	92.3
1997/98	24,624	70.4	1,059	1.3	4,998	7.5	0	0	14,943	7.4	9,964	6.1	2,053	0.4	94.2

7.7 Water Balance for the Area of Operations

The following section is provided to satisfy condition 2.12 of the CICL Monitoring and Reporting Plan, which requires an annual water balance estimate for the supply system taking into account deliveries, net channel losses and changes in the volume of water held in offline storages. This section is also provided to satisfy condition R4.3 (a) of the Environment Protection Licence, which requires the volume of all inflows of water to the premises, the volume of all surface water discharges from the premises and an estimate of all accessions of water to groundwater in or outside of the premises.

Table 7.15 indicates the estimated annual volumes of net channel losses, including evaporation, rainfall and seepage for the 2021/22 irrigation season.

Table 7.15: 2021/22 Annual water balance for each water supply work

Source	Volume (ML)
River	324,935
Groundwater	817
Total Extractions	**325,752**
Customers	249,873
River Operational & Environmental	62,593
Total Deliveries	**312,466**
Evaporation	6,805
Seepage	7,984
Rainfall	-5,476
Discharged without credit	2,734
Offline storage loss	1,239
Change in storage volume	0
Total Losses	**13,286**

Sections 8.1 and 8.2 are provided to comply with condition 2.5 of the CICL Monitoring and Reporting Plan, which requires a discussion of the trends evident from the salinity monitoring data for at least the two previous years and a year at least five years prior.

8.1 Extraction Salinity

Salinity data was omitted from all sites during periods where no flow was detected. Where flow was present with no salinity reported the monthly average was used.

The data in Tables 8.1 to 8.3 illustrates that monthly average salinity in the last two seasons at the Main Canal Off-take, Col Bore and Hort Bore has remained relatively stable. The monthly average salinity readings for the Main Canal Off-take were generally lower in the 2021/22 season compared to the previous season.

Table 8.1: Monthly average salinity (µS/cm) at Main Canal Off-take

Month	2021/22	2020/21	2019/20	2015/16
July	No Flow	No Flow	No Flow	141
August	136	227	219	148
September	156	176	209	195
October	155	162	195	227
November	141	156	189	142
December	155	95	187	163
January	135	90	188	116
February	135	144	197	125
March	121	128	208	146
April	154	214	235	145
May	155	138	219	155
June	No Flow	No Flow	No Flow	No Flow
Average	**144**	**153**	**205**	**155**
Median	**148**	**150**	**203**	**146**

Table 8.2: Monthly average salinity (µS/cm) at Col Bore

Month	2021/22	2020/21	2019/20	2015/16
July	No Flow	No Flow	No Flow	No Flow
August	No Flow	No Flow	No Flow	No Flow
September	No Flow	No Flow	No Flow	No Flow
October	No Flow	No Flow	No Flow	No Flow
November	No Flow	760	No Flow	620
December	No Flow	760	No Flow	620
January	763	760	No Flow	620
February	763	767	No Flow	620
March	763	767	No Flow	620
April	No Flow	No Flow	624	No Flow
May	No Flow	No Flow	624	No Flow
June	No Flow	No Flow	No Flow	620
Average	**763**	**763**	**624**	**620**
Median	**763**	**760**	**624**	**620**

Table 8.3: Monthly average salinity (µS/cm) at Hort Bore

Month	2021/22	2020/21	2019/20	2015/16
July	No Flow	No Flow	347	No Flow
August	195	189	347	320
September	195	189	347	No Flow
October	No Flow	189	No Flow	320
November	No Flow	199	347	No Flow
December	195	194	347	No Flow
January	No Flow	199	347	No Flow
February	No Flow	198	347	No Flow
March	No Flow	198	347	No Flow
April	No Flow	No Flow	347	No Flow
May	No Flow	No Flow	347	No Flow
June	195	198	347	320
Average	**195**	**195**	**347**	**320**
Median	**195**	**198**	**347**	**320**

8.2 Discharge Salinity

Salinity data was omitted from all sites during periods where no flow was detected. Where flow was present with no salinity reported, the monthly average was used.

Tables 8.4 to 8.7 show monthly average salinity readings at four discharge monitoring points. Electrical Conductivity (EC) data is provided from WaterNSW gauging stations. However, to obtain more accurate readings, data without flow from a metered site are omitted and likewise metered flows without salinity are given monthly corrected average EC. In these Tables, 2021/22 data is compared with data from the previous two seasons and with the 2015/16 season.

The data illustrates that the monthly average salinity in the last three seasons has remained relatively constant in comparison to the benchmark year. This can be primarily attributed to the regular supply of water through these discharge points to customers and WaterNSW in addition to lower farm drainage, with ordered supplies constituting most of the flows exiting the system.

