

Appendix E

Trigger Levels for Longreach, Ilfracombe, Isisford & Yaraka

Longreach Trigger Levels**Mode of Operation of Weirs**

1. All water is allowed to gravity feed down the weir system.
2. The weirs furthest upstream are pumped down as required.
3. The Fairmount Weirs are the last to be pumped.

Storage Capacity Calculations

The method used to determine the effective capacity is described in the Drought Management Plan Calculations Report in Appendix J.

The intention is to manage the weirs such that all the water in the weirs upstream of the town weirs is utilised prior to adopting Restriction Level 2.

Note the volume of the town weirs when full has been calculated from recent Bathymetric survey data to be 3,231 ML.

Table E.1: Trigger Levels & Consumption Targets for Longreach

| Restriction Level | Trigger Guide | | Effective Capacity ML | Remaining Months (With Restriction Levels) | Remaining Months (No Restrictions) | Target Town Consumption |
|-------------------|---|---|-----------------------|--|------------------------------------|--|
| | DERM Gauge | Depth below full | | | | |
| 1 | 1.3 m to 0m Water is still gravity feeding down from upstream weirs. Gravity feeding ceases and pumping of water commences from Fairmount weirs | 0 to 1.3 m (Note 1.3 m is equivalent to the top of the Town Weirs) | 4,045 | 20 | 15 | 4.9 ML/day 1,310 L/p/day (2015) 1,245 L/p/day (2018) 1,180 L/p/day (2023) 1,125 L/p/day (2028) |
| 2 | 0 m to -1m | 1.3 to 2.3 m | 2,409 | 14 | 9 | 4.3 ML/day 1,133 L/p/day |
| 3 | -1 to -2m | 2.3 to 3.3m | 1,637 | 11 | 6 | 3.6 ML/day 955 L/p/day |
| 4 | -2 to -3m | 3.3 to 4.3m | 1,099 | 9 | 4 | 3.0 ML/day 778 L/p/day |
| 5 | -3m to Empty | 4.3m to 10.3m | 652 | 5 | 2 | 2.3 ML/day 600 L/p/day |

Note: EC = Effective Capacity (refer to section 4.5.1 for details)

DERM gauge reading can be obtained at the following website:

www.nrw.qld.gov.au/water/monitoring/current_data/map_details.php?group=bulloo

Note that the DERM gauge does not provide a reading below 0m. The two Council gauges measure water depths from 0m (lowest pump intake level) to 6.8m (Top of weir level) and correlates with the DERM gauge.

Ilfracombe Trigger Levels**Mode of Operation of Dams**

1. Water is harvested by means of gravity as well as pump from the creek to Murray Macmillan Dam. Although the Murray Macmillan Dam has a TWL of 10.7 m it very quickly reduces to 8 m.
2. Although the Shannon Dam has a TWL of 16.0 m it has a leak at around 15.0 m, therefore the Shannon Dam is only filled to 14.0 m. Water is pumped from Murray MacMillan Dam to Shannon to keep it at 14.0m until the Murray Macmillan Dam is empty. The WTP is supplied by Shannon Dam.
3. The harvest pumps at the Murray Macmillan Dam and Shannon Dam are turned on whenever it is possible.

Storage Capacity Calculations for Ilfracombe

The method used to determine the effective capacities is described in the Drought Management Plan Calculations Report in Appendix J.

The capacity of Shannon dam has been calculated from a 2015 survey.

The capacity of Murray MacMillan dam has also been calculated from a 2015 survey.

Appendix E

Table E.2: Trigger Levels & Consumption Targets for Ilfracombe

| Restriction Level | Trigger Guide | Effective capacity ML | Remaining Months (With Restriction Levels) | Remaining Months (No Restrictions) | Target Consumption |
|-------------------|--|--------------------------------------|--|------------------------------------|---|
| 1 | Base Level MMD Gauge = 10.3 to 0m SD Gauge = 14.0m | 356.8 92.9 Total of: 449.7 | 22 | 21 | 0.31ML/day (2015) 1,395 L/p/day (2015) 1,245 L/p/day (2018) 1,180 L/p/day (2023) 1,125 L/p/day (2028) |
| 2 | MMD Gauge = 0 to -1.7m SD Gauge = 14.0 to 11m | 13.3 92.9 Total of: 106.2 | 8 | 7 | 0.26ML/day 1,196 L/p/day |
| 3 | MMD Gauge = -1.7m SD Gauge = 11 to 5m | 0 49.4 Total of: 49.4 | 5 | 4 | 0.22ML/day 997 L/p/day |
| 4 | MMD Gauge = -1.7m SD Gauge = 5 to 3m | 0 6.8 Total of: 6.8 | 1 | 1 | 0.18ML/day 799 L/p/day |
| 5 | MMD Gauge = -1.7m SD Gauge = 3m to Empty | 0 1.4 Total of: 1.4 | 0 | 0 | 0.13ML/day 600 L/p/day |

Note: EC = Effective Capacity
MMD = Murray/McMillan Dam
SD = Shannon Dam

Isisford Trigger Levels

Mode of Operation of Dams & Weirs

1. Harvest pumps are used to pump into the off-stream dam until the depth of water in the weir is too low. This is approximately 1.2 m below the weir level. The weir has a capacity of 160ML from full weir level to 1.2m below weir level. The dam is kept full from the weir until it can not be pumped any more
2. A smaller pump is then used to pump from the weir to the WTP until the water is 1.3m below the weir level. The weir has a capacity of 7 ML from 1.2m to 1.3m below weir level.
3. Water is supplied from Off Stream Dam when the weir is below 1.3m below the weir level.

