Tantawanglo-Kiah water supply system

Drought Management Action Plan 2019-20

Water supply zone: Yellow Pinch Dam - Merimbula, Tura Beach, Pambula Beach, Pambula and rural properties with a water connection between YPD and Pambula

Monitoring location	Drought Management Stage	Water Availability Stage	Individual Daily Extraction Limit (IDEL) (ML/d)	Trigger Level for Actions	Supply-Side Actions	Demand-Side Actions (e.g. water restrictions)	Demand Reduction Target (%)
a. Tantawanglo Creek @ Tantawanglo Mountain gauging station (219006) b. Tantawanglo Creek Weir c. Yellow Pinch Dam d. Bega River @ Kanoona gauging station (219032) e. Bega River and Bega borefield f. Towamba River @ Towamba River gauging station (220004) g. Towamba River @ Kiah borefield h. Ben Boyd Dam i. Reservoir inflow/outflow	Drought Preparation	High level	n/a	c. >95%	1. Extract water from YPD to meet demand. 2. Turn Wolumla booster pump station off. 3. Cease pumping available water from Bega borefield to YPD.	1) Permanent Water Wise Measures. 2) Ensure reservoir flowmeters are reading accurately to enable demand reduction target analysis.	0
				c. ≤95%	4. Use Wolumla booster pump station if flow in Tantawanglo Creek > 10ML/d. 5. Pump available water from Bega borefield to YPD in accordance with supply-side actions for Bega-Tathra water supply system.	3) As per 1) and 2).	0
				c. ≤85%		4) As per 1) and 2). 5) Review mains flushing program and suspend as appropriate.	1
		High-mid level	n/a	c. ≤75%	6. As per 1, 4 and 5.	6) As per 1), 2) and 5). 7) Provide appropriate media/community news about water supply situation, water wise measures and website information.	3
	Drought Response	Mid-level	n/a	c. ≤60%	7. As per 1, 4 and 5.	8) Introduce Level 1 water restrictions. 9) Provide appropriate media/community news about water supply situation, water restrictions and website information. 10) Implement process to manage applications for variations. 11) Investigate water pressure management options.	10
		Low level	n/a	c. ≤50%	8. As per 1, 4 and 5. 9. Pump water from Kiah borefield/BBD water, if available, to supply Pambula Beach and Merimbula Tank 2, considerate of South System water security. 10. If the IDEL calculations for the Bega Borefield and Bega-Tathra water supply system demand allow for no water transfer to YPD, seek DPIE-Water approval to pump a volume of water from South Bega to YPD considered sustainable without impacting on Bega-Tathra water supply security.	12) Introduce Level 2 water restrictions. 13) As per 9) and 10). 14) As per 11) and implement if appropriate.	15
		Emergency level 1	n/a	c. ≤40%	11. As per 1, 4, 5, 9 and 10. 12. Determine infrastructure requirements for alternative emergency water sources, such as new bores at Bega and/or Kiah, desalination and recycled water. 13. Determine infrastructure requirements for a potential drought pump at old Wolumla Reservoir for supplying Tantawanglo (upstream YPD) water supply zone with water from Bega borefield.	15) Introduce Level 3 water restrictions. 16) As per 9). 17) Suspend applications for variations process and cancel all prior approvals. 18) No public watering of public parks, gardens and playing fields	20

Water supply zone: Yellow Pinch Dam - Merimbula, Tura Beach, Pambula Beach, Pambula and rural properties with a water connection between YPD and Pambula

Monitoring location	Drought Management Stage	Water Availability Stage	Individual Daily Extraction Limit (IDEL) (ML/d)	Trigger Level for Actions	Supply-Side Actions	Demand-Side Actions (e.g. water restrictions)	Demand Reduction Target (%)
		Emergency level 2	n/a	c. ≤30%	14. As per 1 and/or pump water directly from Bega borefield to meet demand. 15. As per 4, 5, 9 and 10. 16. Build emergency water source infrastructure. 17. Commission a drought pump at old Wolumla Reservoir, if required.	19) Introduce Level 4 water restrictions. 20) As per 9), 17) and 18).	30
		Emergency level 3	n/a	c. limited water available	18. Connect and commission emergency water source infrastructure. 19. Provide intermittent reticulation supply from available water sources. 20. Cart water to designated areas.	21) Water is for minimum health and sanitation requirements only. 22) As per 9), 17), 18) and 21).	50

Water supply zone: Kiah borefield and Ben Boyd Dam - Boydtown, Eden, South Pambula and rural connected properties between Kiah borefield and South Pambula