Table 8.4: Monthly average salinity readings at Discharge Point CCD (410191) on the Coleambally Catchment Drain (µS/cm)

Month	2021/22	2020/21	2019/20	2015/16
July	No Flow	No Flow	No Flow	No Flow
August	152	No Flow	No Flow	176
September	134	269	No Flow	190
October	148	222	No Flow	286
November	16	236	No Flow	228
December	242	125	291	135
January	244	167	177	219
February	151	154	205	143
March	138	131	164	217
April	161	274	152	194
May	174	132	No Flow	192
June	149	No Flow	No Flow	145
Average	**155**	**190**	**198**	**193**
Median	**151**	**167**	**177**	**192**

Note: The monthly average salinity for November 2021/22 is derived from a single data point and is not considered to be accurate.

Table 8.5: Monthly average salinity readings at Discharge Point DC800A (410108) on the Drainage Channel DC800 (µS/cm)

Month	2021/22	2020/21	2019/20	2015/16
July	266	121	174	151
August	280	196	184	168
September	300	239	202	202
October	323	253	189	351
November	296	303	181	261
December	246	238	165	122
January	163	238	178	138
February	160	239	191	153
March	169	197	204	190
April	169	227	211	162
May	180	369	259	168
June	163	265	286	145
Average	**226**	**240**	**202**	**184**
Median	**213**	**239**	**190**	**165**

Table 8.6: Monthly average salinity readings at Discharge Point CODA (410110) on the Coleambally Outfall Drain (µS/cm)

Month	2021/22	2020/21	2019/20	2015/16
July	128	196	No Flow	168
August	128	223	No Flow	190
September	176	158	No Flow	201
October	244	No Flow	424	369
November	153	213	353	211
December	211	325	No Flow	179
January	360	No Flow	344	158
February	284	506	No Flow	168
March	331	541	286	151
April	215	501	339	190
May	203	147	No Flow	221
June	217	87	211	244
Average	**221**	**290**	**326**	**204**
Median	**213**	**218**	**342**	**190**

Table 8.7: Monthly average salinity readings at Discharge Point CODD (410133) on the Coleambally Outfall Drain (µS/cm)

Month	2021/22	2020/21	2019/20	2015/16
July	206	No Flow	No Flow	227
August	No Flow	No Flow	No Flow	No Flow
September	No Flow	No Flow	No Flow	No Flow
October	No Flow	No Flow	No Flow	No Flow
November	No Flow	No Flow	No Flow	227
December	255	157	No Flow	227
January	296	157	No Flow	No Flow
February	No Flow	No Flow	No Flow	No Flow
March	213	157	No Flow	227
April	No Flow	No Flow	152	227
May	No Flow	No Flow	No Flow	No Flow
June	No Flow	157	152	227
Average	**243**	**157**	**152**	**227**
Median	**234**	**157**	**152**	**227**

8.3 Simple Salt Balance

The following section is provided to satisfy conditions 2.14, 2.15 and 2.16 of the CICL Monitoring and Reporting Plan, which requires a report on the volume, salinity and salt load of extractions and discharges with a simple annual salt balance representing the imported, exported and retained salt load for the area.

The salt load is calculated using a daily average EC and total daily salt load. Where daily salinity was not available the monthly average salinity (µS/cm) was used to calculate salt load.

The following tables depict actual numbers for flow (ML) and computed salt load (tonnes) based on daily readings however the salinity (µS/cm) is displayed as a monthly average.

Table 8.8: Salinity (µS/cm) and salt load (Tonnes) entering CICL's Area of Operations in 2021/22

2021/22	Main Canal			Col Bore			Hort Bore		
Month	**ML**	**µS/cm**	**Salt (T)**	**ML**	**µS/cm**	**Salt (T)**	**ML**	**µS/cm**	**Salt (T)**
July	0	0	0	0	0	0	0	0	0
August	31,822	136	2,765	0	0	0	8	195	1
September	12,904	156	1,276	0	0	0	3	195	0
October	31,930	155	3,154	0	0	0	0	0	0
November	10,159	141	868	0	0	0	0	0	0
December	61,470	155	5,946	0	0	0	5	195	1
January	51,466	135	4,580	148	763	72	0	0	0
February	62,536	135	5,464	378	763	185	0	0	0
March	36,551	121	2,671	271	763	132	0	0	0
April	14,979	154	1,484	0	0	0	0	0	0
May	11,118	155	1,049	0	0	0	0	0	0
June	0	0	0	0	0	0	4	195	0
Sub Total	**324,935**		**29,257**	**797**		**389**	**20**		**2**
Salt Total	**29,648**	**ML Total**	**325,752**						

8. Salinity and Salt Load

Tombullen is an in-line storage used by WaterNSW to buffer Murrumbidgee downstream demand. It is located off the main canal at the start of CICL's supply system. Whilst it is not a discharge monitoring site under the CICL Monitoring and Reporting Plan it does, however, account for a significant volume of water (and hence, salt) delivered by CICL through our main extraction site each season. For the salt load tables actual volume (ML) and computed total salt (Tonnes) are used, however salinity (µS/cm) is displayed as a monthly average.

