

Water Regulation Officer
Department of Planning and Environment - Water
Licensing and Approvals
[REDACTED], Parramatta NSW 2124

23 January 2023

Objection to Orange City Council's Water Supply Work Approval Application – Reference No. A030539

Environmentally Concerned Citizens of Orange (ECCO) is a community based not for profit environmental organisation committed to promoting environmental values in Orange and surrounding district. Our Aims include:

- To act as an environmental watchdog and peak lobby group for the community of Orange.
- To create awareness of environmental issues.
- To facilitate cooperation and exchange of information and resources between groups.
- To liaise with regional, state and national conservation bodies.
- To influence and assist Orange City Council with respect to its environmental and sustainability policies and plans.
- To be an independent advocate for the environment.

ECCO objects to the approval of the proposed new Water Supply Works Approval Application by Orange City Council (OCC), reference; A030539, for the following reasons.

1. ECCO strongly disagrees with the conclusion in the document, East Orange Harvesting Wetland, Draft – Review of Environmental Factors (Premise, 5 March 2021 - EOHW, REF) and believes there will be a significant likelihood of serious environmental harm from diverting 50% of flows from Blackmans Swamp Creek (BSC) off-stream for extraction, above its confluence with Summer Hill Creek (SHC). It is widely acknowledged that the SHC system is already being over extracted and is under stress. This proposed new Water Works Approval application will result in a further significant and unacceptable increase in water extraction from the water source.
2. ECCO understands that the principles underpinning OCC’s stormwater harvesting scheme in BSC has, in the past, been that stormwater harvesting targets the peak of high flows and that there would be protection of base flows, smaller freshes and a portion of high flows downstream. Operating rules exist for the current Stage 1 stormwater harvesting scheme to support these principles, i.e., pump extraction does not commence until creek flow exceeds 1,000 L/sec and must cease extraction when flow downstream of the pump site drops below 150 L/second, with pumps extracting 450 L/sec (i.e. flow above the pump site drops below 600 L/sec).

The proposed Stage 2 stormwater harvesting diversion weir will permanently intercept creek flow 2 km upstream of the existing Stage 1 stormwater harvesting site and divert 50% of all creek flow above 23 L/sec (2ML/day) into the off-stream wetland holding basin. These diverted flows will include part of the base flows in the creek and minor freshes, not associated with high-flow stormwater runoff.

3. This new Stage 2 stormwater harvesting proposal will intercept and divert creek flows to the off-stream wetland holding basin for later extraction when creek flows are well below the flow rates harvested with Stage 1 stormwater harvesting, therefore will adversely impacting the ability of any freshes to transport significant distances downstream.
4. By intercepting and diverting creek flows 2 km upstream of the current Stage 1 harvesting site, the existing Stage 1 stormwater harvesting operating rules, designed to protect low flows, minor freshes and a portion of moderate to high flow runoff events, will be circumvented. Flow volume and flow rates, which would otherwise continue downstream to the Stage 1 harvesting site, will effectively be halved upstream.
5. The proposed new diversion weir will introduce another level of stream flow regulation into the creek system, impacting all downstream flows greater than 23 L/sec.
6. Diverting 50% of all creek flow off-stream through the proposed wetland holding basin will attenuate these diverted flows such that any return flows not captured, will have a significantly lower flow rate than the original creek flow rates being diverted. The hydrological loss of flow rate and volume of the diverted flows, when not being captured, can be in the order of 90% to 100% due to evaporation, soakage and gravitational retention as flows fan out from the anabranch diversion channel into the wetland basin, losing energy and flow head.
7. Watercourse channels are maintained by periodic high flows. These high flows are important for riparian environments and instream ecological processes as they scour accumulated fine sediment and algae, mobilise and deliver nutrients downstream and provide behavioural and breeding cues for aquatic biota. (Gordon et al. 1992; Gore 1996)
8. The operation of the current Stage 1 stormwater harvesting scheme incorporates provision of an unimpeded transparent flow via an unrestricted 300 mm diameter pipe through the Stage 1 harvesting weir, ensuring creek flows up 6 ML/day (68 L/sec.) to the downstream system are unimpeded. Intercepting flows 2 km upstream of Stage 1 and diverting 50% of this flow to an off-stream wetland holding basin will halve this current transparent flow.
9. The operating rules in place for Stage 1 stormwater harvesting provide a level of protection for the remaining environmental water available in the downstream creek system. This remaining environmental water must not be further eroded with any new Water Works, in accordance with requirements in the Water Management Act 2000, Water Sharing Plan 2012, Water Resource Plan and Murray Darling Basin Plan 2012.