Monitoring location	Drought Management Stage	Water Availability Stage	Individual Daily Extraction Limit (IDEL) (ML/d)	Trigger Level for Actions	Supply-Side Actions	Demand-Side Actions (e.g. water restrictions)	Demand Reduction Target (%)
a. Tantawanglo Creek @ Tantawanglo Mountain gauging station (219006) b. Tantawanglo Creek Weir c. Yellow Pinch Dam d. Bega River @ Kanoona gauging station (219032) e. Bega River and Bega borefield f. Towamba River @ Towamba River gauging station (220004) g. Towamba River @ Kiah borefield h. Ben Boyd Dam i. Reservoir inflow/outflow	Drought Preparation	Very High Flow	g. 12	f. >34 ML/d	1. Pump water from Kiah borefield and BDD to meet demand. 2. Pump water from Kiah borefield to BBD if BBD < 100%.	As per **YPD water supply zone**.	As per **YPD water supply zone**.
		High Flow	g. 6	f. ≤34 ML/d			
		Moderate Flow	g. 3	f. ≤ 15 ML/d g. visible surface flow	3. Limit Kiah high lift pumps to the IDEL. 4. As per 1 and 2. 5. Consider cleaning and purging all bores.		
	Drought Response	No flow	g. 1	f. ≤ 5 ML/d g. no visible surface flow h. >75%	6. Limit Kiah high lift pumps to the IDEL. 7. As per 1 and if water available, 2. 8. Monitor groundwater levels at Kiah borefield 9. Clean and purge all bores.		
		No flow	g. 1	h. ≤75%	10. Investigate BBD offtake and artificial destratification system for the dam. 11. Determine most appropriate water supply sources for this zone, considering water availability from Kiah bores and BBD and North System Water Availability Stage.		
		No flow and low storage level	g. 2.5	f. ≤ 5 ML/d g. no visible surface flow h. ≤50%	12. Increase Kiah high lift pumping to the IDEL, dependent on groundwater availability. 13. As per 1 and if water available, 2. 14. As per 8. 15. Transfer water from North System to South System if determined as more sustainable. 16. Build infrastructure for BBD offtake and artificial destratification system. 17. Determine infrastructure requirements for alternative emergency water sources, such as deep bores at Kiah, desalination and recycled water.		
		Emergency level 1	g. 2.5	f. ≤ 5 ML/d g. no visible surface flow h. ≤30%	18. As per 1 and if water available, 2 and 12. 19. As per 8, 11 and 15. 20. Build emergency water source infrastructure.		

Water supply zone: Kiah borefield and Ben Boyd Dam - Boydtown, Eden, South Pambula and rural connected properties between Kiah borefield and South Pambula

Monitoring location	Drought Management Stage	Water Availability Stage	Individual Daily Extraction Limit (IDEL) (ML/d)	Trigger Level for Actions	Supply-Side Actions	Demand-Side Actions (e.g. water restrictions)	Demand Reduction Target (%)
		Emergency level 2	g. 2.5	f. ≤ 5 ML/d g. no visible surface flow h. ≤20%	21. Connect and commission emergency water source infrastructure.		
		Emergency level 3	g. 2.5	g. limited water available h. limited water available	22. Provide intermittent reticulation supply from available water sources. 23. Cart water to designated areas.		

Water supply zone : Tantawanglo Creek (upstream Yellow Pinch Dam) - Candelo, Wolumla and rural properties with a water connection between Tantawanglo Ck. Weir and YPD

Monitoring location	Drought Management Stage	Water Availability Stage	Individual Daily Extraction Limit (IDEL) (ML/d)	Trigger Level for Actions	Supply-Side Actions	Demand-Side Actions (e.g. water restrictions)	Demand Reduction Target (%)
a. Tantawanglo Creek @ Tantawanglo Mountain gauging station (219006) b. Tantawanglo Creek Weir c. Yellow Pinch Dam d. Bega River @ Kanoona gauging station (219032) e. Bega River and Bega borefield f. Towamba River @ Towamba River gauging station (220004) g. Towamba River @ Kiah borefield h. Ben Boyd Dam i. Reservoir inflow/outflow	Drought Preparation	High flow	b. 5.0	a. >10.0 ML/d	1. Extract water from Tantawanglo Creek to meet demand and supply YPD. 2. Use Wolumla booster pump station if YPD storage level < 95%.	As per **YPD water supply zone**	As per **YPD water supply zone**
		Moderate flow	b. 50% of flow	a. ≤10.0 ML/d	3. As per 1. 4. Turn Wolumla booster pump station off.		
		Low flow	b. 50% of flow	a. ≤6.0 ML/d	5. As per 1. 6. Follow procedure to limit water extraction to the IDEL using blue gate bypass and PSV as per *SOP Operation of the Tantawanglo Trunk main Rev. 4 Oct 2012 Process 4 Assumption 2.*		
	Drought Response	Very low flow	b. 50% of flow	a. ≤4.0 ML/d	7. Cease water extraction from Tantawanglo Ck. weir and pump water from YPD using YPD drought pump and Candelo drought pump as per *SOP (to be developed).*		
			b. 0.2	a. ≤2.2 ML/d			
		Emergency level 3	n/a	c. limited water available	8. Provide intermittent reticulation supply from available water sources. 9. Cart water to designated areas.		

Water Restrictions Levels

Level	Garden watering	Fixed sprinklers and unattended hoses	Watering of paved areas	Drip irrigation systems and micro-sprays	Watering of lawns	Washing of vehicles/boats & topping up of swimming pools
ONE	One hand-held hose per property may be used 6-8 am AND 6-8 pm[1]	Not permitted	Not permitted	May only be used if fixed to a single tap per property and only in lieu of a hand-held hose	As per garden watering	As per garden watering[3]
TWO	One hand-held hose per property may be used for a maximum of 60 MINUTES PER DAY under an Odds and Evens[2] system between: 6-8 am OR 6-8 pm[1]	Not permitted	Not permitted	Not permitted	As per garden watering	As per garden watering[3]
THREE	Bucket watering only between: 6-8 am OR 6-8 pm[1]	Not permitted	Not permitted	Not permitted	Not permitted	As per garden watering[3]
FOUR	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted	Not permitted

[1] Times shown are for Daylight Saving Time. Eastern Standard Time times are 6-9 am and 4-7 pm.
[2] Odds and Evens System – Houses (residential or multi-residential) with an odd street number may water on odd-numbered days of the month. Houses (residential or multi-residential) with an even street number may water on even-numbered days of the month. No odds and evens system applies for the 31st of January, March, May, July, August, October, December or the 29th February, however all other level 2 restrictions apply.
[3] Vehicles and boats should be washed on lawns wherever possible using buckets. A hose may be used for a final rinse under levels 1, 2 and 3