Table 8.9: Salinity (µS/cm) and salt load (Tonnes) exiting Coleambally Irrigation Area in 2021/22

	Drainage Canal DC800A			Coleambally Outfall Drain A (CODA)			Coleambally Catchment Drain (CCD)			Tombullen		
Month	**ML**	**µS/cm**	**Salt (T)**	**ML**	**µS/cm**	**Salt (T)**	**ML**	**µS/cm**	**Salt (T)**	**ML**	**µS/cm**	**Salt (T)**
July	94	266	17	41	128	3	0	0	0	0	0	0
August	149	280	30	872	128	75	49	152	5	10,037	135	876
September	757	300	150	802	176	85	64	134	7	1,767	152	172
October	434	323	87	203	244	29	83	148	8	0	0	0
November	2,405	296	462	2,580	153	234	30	16	0	0	0	0
December	2,152	246	288	2,734	211	369	2,859	242	443	5,636	146	527
January	3,792	163	398	2,310	360	458	4,992	244	741	2,027	135	173
February	4,269	160	436	1,742	284	333	5,829	151	567	9,159	133	780
March	1,626	169	172	3,442	331	731	626	138	55	11,182	102	739
April	2,214	169	237	1,082	215	144	852	161	88	1,759	155	174
May	222	180	26	22	203	3	85	174	10	3,984	134	344
June	1,579	163	161	2,273	217	315	964	149	89	0	0	0
Sub Total	**19,693**		**2,464**	**18,103**		**2,779**	**16,433**		**2,013**	**45,551**		**3,785**
Salt Total	**11,041**	**ML Total**	**99,780**									

The seasonal flow, salinity and salt load for the CODD is displayed separately in Table 8.10 as it is situated directly downstream from the site CODA. Including both sites in the same table would lead to double counting of the salt and flow data.

Table 8.10: Volume of water exiting CICL's Operational Area at CODOaklands, salinity (µS/cm) at CODD (410133) and calculated salt load (Tonnes) in 2021/22

2021/22	Coleambally Outfall Drain D (CODD)		
Month	**ML**	**µS/cm**	**Salt (T)**
July	19	206	3
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	22	255	4
January	75	296	14
February	0	0	0
March	11	213	2
April	0	0	0
May	0	0	0
June	0	0	0
Total	**127**		**23**

Table 8.11 represents a simple annual salt balance comprising the imported, exported and retained salt load for the area associated with each separate water supply work.

Table 8.11: Simple salt balance (Tonnes) in 2021/22

Inflow Sites	Imported Salt (T)	Outflow Sites	Exported Salt (T)
Main Canal Off-take	29,257	Drainage Canal DC800 A (DC800A)	2,464
Col Bore	389	Coleambally Outfall Drain A (CODA)	2,779
Hort Bore	2	Coleambally Catchment Drain (CCD)	2,013
		Tombullen	3,785
Total	**29,648**		**11,041**
Balance	**18,607**		

9. Groundwater Conditions within the Area of Operations

The following section is provided to satisfy condition 2.17 of CICL Monitoring and Reporting Plan, which requires a report on monitoring of groundwater conditions by means of piezometers in accordance with monitoring and reporting requirements.

CICL has a network of piezometers throughout its Area of Operations which is used to monitor groundwater conditions. Attachment 2 of the CICL Monitoring and Reporting Plan requires that piezometers be read annually in August (+/- 2 weeks). It is CICL's practice to read them again in March to have a more complete understanding of groundwater conditions affecting our area. The related data is analysed using Arc Map GIS and MS Excel software.

In August 2022, 666 of CICL's 737 licensed piezometers were read of which 99 were recorded as being dry. Of the 71 piezometers not read, 6 were recorded as destroyed, 2 were recorded as not found and 63 were recorded as blocked.

Piezometers are read to an accuracy of +/- 5 cm with the data obtained presented as per the Licence monitoring requirements. Data analysis and mapping is based on a split set of data being: pressure levels from the upper Shepparton aquifer via piezometers < 12 m deep; and pressure levels from the lower Shepparton aquifer via piezometers 12–60 m deep.

Readings from the upper Shepparton Aquifer represent the water table, while readings from the lower Shepparton aquifer represent the piezometric level of the lower confined aquifer.

All piezometers with a recorded depth are mapped, except those recorded as dry, blocked, buried or otherwise damaged.

For comparative purposes, piezometric levels in the previous two years and in the baseline year of 1998 are presented along with the current year. The inclusion of the previous two years highlights the change in conditions from the last season to the present, whilst the inclusion of the baseline year allows a comparison with groundwater conditions in 1998.

Figure 9.1 is a contour map of the piezometric levels below natural surface for August 2022. A 3D surface of piezometric levels was created from point measurements (depth to piezometric level below natural surface at each piezometer) by using the Inverse Distance Weighted (IDW) method of interpolation. This method requires inputs of XY locational coordinates and a Z coordinate for the piezometric level.

Tables 9.1 and 9.2 are tabular representations of Figure 9.1. From Table 9.1 for 0-12 m depth piezometers 17,522 ha or 18% of the mapped groundwater area were located in the 0-4 m zone in 2022, which in Figure 9.1 is represented in red, orange and yellow combined. This compares to 10,176 ha in 2021. For the same period there was also an increase in piezometric level, known as standing water level, within 2 metres of the surface from 61 ha to 177 ha.