ECCO is concerned that this proposed new Water Works proposal by OCC will circumvent the current protections provided by the Stage 1 stormwater harvesting scheme's operating rules and lead to an unacceptable reduction in the quantity of environmental water in the downstream SHC system. Splitting flow upstream of the

existing Stage 1 extraction site and later extracting this flow volume effectively diverts half of the creek flows around the current environmental flow protection rules.

10. Modelling of flows (Geolyse 2008) show that when Suma Park Dam is not spilling, much of the flow to the downstream Summer Hill Creek (SHC) system, particularly in summer and dry periods, is derived from BSC. Therefore, any significant increase in extraction from BSC will have a direct adverse impact downstream in the SHC water source.
11. Modelling in the REF suggests that extraction under this proposed new Water Works will, on average, more than double the current level of extraction under Stage 1 harvesting, however for some individual events, this will increase by more than three times higher and needs more detailed assessment of individual events across a range of stormflow event intensities. The existing Stage 1 stormwater harvesting already removes on average 1/3 of the volume of stormwater runoff in BSC.
12. SHC is a prescribed stream under the NSW Native Vegetation Act 2003. The creek has been classified as S1 (high environmental and hydrological stress) more than two decades ago, due to water extraction (DLWC 1998/1999). More recent studies identified severe degradation in SHC downstream of the confluence with BSC (Dye 2012). Any significant increase in water diversion in the SHC water source is unsustainable and will add further stress and ecological harm to the creek system.
13. There appears to be an obvious lack of aquatic environmental assessment in the REF, as this has not extended beyond BSC to the impacted downstream SHC. Maintenance of a reasonable share of water to the downstream environment is critical for maintaining and enhancing ecological processes and biodiversity in these lower reaches.
14. ECCO strongly believes that reducing the volume of the tail end runoff flows by diverting half of these flows off-stream, two kilometres upstream of the Stage 1 pump extraction site, will significantly affect the ability of these cleaner tail end flows to dilute and disperse the higher pollutant loads from first flush runoff. Reduction of these tail end flushing flows poses a high risk of causing build-up of pollutant levels in pool sections and degrading water quality in the downstream system.
15. Operation of the proposed new Works would have an impact across the full range of flows above the 23 L/sec. During wetter periods, this impacts base flows in BSC. The impact of halving low to moderate flows, not currently harvested, is of particular concern. Any impact on the velocity and volume of small freshes events, not extracted under Stage 1 harvesting, presents a high adverse risk of a significant increase in environmental harm.
16. Further, the importance of SHC as an integral and determining morphological feature of the three conservation reserves, located in the downstream SHC water source, must be recognised and considered in assessing any new water works proposals. A flow in SHC through these reserves is vital for maintaining and enhancing their aesthetic and environmental values.

17. SHC is known to support a population of the iconic platypus (Goldney and Fisher 1995, Gibbs 2001), however anecdotal evidence suggests this population may, as in many streams, be in decline. Adequate flow through the system is necessary for providing suitable habitat and food resources by maintaining the connectivity between pool and riffle complexes. ECCO believes that downstream fauna requires more assessment than what has been undertaken in the REF.
18. Orange continues to rely on sourcing the bulk of its potable water supply from this one small creek system, which is unsustainable in the long term with projected future population growth. It would be unfair to expose the SHC system to further increased demand and excessive stress by pursuing new ways to extract more and more water beyond the sustainable diversion limit of the water source. Efforts to compete for growth with other major regional cities such as Bathurst, Cowra and Dubbo, which are located on major river systems, is unrealistic unless Orange can develop new water resources from alternative sources or other catchments.
19. The total cumulative level of water diversion and extraction in the SHC system is being ignored and has not been assessed, but must be fully considered before making any determination on this new Works Approval application. This must also take into account the full impacts on the water source from predicted future climate change.
20. ECCO believes that where there is the likelihood of serious ecological harm, any decisions or adverse changes to extraction levels and environmental flows must be based on best scientific evidence. No scientific evidence has been presented to demonstrate that ecological harm or erosion of environmental values will not result from the proposed new Water Works and with the resulting changes to existing SHC flow regimes.
21. Therefore, ECCO concludes that there is strong evidence for DPE - Water to deny OCC's application for this new Water Works Approval in BSC as described in the REF. The current environmental flows and protection of freshes under Stage 1 stormwater harvesting rules, must not be compromised by circumventing these existing operating rules through interception of flows further upstream. Any new upstream weir and water diversion must mirror the same operating rules applied to the existing Stage 1 harvesting scheme, including 300 mm unrestricted through pipe, current commencement of water diversion and cease to extract flow rate triggers.

Yours sincerely

Nick King
Secretary, Environmentally Concerned Citizens of Orange (ECCO)

[REDACTED]
Orange, NSW. 2800
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