

Licence WU67 Monthly Environmental Flow Report July 2022

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1. Introduction

Icon Water holds a Licence to Take Water under the Water Resources Act 2007 – Licence Number WU67.

Under Licence Number WU67 clause C1, it is a requirement to provide the following information to the Environment Protection Authority (EPA) by the 15th day of each month.

2. Compliance Analysis and Operational Interactions

Reservoir	Notes									
Corin	Corin Dam spilled throughout July.									
	Releases were at licence requirements throughout July.									
Bendora	Bendora Dam spilled throughout July.									
	Releases were at licence requirements throughout July.									
Cotter	Cotter Dam spilled throughout July.									
	Bi-monthly riffle release was achieved via overflows.									
	Releases were at licence requirements throughout July.									
Googong	Googong Dam spilled throughout July.									
	Bi-monthly riffle release was achieved via overflows.									
	Releases were at licence requirements throughout July.									

Table 1 - Notes relating to the reporting month Environmental Flow releases

Table 2 – Notes relating to abstraction from Murrumbidgee River

Mt MacDonald river gauge	Not applicable, natural river flows.
Murrumbidgee abstraction	There was no Murrumbidgee River abstraction for consumption in July.
Murrumbidgee To Cotter Eflow	M2C did not operate in July.
Murrumbidgee to Googong	M2G did not operate in July.
Angle Crossing river gauge	Not applicable, natural river flows.

3. Environmental Release Data

The environmental flow release requirements for the current month (a combination of requirements) are detailed in Table 3.

Table 3 – Current month	Environmental	Flow releases	(Total for month in ML)

	Corin	Bendora	Cotter	Googong
Previous month's shortfall (-) or Excess (+) *	192.2	300.7		
Monthly 75% of the 80 th %tile ML #	1922	3007		
Additional release required?	No	No	No	No
Current month's release target	2705.8	2612.3	550	310

Note: * Excess carried forward is capped at 10% of the current month's base flow.

Shortfall carried forward is 100% of the amount of water under released.

[#] Under stage 1 or greater water restrictions, targets flow change to a predetermined base flow.

Daily totals in Table 4 to Table 7 are reported as the 24-hour average from midnight to midnight. Operational changes to environmental flow releases occur during business hours, and therefore the value reported may be slightly different to the target flow on the day the flow is changed. This is particularly evident for large changes in flow e.g. the riffle and pool flushes as the flow is averaged for the day.

The actual daily flows, in megalitres per day (ML/d), from each reservoir are detailed in Table 4 to Table 7 together with the water produced at the water treatment plants (WTP) in Table 10.

Table 8 provides more detail with respect to environmental flows provided below Cotter Dam. The e-flows are made up of two components: water released from the Cotter Dam and water being pumped from Murrumbidgee River to below Cotter Dam. This is to satisfy the requirements set out by ACT EPA and Federal Department of the Environment for the operation of the Enlarged Cotter Dam.

Table 9 provides flow details for the operations of the Murrumbidgee to Googong pipeline. It details daily flows through the high lift pumps station as well as daily flows in the Murrumbidgee River at Angle crossing. This is to demonstrate compliance with the requirements set out by ACT EPA, Federal Department of the Environment and NSW Department of Planning.

Table 10 also details the quantity of treated water that has been transferred to Googong reservoir from Stromlo WTP.