In 2019/20 CICL improved the reporting practices for piezometric levels resulting in portions of land within the Coleambally Irrigation Area denoted by the label 'no data'. This area equates to 1,880 ha or 2% of the Coleambally Irrigation Area for the 0-12 m piezometric level. 66 piezometers within the 0-12 m range were recorded as dry in August 2022, compared to 65 in August 2021.

9. Groundwater Conditions within the Area of Operations

Table 9.1: Piezometric level below natural surface; 0-12 m piezometers; August 2022 comparison of areas 1998, 2020 & 2021

Piezometric Level Below Natural Surface (m)	Years and Area of Piezometric Level (ha)				Change in Area of Piezometric Level (ha) [+ = increasing][- = decreasing]	
	2022	2021	2020	1998	2022 vs 1998	2022 vs 2021
Less than 2 metres	177	61	40	36,041	-35,864	116
Between 2 and 4 metres	17,345	10,115	2,933	41,559	-24,214	7,230
Greater than 4 metres	76,400	83,146	91,432	18,202	58,198	-6,746
No data	1,880	2,480	1,397	0	1,880	-600
Total	**95,802**	**95,802**	**95,802**	**95,802**		

Table 9.2: Piezometric level below natural surface; 12-60 m piezometers; August 2022 comparison of areas 1998, 2020 & 2021

Piezometric Level Below Natural Surface (m)	Years and Area of Piezometric Level (ha)				Change in Area of Piezometric Level (ha) [+ = increasing][- = decreasing]	
	2022	2021	2020	1998	2022 vs 1998	2022 vs 2021
Less than 2 metres	23	59	0	23,024	-23,001	-36
Between 2 and 4 metres	6,561	2,900	353	33,481	-26,920	3,661
Greater than 4 metres	89,218	92,843	95,399	39,297	49,921	-3,625
No data	0	0	50	0		
Total	**95,802**	**95,802**	**95,802**	**95,802**		

Table 9.2 compares the 12–60 m range in 2022 and demonstrates that the watertable has risen from previous readings, particularly within the 2-4 m range, which is assumed to be in response to the higher rainfall experienced and increased irrigation. In 2020 there was 353 ha with a piezometric level between 2 and 4 metres of the surface, and in 2022 that figure has increased to 6,561 ha.

6,584 ha or 6.9% of mapped standing water level area existed in the 0-4 m zone in 2022. This area is higher than the 3% in 2021.

Figure 9.1: Piezometric level below natural surface; 0-12 m and 12-60 m piezometers August 2022

