

## **Appendix C      Equipment and Technical Information**

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# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

### Part 1: Equipment Available During an Emergency

#### Appendix C1: Earthworks Equipment, Helicopters, Boats and Cranes

##### Earthworks Equipment

All emergency equipment hire is to be arranged through TCC RPA service preapproved supplier services.

**Note:** In addition to the further resources can be accessed through Local, District, and State Disaster Management framework, if and when each Local Disaster Management Group is activated. See relevant pages in communication lists for contact details.

## Part 2: Technical Information - Gate Openings, Spillway and Tailwater Data

### Appendix C2: Ross River Dam–Flood Rules

The operation of the gates on Ross River Dam is directly related to the water level in the reservoir.

**Table C1: Critical Levels**

Item	EL (m AHD)
Spillway Crest Level	34.65
Full Supply Level	38.55
Gate Trigger Level	38.65
Top of Spillway Gate (Closed)	39.05
Limit of Hydrostatic Load	40.05 <sup>5</sup>
Limit of D/S Channel Capacity (Under normal operating conditions)	42.50
Dam Crest Level	48.00

**Note:** The data presented in the following Appendices is taken from DOMM-004, Detailed Operating and Maintenance Procedure for Supervisory Control and Data Acquisition System. The Limit of Hydrostatic Load EL 40.05m at Ross River Dam is related to the design hydrostatic load limit that the gates can withstand if they fail to open as designed.

This level is only relevant if one or more of the spillway gates fails to open when required. It is equivalent to 1.0m of water overtopping the gates when closed.

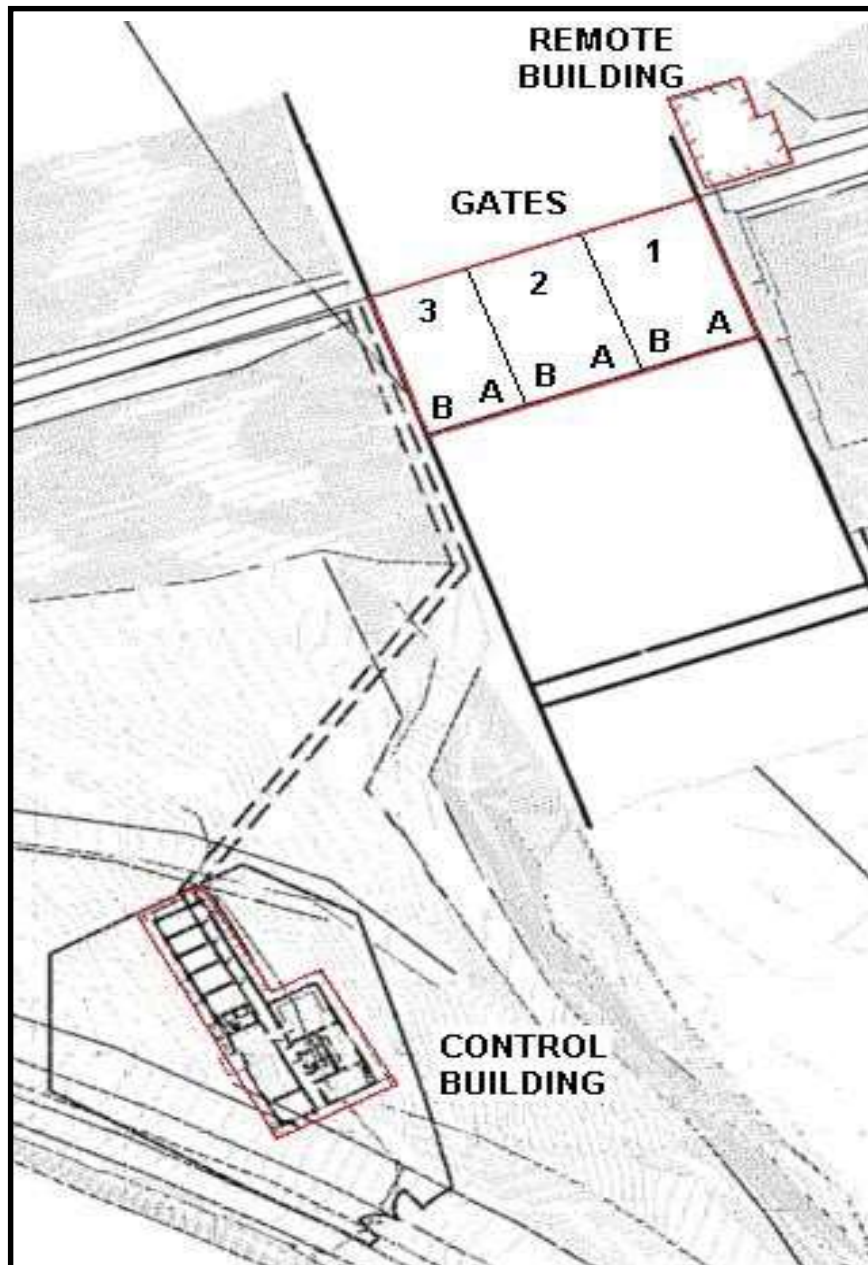
<sup>5</sup> Stage 2 to 5, Spillway and Stilling Basin Design Report (September 2005, GHD)

## Appendix C2: Flood Rules

Flood discharges are controlled by the 3 spillway gates, shown in Figure C1, for lake levels less than EL 43.00 m. Gates 1, 2 & 3 may also be referred to as Left, Centre and Right respectively.

For lake levels equal to and above EL 43.00 m, the spillway gates are to be fully open with free discharge over the crest of the spillway.

**Ross River Dam Layout**



### Appendix C3: Ross River Dam Gate Openings

Gate opening ( $G_o$ ) is defined as the distance between the bottom of the gate skin plate and the dam crest tangent line at the elevation of the gate seating position as shown below.

**Ross River Dam Gate Opening Definition**

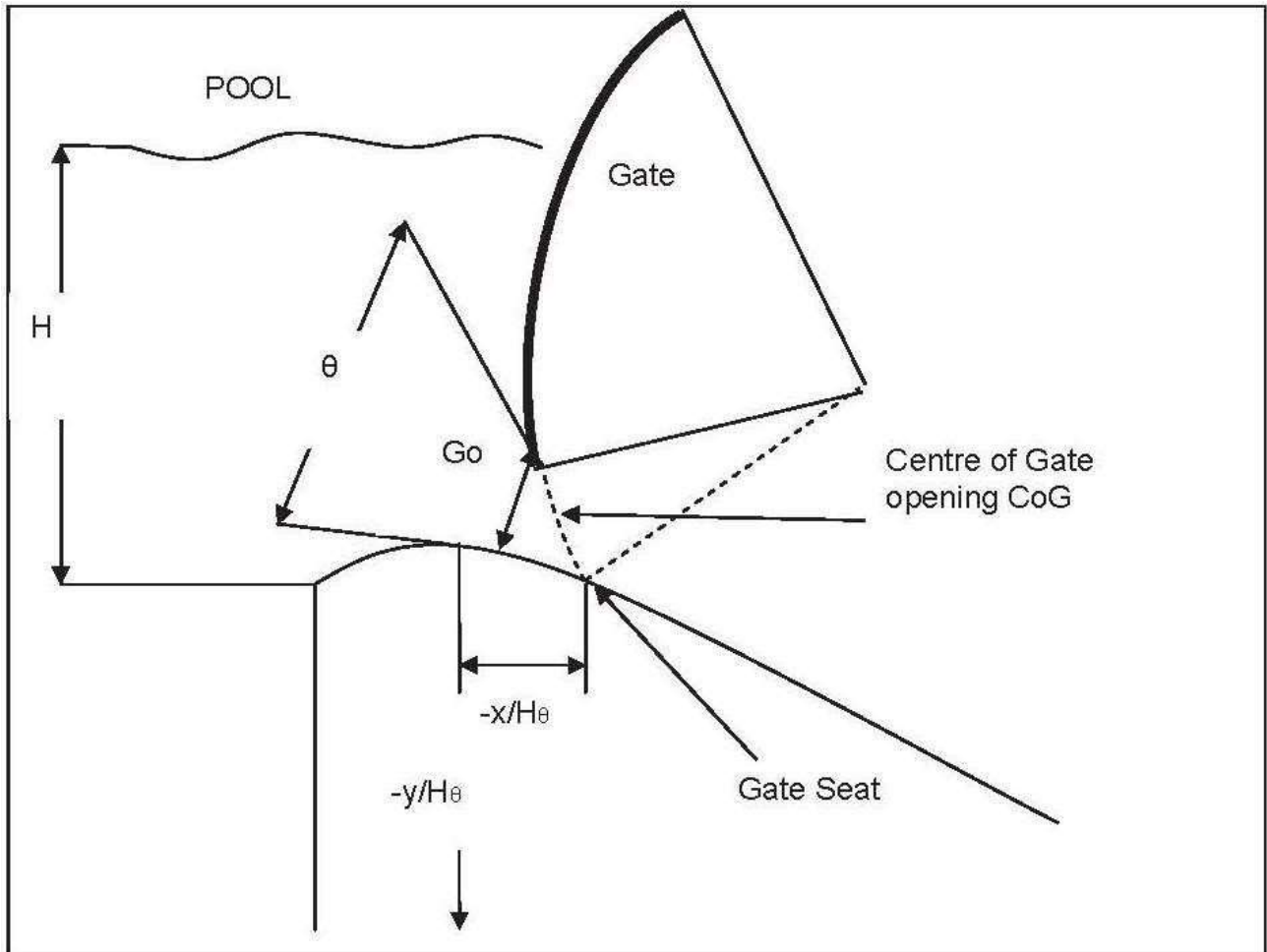


Table C2 below presents the relationships between gate opening and the change of gate arm angle.

**Table C2: Gate Opening Relationship - 2012**

Gate Opening $G_o$ (m)	Gate Arm Angle Change (Degrees)
0.00	0.000
0.25	2.170
0.50	4.170
0.75	6.050
1.00	7.830
1.25	9.530
1.50	11.170
1.75	12.760
2.00	14.310
2.25	15.810
2.50	17.290
2.75	18.740
3.00	20.170
3.25	21.580
3.50	22.970
3.75	24.330
4.00	25.656
4.25	26.981
4.50	28.305
4.75	29.630
5.00	30.954
5.25	32.278
5.50	33.603
5.75	34.927
6.00	36.252
6.25	37.576
6.50	38.900
6.75	40.225
7.00	41.549
7.25	42.874
7.50	44.198
11.50	65.388



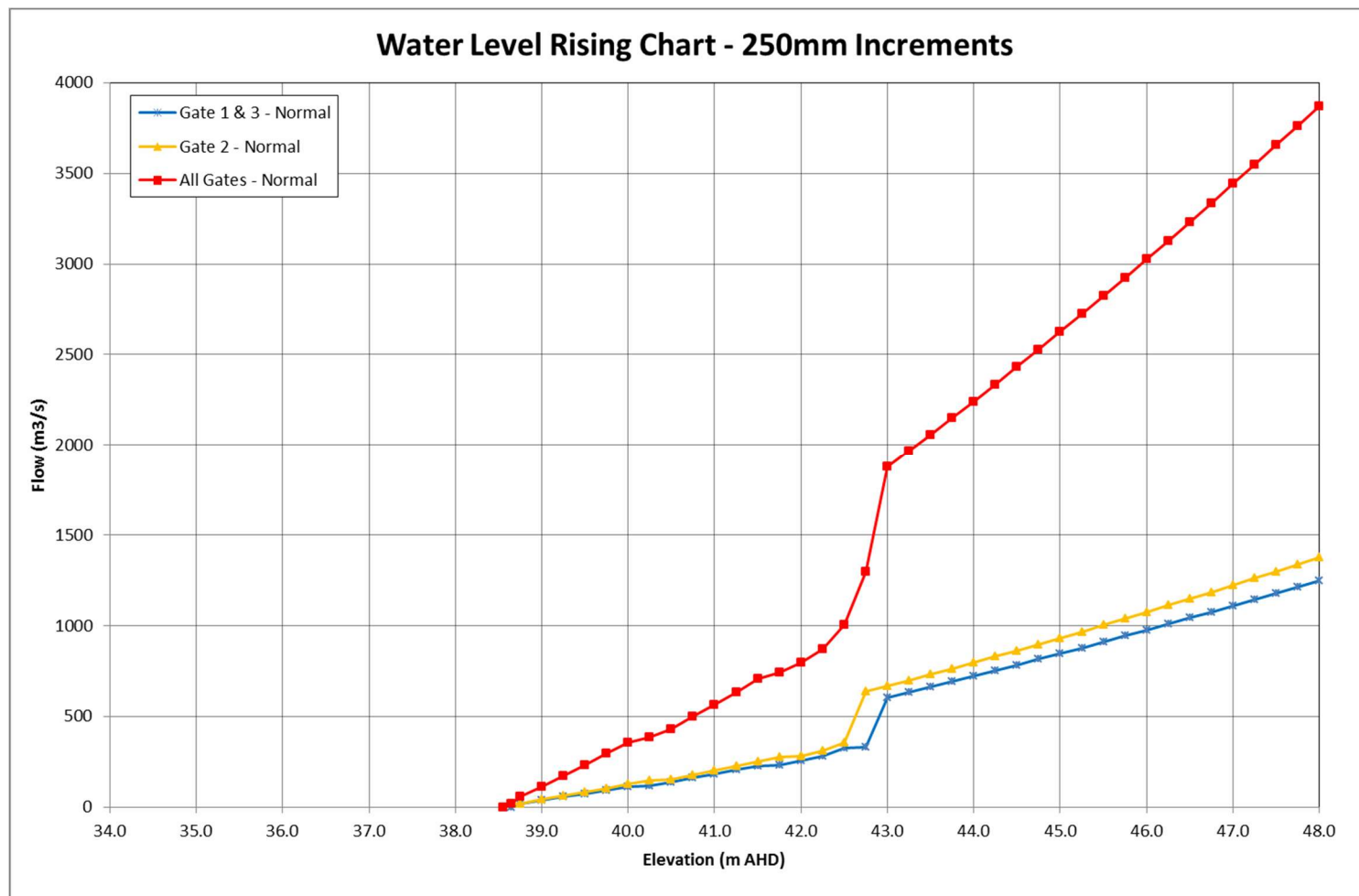
## Appendix C4: Ross River Dam Gate Discharges

Discharge values and the corresponding gate openings are shown in Table C3 and Table C4.

