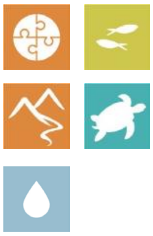
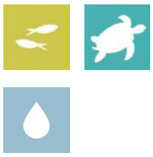
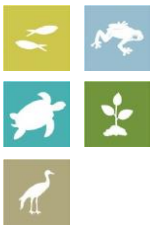
Variation to Table 5.2.1 of the *Seasonal Watering Plan 2021-22*

Changes shown in red text

5.2.1 Barmah Forest

Table 5.2.1 Potential environmental watering actions, expected watering effects and associated environmental objectives for the Barmah Forest

Potential environmental watering action	Expected watering effects	Environmental objectives
Winter/spring forest low flow to various waterways in Barmah Forest (variable flow rates and duration during July to November 2021 and June 2022)	• Provide a gradual connection of waterways with the Murray River to minimise erosion within those waterways • Provide flow in forest waterways to ensure adequate refuge pools persist for native fish and turtles • Provide adequate depth and connection between floodplain waterways and the river to facilitate the movement of native fish • Remove accumulated organic matter from waterways to cycle carbon to the river system and minimise the risk of hypoxic blackwater by ensuring through-flow commence in the cooler months	
Winter/spring/summer low flow (8,500-18,000[1] ML/ day below Yarrawonga Weir during August to December)	• Maintain a sufficient water level in the Murray River main channel to avoid Murray cod nest abandonment, increase juvenile survival and improve dispersal opportunities	
Spring/summer fresh(es) in the Murray River channel (one to three freshes that increase flow by at least 500 ML/day and maintain it for two to eight days during October to December)	• Provide variable water levels once water temperatures exceed 22° C, to trigger spawning of native fish species, primarily silver perch	
Spring/summer/autumn freshes to Gulf and Boals creeks (100 ML/day for three to five days as required during November to April)	• Maintain critical refuge pools to provide habitat for native fish and turtles • Flush refuge pools to maintain water quality	
Spring/summer/autumn low flow to floodplain waterways including Sandspit, Gulf, Big Woodcutter, Boals and Island creeks and Punt Paddock Lagoon (200 ML/day for 30 to 60 days during November to April)	• Replenish refuge pools in permanent waterways to maintain water quality, fish and turtle populations • Maintain connectivity between the forest and the river • Remove accumulated organic matter, cycle carbon to the river system and minimise the risk of hypoxic blackwater	

Fill or top-up Boals Deadwood, Harbours Lake, Reedy Lagoon and Top Island wetlands (200-400 ML/day for four and a half months during September to February)	• Provide a cue to initiate waterbird breeding and maintain a depth of at least 0.5 m beneath reed bed nesting breeding colonies • Maintain wetting duration and depth for growth of wetland vegetation	
Spring wetting of floodplain marshes (variable flow rates of > 9,500-18,000[1] ML/day below Yarrawonga Weir for three months during September to December)	• Wet open plains for sufficient depth and duration to allow the growth of floodplain marsh vegetation • Inundate forest wetlands and low-lying floodplain areas to create foraging opportunities for waterbirds and increase available habitat for turtles, frogs and small-bodied native fish	
Autumn/winter low flow in the Murray River (1,800-~~4,000~~ 12,000 ML/day downstreamof Yarrawonga during Mayto June)	• Increase water depth in the Murray River channel to provide habitat for large-bodied native fish in the Murray River and unregulated anabranches in Barmah-Millewa Forest • Remove accumulated organic matter from waterways to cycle carbon to the river system and minimise the risk of hypoxic blackwater by ensuring through-flow commence in the cooler months	

1 The maximum flow constraint is a level of 3.3 m at the Tocumwal gauge in the Murray River, estimated at 18,000 ML/day downstream of Yarrawonga Weir. The maximum flow rate actually delivered may vary for these actions.