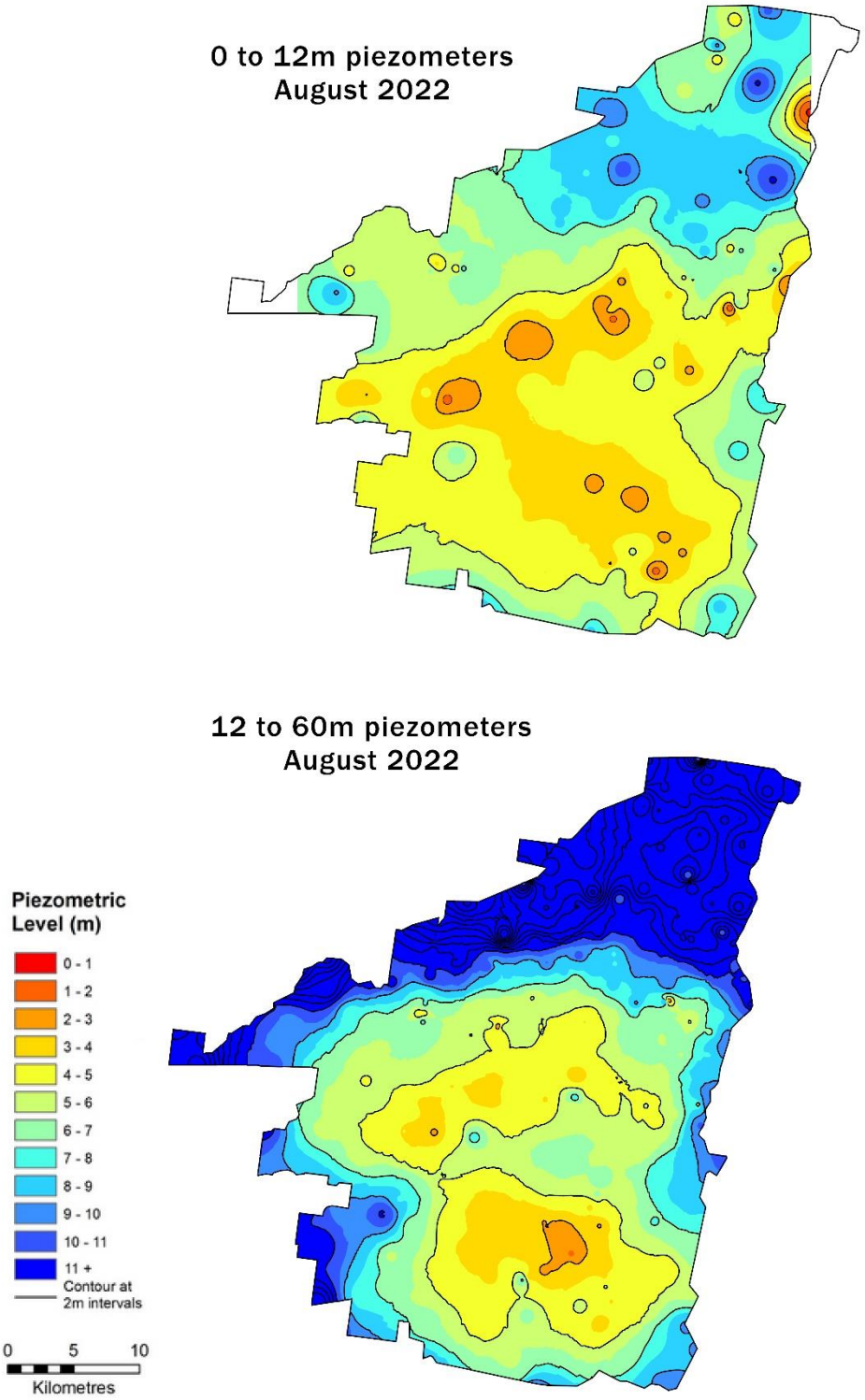


Figure 9.2 depicts the piezometric level as converted to the Australian Height Datum (AHD) and mapped for all the 0-12 m and 12-60 m piezometers. These are the upper and lower parts of the Shepparton Aquifer, respectively. These levels represent the piezometric level height above sea level and can be used to identify the direction of groundwater flow. In general, the direction of groundwater flow is West-South-West.

Tables 9.3 and 9.4 are tabular representations of Figure 9.2.

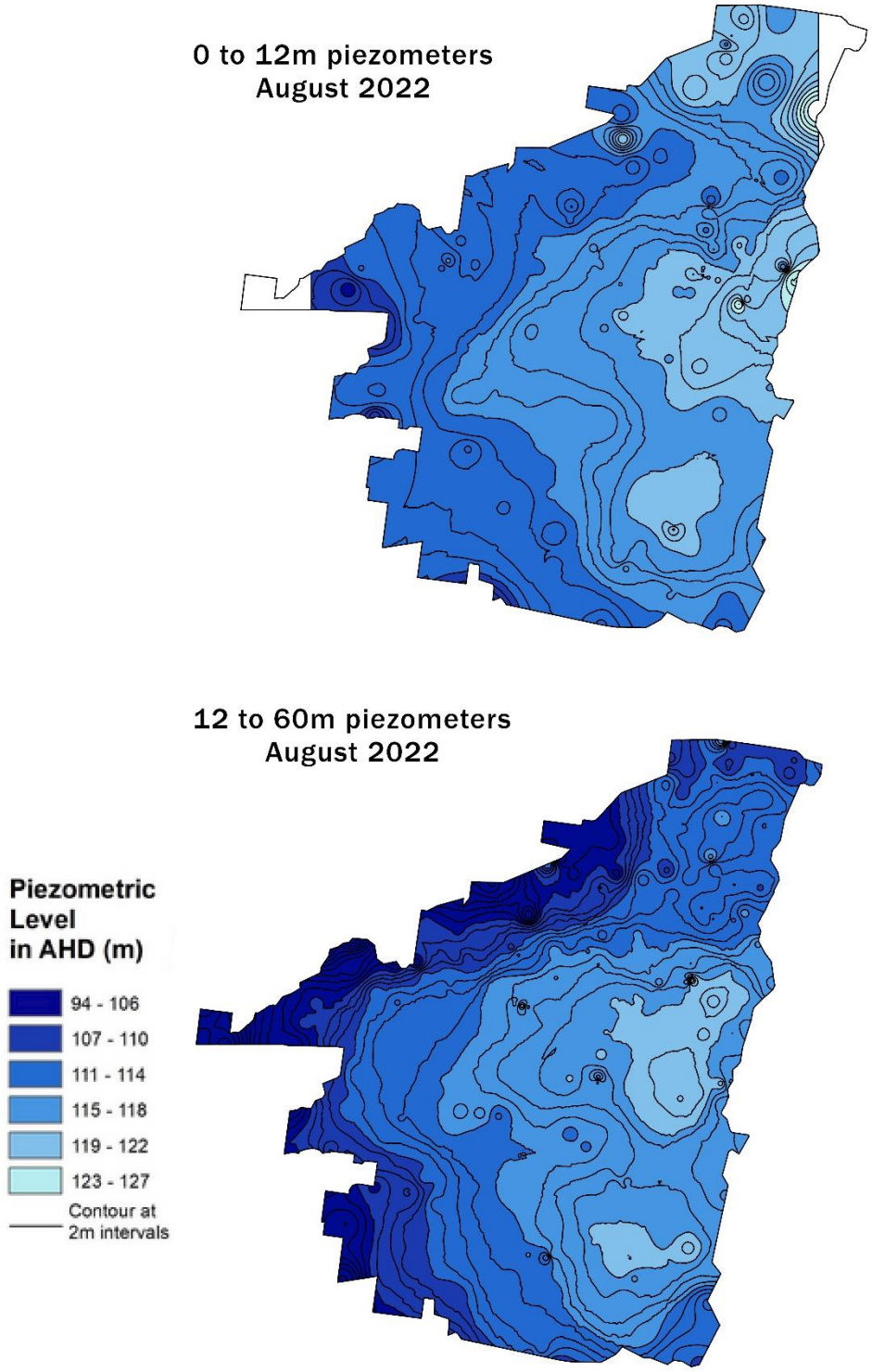
Table 9.3: Piezometric level (mAHD); 0-12 m piezometers; August 2022 versus September 1998