**Table C3: Gate openings & discharges–water level rising 250mm increments – 2016**

Headwater Level 2012 (m AHD)	Headwater Level (m above FSL)	Headwater Level (m above Spillway)	Gate Opening G <sub>o</sub> (m)			2016 Discharge (m <sup>3</sup> /s)			
			Left	Centre	Right	Left	Centre	Right	Total
			1	2	3	1	2	3	
38.55	0	3.89	0	0	0	0	0	0	0
38.65	0.1	3.99	0	0.25	0	0	20	0	20
38.75	0.2	4.09	0.25	0.25	0.25	18	20	18	57
39	0.45	4.34	0.5	0.5	0.5	37	41	37	114
39.25	0.7	4.59	0.75	0.75	0.75	56	61	56	173
39.5	0.95	4.84	1	1	1	75	83	75	232
39.75	1.2	5.09	1.25	1.25	1.25	95	104	95	293
40	1.45	5.34	1.5	1.5	1.5	115	126	115	356
40.25	1.7	5.59	1.5	1.75	1.5	118	149	118	385
40.5	1.95	5.84	1.75	1.75	1.75	139	153	139	431
40.75	2.2	6.09	2	2	2	160	177	160	497
41	2.45	6.34	2.25	2.25	2.25	182	201	182	565
41.25	2.7	6.59	2.5	2.5	2.5	205	225	205	635
41.5	2.95	6.84	2.75	2.75	2.75	228	251	228	706
41.75	3.2	7.09	2.75	3	2.75	233	276	233	742
42	3.45	7.34	3	3	3	256	282	256	795
42.25	3.7	7.59	3.25	3.25	3.25	281	309	281	870
42.5	3.95	7.84	3.75	3.75	3.75	324	356	324	1003
42.75	4.2	8.09	3.75	11.5	3.75	330	636	330	1296
43	4.45	8.34	11.5	11.5	11.5	605	667	605	1877
43.25	4.7	8.59	11.5	11.5	11.5	634	698	634	1966
43.5	4.95	8.84	11.5	11.5	11.5	663	730	663	2056
43.75	5.2	9.09	11.5	11.5	11.5	692	763	692	2148
44	5.45	9.34	11.5	11.5	11.5	722	796	722	2241
44.25	5.7	9.59	11.5	11.5	11.5	753	829	753	2335
44.5	5.95	9.84	11.5	11.5	11.5	784	863	784	2430
44.75	6.2	10.09	11.5	11.5	11.5	815	898	815	2527
45	6.45	10.34	11.5	11.5	11.5	846	932	846	2625
45.25	6.7	10.59	11.5	11.5	11.5	878	967	878	2724
45.5	6.95	10.84	11.5	11.5	11.5	910	1003	910	2823
45.75	7.2	11.09	11.5	11.5	11.5	943	1039	943	2924
46	7.45	11.34	11.5	11.5	11.5	976	1075	976	3026
46.25	7.7	11.59	11.5	11.5	11.5	1009	1111	1009	3129
46.5	7.95	11.84	11.5	11.5	11.5	1042	1148	104	3233
46.75	8.2	12.09	11.5	11.5	11.5	1076	1185	107	3337
47	8.45	12.34	11.5	11.5	11.5	1110	1223	111	3442
47.25	8.7	12.59	11.5	11.5	11.5	1144	1260	114	3548
47.5	8.95	12.84	11.5	11.5	11.5	1178	1298	117	3655
47.75	9.2	13.09	11.5	11.5	11.5	1213	1336	121	3763
48	9.45	13.34	11.5	11.5	11.5	1248	1375	124	3871

**Spillway Discharge - Water Level Rising 2016**



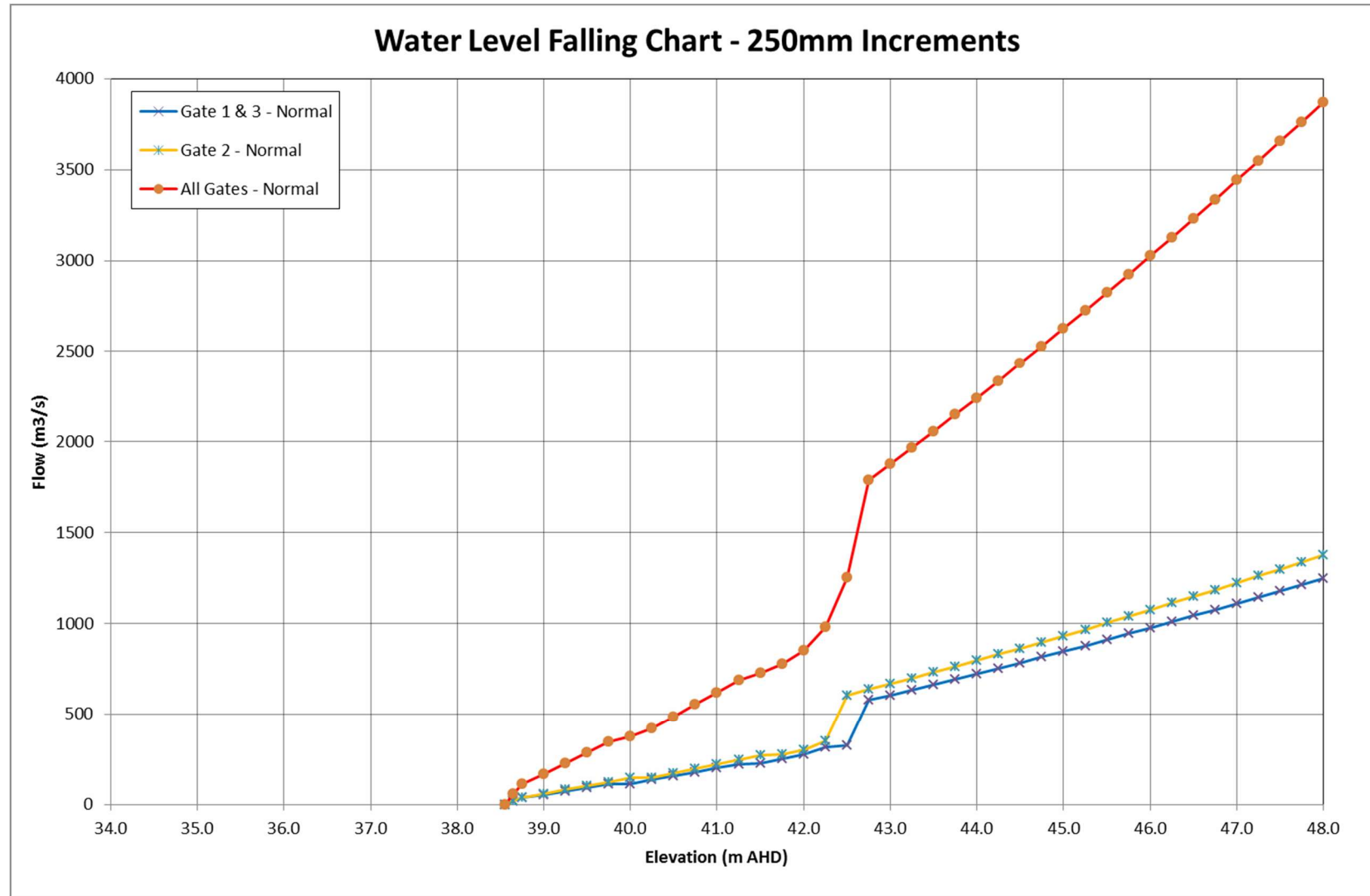
As the lake level falls the total discharge shall be progressively reduced so that at any given level the discharge does not exceed the value for the next higher lake level range. There is less risk of the gates “hunting” if gate openings on the falling limb of a flood remain at the highest lake level setting for the first fall in lake level. The gate openings are set for the next higher lake level reached given in Table C3 as the lake continues to fall.



**Table C4: Gate Openings & Discharges – Water Level Falling 250mm Increments**

Headwater Level 2012 (m AHD)	Headwater Level (m above FSL)	Headwater Level (m above Spillway)	Gate Opening $G_o$ (m)			2016 Discharge (m <sup>3</sup> /s)			
			Left	Centre	Right	Left	Centre	Right	Total
			1	2	3	1	2	3	Total
38.55	0	3.89	0	0	0	0	0	0	0
38.65	0.1	3.99	0.25	0.25	0.25	18	20	18	56
38.75	0.2	4.09	0.5	0.5	0.5	36	39	36	111
39	0.45	4.34	0.75	0.75	0.75	54	60	54	168
39.25	0.7	4.59	1	1	1	73	80	73	226
39.5	0.95	4.84	1.25	1.25	1.25	92	101	92	285
39.75	1.2	5.09	1.5	1.5	1.5	112	123	112	346
40	1.45	5.34	1.5	1.75	1.5	115	145	115	375
40.25	1.7	5.59	1.75	1.75	1.75	135	149	135	420
40.5	1.95	5.84	2	2	2	156	172	156	485
40.75	2.2	6.09	2.25	2.25	2.25	178	196	178	552
41	2.45	6.34	2.5	2.5	2.5	200	220	200	620
41.25	2.7	6.59	2.75	2.75	2.75	222	245	222	690
41.5	2.95	6.84	2.75	3	2.75	228	270	228	725
41.75	3.2	7.09	3	3	3	251	276	251	778
42	3.45	7.34	3.25	3.25	3.25	275	303	275	852
42.25	3.7	7.59	3.75	3.75	3.75	317	349	317	982
42.5	3.95	7.84	3.75	11.5	3.75	324	605	324	1252
42.75	4.2	8.09	11.5	11.5	11.5	577	636	577	1789
43	4.45	8.34	11.5	11.5	11.5	605	667	605	1877
43.25	4.7	8.59	11.5	11.5	11.5	634	698	634	1966
43.5	4.95	8.84	11.5	11.5	11.5	663	730	663	2056
43.75	5.2	9.09	11.5	11.5	11.5	692	763	692	2148
44	5.45	9.34	11.5	11.5	11.5	722	796	722	2241
44.25	5.7	9.59	11.5	11.5	11.5	753	829	753	2335
44.5	5.95	9.84	11.5	11.5	11.5	784	863	784	2430
44.75	6.2	10.09	11.5	11.5	11.5	815	898	815	2527
45	6.45	10.34	11.5	11.5	11.5	846	932	846	2625
45.25	6.7	10.59	11.5	11.5	11.5	878	967	878	2724
45.5	6.95	10.84	11.5	11.5	11.5	910	1003	910	2823
45.75	7.2	11.09	11.5	11.5	11.5	943	1039	943	2924
46	7.45	11.34	11.5	11.5	11.5	976	1075	976	3026
46.25	7.7	11.59	11.5	11.5	11.5	1009	1111	1009	3129
46.5	7.95	11.84	11.5	11.5	11.5	1042	1148	1042	3233
46.75	8.2	12.09	11.5	11.5	11.5	1076	1185	1076	3337
47	8.45	12.34	11.5	11.5	11.5	1110	1223	1110	3442
47.25	8.7	12.59	11.5	11.5	11.5	1144	1260	1144	3548
47.5	8.95	12.84	11.5	11.5	11.5	1178	1298	1178	3655
47.75	9.2	13.09	11.5	11.5	11.5	1213	1336	1213	3763
48	9.45	13.34	11.5	11.5	11.5	1248	1375	1248	3871

**Spillway Discharge – Water Level Falling – 2016**



## Appendix C5: Ross River Dam Free Overflow Discharges

Table C5 shows the flow over the spillway which would result if the gates were fully opened at the commencement of spill.

**Table C5: Free overflow discharges – 2016**

Headwater Level (m AHD)	Headwater Level (m above Spillway)	Discharge (m3 /s)			
		Left	Centre	Right	Total
		1	2	3	
34.656	0	0	0	0	0
34.75	0.09	1	1	1	2
35	0.34	4	5	4	14
35.5	0.84	17	19	17	54
35.75	1.09	26	28	26	80
36	1.34	35	39	35	109
36.25	1.59	46	50	46	142
36.5	1.84	57	63	57	177
36.75	2.09	69	77	69	215
37	2.34	83	91	83	257
37.25	2.59	97	107	97	300
37.5	2.84	112	123	112	346
37.75	3.09	127	140	127	395
38	3.34	144	158	144	446
38.25	3.59	161	177	161	499
38.5	3.84	179	197	179	554
38.75	4.09	197	217	197	612
39	4.34	216	238	216	671
39.25	4.59	236	260	236	733
39.5	4.84	257	283	257	797
39.75	5.09	278	306	278	863
40	5.34	300	330	300	930
40.25	5.59	322	355	322	1000
40.5	5.84	345	380	345	1071
40.75	6.09	369	406	369	1144
41	6.34	393	433	393	1219
41.25	6.59	418	460	418	1296
41.5	6.84	443	488	443	1374
41.75	7.09	469	516	469	1454
42	7.34	495	545	495	1535
42.25	7.59	522	575	522	1618
42.5	7.84	549	605	549	1703
42.75	8.09	577	636	577	1789
43	8.34	605	667	605	1877
43.25	8.59	634	698	634	1966
43.5	8.84	663	730	663	2056
43.75	9.09	692	763	692	2148
44	9.34	722	796	722	2241
44.25	9.59	753	829	753	2335
44.5	9.84	784	863	784	2430
44.75	10	815	898	815	2527
45	10.3	846	932	846	2625
45.25	10.5	878	967	878	2724
45.5	10.8	910	1003	910	2823
45.75	11	943	1039	943	2924
46	11.3	976	1075	976	3026
46.25	11.5	1009	1111	1009	3129
46.5	11.8	1042	1148	1042	3233
46.75	12	1076	1185	1076	3337
47	12.3	1110	1223	1110	3442
47.25	12.5	1144	1260	1144	3548
47.5	12.8	1178	1298	1178	3655
47.75	13	1213	1336	1213	3763
48	13.3	1248	1375	1248	3871







Effective Date: 30/09/2024

Gate Opening (m)																										
Elevation on centre of gate opening (m)																										
Elevation at Top of Gate (m)																										
Lake Level	39.03	39.44	39.82	40.18	40.52	40.85	41.16	41.47	41.76	42.05	42.33	42.61	42.88	43.15	43.41	43.67	43.93	44.17	44.42	44.90	45.37	45.82	46.27	46.71	47.13	50.11
48.00	539	535	534	535	538	542	547	554	561	569	578	587	597	607	618	629	640	653	665	691	717	745	774	804	836	1248
47.75	517	513	512	513	516	520	526	533	540	548	557	566	576	587	597	609	620	633	645	671	698	726	756	786	819	1213
47.50	494	491	490	492	495	499	505	512	519	527	536	546	556	566	577	589	600	613	625	652	679	708	738	769	802	1178
47.25	473	469	469	470	474	479	484	491	499	507	516	526	536	547	558	569	581	594	606	633	661	690	721	753	788	1144
47.00	451	448	448	450	453	458	464	471	479	487	497	506	517	527	539	550	562	575	588	615	643	673	704	738	776	1110
46.75	430	427	427	429	433	438	444	451	459	468	477	487	497	508	520	532	543	557	570	597	626	656	689	724	764	1076
46.50	410	407	407	409	413	418	425	432	440	449	458	468	479	490	501	514	526	539	552	580	609	641	675	713	753	1042
46.25	389	387	387	390	394	399	405	413	421	430	440	450	461	472	484	496	508	522	535	564	594	626	663	703	741	1009
46.00	369	367	368	370	374	380	387	394	403	412	422	432	443	454	466	479	491	505	519	548	579	613	653	692	729	976
45.75	349	348	348	351	356	361	368	376	385	394	404	415	426	437	449	462	475	489	503	533	565	602	642	681	717	943
45.50	330	329	330	333	337	343	350	358	367	377	387	398	409	421	433	446	459	474	488	519	553	593	632	669	705	910
45.25	311	310	311	315	319	326	333	341	350	360	370	381	393	405	418	431	444	459	474	506	544	583	622	658	692	878
45.00	293	292	293	297	302	308	316	324	333	343	354	365	377	389	402	416	430	445	461	495	535	574	611	646	680	846
44.75	274	274	276	279	285	291	299	308	317	327	338	350	362	375	388	402	416	432	449	486	526	564	600	634	667	815
44.50	257	256	258	262	268	275	283	292	301	312	323	335	347	361	374	389	404	421	438	478	517	554	589	622	653	784
44.25	239	239	242	246	252	259	267	276	286	297	309	321	334	347	362	377	393	410	430	470	508	544	578	610	640	753
44.00	222	223	225	230	236	244	252	261	272	283	295	307	321	335	350	366	383	403	423	462	498	533	566	597		

