

9 November 2023

Ronan Magaharan
WaterNSW
Level 12, 169 Macquarie Street
Parramatta, NSW 2124

Re: Menindee Lakes Flood Report - Review

Dear Ronan

At your request, HARC have completed a peer review of the report Menindee Lakes Flood Operations Review: 2021-2023, as supplied to us on 26 October 2023.

The review was completed by David Stephens. David has over 20 years of experience in hydrologic and hydraulic modelling, dam safety and dam flood operations. He was project director for the 2023 Menindee Lakes Portfolio Risk Assessment: Hydrology, Dambreak and Consequence study, and also led the preparation of three flood event reports for Seqwater in 2022.

Our review of the report covered the following areas:

- General readability and clarity;
- Content and scope;
- Overview of observed rainfall, reservoir level and flow data, as well as flood modelling;
- Description of the objectives, strategies and procedures for flood operations and their implementation;
- Findings and recommendations.

Note that we have not undertaken an independent review of the rainfall, flow and reservoir level data which has been used to prepare the report. Similarly, we have not reviewed the implementation of the flood operations procedures for the Menindee Lakes and whether these were compliant with the procedures which in place at the time.

The review process was undertaken in two parts. The initial review was completed on a draft of the report provided to us on 11 September 2023. At that stage we provided WaterNSW with a number of comments and suggestions. Subsequently, a second version of the report was produced and reviewed to form the basis of the comments in this letter.

Overall the report is well written and provides a clear and comprehensive description of the lead up to the flood events and the events themselves. WaterNSW's obligations and objectives during flood operations are clearly described. Based on the evidence presented it is apparent that the flood operations procedures applied at the Menindee Lakes during the 2021-2023 flood events were consistent with the objectives.

It is clear that the flood operations procedures undertaken at the Lakes during the peak of the flood event (late December 2022), resulted in a significant reduction in peak flow at Menindee township. Calculated peak inflow to Lake Weatherall was 106,000 ML/d and peak outflow was 75,000 ML/d. Further modelling would be required to determine the net impact of this peak flow

reduction on Menindee township, but there is reasonable certainty that peak flood levels in the town would have higher had the Lakes not been in place. Similarly, the flood operating procedures which allowed the Lakes to be surcharged in order to reduce peak outflow also acted to reduce peak flood levels in the town.

WaterNSW have identified several hypothetical scenarios, with the benefit of hindsight, under which greater flood mitigation could have been provided without compromising other objectives such as dam safety and preservation of the water resource. The evidence provided in the report suggests that these scenarios were not practicable given the limitations of inflow forecasting available to WaterNSW at the time of the event.

The findings which WaterNSW have identified are reasonable and supported by worthwhile recommendations for future work. Given the known uncertainties in flood behaviour of the Darling River and Talyawalka Creek between Wilcannia and Lake Weatherall, we are particularly supportive of the recommendations to enhance the gauging network and the modelling systems used to forecast inflows to the Menindee Lakes.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'D. Stephens', with a long horizontal flourish extending to the right.

David Stephens
Senior Flood Modeller