Piezometric Level (AHD)	2022 Area (Ha)	1998 Area (Ha)
123 – 127 (higher)	657	4,151
119 - 122	17,975	39,182
115 - 118	39,448	31,548
111 - 114	34,657	11,211
107 - 110	1,185	5,724
94 – 106 (lower)	0	3,986
No Data	1,880	0
Total	**95,802**	**95,802**

Table 9.4: Piezometric level (mAHD); 12-60 m piezometers; August 2022 versus September 1998

Piezometric Level (AHD)	2022 Area (Ha)	1998 Area (Ha)
123 – 127 (higher)	0	6,381
119 - 122	7,502	42,337
115 - 118	31,945	34,921
111 - 114	37,757	11,432
107 - 110	12,257	731
94 – 106 (lower)	6,341	0
No Data	0	0
Total	**95,802**	**95,802**

Figure 9.2: Piezometric level (mAHD); 0-12 m and 12-60 m piezometers August 2022



10.1 Data Omissions and Discrepancies

This section identifies the variations, discrepancies, data omissions and details of any actions undertaken or proposed to remedy any monitoring or reporting deficiencies in satisfying condition 2.6 of the CICL Monitoring and Reporting Plan.

The Coleambally Catchment Drain (CCD) is a supply point for WaterNSW customers and these flows are measured at the adjacent CICL delivery point rather than the WaterNSW gauging station. Under condition 3 of the CICL Monitoring and Reporting Plan it is understood that CICL may include data of acceptable quality from other sources to meet the monitoring and reporting requirements of the Plan. As with the CODA site, the flow data from the CCD delivery system is used in conjunction with the continuous EC data from the WaterNSW gauge to compute salt load. Table 10.1 indicates where data is sourced. The WaterNSW CCD and CODD gauges are impacted by backwater during periods of high flow in the Yanco and Billabong creeks and are considered unreliable.

To provide the most accurate data possible CICL uses data sources as detailed in Table 10.1.

Table 10.1: Data sources for licence sites

NSW DPI-Hydrometrics site number	NSW DPI-Water Licenced Site	NSW EPA Licenced Site	ACR Comment
410110	CODA	1. CODWonga	Salinity from CODA (410110) Flow from CICL FlumeGate CODWonga
410108	DC800A	2. DC800A	Salinity and Flow from DC800A (410108)
410191	CCD	3. CCD	Salinity from CCD (410191) Flow from CICL FlumeGate CCD Escape
410133	CODD	4. CODOaklands	Salinity from CODD (410133) Flow from CICL FlumeGate CODOaklands

The CICL Rubicon Demand Management System was rolled over on 8 June 2022, with the flow volumes recorded on that day not accurately reflecting actual volumes. This has affected the CODWonga and Coleambally Catchment Drain FlumeGate data, with all other extraction and discharge points either recording no flow during that period or the data isn't used in our reporting. The flow volume for CODWonga and the Coleambally Catchment Drain for 8 June was calculated by averaging the flow rates of the preceding and proceeding days.

The NSW DPI hydrometric site 410191 (CCD) recorded a salinity reading of 15.8 µS/cm on the 3rd of November which is considered to be too low to be accurate, however as we do not operate or maintain the site we have not modified the data. As a result in Table 8.4 the monthly average salinity reading for CCD in November is 16 µS/cm which is the lowest reading for the season and has lowered the season average and median.

Salinity at the Main Canal Off-take was recorded at weekly intervals using a handheld YSI Pro2030 Dissolved Oxygen and Conductivity meter. It was initially planned to replace the existing faulty salinity sensor located at the Main Canal Off-take, however, this was delayed due to COVID-19 restrictions. Similarly due to COVID-19 restrictions staff were not able to take salinity readings at the Main Canal Off-take every week, recording a total of 35 weeks out of the 41 weeks in which water was extracted through the Off-take. As part of winter maintenance in 2022 the salinity sensor at the Main Canal Off-take was replaced.