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C8: Discharge for all Gates (m3/s) – 2016**

Gate Opening (m)																														
0      0.25      0.50      0.75      1.00      1.25      1.50      1.75      2.00      2.25      2.50      2.75																														
Elevation on centre of gate opening (m)																														
34.252    34.46    34.65    34.82    34.99    35.15    35.30    35.45    35.59    35.73    35.87    36.00    36.13    36.26    36.39    36.52    36.65    36.77    36.90    37.15    37.40    37.65    37.90    38.15    38.40    40.389																														
Elevation at Top of Gate (m)																														
	39.03	39.44	39.82	40.18	40.52	40.85	41.16	41.47	41.76	42.05	42.33	42.61	42.88	43.15	43.41	43.67	43.93	44.17	44.42	44.90	45.37	45.82	46.27	46.71	47.13	50.11				
Lake Level	1672	1659	1656	1659	1668	1681	1698	1718	1740	1765	1792	1821	1851	1883	1917	1952	1986	2025	2062	2142	2225	2312	2402	2495	2593	3871				
48.00	1602	1590	1587	1591	1600	1614	1632	1652	1675	1700	1727	1756	1787	1820	1853	1889	1923	1962	2000	2081	2165	2253	2344	2439	2539	3763				
47.75	1534	1523	1520	1525	1534	1549	1566	1587	1610	1636	1664	1693	1724	1757	1791	1827	1861	1901	1940	2021	2106	2195	2288	2386	2489	3655				
47.50	1466	1456	1454	1459	1469	1484	1502	1523	1547	1573	1601	1631	1663	1696	1730	1766	1801	1842	1881	1963	2050	2140	2235	2335	2443	3548				
47.25	1400	1390	1389	1395	1406	1421	1439	1461	1485	1511	1540	1570	1602	1636	1671	1707	1743	1783	1823	1907	1994	2087	2184	2288	2406	3442				
46.75	1335	1326	1325	1331	1343	1359	1378	1400	1424	1451	1480	1511	1543	1577	1612	1649	1686	1727	1767	1852	1941	2036	2136	2246	2371	3337				
46.50	1270	1262	1263	1269	1281	1297	1317	1339	1364	1392	1421	1452	1485	1520	1555	1593	1630	1672	1712	1799	1890	1987	2092	2213	2335	3233				
46.25	1207	1200	1201	1208	1221	1237	1258	1281	1306	1334	1364	1395	1429	1464	1500	1538	1576	1618	1660	1748	1842	1942	2055	2180	2299	3129				
46.00	1145	1138	1140	1148	1161	1179	1199	1223	1249	1277	1308	1340	1374	1409	1446	1485	1524	1567	1609	1700	1796	1901	2024	2146	2262	3026				
45.75	1084	1078	1081	1089	1103	1121	1142	1166	1193	1222	1253	1286	1320	1357	1394	1434	1473	1517	1560	1653	1754	1868	1992	2111	2224	2924				
45.50	1024	1019	1023	1032	1046	1065	1087	1111	1138	1168	1200	1233	1268	1305	1344	1384	1424	1469	1514	1610	1716	1839	1960	2076	2186	2823				
45.25	965	961	965	976	991	1010	1032	1058	1085	1116	1148	1182	1218	1256	1295	1336	1378	1424	1470	1570	1686	1810	1928	2041	2147	2724				
45.00	908	905	910	920	936	956	979	1005	1034	1065	1098	1133	1169	1208	1248	1291	1334	1381	1429	1535	1659	1780	1895	2004	2108	2625				
44.75	851	849	855	867	883	904	928	954	984	1015	1049	1085	1123	1162	1204	1247	1292	1341	1391	1508	1631	1749	1861	1967	2068	2527				
44.50	796	795	802	814	831	853	878	905	935	968	1002	1039	1078	1118	1161	1207	1253	1305	1359	1483	1603	1718	1827	1930	2026	2430				
44.25	742	742	750	763	781	803	829	857	888	922	957	995	1035	1077	1121	1169	1218	1273	1335	1458	1575	1686	1792	1891	1984	2335				
44.00	689	690	699	713	732	755	782	811	843	877	914	953	994	1038	1084	1134	1188	1250	1312	1432	1546	1654	1756	1852	1941	2241				
43.75	638	640	650	665	685	709	736	767	799	835	873	913	956	1002	1051	1105	1166	1228	1288	1405	1516	1621	1720	1812	1898	2148				
43.50	588	591	602	618	639	664	693	724	758	795	834	876	921	970	1023	1084	1145	1206	1265	1378	1486	1588	1683	1771	1853	2056				
43.25	539	544	556	573	595	621	651	683	719	757	798	842	890	942	1003	1065	1124	1184	1241	1351	1455	1553	1645	1729	1807	1966				
43.00	492	498	511	529	553	580	611	645	681	721	765	811	863	923	984	1045	1103	1160	1216	1323	1424	1518	1606	1686	1759	1877				
42.75	446	453	468	488	512	541	573	608	647	689	735	785	845	906	966	1024	1081	1137	1191	1294	1392	1482	1566	1642	1711	1789				
42.50	402	411	426	447	473	503	537	574	615	659	709	767	828	888	946	1003	1058	1113	1165	1265	1359	1445	1525	1597	1661	1703				
42.25	360	369	387	409	436	468	503	543	586	634	691	752	812	870	927	982	1036	1088	1139	1235	1325	1408	1483	1550	1610	1618				
42.00	318	330	349	373	402	435	473	515	561	617	678	737	795	852	907	961	1012	1063	1112	1204	1290	1369	1440	1502	1535	1535				
41.75	279	292	313	339	369	405	445	490	543	604	664	722	778	833	886	938	988	1037	1084	1173	1255	1329	1395	1453	1454	1454				
41.50	242	257	279	307	340	378	421	472	532	592	649	706	761	814	865	916	964	1011	1056	1141	1218	1288	1349	1374	1374	1374				
41.25	206	223	247	277	313	354	402	461	521	579	635	690	743	794	844	892	938	984	1027	1107	1180	1245	1296	1296	1296	1296				
41.00	172	191	218	250	289	335	392	451	509	565	620	673	724	774	822	869	913	956	997	1073	1141	1201	1219	1219	1219	1219				
40.75	140	162	191	227	269	324	383	441	497	552	605	656	705	753	799	844	886	927	966	1038	1101	1144	1144	1144	1144	1144				
40.50	111	135	167	207	257	316	374	431	485	538	589	638	686	732	776	819	858	898	934	1001	1059	1071	1071	1071	1071	1071				
40.25	84	111	147	192	251	309	365	420	473	524	573	620	666	710	752	792	830	867	901	963	1000	1000	1000	1000	1000	1000				
40.00	59	90	131	187	245	301	356	409	460	509	556	602	646	687	727	765	801	835	866	923	930	930	930	930	930	930				
39.75	38	74	124	182	239	293	346	397	446	494	539	583	624	664	702	737	770	802	831	863	863	863	863	863	863	863				
39.50	20	62	121	177	232	285	336	386	433	478	522	563	602	640	675	708	738	768	793	797	797	797	797	797	797	797				
39.25	6	60	117	173	226	277	326	374	419	462	503	543	580	615	647	678	705	732	733	733	733	733	733	733	733	733				
39.00	0	58	114	168	219	268	316	361	404	445	484	521	556	588	618	646	671	671	671	671	671	671	671	671	671	671				
38.75	0	57	111	163	212	260	305	348	389	428	465	499	531	561	588	612	612	612	612	612	612	612	612	612	612	612				
38.50	0	55	107	157	205	250	294	335	373	410	444	476	505	532	554	554	554	554	554	554	554	554	554	554	554	554				
38.25	0	53	104	152	198	241	282	321	357	391	422	451	478	499	499	499	499	499	499	499	499	499	499	499	499	499				
38.00	0	51	100	146	190	231	270	306	340	371	400	426	446	446	446	446	446	446	446	446	446	446	446	446	446	446				
37.75	0	50	96	140	182	221	257	291	322	350	376	395	395	395	395	395	395	395	395	395	395	395	395	395	395	395				
37.50	0	48	92	134	173	210	244	274	303	328	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346	346				
37.25	0	46	88	128	164	198	229	257	282	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300	300				
37.00	0	44	84	121	155	186	214	239	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257	257				
36.75	0	41	79	114	145	173	198	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215	215				
36.50	0	39	74	106	134	159	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177	177				
36.25	0	37	69	98	123	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142	142				
36.00	0	34	64	89	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109	109				
35.75	0	31	57	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80				
35.50	0	28	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54				
35.2																														



**Table C9: Minimum Gate Settings - Water Level RISING 50mm increments**

Headwater	Headwater	Gate Opening $G_o$			All Gates Operational				Gate 1 closed or Inoperable (m)			$Q$ (m <sup>3</sup> /s)	Gate 2 closed or Inoperable (m)			$Q$ (m <sup>3</sup> /s)	Gate 3 closed or Inoperable (m)			$Q$ (m <sup>3</sup> /s)	2016 Discharge			
Level	Level	(m)			Gate Opening (m)				$Q$ (m <sup>3</sup> /s)	(m)			$Q$ (m <sup>3</sup> /s)	(m)			$Q$ (m <sup>3</sup> /s)	(m <sup>3</sup> /s)						
(m AHD)	(m above FSL)	Left	Centre	Right	Left	Centre	Right	Left		Centre	Right			Left	Centre			Right	Left		Centre	Right	Left	Centre
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3		1	2	3	(m <sup>3</sup> /s)
38.55	0.00	0.00	0.00	0.00	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	0.0	0.0	0.0	0.0
38.60	0.05	0.00	0.00	0.00	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0	0.0	0.0	0.0	0.0
38.65	0.10	0.00	0.25	0.00	closed	0.25	closed	20	closed	0.25	closed	20	closed	closed	closed	0	closed	0.25	closed	20	0.0	19.9	0.0	19.9
38.70	0.15	0.00	0.25	0.00	closed	0.25	closed	20	closed	0.25	closed	20	closed	closed	closed	0	closed	0.25	closed	20	0.0	20.0	0.0	20.0
38.75	0.20	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	75	0.50	closed	0.50	71	0.50	0.50	closed	75	18.3	20.1	18.3	56.7
38.80	0.25	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	76	0.50	closed	0.50	72	0.50	0.50	closed	76	18.4	20.2	18.4	57.0
38.85	0.30	0.25	0.25	0.25	0.25	0.25	0.25	57	closed	0.50	0.50	76	0.50	closed	0.50	72	0.50	0.50	closed	76	18.5	20.4	18.5	57.3
38.90	0.35	0.25	0.25	0.25	0.25	0.25	0.25	58	closed	0.50	0.50	76	0.50	closed	0.50	73	0.50	0.50	closed	76	18.6	20.5	18.6	57.6
38.95	0.40	0.25	0.25	0.25	0.25	0.25	0.25	58	closed	0.50	0.50	77	0.50	closed	0.50	73	0.50	0.50	closed	77	18.7	20.6	18.7	58.0
39.00	0.45	0.50	0.50	0.50	0.50	0.50	0.50	114	closed	0.75	0.75	114	1.00	closed	1.00	141	0.75	0.75	closed	114	36.8	40.5	36.8	114.1
39.05	0.50	0.50	0.50	0.50	0.50	0.50	0.50	115	closed	0.75	0.75	114	1.00	closed	1.00	142	0.75	0.75	closed	114	37.0	40.8	37.0	114.8
39.10	0.55	0.50	0.50	0.50	0.50	0.50	0.50	115	closed	0.75	0.75	115	1.00	closed	1.00	143	0.75	0.75	closed	115	37.2	41.0	37.2	115.4
39.15	0.60	0.50	0.50	0.50	0.50	0.50	0.50	116	closed	0.75	0.75	116	1.00	closed	1.00	144	0.75	0.75	closed	116	37.4	41.2	37.4	116.1
39.20	0.65	0.50	0.50	0.50	0.50	0.50	0.50	117	closed	0.75	0.75	116	1.00	closed	1.00	145	0.75	0.75	closed	116	37.6	41.5	37.6	116.7
39.25	0.70	0.75	0.75	0.75	0.75	0.75	0.75	173	closed	1.25	1.25	188	1.25	closed	1.25	179	1.25	1.25	closed	188	55.7	61.3	55.7	172.7
39.30	0.75	0.75	0.75	0.75	0.75	0.75	0.75	174	closed	1.25	1.25	189	1.25	closed	1.25	180	1.25	1.25	closed	189	56.0	61.7	56.0	173.6
39.35	0.80	0.75	0.75	0.75	0.75	0.75	0.75	175	closed	1.25	1.25	190	1.25	closed	1.25	181	1.25	1.25	closed	190	56.3	62.0	56.3	174.6
39.40	0.85	0.75	0.75	0.75	0.75	0.75	0.75	176	closed	1.25	1.25	191	1.25	closed	1.25	182	1.25	1.25	closed	191	56.6	62.4	56.6	175.6
39.45	0.90	0.75	0.75	0.75	0.75	0.75	0.75	177	closed	1.25	1.25	192	1.25	closed	1.25	183	1.25	1.25	closed	192	56.9	62.7	56.9	176.5
39.50	0.95	1.00	1.00	1.00	1.00	1.00	1.00	232	closed	1.50	1.50	228	1.75	closed	1.75	249	1.50	1.50	closed	228	74.9	82.5	74.9	232.4
39.55	1.00	1.00	1.00	1.00	1.00	1.00	1.00	234	closed	1.50	1.50	229	1.75	closed	1.75	250	1.50	1.50	closed	229	75.3	83.0	75.3	233.7
39.60	1.05	1.00	1.00	1.00	1.00	1.00	1.00	235	closed	1.50	1.50	231	1.75	closed	1.75	252	1.50	1.50	closed	231	75.7	83.4	75.7	234.9
39.65	1.10	1.00	1.00	1.00	1.00	1.00	1.00	236	closed	1.50	1.50	232	1.75	closed	1.75	253	1.50	1.50	closed	232	76.2	83.9	76.2	236.2
39.70	1.15	1.00	1.00	1.00	1.00	1.00	1.00	237	closed	1.50	1.50	233	1.75	closed	1.75	255	1.50	1.50	closed	233	76.6	84.3	76.6	237.5
39.75	1.20	1.25	1.25	1.25	1.25	1.25	1.25	293	closed	2.00	2.00	303	2.00	closed	2.00	288	2.00	2.00	closed	303	94.6	104.2	94.6	293.4
39.80	1.25	1.25	1.25	1.25	1.25	1.25	1.25	295	closed	2.00	2.00	304	2.00	closed	2.00	290	2.00	2.00	closed	304	95.1	104.8	95.1	295.0
39.85	1.30	1.25	1.25	1.25	1.25	1.25	1.25	297	closed	2.00	2.00	306	2.00	closed	2.00	291	2.00	2.00	closed	306	95.6	105.4	95.6	296.6
39.90	1.35	1.25	1.25	1.25	1.25	1.25	1.25	298	closed	2.00	2.00	308	2.00	closed	2.00	293	2.00	2.00	closed	308	96.1	105.9	96.1	298.2
39.95	1.40	1.25	1.25	1.25	1.25	1.25	1.25	300	closed	2.00	2.00	310	2.00	closed	2.00	295	2.00	2.00	closed	310	96.6	106.5	96.6	299.7
40.00	1.45	1.50	1.50	1.50	1.50	1.50	1.50	356	closed	2.25	2.25	345	2.50	closed	2.50	359	2.25	2.25	closed	345	114.7	126.4	114.7	355.9
40.05	1.50	1.50	1.50	1.50	1.50	1.50	1.50	358	closed	2.25	2.25	347	2.50	closed	2.50	361	2.25	2.25	closed	347	115.4	127.1	115.4	357.8
40.10	1.55	1.50	1.50	1.50	1.50	1.50	1.50	360	closed	2.25	2.25	349	2.50	closed	2.50	363	2.25	2.25	closed	349	116.0	127.8	116.0	359.7
40.15	1.60	1.50	1.50	1.50	1.50	1.50	1.50	362	closed	2.25	2.25	351	2.50	closed	2.50	365	2.25	2.25	closed	351	116.6	128.4	116.6	361.5
40.20	1.65	1.50	1.50	1.50	1.50	1.50	1.50	363	closed	2.25	2.25	353	2.50	closed	2.50	367	2.25	2.25	closed	353	117.2	129.1	117.2	363.4
40.25	1.70	1.50	1.75	1.50	1.50	1.75	1.50	385	closed	2.50	2.25	372	2.50	closed	2.50	369	2.25	2.50	closed	372	117.8	149.1	117.8	384.6
40.30	1.75	1.50	1.75	1.50	1.50	1.75	1.50	387	closed	2.50	2.25	374	2.50	closed	2.50	371	2.25	2.50	closed	374	118.4	149.9	118.4	386.6
40.35	1.80	1.50	1.75	1.50	1.50	1.75	1.50	389	closed	2.50	2.25	376	2.50	closed	2.50	374	2.25	2.50	closed	376	118.9	150.6	118.9	388.5
40.40	1.85	1.50	1.75	1.50	1.50	1.75	1.50	390	closed	2.50	2.25	379	2.50	closed	2.50	376	2.25	2.50	closed	379	119.5	151.4	119.5	390.5
40.45	1.90	1.50	1.75	1.50	1.50	1.75	1.50	392	closed	2.50	2.25	381	2.50	closed	2.50	378	2.25	2.50	closed	381	120.1	152.2	120.1	392.4
40.50	1.95	1.75	1.75	1.75	1.75	1.75	1.75	431	closed	2.75	2.75	433	2.75	closed	2.75	412	2.75	2.75	closed	433	138.8	152.9	138.8	430.5