Table 4 - Monthly Environmental Flow release data for Corin dam

			Environmental flow release						Adjusted daily			EOM Excess (+) /		EOM Correction	
		410730			Additional	+/- 50%	Natural	Natural	base flow.	410752	410752	Shortfall (-)	to 410730 ,	to 410752 ,	
	410730 Gingera				release (pool			Flow.	EOM = Revised	Corin D/S	Corin D/S	to carry	Verified Vs	Verified Vs	
SUM	(unverified)	(verified)	Date	flow	/ riffle)	regime	(Unverified)	(Verified)	monthly target	(Unverified)	(Verified)	forward	unverified	unverified	Comments
Previo	us months ad	ustment							-139.5						
	196.08	190.9	Fri 1-Jul-22	45.00		67.5	280.1	272.7	45.0	288.20	280.9				
	188.31	191.5	Sat 2-Jul-22	45.00		67.5	269.0	273.5	45.0	294.98	3 290.3				
	182.65	182.6	Sun 3-Jul-22			67.5			45.0	273.85					
	175.17	176.5	Mon 4-Jul-22			67.5			45.0	265.46					
	167.2		Tue 5-Jul-22			67.5									
	163.6		Wed 6-Jul-22			67.5									
	160.2		Thu 7-Jul-22			22.5									
	156.4	156.8	Fri 8-Jul-22			22.5									
	152.41	153.2	Sat 9-Jul-22			22.5									
	148.20	149.3	Sun 10-Jul-22	45.00		22.5									
	143.44	143.3	Mon 11-Jul-22			22.5				197.1					
	142.98	141.5	Tue 12-Jul-22			22.5									
	141.26	141.8	Wed 13-Jul-22			22.5									
	135.02	135.7	Thu 14-Jul-22			67.5									
	130.05	129.9	Fri 15-Jul-22			67.5									
	128.17	127.8	Sat 16-Jul-22			67.5									
	154.14	140.3	Sun 17-Jul-22			67.5									
	151.89	160.7	Mon 18-Jul-22			67.5									
	131.77	132.1	Tue 19-Jul-22			67.5				197.84					
	126.71	125.8	Wed 20-Jul-22			67.5									
	132.54	127.9	Thu 21-Jul-22			22.5									
	135.08	135.5	Fri 22-Jul-22			22.5									
	129.00	128.6	Sat 23-Jul-22			22.5									
	123.70	122.3	Sun 24-Jul-22			22.5									
	121.69	119	Mon 25-Jul-22			22.5									
	132.65	130	Tue 26-Jul-22	45.00		22.5									
	120.79	120.4	Wed 27-Jul-22			22.5									
	119.96	117.4	Thu 28-Jul-22			67.5									
	115.62	115.1	Fri 29-Jul-22			67.5									
	110.22	108.2	Sat 30-Jul-22			67.5									
	130.42	111.7	Sun 31-Jul-22			67.5									
SUM	4,447.26	4409.5		1395.0	0.0	1462.5	6039.5	6298.1	1255.5	6378.9	6359.4	192.2	-0.8%	6 -0.3%	D

Table 5 - Monthly Environmental Flow release data for Bendora dam

			Environmental									EOM	EOM	EOM	
					Additional	Planned	Calculated	Calculated	Adjusted daily	410747	410747	Excess (+) /	Correction	Correction	
	410730	410730	flow release		release	+/- 50%	Natural	Natural	base flow.	Bendora	Bendora		to 410730 ,	to 410747 ,	
		Gingera	below Bendora	Daily base	(pool /		Flow.	Flow.	EOM = Revised	D/S	D/S	to carry	Verified Vs	Verified Vs	
		(verified)	Date	flow	riffle)	regime	(Unverified)	(Verified)	monthly target	(Unverified)	(Verified)	forward	unverified	unverified	Comments
Previo	us months a	diustment	t		,		, ,	, ,	-220.1		· ,				
	196.08	190.9	Fri 1-Jul-22	71.00		35.5	431.4	420.0		268.96	256.6				
	188.31	191.5	Sat 2-Jul-22			35.5				298.25					
	182.65	182.6	Sun 3-Jul-22			35.5				274.37					
	175.17	176.5	Mon 4-Jul-22			35.5				259.11					
	167.2		Tue 5-Jul-22			35.5				228.1					
	163.6		Wed 6-Jul-22			106.5				202.4					
	160.2		Thu 7-Jul-22			106.5				199.5					
	156.4	156.8	Fri 8-Jul-22			106.5		345.0		199.2					
	152.41	153.2	Sat 9-Jul-22			106.5				188.41					
	148.20	149.3	Sun 10-Jul-22			106.5				184.33					
	143.44	143.3	Mon 11-Jul-22			106.5				170.1					
	142.98	141.5	Tue 12-Jul-22			106.5				164.7					
	141.26	141.8	Wed 13-Jul-22			35.5				161.5					
	135.02	135.7	Thu 14-Jul-22			35.5				164.1					
	130.05	129.9	Fri 15-Jul-22			35.5		285.8		154.8					
	128.17	127.8	Sat 16-Jul-22			35.5				145.0					
	154.14	140.3	Sun 17-Jul-22	71.00		35.5	339.1	308.7	71.0	140.9	140.2				
	151.89	160.7	Mon 18-Jul-22	71.00		35.5	334.2	353.5	71.0	169.93	169.7				
	131.77	132.1	Tue 19-Jul-22	71.00		35.5	289.9	290.6	71.0	161.83	160				
	126.71	125.8	Wed 20-Jul-22	71.00		106.5	278.8	276.8	71.0	144.74	143.2				
	132.54	127.9	Thu 21-Jul-22	71.00		106.5	291.6	281.4	71.0	138.02	136.9				
	135.08	135.5	Fri 22-Jul-22	71.00		106.5	297.2	298.1	71.0	148.26	148				
	129.00	128.6	Sat 23-Jul-22	71.00		106.5	283.8	282.9	71.0	143.86	144.4				
	123.70	122.3	Sun 24-Jul-22	71.00		106.5	272.1	269.1	71.0	130.18	131.8				
	121.69	119	Mon 25-Jul-22	71.00		106.5	267.7	261.8	71.0	119.05	120.8				
	132.65	130	Tue 26-Jul-22	71.00		106.5	132.7	286.0	71.0	134.92	136.4				
	120.79	120.4	Wed 27-Jul-22	71.00		35.5	120.8	264.9	71.0	147.11	148.9				
	119.96	117.4	Thu 28-Jul-22	71.00		35.5	120.0	258.3	71.0	130.71	131.1				
	115.62	115.1	Fri 29-Jul-22	71.00		35.5	115.6	253.2	71.0	124.41	125.7				
	110.22	108.2	Sat 30-Jul-22	71.00		35.5	110.2	238.0	71.0	115.37	116.5				
	130.42	111.7	Sun 31-Jul-22	71.00		35.5	130.4	245.7	71.0	109.45	110.6				
SUM	4,447.26	4409.5		2201.0	0.0	2094.5	8908.4	9700.9	1980.9	5321.6	5245.2	300.7	-0.8%	6 -1.4%	