CICL applied for and received a Groundwater Works Approval (40WA418096) for a bore in 2020. This bore has not yet been constructed and as such no data for the Works Approval has been provided in this report.

11. New Measures to Limit Groundwater Recharge and Salinity Discharge

The following section is provided to satisfy condition 2.9 of the CICL Monitoring and Reporting Plan, which requires a discussion of any new measures implemented during the year and results of measures commenced in the previous year to reduce recharge of groundwater and discharge of salt from the Area of Operations.

11.1 Water Use Policy

Coleambally Irrigation has a Water Use Policy in place which is intended to limit the environmental impacts of irrigation recharge on the water table. This policy imposes a water use intensity limit and limitations on the approved areas to farm rice on all farms with access to CICL drainage. The standard water use intensity maximum limit is 7.2 ML per ha, which was derived from CSIRO studies on sustainable irrigation limits for the Coleambally Irrigation Area in order to limit accessions to the water table. Given the low water use and a very small area of the CIA with watertables within 2 m of the surface the CICL Board adjusted the water use intensity limit for the 2021/22 season to 8 ML per ha.

11.2 Salinity Discharge

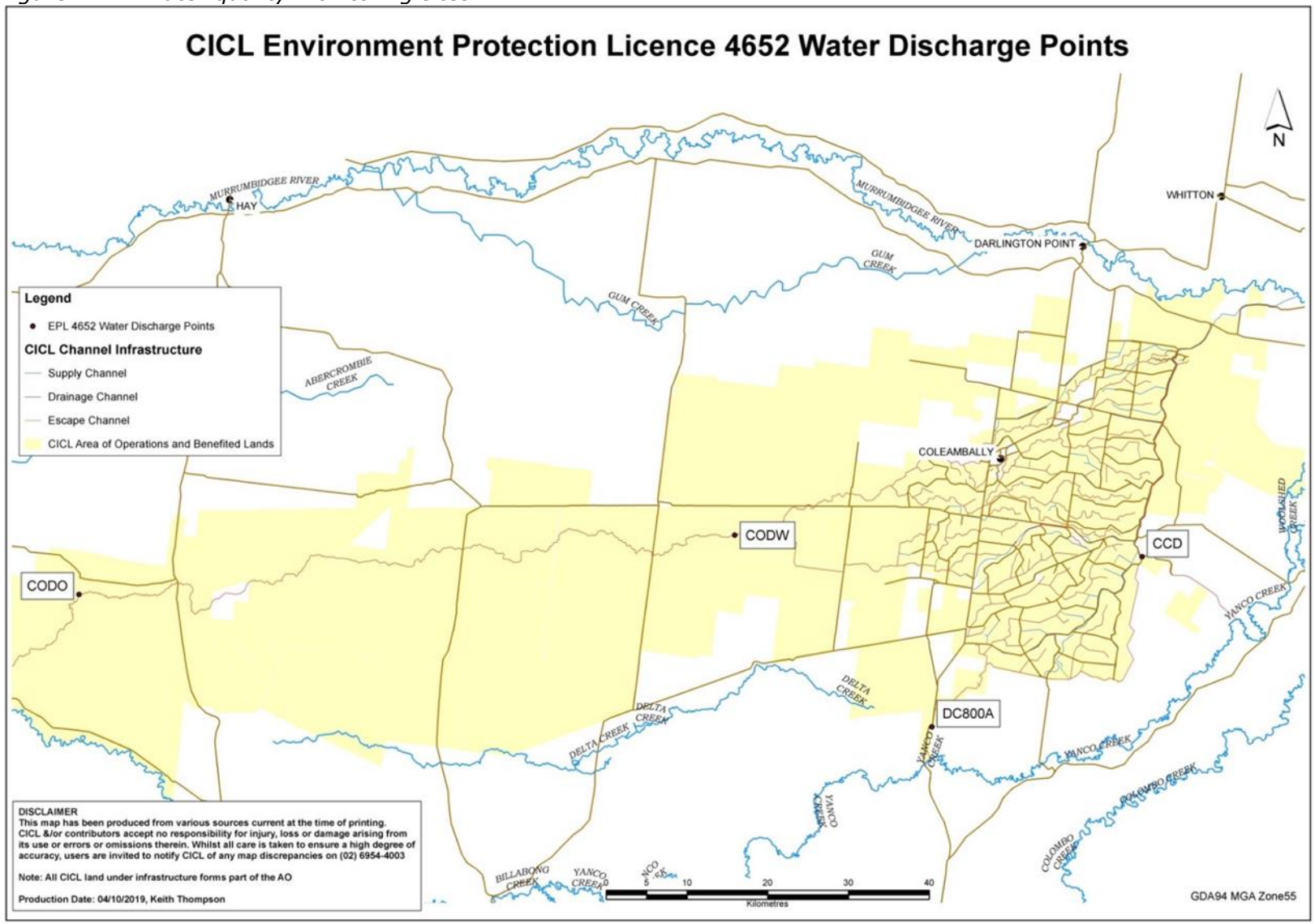
There were no new measures proposed or implemented in the 2021/22 season. Coleambally Irrigation is a net importer of salt and as such the effects of climate and water allocation conditions are not considered with regards to salinity and salt load.