**Table C9 (continued): Minimum Gate Settings–Water Level RISING 50mm increments**



# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

Headwater	Headwater	Gate Opening G <sub>o</sub>			All Gates Operational				Gate 1 closed or Inoperable (m)			Q	Gate 2 closed or Inoperable (m)			Q	Gate 3 closed or Inoperable (m)			Q	2016 Discharge			
Level	Level	(m)			Gate Opening (m)			Q (m <sup>3</sup> /s)				Q (m <sup>3</sup> /s)				Q (m <sup>3</sup> /s)				Q (m <sup>3</sup> /s)	(m <sup>3</sup> /s)			
(m AHD)	(m above FSL)	Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	Left
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3		1	2	3	(m <sup>3</sup> /s)
40.55	2.00	1.75	1.75	1.75	1.75	1.75	1.75	433	closed	2.75	2.75	435	2.75	closed	2.75	414	2.75	2.75	closed	435	139.5	153.7	139.5	432.6
40.60	2.05	1.75	1.75	1.75	1.75	1.75	1.75	435	closed	2.75	2.75	437	2.75	closed	2.75	416	2.75	2.75	closed	437	140.2	154.4	140.2	434.8
40.65	2.10	1.75	1.75	1.75	1.75	1.75	1.75	437	closed	2.75	2.75	440	2.75	closed	2.75	418	2.75	2.75	closed	440	140.8	155.2	140.8	436.9
40.70	2.15	1.75	1.75	1.75	1.75	1.75	1.75	439	closed	2.75	2.75	442	2.75	closed	2.75	421	2.75	2.75	closed	442	141.5	155.9	141.5	439.0
40.75	2.20	2.00	2.00	2.00	2.00	2.00	2.00	497	closed	3.00	3.00	478	3.25	closed	3.25	486	3.25	3.00	closed	493	160.3	176.6	160.3	497.2
40.80	2.25	2.00	2.00	2.00	2.00	2.00	2.00	500	closed	3.00	3.00	481	3.25	closed	3.25	488	3.25	3.00	closed	496	161.1	177.5	161.1	499.6
40.85	2.30	2.00	2.00	2.00	2.00	2.00	2.00	502	closed	3.00	3.00	483	3.25	closed	3.25	491	3.25	3.00	closed	499	161.8	178.3	161.8	502.0
40.90	2.35	2.00	2.00	2.00	2.00	2.00	2.00	504	closed	3.00	3.00	486	3.25	closed	3.25	494	3.25	3.00	closed	501	162.6	179.1	162.6	504.4
40.95	2.40	2.00	2.00	2.00	2.00	2.00	2.00	507	closed	3.00	3.00	488	3.25	closed	3.25	496	3.25	3.00	closed	504	163.4	180.0	163.4	506.7
41.00	2.45	2.25	2.25	2.25	2.25	2.25	2.25	565	closed	3.50	3.50	557	3.50	closed	3.50	530	3.50	3.50	closed	557	182.3	200.8	182.3	565.3
41.05	2.50	2.25	2.25	2.25	2.25	2.25	2.25	568	closed	3.50	3.50	560	3.50	closed	3.50	533	3.50	3.50	closed	560	183.1	201.7	183.1	568.0
41.10	2.55	2.25	2.25	2.25	2.25	2.25	2.25	571	closed	3.50	3.50	563	3.50	closed	3.50	536	3.50	3.50	closed	563	184.0	202.7	184.0	570.6
41.15	2.60	2.25	2.25	2.25	2.25	2.25	2.25	573	closed	3.50	3.50	566	3.50	closed	3.50	539	3.50	3.50	closed	566	184.8	203.6	184.8	573.3
41.20	2.65	2.25	2.25	2.25	2.25	2.25	2.25	576	closed	3.50	3.50	569	3.50	closed	3.50	541	3.50	3.50	closed	569	185.7	204.6	185.7	575.9
41.25	2.70	2.50	2.50	2.50	2.50	2.50	2.50	635	closed	3.75	3.75	605	11.50	closed	11.50	835	3.75	3.75	closed	605	204.7	225.5	204.7	634.8
41.30	2.75	2.50	2.50	2.50	2.50	2.50	2.50	638	closed	3.75	3.75	608	11.50	closed	11.50	845	3.75	3.75	closed	608	205.6	226.5	205.6	637.8
41.35	2.80	2.50	2.50	2.50	2.50	2.50	2.50	641	closed	3.75	3.75	611	11.50	closed	11.50	855	3.75	3.75	closed	611	206.6	227.6	206.6	640.7
41.40	2.85	2.50	2.50	2.50	2.50	2.50	2.50	644	closed	3.75	3.75	614	11.50	closed	11.50	866	3.75	3.75	closed	614	207.5	228.6	207.5	643.6
41.45	2.90	2.50	2.50	2.50	2.50	2.50	2.50	647	closed	3.75	3.75	617	11.50	closed	11.50	876	3.75	3.75	closed	617	208.4	229.6	208.4	646.5
41.50	2.95	2.75	2.75	2.75	2.75	2.75	2.75	706	closed	11.50	11.50	931	11.50	closed	11.50	886	11.50	11.50	closed	931	227.5	250.7	227.5	705.7
41.55	3.00	2.75	2.75	2.75	2.75	2.75	2.75	709	closed	11.50	11.50	942	11.50	closed	11.50	896	11.50	11.50	closed	942	228.6	251.8	228.6	708.9
41.60	3.05	2.75	2.75	2.75	2.75	2.75	2.75	712	closed	11.50	11.50	952	11.50	closed	11.50	906	11.50	11.50	closed	952	229.6	252.9	229.6	712.1
41.65	3.10	2.75	2.75	2.75	2.75	2.75	2.75	715	closed	11.50	11.50	963	11.50	closed	11.50	917	11.50	11.50	closed	963	230.6	254.1	230.6	715.3
41.70	3.15	2.75	2.75	2.75	2.75	2.75	2.75	718	closed	11.50	11.50	974	11.50	closed	11.50	927	11.50	11.50	closed	974	231.6	255.2	231.6	718.5
41.75	3.20	2.75	3.00	2.75	2.75	3.00	2.75	742	closed	11.50	11.50	985	11.50	closed	11.50	937	11.50	11.50	closed	985	232.6	276.4	232.6	741.7
41.80	3.25	2.75	3.00	2.75	2.75	3.00	2.75	745	closed	11.50	11.50	996	11.50	closed	11.50	948	11.50	11.50	closed	996	233.7	277.6	233.7	744.9
41.85	3.30	2.75	3.00	2.75	2.75	3.00	2.75	748	closed	11.50	11.50	1007	11.50	closed	11.50	958	11.50	11.50	closed	1007	234.7	278.8	234.7	748.1
41.90	3.35	2.75	3.00	2.75	2.75	3.00	2.75	751	closed	11.50	11.50	1018	11.50	closed	11.50	969	11.50	11.50	closed	1018	235.7	280.0	235.7	751.4
41.95	3.40	2.75	3.00	2.75	2.75	3.00	2.75	755	closed	11.50	11.50	1029	11.50	closed	11.50	979	11.50	11.50	closed	1029	236.7	281.2	236.7	754.6
42.00	3.45	3.00	3.00	3.00	3.00	3.00	3.00	795	closed	11.50	11.50	1040	11.50	closed	11.50	990	11.50	11.50	closed	1040	256.4	282.5	256.4	795.2
42.05	3.50	3.00	3.00	3.00	3.00	3.00	3.00	799	closed	11.50	11.50	1052	11.50	closed	11.50	1001	11.50	11.50	closed	1052	257.5	283.7	257.5	798.6
42.10	3.55	3.00	3.00	3.00	3.00	3.00	3.00	802	closed	11.50	11.50	1063	11.50	closed	11.50	1011	11.50	11.50	closed	1063	258.6	284.8	258.6	802.0
42.15	3.60	3.00	3.00	3.00	3.00	3.00	3.00	805	closed	11.50	11.50	1074	11.50	closed	11.50	1022	11.50	11.50	closed	1074	259.6	286.0	259.6	805.3
42.20	3.65	3.00	3.00	3.00	3.00	3.00	3.00	809	closed	11.50	11.50	1085	11.50	closed	11.50	1033	11.50	11.50	closed	1085	260.7	287.2	260.7	808.6
42.25	3.70	3.25	3.25	3.25	3.25	3.25	3.25	870	closed	11.50	11.50	1097	11.50	closed	11.50	1044	11.50	11.50	closed	1097	280.5	309.1	280.5	870.1
42.30	3.75	3.25	3.25	3.25	3.25	3.25	3.25	874	closed	11.50	11.50	1108	11.50	closed	11.50	1054	11.50	11.50	closed	1108	281.7	310.4	281.7	873.8
42.35	3.80	3.25	3.25	3.25	3.25	3.25	3.25	877	closed	11.50	11.50	1120	11.50	closed	11.50	1065	11.50	11.50	closed	1120	282.9	311.6	282.9	877.4
42.40	3.85	3.25	3.25	3.25	3.25	3.25	3.25	881	closed	11.50	11.50	1131	11.50	closed	11.50	1076	11.50	11.50	closed	1131	284.0	312.9	284.0	881.0
42.45	3.90	3.25	3.25	3.25	3.25	3.25	3.25	885	closed	11.50	11.50	1142	11.50	closed	11.50	1087	11.50	11.50	closed	1142	285.2	314.2	285.2	884.6
42.50	3.95	3.75	3.75	3.75	3.75	3.75	3.75	1003	closed	11.50	11.50	1154	11.50	closed	11.50	1098	11.50	11.50	closed	1154	323.5	356.4	323.5	1003.5