Storage capacity Calculation for Isisford

The method used to determine the effective capacity is described in the Drought Management Plan Calculations Report in Appendix J.

The capacity of the off stream dam has been derived from a 2015 survey of the dam. There is no gauge at the dam. Trigger levels are based on a proposed new gauge zeroed at 194.0 AHD.

The storage capacity of the Isisford weir has been determined from a depth/volume curve shown on GBA drawing 1986-53 (Isisford). It is assumed this curve has been calculated from depth and width measurements at intervals along the river.

Appendix E

Table E.3: Trigger Levels & Consumption Targets for Isisford

| Restriction Level | Trigger Guide | Effective capacity ML | Remaining Months (With Restriction Levels) | Remaining Months (No Restrictions) | Target Consumption |
|-------------------|--|--|--|------------------------------------|---|
| 1 | Base Level CWBR = Full to Empty OSD Gauge = 11.0 to 8m | 166.2 261.6 Total of: 427.8 | 22 | 18 | 0.30 ML/day 2,314 L/p/day (2015) 2,260 L/p/day (2018) 2,205 L/p/day (2023) 2,155 L/p/day (2028) |
| 2 | CWBR = Empty OSD Gauge = 8 to 6m | 150.0 | 15 | 11 | 0.24 ML/day 1,886 L/p/day |
| 3 | OSD Gauge = 6 to 4m | 92.7 | 11 | 7 | 0.19 ML/day 1,457 L/p/day |
| 4 | OSD Gauge = 4 to 2m | 47.4 | 7 | 4 | 0.13 ML/day 1,028 L/p/day |
| 5 | OSD Gauge = 2m to Empty | 12.9 | 3 | 1 | 0.08ML/day 600 L/p/day |

Note: EC = Effective Capacity
 CWBR = Concrete Weir at Barcoo River
 OSD = Off-Stream Dam

Yaraka Trigger Levels

Mode of Operation of Dams & Weirs

1. North Dam and South Dam are gravity fed from the catchment dam. Water can be pumped from the catchment dam at anytime until it is empty by means of a mobile pump. Non-return flap valves prevent water from returning to the catchment dam.
2. The optimum high water level has a gauge depth of 12.5m at North dam and a gauge depth of 6.0m at South Dam. These levels are at the same elevation relative to each other. Water above these levels drop quickly.
3. Water is pumped alternately from each dam so that water levels generally remain at the same elevation relative to each other. The bottom level at South Dam is higher than that of North Dam. North Dam will have a gauge depth of 6.5m when South Dam becomes empty.

Storage Capacity calculation for Yaraka

The method used to determine the effective capacity is described in the Drought Management Plan Calculations Report in Appendix J.

Capacity of both the north and south dam has been calculated from a 2015 survey. The south dam currently do not have a gauge and levels are estimated from the North dam's gauge.

Table E.4: Trigger Level & Consumption Targets for Yaraka

| Restriction Level | Trigger Guide | Effective capacity ML | Remaining Months (With Restriction Levels) | Remaining Months (No Restrictions) | Target Consumption |
|-------------------|---|---------------------------------|--|------------------------------------|---|
| 1 | ND Gauge = 12.5m to 7m SD Gauge = 12.5m to 7m | 57.7 44.3 Total of: 102.0 | 21 | 20 | 54.2 kL/day 3,616 L/p/day (2015) 3,500 L/p/day (2018) 3,390 L/p/day (2023) 3,280 L/p/day (2028) |
| 2 | ND Gauge = 7m to 6m SD Gauge = 7m to 3.3m or empty | 10.9 5.7 Total of: 16.7 | 8 | 6 | 43kL/day 2,862 L/p/day |
| 3 | ND Gauge = 6m to 3.5m SD Gauge = Empty | 7.4 2.8 Total of: 10.2 | 6 | 4 | 31.6kL/day 2,108 L/p/day |
| 4 | ND Gauge = 3.5m to 2.5m SD Gauge = Empty | 1.4 0 Total of: 1.4 | 1 | 1 | 20.3kL/day 1,354 L/p/day |
| 5 | ND Gauge = 2.5m to Empty SD Gauge = Empty | 0 | 0 | 0 | 9.0kL/day 600 L/p/day |

Note: EC = Effective Capacity of Combined Dams

ND = North Dam
SD = South Dam