12.1 Water Quality

CICL's surface water quality program is aimed at monitoring supply and drainage water quality within CICL's Area of Operations, including at the licensed discharge points. The program monitors flow, turbidity, dissolved oxygen, salinity, chemical and nutrient levels at various points to comply with licence conditions. CICL's water quality monitoring sites are shown in Figure 12.1.

At the licensed sites, flow, salinity and the temperature of drainage water are monitored continuously. Monthly water samples are collected from these sites and are analysed for the presence of chemicals as required by CICL's Environment Protection Licence. Water samples are also collected and analysed from one supply site at the Main Canal Off-take when flowing. An EC sensor was installed in July 2022 at the Main Canal Off-take to provide data used to calculate the salt load.

Figure 12.1: Water quality monitoring sites



12.2 Environmental Monitoring

The following section is provided to satisfy condition M4 of the Environment Protection Licence, which requires irrigation wastewater sampling for Molinate for a period of 9 weeks from mid-October at licenced discharge sites.

There were no detections of Molinate exceeding either the Notification Level or Action Level (see Table 12.1). However as part of the weekly testing Metolachlor was detected above Notification or Action Level 10 times and Diuron was detected above Notification or Action Level twice as part of the Environmental Monitoring Program.

Table 12.1 Environmental monitoring licence point results in 2021/22

Date	CODWonga Molinate (µg/L)	DC800A Molinate (µg/L)	CCD Molinate (µg/L)	Report No.
Week 1	Not Sampled	<0.005	Not Sampled	ES2136750
Week 2	Not Sampled	<0.005	Not Sampled	ES2137749
Week 3	<0.005	<0.005	Not Sampled	ES2138752
Week 4	<0.005	<0.005	Not Sampled	ES2139643
Week 5	<0.005	<0.005	Not Sampled	ES2140513
Week 6	<0.005	<0.005	Not Sampled	ES2141557
Week 7	<0.005	<0.005	Not Sampled	ES2142523
Week 8	0.236	0.034	Not Sampled	ES2143666
Week 9	<0.005	<0.005	Not Sampled	ES2144615

12.3 Chemical Use

The following section is provided to satisfy condition O3.9 of the Environment Protection Licence, which requires a record to be kept of all chemical applications greater than 10 litres of chemical concentrate directly to or within close proximity to any water within the infrastructure owned or controlled by CICL.

In absolute terms chemical usage by CICL is down this season compared to last season, with the use of diesel as a spray adjuvant decreasing by 73%.

Table 12.2: CICL chemical usage in 2021/22

Product	Active Constituent	Litres or Kg	Application
Access	Triclopyr, Picloram	18	Boxthorns
Associate	Metsulfuron methyl	0.57	Boxthorns
Bowlem	Canola Oil, Ammonia Sulphate	1,090.5	Spray adjuvant
Crucial	Glyphosate	183	Weed control
Cutlass	Dicamba	759	Weed grass control
Dalapon	2-2-DPA	4	Cumbungi, water couch
Dicamba	Dicamba	19.3	Weed grass control
Diesel		1,080	Spray adjuvant
Glyphosate 450	Glyphosate	67	Weed control
Grazon	Triclopr, Picloram	8	Brush weeds
Roundup	Glyphosate	2,127	Weed control
Starane Advanced	Fluroxypyr	12	Weed control
Surfactant	Sulfonylurea	1.6	Weeds around structures
VC700	Propionic Acid, Soyal Phospholipids	1	Spray adjuvant

12.4 Reportable Incidents

The following section is provided to satisfy condition R4.3 (c) of the Environment Protection Licence, which requires a summary of all pollution events which have been reported under the conditions of the licence.

There were 20 reportable incidents in 2021/22 where pollutants exceeded notifiable levels as part of routine monitoring.

Between 3 to 5 September 2021 much of our region experienced a heavy rainfall event of between 35-50 mm, with a significant amount of runoff. The combined flow rate in the drains at the time of sampling was approximately 210 ML per day. Metolachlor was detected above Notification Level at EPA Sites CODWonga and DC800A on 7 September as part of our monthly water quality test. We undertook follow up water quality testing on 14 September and detected Diuron above Action Level at EPA Site CODWonga.

On 5 October 2021, as part of our monthly water quality testing, Metolachlor was detected above Notification Level at EPA Sites CODWonga and DC800A. For the following 10 weeks we detected Metolachlor at concentrations exceeding our Notification or Action level 10 times as part of our weekly Environmental Monitoring Program at CODWonga, DC800A and CODOaklands. During that same time period we also detected Diuron at concentrations exceeding our Notification or Action Level twice at CODWonga and DC800A. Our response to the detections included a significant increase in internal water quality testing and surveillance within our system. As a result we identified 3 customers who had drained contaminated wastewater off their farm in contravention of the CICL Rules and imposed penalties accordingly.