**Table C9 (continued): Minimum Gate Settings–Water Level RISING 50mm increments**

Headwater	Headwater	Gate Opening G <sub>o</sub>			All Gates Operational				Gate 1 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	2016 Discharge			
Level	Level	(m)			Gate Opening (m)			Q (m <sup>3</sup> /s)	(m)				Q (m <sup>3</sup> /s)	(m)			Q (m <sup>3</sup> /s)	(m <sup>3</sup> /s)						
(m AHD)	(m above FSL)	Left	Centre	Right	Left	Centre	Right		Left	Centre	Right			Left	Centre			Right	Left		Centre	Right	Left	Centre
		1	2	3	1	2	3	(m <sup>3</sup> /s)	1	2	3	(m <sup>3</sup> /s)	1	2	3	(m <sup>3</sup> /s)	1	2	3	(m <sup>3</sup> /s)	1	2	3	(m <sup>3</sup> /s)
42.55	4.00	3.75	3.75	3.75	3.75	3.75	3.75	1008	closed	11.50	11.50	1166	11.50	closed	11.50	1109	11.50	11.50	closed	1166	324.9	357.9	324.9	1007.6
42.60	4.05	3.75	3.75	3.75	3.75	3.75	3.75	1012	closed	11.50	11.50	1177	11.50	closed	11.50	1120	11.50	11.50	closed	1177	326.2	359.4	326.2	1011.8
42.65	4.10	3.75	3.75	3.75	3.75	3.75	3.75	1016	closed	11.50	11.50	1189	11.50	closed	11.50	1131	11.50	11.50	closed	1189	327.6	360.9	327.6	1016.0
42.70	4.15	3.75	3.75	3.75	3.75	3.75	3.75	1020	closed	11.50	11.50	1201	11.50	closed	11.50	1143	11.50	11.50	closed	1201	328.9	362.3	328.9	1020.1
42.75	4.20	3.75	11.50	3.75	3.75	11.50	3.75	1296	closed	11.50	11.50	1212	11.50	closed	11.50	1154	11.50	11.50	closed	1212	330.2	635.5	330.2	1296.0
42.80	4.25	3.75	11.50	3.75	3.75	11.50	3.75	1305	closed	11.50	11.50	1224	11.50	closed	11.50	1165	11.50	11.50	closed	1224	331.5	641.7	331.5	1304.8
42.85	4.30	3.75	11.50	3.75	3.75	11.50	3.75	1314	closed	11.50	11.50	1236	11.50	closed	11.50	1176	11.50	11.50	closed	1236	332.9	647.9	332.9	1313.6
42.90	4.35	3.75	11.50	3.75	3.75	11.50	3.75	1322	closed	11.50	11.50	1248	11.50	closed	11.50	1187	11.50	11.50	closed	1248	334.2	654.1	334.2	1322.5
42.95	4.40	3.75	11.50	3.75	3.75	11.50	3.75	1331	closed	11.50	11.50	1260	11.50	closed	11.50	1199	11.50	11.50	closed	1260	335.5	660.4	335.5	1331.3
43.00	4.45	11.50	11.50	11.50	11.50	11.50	11.50	1877	closed	11.50	11.50	1272	11.50	closed	11.50	1210	11.50	11.50	closed	1272	605.1	666.6	605.1	1876.8
43.05	4.50	11.50	11.50	11.50	11.50	11.50	11.50	1895	closed	11.50	11.50	1284	11.50	closed	11.50	1222	11.50	11.50	closed	1284	610.8	672.9	610.8	1894.5
43.10	4.55	11.50	11.50	11.50	11.50	11.50	11.50	1912	closed	11.50	11.50	1296	11.50	closed	11.50	1233	11.50	11.50	closed	1296	616.5	679.2	616.5	1912.2
43.15	4.60	11.50	11.50	11.50	11.50	11.50	11.50	1930	closed	11.50	11.50	1308	11.50	closed	11.50	1245	11.50	11.50	closed	1308	622.3	685.5	622.3	1930.0
43.20	4.65	11.50	11.50	11.50	11.50	11.50	11.50	1948	closed	11.50	11.50	1320	11.50	closed	11.50	1256	11.50	11.50	closed	1320	628.0	691.9	628.0	1947.9
43.25	4.70	11.50	11.50	11.50	11.50	11.50	11.50	1966	closed	11.50	11.50	1332	11.50	closed	11.50	1268	11.50	11.50	closed	1332	633.8	698.2	633.8	1965.8
43.30	4.75	11.50	11.50	11.50	11.50	11.50	11.50	1984	closed	11.50	11.50	1344	11.50	closed	11.50	1279	11.50	11.50	closed	1344	639.6	704.6	639.6	1983.8
43.35	4.80	11.50	11.50	11.50	11.50	11.50	11.50	2002	closed	11.50	11.50	1356	11.50	closed	11.50	1291	11.50	11.50	closed	1356	645.4	711.0	645.4	2001.8
43.40	4.85	11.50	11.50	11.50	11.50	11.50	11.50	2020	closed	11.50	11.50	1369	11.50	closed	11.50	1302	11.50	11.50	closed	1369	651.2	717.4	651.2	2019.8
43.45	4.90	11.50	11.50	11.50	11.50	11.50	11.50	2038	closed	11.50	11.50	1381	11.50	closed	11.50	1314	11.50	11.50	closed	1381	657.0	723.9	657.0	2038.0
43.50	4.95	11.50	11.50	11.50	11.50	11.50	11.50	2056	closed	11.50	11.50	1393	11.50	closed	11.50	1326	11.50	11.50	closed	1393	662.9	730.3	662.9	2056.1
43.55	5.00	11.50	11.50	11.50	11.50	11.50	11.50	2074	closed	11.50	11.50	1406	11.50	closed	11.50	1338	11.50	11.50	closed	1406	668.8	736.8	668.8	2074.4
43.60	5.05	11.50	11.50	11.50	11.50	11.50	11.50	2093	closed	11.50	11.50	1418	11.50	closed	11.50	1349	11.50	11.50	closed	1418	674.7	743.3	674.7	2092.7
43.65	5.10	11.50	11.50	11.50	11.50	11.50	11.50	2111	closed	11.50	11.50	1430	11.50	closed	11.50	1361	11.50	11.50	closed	1430	680.6	749.8	680.6	2111.0
43.70	5.15	11.50	11.50	11.50	11.50	11.50	11.50	2129	closed	11.50	11.50	1443	11.50	closed	11.50	1373	11.50	11.50	closed	1443	686.5	756.3	686.5	2129.4
43.75	5.20	11.50	11.50	11.50	11.50	11.50	11.50	2148	closed	11.50	11.50	1455	11.50	closed	11.50	1385	11.50	11.50	closed	1455	692.5	762.9	692.5	2147.8
43.80	5.25	11.50	11.50	11.50	11.50	11.50	11.50	2166	closed	11.50	11.50	1468	11.50	closed	11.50	1397	11.50	11.50	closed	1468	698.4	769.5	698.4	2166.3
43.85	5.30	11.50	11.50	11.50	11.50	11.50	11.50	2185	closed	11.50	11.50	1480	11.50	closed	11.50	1409	11.50	11.50	closed	1480	704.4	776.0	704.4	2184.9
43.90	5.35	11.50	11.50	11.50	11.50	11.50	11.50	2203	closed	11.50	11.50	1493	11.50	closed	11.50	1421	11.50	11.50	closed	1493	710.4	782.6	710.4	2203.4
43.95	5.40	11.50	11.50	11.50	11.50	11.50	11.50	2222	closed	11.50	11.50	1506	11.50	closed	11.50	1433	11.50	11.50	closed	1506	716.4	789.3	716.4	2222.1
44.00	5.45	11.50	11.50	11.50	11.50	11.50	11.50	2241	closed	11.50	11.50	1518	11.50	closed	11.50	1445	11.50	11.50	closed	1518	722.4	795.9	722.4	2240.8
44.05	5.50	11.50	11.50	11.50	11.50	11.50	11.50	2260	closed	11.50	11.50	1531	11.50	closed	11.50	1457	11.50	11.50	closed	1531	728.5	802.6	728.5	2259.5
44.10	5.55	11.50	11.50	11.50	11.50	11.50	11.50	2278	closed	11.50	11.50	1544	11.50	closed	11.50	1469	11.50	11.50	closed	1544	734.5	809.2	734.5	2278.3
44.15	5.60	11.50	11.50	11.50	11.50	11.50	11.50	2297	closed	11.50	11.50	1557	11.50	closed	11.50	1481	11.50	11.50	closed	1557	740.6	815.9	740.6	2297.2
44.20	5.65	11.50	11.50	11.50	11.50	11.50	11.50	2316	closed	11.50	11.50	1569	11.50	closed	11.50	1493	11.50	11.50	closed	1569	746.7	822.6	746.7	2316.1
44.25	5.70	11.50	11.50	11.50	11.50	11.50	11.50	2335	closed	11.50	11.50	1582	11.50	closed	11.50	1506	11.50	11.50	closed	1582	752.8	829.4	752.8	2335.0
44.30	5.75	11.50	11.50	11.50	11.50	11.50	11.50	2354	closed	11.50	11.50	1595	11.50	closed	11.50	1518	11.50	11.50	closed	1595	758.9	836.1	758.9	2354.0
44.35	5.80	11.50	11.50	11.50	11.50	11.50	11.50	2373	closed	11.50	11.50	1608	11.50	closed	11.50	1530	11.50	11.50	closed	1608	765.1	842.9	765.1	2373.0
44.40	5.85	11.50	11.50	11.50	11.50	11.50	11.50	2392	closed	11.50	11.50	1621	11.50	closed	11.50	1542	11.50	11.50	closed	1621	771.2	849.7	771.2	2392.1
44.45	5.90	11.50	11.50	11.50	11.50	11.50	11.50	2411	closed	11.50	11.50	1634	11.50	closed	11.50	1555	11.50	11.50	closed	1634	777.4	856.5	777.4	2411.3
44.50	5.95	11.50	11.50	11.50	11.50	11.50	11.50	2430	closed	11.50	11.50	1647	11.50	closed	11.50	1567	11.50	11.50	closed	1647	783.6	863.3	783.6	2430.4



**Table C9 (continued): Minimum Gate Settings–Water Level RISING 50mm increments**

Headwater	Headwater	Gate Opening G <sub>o</sub>			All Gates Operational				Gate 1 closed or Inoperable (m)				Gate 2 closed or Inoperable (m)				Gate 3 closed or Inoperable (m)				2016 Discharge			
Level	Level	(m)			Gate Opening (m)				Inoperable (m)				Inoperable (m)				Inoperable (m)				(m <sup>3</sup> /s)			
(m AHD)	(m above FSL)	Left	Centre	Right	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right	Total (m <sup>3</sup> /s)
1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	4
44.55	6.00	11.50	11.50	11.50	11.50	11.50	11.50	2450	closed	11.50	11.50	1660	11.50	closed	11.50	1580	11.50	11.50	closed	1660	789.8	870.1	789.8	2449.7
44.60	6.05	11.50	11.50	11.50	11.50	11.50	11.50	2469	closed	11.50	11.50	1673	11.50	closed	11.50	1592	11.50	11.50	closed	1673	796.0	876.9	796.0	2468.9
44.65	6.10	11.50	11.50	11.50	11.50	11.50	11.50	2488	closed	11.50	11.50	1686	11.50	closed	11.50	1604	11.50	11.50	closed	1686	802.2	883.8	802.2	2488.3
44.70	6.15	11.50	11.50	11.50	11.50	11.50	11.50	2508	closed	11.50	11.50	1699	11.50	closed	11.50	1617	11.50	11.50	closed	1699	808.5	890.7	808.5	2507.6
44.75	6.20	11.50	11.50	11.50	11.50	11.50	11.50	2527	closed	11.50	11.50	1712	11.50	closed	11.50	1629	11.50	11.50	closed	1712	814.7	897.6	814.7	2527.0
44.80	6.25	11.50	11.50	11.50	11.50	11.50	11.50	2546	closed	11.50	11.50	1725	11.50	closed	11.50	1642	11.50	11.50	closed	1725	821.0	904.5	821.0	2546.5
44.85	6.30	11.50	11.50	11.50	11.50	11.50	11.50	2566	closed	11.50	11.50	1739	11.50	closed	11.50	1655	11.50	11.50	closed	1739	827.3	911.4	827.3	2566.0
44.90	6.35	11.50	11.50	11.50	11.50	11.50	11.50	2586	closed	11.50	11.50	1752	11.50	closed	11.50	1667	11.50	11.50	closed	1752	833.6	918.4	833.6	2585.6
44.95	6.40	11.50	11.50	11.50	11.50	11.50	11.50	2605	closed	11.50	11.50	1765	11.50	closed	11.50	1680	11.50	11.50	closed	1765	839.9	925.3	839.9	2605.1
45.00	6.45	11.50	11.50	11.50	11.50	11.50	11.50	2625	closed	11.50	11.50	1779	11.50	closed	11.50	1692	11.50	11.50	closed	1779	846.2	932.3	846.2	2624.8
45.05	6.50	11.50	11.50	11.50	11.50	11.50	11.50	2644	closed	11.50	11.50	1792	11.50	closed	11.50	1705	11.50	11.50	closed	1792	852.6	939.3	852.6	2644.5
45.10	6.55	11.50	11.50	11.50	11.50	11.50	11.50	2664	closed	11.50	11.50	1805	11.50	closed	11.50	1718	11.50	11.50	closed	1805	858.9	946.3	858.9	2664.2
45.15	6.60	11.50	11.50	11.50	11.50	11.50	11.50	2684	closed	11.50	11.50	1819	11.50	closed	11.50	1731	11.50	11.50	closed	1819	865.3	953.3	865.3	2683.9
45.20	6.65	11.50	11.50	11.50	11.50	11.50	11.50	2704	closed	11.50	11.50	1832	11.50	closed	11.50	1743	11.50	11.50	closed	1832	871.7	960.3	871.7	2703.8
45.25	6.70	11.50	11.50	11.50	11.50	11.50	11.50	2724	closed	11.50	11.50	1846	11.50	closed	11.50	1756	11.50	11.50	closed	1846	878.1	967.4	878.1	2723.6
45.30	6.75	11.50	11.50	11.50	11.50	11.50	11.50	2743	closed	11.50	11.50	1859	11.50	closed	11.50	1769	11.50	11.50	closed	1859	884.5	974.5	884.5	2743.5
45.35	6.80	11.50	11.50	11.50	11.50	11.50	11.50	2763	closed	11.50	11.50	1872	11.50	closed	11.50	1782	11.50	11.50	closed	1872	890.9	981.5	890.9	2763.4
45.40	6.85	11.50	11.50	11.50	11.50	11.50	11.50	2783	closed	11.50	11.50	1886	11.50	closed	11.50	1795	11.50	11.50	closed	1886	897.4	988.6	897.4	2783.4
45.45	6.90	11.50	11.50	11.50	11.50	11.50	11.50	2803	closed	11.50	11.50	1900	11.50	closed	11.50	1808	11.50	11.50	closed	1900	903.8	995.8	903.8	2803.4
45.50	6.95	11.50	11.50	11.50	11.50	11.50	11.50	2823	closed	11.50	11.50	1913	11.50	closed	11.50	1821	11.50	11.50	closed	1913	910.3	1002.9	910.3	2823.5
45.55	7.00	11.50	11.50	11.50	11.50	11.50	11.50	2844	closed	11.50	11.50	1927	11.50	closed	11.50	1834	11.50	11.50	closed	1927	916.8	1010.0	916.8	2843.6
45.60	7.05	11.50	11.50	11.50	11.50	11.50	11.50	2864	closed	11.50	11.50	1940	11.50	closed	11.50	1847	11.50	11.50	closed	1940	923.3	1017.2	923.3	2863.7
45.65	7.10	11.50	11.50	11.50	11.50	11.50	11.50	2884	closed	11.50	11.50	1954	11.50	closed	11.50	1860	11.50	11.50	closed	1954	929.8	1024.3	929.8	2883.9
45.70	7.15	11.50	11.50	11.50	11.50	11.50	11.50	2904	closed	11.50	11.50	1968	11.50	closed	11.50	1873	11.50	11.50	closed	1968	936.3	1031.5	936.3	2904.1
45.75	7.20	11.50	11.50	11.50	11.50	11.50	11.50	2924	closed	11.50	11.50	1982	11.50	closed	11.50	1886	11.50	11.50	closed	1982	942.8	1038.7	942.8	2924.4
45.80	7.25	11.50	11.50	11.50	11.50	11.50	11.50	2945	closed	11.50	11.50	1995	11.50	closed	11.50	1899	11.50	11.50	closed	1995	949.4	1045.9	949.4	2944.7
45.85	7.30	11.50	11.50	11.50	11.50	11.50	11.50	2965	closed	11.50	11.50	2009	11.50	closed	11.50	1912	11.50	11.50	closed	2009	955.9	1053.1	955.9	2965.0
45.90	7.35	11.50	11.50	11.50	11.50	11.50	11.50	2985	closed	11.50	11.50	2023	11.50	closed	11.50	1925	11.50	11.50	closed	2023	962.5	1060.4	962.5	2985.4
45.95	7.40	11.50	11.50	11.50	11.50	11.50	11.50	3006	closed	11.50	11.50	2037	11.50	closed	11.50	1938	11.50	11.50	closed	2037	969.1	1067.6	969.1	3005.8
46.00	7.45	11.50	11.50	11.50	11.50	11.50	11.50	3026	closed	11.50	11.50	2051	11.50	closed	11.50	1951	11.50	11.50	closed	2051	975.7	1074.9	975.7	3026.2
46.05	7.50	11.50	11.50	11.50	11.50	11.50	11.50	3047	closed	11.50	11.50	2064	11.50	closed	11.50	1965	11.50	11.50	closed	2064	982.3	1082.2	982.3	3046.7
46.10	7.55	11.50	11.50	11.50	11.50	11.50	11.50	3067	closed	11.50	11.50	2078	11.50	closed	11.50	1978	11.50	11.50	closed	2078	988.9	1089.4	988.9	3067.2
46.15	7.60	11.50	11.50	11.50	11.50	11.50	11.50	3088	closed	11.50	11.50	2092	11.50	closed	11.50	1991	11.50	11.50	closed	2092	995.5	1096.7	995.5	3087.8
46.20	7.65	11.50	11.50	11.50	11.50	11.50	11.50	3108	closed	11.50	11.50	2106	11.50	closed	11.50	2004	11.50	11.50	closed	2106	1002.1	1104.1	1002.1	3108.4
46.25	7.70	11.50	11.50	11.50	11.50	11.50	11.50	3129	closed	11.50	11.50	2120	11.50	closed	11.50	2018	11.50	11.50	closed	2120	1008.8	1111.4	1008.8	3129.0
46.30	7.75	11.50	11.50	11.50	11.50	11.50	11.50	3150	closed	11.50	11.50	2134	11.50	closed	11.50	2031	11.50	11.50	closed	2134	1015.5	1118.7	1015.5	3149.6
46.35	7.80	11.50	11.50	11.50	11.50	11.50	11.50	3170	closed	11.50	11.50	2148	11.50	closed	11.50	2044	11.50	11.50	closed	2148	1022.1	1126.1	1022.1	3170.3
46.40	7.85	11.50	11.50	11.50	11.50	11.50	11.50	3191	closed	11.50	11.50	2162	11.50	closed	11.50	2058	11.50	11.50	closed	2162	1028.8	1133.4	1028.8	3191.1
46.45	7.90	11.50	11.50	11.50	11.50	11.50	11.50	3212	closed	11.50	11.50	2176	11.50	closed	11.50	2071	11.50	11.50	closed	2176	1035.5	1140.8	1035.5	3211.8



# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C9 (continued): Minimum Gate Settings–Water Level RISING 50mm increments**

Headwater	Headwater	Gate Opening $G_o$			All Gates Operational				Gate 1 closed or Inoperable (m)			$Q$	Gate 2 closed or Inoperable (m)			$Q$	Gate 3 closed or Inoperable (m)			$Q$	2016 Discharge			
Level	Level	(m)			Gate Opening (m)			$Q$ (m <sup>3</sup> /s)	(m)			$Q$ (m <sup>3</sup> /s)	(m)			$Q$ (m <sup>3</sup> /s)	(m)			$Q$ (m <sup>3</sup> /s)	(m <sup>3</sup> /s)			
(m AHD)	(m above FSL)	Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	Left
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3		1	2	3	
46.50	7.95	11.50	11.50	11.50	11.50	11.50	11.50	3233	closed	11.50	11.50	2190	11.50	closed	11.50	2084	11.50	11.50	closed	2190	1042.2	1148.2	1042.2	3232.6
46.55	8.00	11.50	11.50	11.50	11.50	11.50	11.50	3253	closed	11.50	11.50	2205	11.50	closed	11.50	2098	11.50	11.50	closed	2205	1048.9	1155.6	1048.9	3253.5
46.60	8.05	11.50	11.50	11.50	11.50	11.50	11.50	3274	closed	11.50	11.50	2219	11.50	closed	11.50	2111	11.50	11.50	closed	2219	1055.7	1163.0	1055.7	3274.3
46.65	8.10	11.50	11.50	11.50	11.50	11.50	11.50	3295	closed	11.50	11.50	2233	11.50	closed	11.50	2125	11.50	11.50	closed	2233	1062.4	1170.4	1062.4	3295.2
46.70	8.15	11.50	11.50	11.50	11.50	11.50	11.50	3316	closed	11.50	11.50	2247	11.50	closed	11.50	2138	11.50	11.50	closed	2247	1069.1	1177.9	1069.1	3316.2
46.75	8.20	11.50	11.50	11.50	11.50	11.50	11.50	3337	closed	11.50	11.50	2261	11.50	closed	11.50	2152	11.50	11.50	closed	2261	1075.9	1185.3	1075.9	3337.1
46.80	8.25	11.50	11.50	11.50	11.50	11.50	11.50	3358	closed	11.50	11.50	2275	11.50	closed	11.50	2165	11.50	11.50	closed	2275	1082.7	1192.8	1082.7	3358.1
46.85	8.30	11.50	11.50	11.50	11.50	11.50	11.50	3379	closed	11.50	11.50	2290	11.50	closed	11.50	2179	11.50	11.50	closed	2290	1089.5	1200.2	1089.5	3379.2
46.90	8.35	11.50	11.50	11.50	11.50	11.50	11.50	3400	closed	11.50	11.50	2304	11.50	closed	11.50	2192	11.50	11.50	closed	2304	1096.2	1207.7	1096.2	3400.2
46.95	8.40	11.50	11.50	11.50	11.50	11.50	11.50	3421	closed	11.50	11.50	2318	11.50	closed	11.50	2206	11.50	11.50	closed	2318	1103.0	1215.2	1103.0	3421.3
47.00	8.45	11.50	11.50	11.50	11.50	11.50	11.50	3442	closed	11.50	11.50	2333	11.50	closed	11.50	2220	11.50	11.50	closed	2333	1109.9	1222.7	1109.9	3442.4
47.05	8.50	11.50	11.50	11.50	11.50	11.50	11.50	3464	closed	11.50	11.50	2347	11.50	closed	11.50	2233	11.50	11.50	closed	2347	1116.7	1230.2	1116.7	3463.6
47.10	8.55	11.50	11.50	11.50	11.50	11.50	11.50	3485	closed	11.50	11.50	2361	11.50	closed	11.50	2247	11.50	11.50	closed	2361	1123.5	1237.8	1123.5	3484.7
47.15	8.60	11.50	11.50	11.50	11.50	11.50	11.50	3506	closed	11.50	11.50	2376	11.50	closed	11.50	2261	11.50	11.50	closed	2376	1130.3	1245.3	1130.3	3506.0
47.20	8.65	11.50	11.50	11.50	11.50	11.50	11.50	3527	closed	11.50	11.50	2390	11.50	closed	11.50	2274	11.50	11.50	closed	2390	1137.2	1252.8	1137.2	3527.2
47.25	8.70	11.50	11.50	11.50	11.50	11.50	11.50	3548	closed	11.50	11.50	2404	11.50	closed	11.50	2288	11.50	11.50	closed	2404	1144.0	1260.4	1144.0	3548.5
47.30	8.75	11.50	11.50	11.50	11.50	11.50	11.50	3570	closed	11.50	11.50	2419	11.50	closed	11.50	2302	11.50	11.50	closed	2419	1150.9	1267.9	1150.9	3569.8
47.35	8.80	11.50	11.50	11.50	11.50	11.50	11.50	3591	closed	11.50	11.50	2433	11.50	closed	11.50	2316	11.50	11.50	closed	2433	1157.8	1275.5	1157.8	3591.1
47.40	8.85	11.50	11.50	11.50	11.50	11.50	11.50	3612	closed	11.50	11.50	2448	11.50	closed	11.50	2329	11.50	11.50	closed	2448	1164.7	1283.1	1164.7	3612.4
47.45	8.90	11.50	11.50	11.50	11.50	11.50	11.50	3634	closed	11.50	11.50	2462	11.50	closed	11.50	2343	11.50	11.50	closed	2462	1171.6	1290.7	1171.6	3633.8
47.50	8.95	11.50	11.50	11.50	11.50	11.50	11.50	3655	closed	11.50	11.50	2477	11.50	closed	11.50	2357	11.50	11.50	closed	2477	1178.5	1298.3	1178.5	3655.2
47.55	9.00	11.50	11.50	11.50	11.50	11.50	11.50	3677	closed	11.50	11.50	2491	11.50	closed	11.50	2371	11.50	11.50	closed	2491	1185.4	1305.9	1185.4	3676.6
47.60	9.05	11.50	11.50	11.50	11.50	11.50	11.50	3698	closed	11.50	11.50	2506	11.50	closed	11.50	2385	11.50	11.50	closed	2506	1192.3	1313.5	1192.3	3698.1
47.65	9.10	11.50	11.50	11.50	11.50	11.50	11.50	3720	closed	11.50	11.50	2520	11.50	closed	11.50	2398	11.50	11.50	closed	2520	1199.2	1321.2	1199.2	3719.6
47.70	9.15	11.50	11.50	11.50	11.50	11.50	11.50	3741	closed	11.50	11.50	2535	11.50	closed	11.50	2412	11.50	11.50	closed	2535	1206.1	1328.8	1206.1	3741.1
47.75	9.20	11.50	11.50	11.50	11.50	11.50	11.50	3763	closed	11.50	11.50	2550	11.50	closed	11.50	2426	11.50	11.50	closed	2550	1213.1	1336.5	1213.1	3762.6
47.80	9.25	11.50	11.50	11.50	11.50	11.50	11.50	3784	closed	11.50	11.50	2564	11.50	closed	11.50	2440	11.50	11.50	closed	2564	1220.0	1344.1	1220.0	3784.2
47.85	9.30	11.50	11.50	11.50	11.50	11.50	11.50	3806	closed	11.50	11.50	2579	11.50	closed	11.50	2454	11.50	11.50	closed	2579	1227.0	1351.8	1227.0	3805.8
47.90	9.35	11.50	11.50	11.50	11.50	11.50	11.50	3827	closed	11.50	11.50	2593	11.50	closed	11.50	2468	11.50	11.50	closed	2593	1234.0	1359.4	1234.0	3827.4
47.95	9.40	11.50	11.50	11.50	11.50	11.50	11.50	3849	closed	11.50	11.50	2608	11.50	closed	11.50	2482	11.50	11.50	closed	2608	1240.9	1367.1	1240.9	3849.0
48.00	9.45	11.50	11.50	11.50	11.50	11.50	11.50	3871	closed	11.50	11.50	2623	11.50	closed	11.50	2496	11.50	11.50	closed	2623	1247.9	1374.8	1247.9	3870.7
Note: Discharge rate does not include flow over the closed gate																								

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10: Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening $G_o$ (m)			All Gates Operational (m)			Q ( $m^3/s$ )	Gate 1 closed or Inoperable (m)			Q ( $m^3/s$ )	Gate 2 closed or Inoperable (m)			Q ( $m^3/s$ )	Gate 3 closed or Inoperable (m)			Q ( $m^3/s$ )
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
38.55	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0	closed	closed	closed	0	closed	closed	closed	0	closed	closed	closed	0
38.60	0.05	0.25	0.25	0.25	0.25	0.25	0.25	56	closed	0.50	0.50	74	0.5	closed	0.5	70	0.50	0.50	closed	74
38.65	0.10	0.25	0.25	0.25	0.25	0.25	0.25	56	closed	0.50	0.50	74	0.5	closed	0.5	71	0.50	0.50	closed	74
38.70	0.15	0.50	0.50	0.50	0.50	0.50	0.50	110	closed	0.75	0.75	109	1.0	closed	1.0	136	0.75	0.75	closed	109
38.75	0.20	0.50	0.50	0.50	0.50	0.50	0.50	111	closed	0.75	0.75	110	1.00	closed	1.00	137	0.75	0.75	closed	110
38.80	0.25	0.75	0.75	0.75	0.75	0.75	0.75	164	closed	1.25	1.25	177	1.25	closed	1.25	169	1.25	1.25	closed	177
38.85	0.30	0.75	0.75	0.75	0.75	0.75	0.75	165	closed	1.25	1.25	178	1.25	closed	1.25	170	1.25	1.25	closed	178
38.90	0.35	0.75	0.75	0.75	0.75	0.75	0.75	166	closed	1.25	1.25	180	1.25	closed	1.25	171	1.25	1.25	closed	180
38.95	0.40	0.75	0.75	0.75	0.75	0.75	0.75	167	closed	1.25	1.25	181	1.25	closed	1.25	172	1.25	1.25	closed	181
39.00	0.45	1.00	1.00	1.00	1.00	1.00	1.00	219	closed	1.50	1.50	214	1.75	closed	1.75	233	1.50	1.50	closed	214
39.05	0.50	1.00	1.00	1.00	1.00	1.00	1.00	220	closed	1.50	1.50	215	1.75	closed	1.75	234	1.50	1.50	closed	215
39.10	0.55	1.00	1.00	1.00	1.00	1.00	1.00	222	closed	1.50	1.50	217	1.75	closed	1.75	236	1.50	1.50	closed	217
39.15	0.60	1.00	1.00	1.00	1.00	1.00	1.00	223	closed	1.50	1.50	218	1.75	closed	1.75	238	1.50	1.50	closed	218
39.20	0.65	1.00	1.00	1.00	1.00	1.00	1.00	225	closed	1.50	1.50	220	1.75	closed	1.75	239	1.50	1.50	closed	220
39.25	0.70	1.25	1.25	1.25	1.25	1.25	1.25	277	closed	2.00	2.00	284	2.00	closed	2.00	270	2.00	2.00	closed	284
39.30	0.75	1.25	1.25	1.25	1.25	1.25	1.25	279	closed	2.00	2.00	286	2.00	closed	2.00	272	2.00	2.00	closed	286
39.35	0.80	1.25	1.25	1.25	1.25	1.25	1.25	280	closed	2.00	2.00	288	2.00	closed	2.00	274	2.00	2.00	closed	288
39.40	0.85	1.25	1.25	1.25	1.25	1.25	1.25	282	closed	2.00	2.00	290	2.00	closed	2.00	275	2.00	2.00	closed	290
39.45	0.90	1.25	1.25	1.25	1.25	1.25	1.25	284	closed	2.00	2.00	291	2.00	closed	2.00	277	2.00	2.00	closed	291
39.50	0.95	1.50	1.50	1.50	1.50	1.50	1.50	336	closed	2.25	2.25	324	2.50	closed	2.50	336	2.25	2.25	closed	324
39.55	1.00	1.50	1.50	1.50	1.50	1.50	1.50	338	closed	2.25	2.25	326	2.50	closed	2.50	339	2.25	2.25	closed	326
39.60	1.05	1.50	1.50	1.50	1.50	1.50	1.50	340	closed	2.25	2.25	328	2.50	closed	2.50	341	2.25	2.25	closed	328
39.65	1.10	1.50	1.50	1.50	1.50	1.50	1.50	342	closed	2.25	2.25	330	2.50	closed	2.50	343	2.25	2.25	closed	330
39.70	1.15	1.50	1.50	1.50	1.50	1.50	1.50	344	closed	2.25	2.25	332	2.50	closed	2.50	345	2.25	2.25	closed	332
39.75	1.20	1.50	1.50	1.50	1.50	1.50	1.50	346	closed	2.25	2.25	335	2.50	closed	2.50	348	2.25	2.25	closed	335
39.80	1.25	1.50	1.75	1.50	1.50	1.75	1.50	366	closed	2.50	2.25	353	2.50	closed	2.50	350	2.25	2.50	closed	353
39.85	1.30	1.50	1.75	1.50	1.50	1.75	1.50	369	closed	2.50	2.25	355	2.50	closed	2.50	352	2.25	2.50	closed	355
39.90	1.35	1.50	1.75	1.50	1.50	1.75	1.50	371	closed	2.50	2.25	357	2.50	closed	2.50	354	2.25	2.50	closed	357
39.95	1.40	1.50	1.75	1.50	1.50	1.75	1.50	373	closed	2.50	2.25	359	2.50	closed	2.50	357	2.25	2.50	closed	359
40.00	1.45	1.50	1.75	1.50	1.50	1.75	1.50	375	closed	2.50	2.25	362	2.50	closed	2.50	359	2.25	2.50	closed	362
40.05	1.50	1.75	1.75	1.75	1.75	1.75	1.75	411	closed	2.75	2.75	410	2.75	closed	2.75	391	2.75	2.75	closed	410



# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10 (continued): Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening G <sub>0</sub> (m)			All Gates Operational (m)			Q (m <sup>3</sup> /s)	Gate 1 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable (m)			Q (m <sup>3</sup> /s)
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
40.10	1.55	1.75	1.75	1.75	1.75	1.75	1.75	413	closed	2.75	2.75	413	2.75	closed	2.75	393	2.75	2.75	closed	413
40.15	1.60	1.75	1.75	1.75	1.75	1.75	1.75	415	closed	2.75	2.75	415	2.75	closed	2.75	395	2.75	2.75	closed	415
40.20	1.65	1.75	1.75	1.75	1.75	1.75	1.75	418	closed	2.75	2.75	418	2.75	closed	2.75	398	2.75	2.75	closed	418
40.25	1.70	1.75	1.75	1.75	1.75	1.75	1.75	420	closed	2.75	2.75	420	2.75	closed	2.75	400	2.75	2.75	closed	420
40.30	1.75	2.00	2.00	2.00	2.00	2.00	2.00	475	closed	3.00	3.00	454	3.25	closed	3.25	461	3.00	3.00	closed	454
40.35	1.80	2.00	2.00	2.00	2.00	2.00	2.00	478	closed	3.00	3.00	457	3.25	closed	3.25	464	3.00	3.00	closed	457
40.40	1.85	2.00	2.00	2.00	2.00	2.00	2.00	480	closed	3.00	3.00	460	3.25	closed	3.25	466	3.00	3.00	closed	460
40.45	1.90	2.00	2.00	2.00	2.00	2.00	2.00	483	closed	3.00	3.00	462	3.25	closed	3.25	469	3.00	3.00	closed	462
40.50	1.95	2.00	2.00	2.00	2.00	2.00	2.00	485	closed	3.00	3.00	465	3.25	closed	3.25	472	3.00	3.00	closed	465
40.55	2.00	2.25	2.25	2.25	2.25	2.25	2.25	541	closed	3.50	3.50	529	3.50	closed	3.50	503	3.50	3.50	closed	529
40.60	2.05	2.25	2.25	2.25	2.25	2.25	2.25	543	closed	3.50	3.50	532	3.50	closed	3.50	506	3.50	3.50	closed	532
40.65	2.10	2.25	2.25	2.25	2.25	2.25	2.25	546	closed	3.50	3.50	535	3.50	closed	3.50	509	3.50	3.50	closed	535
40.70	2.15	2.25	2.25	2.25	2.25	2.25	2.25	549	closed	3.50	3.50	538	3.50	closed	3.50	512	3.50	3.50	closed	538
40.75	2.20	2.25	2.25	2.25	2.25	2.25	2.25	552	closed	3.50	3.50	542	3.50	closed	3.50	515	3.50	3.50	closed	542
40.80	2.25	2.50	2.50	2.50	2.50	2.50	2.50	608	closed	3.75	3.75	575	11.50	closed	11.50	747	3.75	3.75	closed	575
40.85	2.30	2.50	2.50	2.50	2.50	2.50	2.50	611	closed	3.75	3.75	579	11.50	closed	11.50	757	3.75	3.75	closed	579
40.90	2.35	2.50	2.50	2.50	2.50	2.50	2.50	614	closed	3.75	3.75	582	11.50	closed	11.50	767	3.75	3.75	closed	582
40.95	2.40	2.50	2.50	2.50	2.50	2.50	2.50	617	closed	3.75	3.75	585	11.50	closed	11.50	776	3.75	3.75	closed	585
41.00	2.45	2.50	2.50	2.50	2.50	2.50	2.50	620	closed	3.75	3.75	589	11.50	closed	11.50	786	3.75	3.75	closed	589
41.05	2.50	2.75	2.75	2.75	2.75	2.75	2.75	676	closed	11.50	11.50	836	11.50	closed	11.50	796	11.50	11.50	closed	836
41.10	2.55	2.75	2.75	2.75	2.75	2.75	2.75	680	closed	11.50	11.50	847	11.50	closed	11.50	806	11.50	11.50	closed	847
41.15	2.60	2.75	2.75	2.75	2.75	2.75	2.75	683	closed	11.50	11.50	857	11.50	closed	11.50	816	11.50	11.50	closed	857
41.20	2.65	2.75	2.75	2.75	2.75	2.75	2.75	686	closed	11.50	11.50	867	11.50	closed	11.50	825	11.50	11.50	closed	867
41.25	2.70	2.75	2.75	2.75	2.75	2.75	2.75	690	closed	11.50	11.50	878	11.50	closed	11.50	835	11.50	11.50	closed	878
41.30	2.75	2.75	3.00	2.75	2.75	3.00	2.75	712	closed	11.50	11.50	888	11.50	closed	11.50	845	11.50	11.50	closed	888
41.35	2.80	2.75	3.00	2.75	2.75	3.00	2.75	715	closed	11.50	11.50	899	11.50	closed	11.50	855	11.50	11.50	closed	899
41.40	2.85	2.75	3.00	2.75	2.75	3.00	2.75	719	closed	11.50	11.50	910	11.50	closed	11.50	866	11.50	11.50	closed	910
41.45	2.90	2.75	3.00	2.75	2.75	3.00	2.75	722	closed	11.50	11.50	920	11.50	closed	11.50	876	11.50	11.50	closed	920
41.50	2.95	2.75	3.00	2.75	2.75	3.00	2.75	725	closed	11.50	11.50	931	11.50	closed	11.50	886	11.50	11.50	closed	931
41.55	3.00	3.00	3.00	3.00	3.00	3.00	3.00	764	closed	11.50	11.50	942	11.50	closed	11.50	896	11.50	11.50	closed	942
41.60	3.05	3.00	3.00	3.00	3.00	3.00	3.00	768	closed	11.50	11.50	952	11.50	closed	11.50	906	11.50	11.50	closed	952

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10 (continued): Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening G <sub>0</sub> (m)			All Gates Operational			Q (m <sup>3</sup> /s)	Gate 1 closed or Inoperable			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable			Q (m <sup>3</sup> /s)
					(m)				(m)				(m)				(m)			
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
41.65	3.10	3.00	3.00	3.00	3.00	3.00	3.00	771	closed	11.50	11.50	963	11.50	closed	11.50	917	11.50	11.50	closed	963
41.70	3.15	3.00	3.00	3.00	3.00	3.00	3.00	775	closed	11.50	11.50	974	11.50	closed	11.50	927	11.50	11.50	closed	974
41.75	3.20	3.00	3.00	3.00	3.00	3.00	3.00	778	closed	11.50	11.50	985	11.50	closed	11.50	937	11.50	11.50	closed	985
41.80	3.25	3.25	3.25	3.25	3.25	3.25	3.25	837	closed	11.50	11.50	996	11.50	closed	11.50	948	11.50	11.50	closed	996
41.85	3.30	3.25	3.25	3.25	3.25	3.25	3.25	841	closed	11.50	11.50	1007	11.50	closed	11.50	958	11.50	11.50	closed	1007
41.90	3.35	3.25	3.25	3.25	3.25	3.25	3.25	844	closed	11.50	11.50	1018	11.50	closed	11.50	969	11.50	11.50	closed	1018
41.95	3.40	3.25	3.25	3.25	3.25	3.25	3.25	848	closed	11.50	11.50	1029	11.50	closed	11.50	979	11.50	11.50	closed	1029
42.00	3.45	3.25	3.25	3.25	3.25	3.25	3.25	852	closed	11.50	11.50	1040	11.50	closed	11.50	990	11.50	11.50	closed	1040
42.05	3.50	3.75	3.75	3.75	3.75	3.75	3.75	965	closed	11.50	11.50	1052	11.50	closed	11.50	1001	11.50	11.50	closed	1052
42.10	3.55	3.75	3.75	3.75	3.75	3.75	3.75	969	closed	11.50	11.50	1063	11.50	closed	11.50	1011	11.50	11.50	closed	1063
42.15	3.60	3.75	3.75	3.75	3.75	3.75	3.75	974	closed	11.50	11.50	1074	11.50	closed	11.50	1022	11.50	11.50	closed	1074
42.20	3.65	3.75	3.75	3.75	3.75	3.75	3.75	978	closed	11.50	11.50	1085	11.50	closed	11.50	1033	11.50	11.50	closed	1085
42.25	3.70	3.75	3.75	3.75	3.75	3.75	3.75	982	closed	11.50	11.50	1097	11.50	closed	11.50	1044	11.50	11.50	closed	1097
42.30	3.75	3.75	11.50	3.75	3.75	11.50	3.75	1217	closed	11.50	11.50	1108	11.50	closed	11.50	1054	11.50	11.50	closed	1108
42.35	3.80	3.75	11.50	3.75	3.75	11.50	3.75	1226	closed	11.50	11.50	1120	11.50	closed	11.50	1065	11.50	11.50	closed	1120
42.40	3.85	3.75	11.50	3.75	3.75	11.50	3.75	1234	closed	11.50	11.50	1131	11.50	closed	11.50	1076	11.50	11.50	closed	1131
42.45	3.90	3.75	11.50	3.75	3.75	11.50	3.75	1243	closed	11.50	11.50	1142	11.50	closed	11.50	1087	11.50	11.50	closed	1142
42.50	3.95	3.75	11.50	3.75	3.75	11.50	3.75	1252	closed	11.50	11.50	1154	11.50	closed	11.50	1098	11.50	11.50	closed	1154
42.55	4.00	11.50	11.50	11.50	11.50	11.50	11.50	1720	closed	11.50	11.50	1166	11.50	closed	11.50	1109	11.50	11.50	closed	1166
42.60	4.05	11.50	11.50	11.50	11.50	11.50	11.50	1737	closed	11.50	11.50	1177	11.50	closed	11.50	1120	11.50	11.50	closed	1177
42.65	4.10	11.50	11.50	11.50	11.50	11.50	11.50	1755	closed	11.50	11.50	1189	11.50	closed	11.50	1131	11.50	11.50	closed	1189
42.70	4.15	11.50	11.50	11.50	11.50	11.50	11.50	1772	closed	11.50	11.50	1201	11.50	closed	11.50	1143	11.50	11.50	closed	1201
42.75	4.20	11.50	11.50	11.50	11.50	11.50	11.50	1789	closed	11.50	11.50	1212	11.50	closed	11.50	1154	11.50	11.50	closed	1212
42.80	4.25	11.50	11.50	11.50	11.50	11.50	11.50	1807	closed	11.50	11.50	1224	11.50	closed	11.50	1165	11.50	11.50	closed	1224
42.85	4.30	11.50	11.50	11.50	11.50	11.50	11.50	1824	closed	11.50	11.50	1236	11.50	closed	11.50	1176	11.50	11.50	closed	1236
42.90	4.35	11.50	11.50	11.50	11.50	11.50	11.50	1842	closed	11.50	11.50	1248	11.50	closed	11.50	1187	11.50	11.50	closed	1248
42.95	4.40	11.50	11.50	11.50	11.50	11.50	11.50	1859	closed	11.50	11.50	1260	11.50	closed	11.50	1199	11.50	11.50	closed	1260
43.00	4.45	11.50	11.50	11.50	11.50	11.50	11.50	1877	closed	11.50	11.50	1272	11.50	closed	11.50	1210	11.50	11.50	closed	1272
43.05	4.50	11.50	11.50	11.50	11.50	11.50	11.50	1895	closed	11.50	11.50	1284	11.50	closed	11.50	1222	11.50	11.50	closed	1284
43.10	4.55	11.50	11.50	11.50	11.50	11.50	11.50	1912	closed	11.50	11.50	1296	11.50	closed	11.50	1233	11.50	11.50	closed	1296

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10 (continued): Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening G <sub>0</sub> (m)			All Gates Operational				Gate 1 closed or Inoperable			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable			Q (m <sup>3</sup> /s)
					(m)			(m)			(m)			(m)						
		Left	Centre	Right	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3	1	2	3	1		2	3	1		2	3	1	
43.20	4.65	11.50	11.50	11.50	11.50	11.50	11.50	1948	closed	11.50	11.50	1320	11.50	closed	11.50	1256	11.50	11.50	closed	1320
43.25	4.70	11.50	11.50	11.50	11.50	11.50	11.50	1966	closed	11.50	11.50	1332	11.50	closed	11.50	1268	11.50	11.50	closed	1332
43.30	4.75	11.50	11.50	11.50	11.50	11.50	11.50	1984	closed	11.50	11.50	1344	11.50	closed	11.50	1279	11.50	11.50	closed	1344
43.35	4.80	11.50	11.50	11.50	11.50	11.50	11.50	2002	closed	11.50	11.50	1356	11.50	closed	11.50	1291	11.50	11.50	closed	1356
43.40	4.85	11.50	11.50	11.50	11.50	11.50	11.50	2020	closed	11.50	11.50	1369	11.50	closed	11.50	1302	11.50	11.50	closed	1369
43.45	4.90	11.50	11.50	11.50	11.50	11.50	11.50	2038	closed	11.50	11.50	1381	11.50	closed	11.50	1314	11.50	11.50	closed	1381
43.50	4.95	11.50	11.50	11.50	11.50	11.50	11.50	2056	closed	11.50	11.50	1393	11.50	closed	11.50	1326	11.50	11.50	closed	1393
43.55	5.00	11.50	11.50	11.50	11.50	11.50	11.50	2074	closed	11.50	11.50	1406	11.50	closed	11.50	1338	11.50	11.50	closed	1406
43.60	5.05	11.50	11.50	11.50	11.50	11.50	11.50	2093	closed	11.50	11.50	1418	11.50	closed	11.50	1349	11.50	11.50	closed	1418
43.65	5.10	11.50	11.50	11.50	11.50	11.50	11.50	2111	closed	11.50	11.50	1430	11.50	closed	11.50	1361	11.50	11.50	closed	1430
43.70	5.15	11.50	11.50	11.50	11.50	11.50	11.50	2129	closed	11.50	11.50	1443	11.50	closed	11.50	1373	11.50	11.50	closed	1443
43.75	5.20	11.50	11.50	11.50	11.50	11.50	11.50	2148	closed	11.50	11.50	1455	11.50	closed	11.50	1385	11.50	11.50	closed	1455
43.80	5.25	11.50	11.50	11.50	11.50	11.50	11.50	2166	closed	11.50	11.50	1468	11.50	closed	11.50	1397	11.50	11.50	closed	1468
43.85	5.30	11.50	11.50	11.50	11.50	11.50	11.50	2185	closed	11.50	11.50	1480	11.50	closed	11.50	1409	11.50	11.50	closed	1480
43.90	5.35	11.50	11.50	11.50	11.50	11.50	11.50	2203	closed	11.50	11.50	1493	11.50	closed	11.50	1421	11.50	11.50	closed	1493
43.95	5.40	11.50	11.50	11.50	11.50	11.50	11.50	2222	closed	11.50	11.50	1506	11.50	closed	11.50	1433	11.50	11.50	closed	1506
44.00	5.45	11.50	11.50	11.50	11.50	11.50	11.50	2241	closed	11.50	11.50	1518	11.50	closed	11.50	1445	11.50	11.50	closed	1518
44.05	5.50	11.50	11.50	11.50	11.50	11.50	11.50	2260	closed	11.50	11.50	1531	11.50	closed	11.50	1457	11.50	11.50	closed	1531
44.10	5.55	11.50	11.50	11.50	11.50	11.50	11.50	2278	closed	11.50	11.50	1544	11.50	closed	11.50	1469	11.50	11.50	closed	1544
44.15	5.60	11.50	11.50	11.50	11.50	11.50	11.50	2297	closed	11.50	11.50	1557	11.50	closed	11.50	1481	11.50	11.50	closed	1557
44.20	5.65	11.50	11.50	11.50	11.50	11.50	11.50	2316	closed	11.50	11.50	1569	11.50	closed	11.50	1493	11.50	11.50	closed	1569
44.25	5.70	11.50	11.50	11.50	11.50	11.50	11.50	2335	closed	11.50	11.50	1582	11.50	closed	11.50	1506	11.50	11.50	closed	1582
44.30	5.75	11.50	11.50	11.50	11.50	11.50	11.50	2354	closed	11.50	11.50	1595	11.50	closed	11.50	1518	11.50	11.50	closed	1595
44.35	5.80	11.50	11.50	11.50	11.50	11.50	11.50	2373	closed	11.50	11.50	1608	11.50	closed	11.50	1530	11.50	11.50	closed	1608
44.40	5.85	11.50	11.50	11.50	11.50	11.50	11.50	2392	closed	11.50	11.50	1621	11.50	closed	11.50	1542	11.50	11.50	closed	1621
44.45	5.90	11.50	11.50	11.50	11.50	11.50	11.50	2411	closed	11.50	11.50	1634	11.50	closed	11.50	1555	11.50	11.50	closed	1634
44.50	5.95	11.50	11.50	11.50	11.50	11.50	11.50	2430	closed	11.50	11.50	1647	11.50	closed	11.50	1567	11.50	11.50	closed	1647
44.55	6.00	11.50	11.50	11.50	11.50	11.50	11.50	2450	closed	11.50	11.50	1660	11.50	closed	11.50	1580	11.50	11.50	closed	1660
44.60	6.05	11.50	11.50	11.50	11.50	11.50	11.50	2469	closed	11.50	11.50	1673	11.50	closed	11.50	1592	11.50	11.50	closed	1673
44.65	6.10	11.50	11.50	11.50	11.50	11.50	11.50	2488	closed	11.50	11.50	1686	11.50	closed	11.50	1604	11.50	11.50	closed	1686
44.70	6.15	11.50	11.50	11.50	11.50	11.50	11.50	2508	closed	11.50	11.50	1699	11.50	closed	11.50	1617	11.50	11.50	closed	1699
44.75	6.20	11.50	11.50	11.50	11.50	11.50	11.50	2527	closed	11.50	11.50	1712	11.50	closed	11.50	1629	11.50	11.50	closed	1712