SUM	Environmental flow release below Cotter Date	Daily base flow	Additional release (pool / riffle)	EOM = Revised monthly target	410700 Cotter D/S (Unverified)	410700 Cotter D/S (Verified)	EOM Excess (+) / Shortfall (-)	EOM Correction to 410700 , Verified Vs unverified	Comments
Previou	s months adjustment			0.0					
	Fri 1-Jul-22		;	15.0	390.4	379			
	Sat 2-Jul-22	2 15	i	15.0	443.0	426.8			
	Sun 3-Jul-22	2 15	i	15.0	403.1	381.5			
	Mon 4-Jul-22		i	15.0	360.7	348.7			
	Tue 5-Jul-22	2 15	i	15.0	322.9	322.9			
	Wed 6-Jul-22	2 15	i	15.0	302.9	302.9			
	Thu 7-Jul-22	2 15	i	15.0	291.5	291.5			
	Fri 8-Jul-22	2 15	i	15.0	299.2	299.2			
	Sat 9-Jul-22	2 15		15.0	283.3	283.3			
	Sun 10-Jul-22	2 15		15.0	273.3	273.3			
	Mon 11-Jul-22	2 15	100	100.0	258.6	258.6			Riffle release achieved
	Tue 12-Jul-22	2 15		15.0	248.8	248.8			
	Wed 13-Jul-22	2 15		15.0	242.8	242.7			
	Thu 14-Jul-22	2 15		15.0	238.5	238.5			
	Fri 15-Jul-22			15.0	234.0	234			
	Sat 16-Jul-22			15.0	226.1	226			
	Sun 17-Jul-22			15.0	245.0	245			
	Mon 18-Jul-22			15.0	224.6	224.6			
	Tue 19-Jul-22	2 15		15.0	237.3	237.3			
	Wed 20-Jul-22			15.0	225.0	225			
	Thu 21-Jul-22	2 15	i	15.0	218.7	218.7			
	Fri 22-Jul-22	2 15	i	15.0	225.0	225			
	Sat 23-Jul-22	2 15	i	15.0	218.6	218.6			
	Sun 24-Jul-22	2 15	i	15.0	211.09	211.1			
	Mon 25-Jul-22			15.0	196.41	196.4			
	Tue 26-Jul-22	2 15	i	15.0	202.07	202.1			
	Wed 27-Jul-22			15.0	203.66	203.7			
	Thu 28-Jul-22			15.0	199.49	199.5			
	Fri 29-Jul-22	2 15		15.0	242.20	242.2			COTD outlet valves opened to reduce overflow for lo
	Sat 30-Jul-22	2 15		15.0	240.67	240.7			
	Sun 31-Jul-22	2 15		15.0	201.7	201.7			
SUM		465.0	100.0	550.0	8110.4	8049.3	7499.3	-0.8%	

Table 6 - Monthly Environmental Flow release data for Cotter dam

	Upstream	410781 Upstream Googong (Verified)	Environmental flow release below Googong Date	Daily base flow	Additional release (pool / riffle)	Natural	Calculated Natural Flow. (Verified)	EOM = Revised monthly target	410760 Wickerslack (Unverified)	410760 Wickerslac k (Verified)	EOM Excess (+) / Shortfall (-)		EOM Correction to 410760 , Verified Vs unverified	Comments
	· · · · ·	adjustmer	nt		,		,	, , ,	. ,	,				
	203.0		Fri 1-Jul-22	2 10.0		259.8	296.1	10.0	226.54	231.3				
	222.9		Sat 2-Jul-22			285.3			250.98					
	226.6		Sun 3-Jul-22			290.0			271.19					
	253.3		Mon 4-Jul-22			324.2			261.1					
	254.5		Tue 5-Jul-22			325.8	315.8	10.0	246.8					
	223.1	228.8	Wed 6-Jul-22			285.5	292.9	10.0	228.8	228.8				
	212.8		Thu 7-Jul-22			272.4			226.1					
	208.4	216.9	Fri 8-Jul-22	2 10.0		266.7	277.6	10.0	216.9	216.9				
	202.40	211.9	Sat 9-Jul-22	2 10.0		259.1	271.2	10.0	211.9	211.9				
	193.33	218.1	Sun 10-Jul-22	2 10.0		247.5	279.2	10.0	218.3	218.1				
	193.9	188.7	Mon 11-Jul-22	2 10.0	100	248.2	241.5	100.0	190.2	188.7				riffle release achieved
	195.7	191.6	Tue 12-Jul-22	2 10.0		250.5	245.2	10.0	193.0	191.6				
	189.6	203.4	Wed 13-Jul-22	2 10.0		242.7	260.4	10.0	204.9	203.4				
	184.6	193.1	Thu 14-Jul-22	2 10.0		236.3	247.2	10.0	194.5	193.1				
	180.3	179	Fri 15-Jul-22	2 10.0		230.7	229.1	10.0	181.11	179				
	174.7	170.4	Sat 16-Jul-22	2 10.0		223.7	218.1	10.0	173.18	170.4				
	171.9	165.4	Sun 17-Jul-22	2 10.0		220.0	211.7	10.0	168.10	165.4				
	172.26	176.6	Mon 18-Jul-22	2 10.0		220.5	226.0	10.0	179.43	176.6				
	170.35	189.8	Tue 19-Jul-22	2 10.0		218.0	242.9	10.0	192.74	189.8				
	163.91	170.1	Wed 20-Jul-22	2 10.0		209.8	217.7	10.0	173.92	170.1				
	163.95	168	Thu 21-Jul-22	2 10.0		209.9	215.0	10.0	172.11	168				
	224.35	177.8	Fri 22-Jul-22			287.2		10.0	182.04					
	309.16	209.2	Sat 23-Jul-22	2 10.0		395.7	267.8	10.0	213.85	209.2				
	263.20	261.1	Sun 24-Jul-22	2 10.0		336.9	334.2	10.0	267.12					
	223.08	255	Mon 25-Jul-22	2 10.0		285.5	326.4	10.0	262.25	255				
	206.01	239.9	Tue 26-Jul-22	2 10.0		263.7	307.1	10.0	246.51	239.9				
	196.97		Wed 27-Jul-22	2 10.0		252.1	279.6	10.0	224.74					
	187.85	206.2	Thu 28-Jul-22			240.4			212.33					
	179.29	199.1	Fri 29-Jul-22	2 10.0		229.5	254.8	10.0	205.82	199.1				
	170.41	182.9	Sat 30-Jul-22	2 10.0		218.1	234.1	10.0	190.09	182.9				
	170.30	167.5	Sun 31-Jul-22	2 10.0		218.0	214.4	10.0	174.30	167.5				
SUM	6292.0	6489.2		310.0	100.0	8053.7	8306.2	400.0	6560.9	6489.2	6089.2	3.1%	6 -1.1%	

Table 7 - Monthly Environmental Flow release data for Googong dam

Note:

410781 Upstream Googong verified data is provided every second month.

	Cotter River e-flows I	pelow Cotter Dam	
Date	E-flow sourced from Murrumbidgee via M2C	E-flow sourced from Cotter Dam release/spill	Comments
1-Jul-22	0.0	379	
2-Jul-22	0.0	426.8	
3-Jul-22	0.0	381.5	
4-Jul-22	0.0	348.7	
5-Jul-22	0.0	322.9	
6-Jul-22	0.0	302.9	
7-Jul-22	0.0	291.5	
8-Jul-22	0.0	299.2	
9-Jul-22	0.0	283.3	
10-Jul-22	0.0	273.3	
11-Jul-22	0.0	258.6	
12-Jul-22	0.0	248.8	
13-Jul-22	0.0	242.7	
14-Jul-22	0.0	238.5	
15-Jul-22	0.0	234	
16-Jul-22	0.0	226	
17-Jul-22	0.0	245	
18-Jul-22	0.0	224.6	
19-Jul-22	0.0	237.3	
20-Jul-22	0.0	225	
21-Jul-22	0.0	218.7	
22-Jul-22	0.0	225	
23-Jul-22	0.0	218.6	
24-Jul-22	0.0	211.1	
25-Jul-22	0.0	196.4	
26-Jul-22	0.0	202.1	
27-Jul-22	0.0	203.7	
28-Jul-22	0.0	199.5	
29-Jul-22	0.0	242.2	
30-Jul-22	0.0	240.7	
31-Jul-22	0.0	201.7	
Total	0.0	8049.3	

Table 8 – Monthly flow data for Cotter River Environmental Flows

Date	M2G Flow	Comments
1-Jul-22	0.0	
2-Jul-22	0.0	
3-Jul-22	0.0	
4-Jul-22	0.0	
5-Jul-22	0.0	
6-Jul-22	0.0	
7-Jul-22	0.0	
8-Jul-22	0.0	
9-Jul-22	0.0	
10-Jul-22	0.0	
11-Jul-22	0.0	
12-Jul-22	0.0	
13-Jul-22	0.0	
14-Jul-22	0.0	
15-Jul-22	0.0	
16-Jul-22	0.0	
17-Jul-22	0.0	
18-Jul-22	0.0	
19-Jul-22	0.0	
20-Jul-22	0.0	
21-Jul-22	0.0	
22-Jul-22	0.0	
23-Jul-22	0.0	
24-Jul-22	0.0	
25-Jul-22	0.0	
26-Jul-22	0.0	
27-Jul-22	0.0	
28-Jul-22	0.0	
29-Jul-22	0.0	
30-Jul-22	0.0	
31-Jul-22	0.0	
Total	0.0	

Table 9 – Monthly flow data for Murrumbidgee to Googong

Day	Stromlo WTP ML		Googong WTP ML	Transfer from SWTP to Googong res.	
	M'bidgee	Cotter	Bendora		
1	0.0	0.0	120.5	0.0	0.0
2	0.0	0.0	113.7	0.0	0.0
3	0.0	0.0	114.9	0.0	0.0
4	0.0	0.0	113.8	0.0	0.0
5	0.0	0.0	110.8	0.0	0.0
6	0.0	0.0	108.4	0.0	0.0
7	0.0	0.0	115.2	0.0	0.0
8	0.0	0.0	112.2	0.0	0.0
9	0.0	0.0	111.9	0.0	0.0
10	0.0	0.0	113.1	0.0	0.0
11	0.0	0.0	113.4	0.0	0.0
12	0.0	0.0	109.6	0.0	0.0
13	0.0	0.0	113.0	0.0	0.0
14	0.0	0.0	117.7	0.0	0.0
15	0.0	0.0	101.2	0.0	0.0
16	0.0	0.0	103.3	0.0	0.0
17	0.0	0.0	113.3	0.0	0.0
18	0.0	0.0	130.1	0.0	0.0
19	0.0	0.0	122.9	0.0	0.0
20	0.0	0.0	118.0	0.0	0.0
21	0.0	0.0	108.6	0.0	0.0
22	0.0	0.0	110.8	0.0	0.0
23	0.0	0.0	110.6	0.0	0.0
24	0.0	0.0	116.2	0.0	0.0
25	0.0	0.0	123.5	0.0	0.0
26	0.0	0.0	123.3	0.0	0.0
27	0.0	0.0	119.8	0.0	0.0
28	0.0	0.0	111.0	0.0	0.0
29	0.0	0.0	109.4	0.0	0.0
30	0.0	0.0	111.2	0.0	0.0
31	0.0	0.0	115.4	0.0	0.0
Total	0.0	0.0	3536.8	0.0	0.0

Table 10 – Monthly water production data and water transferred to Googong reservoir

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