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10 (continued): Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening G <sub>0</sub> (m)			All Gates Operational (m)			Q (m <sup>3</sup> /s)	Gate 1 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable (m)			Q (m <sup>3</sup> /s)
		Left	Centre	Right	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
44.80	6.25	11.50	11.50	11.50	11.50	11.50	11.50	2546	closed	11.50	11.50	1725	11.50	closed	11.50	1642	11.50	11.50	closed	1725
44.85	6.30	11.50	11.50	11.50	11.50	11.50	11.50	2566	closed	11.50	11.50	1739	11.50	closed	11.50	1655	11.50	11.50	closed	1739
44.90	6.35	11.50	11.50	11.50	11.50	11.50	11.50	2586	closed	11.50	11.50	1752	11.50	closed	11.50	1667	11.50	11.50	closed	1752
44.95	6.40	11.50	11.50	11.50	11.50	11.50	11.50	2605	closed	11.50	11.50	1765	11.50	closed	11.50	1680	11.50	11.50	closed	1765
45.00	6.45	11.50	11.50	11.50	11.50	11.50	11.50	2625	closed	11.50	11.50	1779	11.50	closed	11.50	1692	11.50	11.50	closed	1779
45.05	6.50	11.50	11.50	11.50	11.50	11.50	11.50	2644	closed	11.50	11.50	1792	11.50	closed	11.50	1705	11.50	11.50	closed	1792
45.10	6.55	11.50	11.50	11.50	11.50	11.50	11.50	2664	closed	11.50	11.50	1805	11.50	closed	11.50	1718	11.50	11.50	closed	1805
45.15	6.60	11.50	11.50	11.50	11.50	11.50	11.50	2684	closed	11.50	11.50	1819	11.50	closed	11.50	1731	11.50	11.50	closed	1819
45.20	6.65	11.50	11.50	11.50	11.50	11.50	11.50	2704	closed	11.50	11.50	1832	11.50	closed	11.50	1743	11.50	11.50	closed	1832
45.25	6.70	11.50	11.50	11.50	11.50	11.50	11.50	2724	closed	11.50	11.50	1846	11.50	closed	11.50	1756	11.50	11.50	closed	1846
45.30	6.75	11.50	11.50	11.50	11.50	11.50	11.50	2743	closed	11.50	11.50	1859	11.50	closed	11.50	1769	11.50	11.50	closed	1859
45.35	6.80	11.50	11.50	11.50	11.50	11.50	11.50	2763	closed	11.50	11.50	1872	11.50	closed	11.50	1782	11.50	11.50	closed	1872
45.40	6.85	11.50	11.50	11.50	11.50	11.50	11.50	2783	closed	11.50	11.50	1886	11.50	closed	11.50	1795	11.50	11.50	closed	1886
45.45	6.90	11.50	11.50	11.50	11.50	11.50	11.50	2803	closed	11.50	11.50	1900	11.50	closed	11.50	1808	11.50	11.50	closed	1900
45.50	6.95	11.50	11.50	11.50	11.50	11.50	11.50	2823	closed	11.50	11.50	1913	11.50	closed	11.50	1821	11.50	11.50	closed	1913
45.55	7.00	11.50	11.50	11.50	11.50	11.50	11.50	2844	closed	11.50	11.50	1927	11.50	closed	11.50	1834	11.50	11.50	closed	1927
45.60	7.05	11.50	11.50	11.50	11.50	11.50	11.50	2864	closed	11.50	11.50	1940	11.50	closed	11.50	1847	11.50	11.50	closed	1940
45.65	7.10	11.50	11.50	11.50	11.50	11.50	11.50	2884	closed	11.50	11.50	1954	11.50	closed	11.50	1860	11.50	11.50	closed	1954
45.70	7.15	11.50	11.50	11.50	11.50	11.50	11.50	2904	closed	11.50	11.50	1968	11.50	closed	11.50	1873	11.50	11.50	closed	1968
45.75	7.20	11.50	11.50	11.50	11.50	11.50	11.50	2924	closed	11.50	11.50	1982	11.50	closed	11.50	1886	11.50	11.50	closed	1982
45.80	7.25	11.50	11.50	11.50	11.50	11.50	11.50	2945	closed	11.50	11.50	1995	11.50	closed	11.50	1899	11.50	11.50	closed	1995
45.85	7.30	11.50	11.50	11.50	11.50	11.50	11.50	2965	closed	11.50	11.50	2009	11.50	closed	11.50	1912	11.50	11.50	closed	2009
45.90	7.35	11.50	11.50	11.50	11.50	11.50	11.50	2985	closed	11.50	11.50	2023	11.50	closed	11.50	1925	11.50	11.50	closed	2023
45.95	7.40	11.50	11.50	11.50	11.50	11.50	11.50	3006	closed	11.50	11.50	2037	11.50	closed	11.50	1938	11.50	11.50	closed	2037
46.00	7.45	11.50	11.50	11.50	11.50	11.50	11.50	3026	closed	11.50	11.50	2051	11.50	closed	11.50	1951	11.50	11.50	closed	2051
46.05	7.50	11.50	11.50	11.50	11.50	11.50	11.50	3047	closed	11.50	11.50	2064	11.50	closed	11.50	1965	11.50	11.50	closed	2064
46.10	7.55	11.50	11.50	11.50	11.50	11.50	11.50	3067	closed	11.50	11.50	2078	11.50	closed	11.50	1978	11.50	11.50	closed	2078
46.15	7.60	11.50	11.50	11.50	11.50	11.50	11.50	3088	closed	11.50	11.50	2092	11.50	closed	11.50	1991	11.50	11.50	closed	2092
46.20	7.65	11.50	11.50	11.50	11.50	11.50	11.50	3108	closed	11.50	11.50	2106	11.50	closed	11.50	2004	11.50	11.50	closed	2106
46.25	7.70	11.50	11.50	11.50	11.50	11.50	11.50	3129	closed	11.50	11.50	2120	11.50	closed	11.50	2018	11.50	11.50	closed	2120
46.30	7.75	11.50	11.50	11.50	11.50	11.50	11.50	3150	closed	11.50	11.50	2134	11.50	closed	11.50	2031	11.50	11.50	closed	2134

# Townsville City Council

## RD0032 Ross River Dam Emergency Action Plan

Authorised by: Principal Dam Safety & Operations N02632

Effective Date: 30/09/2024

**Table C10 (continued): Minimum Gate Settings–Water Level FALLING Table 50mm increments**

Headwater Level (m AHD)	Headwater Level (m)	Gate Opening G <sub>0</sub> (m)			All Gates Operational (m)				Gate 1 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 2 closed or Inoperable (m)			Q (m <sup>3</sup> /s)	Gate 3 closed or Inoperable (m)			Q (m <sup>3</sup> /s)
		Left	Centre	Right	Left	Centre	Right	Q (m <sup>3</sup> /s)	Left	Centre	Right		Left	Centre	Right		Left	Centre	Right	
		1	2	3	1	2	3		1	2	3		1	2	3		1	2	3	
46.35	7.80	11.50	11.50	11.50	11.50	11.50	11.50	3170	closed	11.50	11.50	2148	11.50	closed	11.50	2044	11.50	11.50	closed	2148
46.40	7.85	11.50	11.50	11.50	11.50	11.50	11.50	3191	closed	11.50	11.50	2162	11.50	closed	11.50	2058	11.50	11.50	closed	2162
46.45	7.90	11.50	11.50	11.50	11.50	11.50	11.50	3212	closed	11.50	11.50	2176	11.50	closed	11.50	2071	11.50	11.50	closed	2176
46.50	7.95	11.50	11.50	11.50	11.50	11.50	11.50	3233	closed	11.50	11.50	2190	11.50	closed	11.50	2084	11.50	11.50	closed	2190
46.55	8.00	11.50	11.50	11.50	11.50	11.50	11.50	3253	closed	11.50	11.50	2205	11.50	closed	11.50	2098	11.50	11.50	closed	2205
46.60	8.05	11.50	11.50	11.50	11.50	11.50	11.50	3274	closed	11.50	11.50	2219	11.50	closed	11.50	2111	11.50	11.50	closed	2219
46.65	8.10	11.50	11.50	11.50	11.50	11.50	11.50	3295	closed	11.50	11.50	2233	11.50	closed	11.50	2125	11.50	11.50	closed	2233
46.70	8.15	11.50	11.50	11.50	11.50	11.50	11.50	3316	closed	11.50	11.50	2247	11.50	closed	11.50	2138	11.50	11.50	closed	2247
46.75	8.20	11.50	11.50	11.50	11.50	11.50	11.50	3337	closed	11.50	11.50	2261	11.50	closed	11.50	2152	11.50	11.50	closed	2261
46.80	8.25	11.50	11.50	11.50	11.50	11.50	11.50	3358	closed	11.50	11.50	2275	11.50	closed	11.50	2165	11.50	11.50	closed	2275
46.85	8.30	11.50	11.50	11.50	11.50	11.50	11.50	3379	closed	11.50	11.50	2290	11.50	closed	11.50	2179	11.50	11.50	closed	2290
46.90	8.35	11.50	11.50	11.50	11.50	11.50	11.50	3400	closed	11.50	11.50	2304	11.50	closed	11.50	2192	11.50	11.50	closed	2304
46.95	8.40	11.50	11.50	11.50	11.50	11.50	11.50	3421	closed	11.50	11.50	2318	11.50	closed	11.50	2206	11.50	11.50	closed	2318
47.00	8.45	11.50	11.50	11.50	11.50	11.50	11.50	3442	closed	11.50	11.50	2333	11.50	closed	11.50	2220	11.50	11.50	closed	2333
47.05	8.50	11.50	11.50	11.50	11.50	11.50	11.50	3464	closed	11.50	11.50	2347	11.50	closed	11.50	2233	11.50	11.50	closed	2347
47.10	8.55	11.50	11.50	11.50	11.50	11.50	11.50	3485	closed	11.50	11.50	2361	11.50	closed	11.50	2247	11.50	11.50	closed	2361
47.15	8.60	11.50	11.50	11.50	11.50	11.50	11.50	3506	closed	11.50	11.50	2376	11.50	closed	11.50	2261	11.50	11.50	closed	2376
47.20	8.65	11.50	11.50	11.50	11.50	11.50	11.50	3527	closed	11.50	11.50	2390	11.50	closed	11.50	2274	11.50	11.50	closed	2390
47.25	8.70	11.50	11.50	11.50	11.50	11.50	11.50	3548	closed	11.50	11.50	2404	11.50	closed	11.50	2288	11.50	11.50	closed	2404
47.30	8.75	11.50	11.50	11.50	11.50	11.50	11.50	3570	closed	11.50	11.50	2419	11.50	closed	11.50	2302	11.50	11.50	closed	2419
47.35	8.80	11.50	11.50	11.50	11.50	11.50	11.50	3591	closed	11.50	11.50	2433	11.50	closed	11.50	2316	11.50	11.50	closed	2433
47.40	8.85	11.50	11.50	11.50	11.50	11.50	11.50	3612	closed	11.50	11.50	2448	11.50	closed	11.50	2329	11.50	11.50	closed	2448
47.45	8.90	11.50	11.50	11.50	11.50	11.50	11.50	3634	closed	11.50	11.50	2462	11.50	closed	11.50	2343	11.50	11.50	closed	2462
47.50	8.95	11.50	11.50	11.50	11.50	11.50	11.50	3655	closed	11.50	11.50	2477	11.50	closed	11.50	2357	11.50	11.50	closed	2477
47.55	9.00	11.50	11.50	11.50	11.50	11.50	11.50	3677	closed	11.50	11.50	2491	11.50	closed	11.50	2371	11.50	11.50	closed	2491
47.60	9.05	11.50	11.50	11.50	11.50	11.50	11.50	3698	closed	11.50	11.50	2506	11.50	closed	11.50	2385	11.50	11.50	closed	2506
47.65	9.10	11.50	11.50	11.50	11.50	11.50	11.50	3720	closed	11.50	11.50	2520	11.50	closed	11.50	2398	11.50	11.50	closed	2520
47.70	9.15	11.50	11.50	11.50	11.50	11.50	11.50	3741	closed	11.50	11.50	2535	11.50	closed	11.50	2412	11.50	11.50	closed	2535
47.75	9.20	11.50	11.50	11.50	11.50	11.50	11.50	3763	closed	11.50	11.50	2550	11.50	closed	11.50	2426	11.50	11.50	closed	2550
47.80	9.25	11.50	11.50	11.50	11.50	11.50	11.50	3784	closed	11.50	11.50	2564	11.50	closed	11.50	2440	11.50	11.50	closed	2564
47.85	9.30	11.50	11.50	11.50	11.50	11.50	11.50	3806	closed	11.50	11.50	2579	11.50	closed	11.50	2454	11.50	11.50	closed	2579
47.90	9.35	11.50	11.50	11.50	11.50	11.50	11.50	3827	closed	11.50	11.50	2593	11.50	closed	11.50	2468	11.50	11.50	closed	2593
47.95	9.40	11.50	11.50	11.50	11.50	11.50	11.50	3849	closed	11.50	11.50	2608	11.50	closed	11.50	2482	11.50	11.50	closed	2608
48.00	9.45	11.50	11.50	11.50	11.50	11.50	11.50	3871	closed	11.50	11.50	2623	11.50	closed	11.50	2496	11.50	11.50	closed	2623

Note: Discharge rate does not include flow over the closed gate

## Appendix C6 – Ross River Dam Storage Curve

Figure C1: Ross River Dam Storage Curve

