



23 January 2007

NSW Dams Safety Committee
PO Box 3720
Parramatta NSW 2124

Our ref: 21/15393/125330
Your ref:

Attn: Mr Norm Himsley

Dear Norm

Proposed Eraring Attemperating Cooling Water Reservoir Preliminary Consequence Category Assessment

Subsequent to completing the Preliminary Dambreak Study and in compliance with DSC's requirements we have assessed the consequences of failure for the proposed Eraring Attemperating Cooling Water Reservoir.

This off-stream storage has been assessed in accordance with the ANCOLD Guidelines and NSW DSC Information Sheet DSC13.

Please find attached an air photo and topographic map showing the general position of the reservoir and nearby infrastructure that would be affected by a breach of the reservoir. We have also attached a copy of the Preliminary Dambreak Study.

1 Sunny Day Consequence Category

1.1 Population at Risk

1.1.1 Dambreak at two alternative positions along the North West Embankment

It can be seen from the inundation maps in the dambreak study that sunny day failure of the dam will result in the overtopping of the cooling water inflow canal (Upper Canal) to the Eraring Power Station. This is likely to cause the failure of the canal embankments and the combined flood wave will overtop the Sydney Newcastle rail line.

Itinerant Population at Risk

Assuming a maximum passenger train occupancy of 870 (express trains), the itinerant Population at Risk (PAR) is in the range '10 to 1000'.

Up to 32 express trains run per day with a further 50 local trains (with a maximum train occupancy of 220). Allowing for an exposure period of 15 minutes per train (to allow for hazard identification and warning), the equivalent PAR, allowing for exposure factors, has been assessed to be 407.

Non-Itinerant Population at Risk

There is also a potential non-itinerant PAR along the banks of the Muddy Lake but this is yet to be confirmed by survey. A preliminary assessment suggests that up to 25 properties could be at risk and we have therefore allowed for an additional PAR of up to 100.



This still gives a total PAR (Non-Itinerant and Itinerant) in the range '10-1000'.

1.1.2 Dambreak at two alternative positions along the South East Embankment

We have not yet carried out a dam break relating to these two potential failure sites. While strictly speaking, not mutually exclusive to the North West failures, it is not considered likely that they would occur either together with each other or with one of the North West failures.

Itinerant Population at Risk

The main road from Morisset to Toronto would be overtopped by a South East dambreak. This road is fairly heavily trafficked during daylight hours and therefore there is a reasonable likelihood that a number of itinerants could be at risk. This number and exposure factors has not been assessed at this stage but the PAR will be considerably less than for the NW dambreak and therefore will not increase the consequence category.

Non-Itinerant Population at Risk

It is assessed that only 1 to 3 houses could be at risk from a SE dambreak and therefore, again, the consequence category will not be increased from that assessed for the NE dambreak.

Dam Safety Emergency Plan

While the SE dambreak options will not increase the consequence category, the extent of inundation will need to be resolved for finalisation of the DSEP.

1.2 Severity of Damage and Loss

The Severity of Damage and Loss has been assessed using the severity of damage and losses table from the ANCOLD Guidelines on Assessment of the Consequences of Dam Failure, May 2000.

A NE dambreak would take both the high level canal and the Sydney Newcastle rail line out of service. The loss of the canal would entirely shut down the Eraring Power Station. Given the significance of the infrastructure at risk, the assessed 'Severity of Damage and Loss' for dambreak failure is Major.

1.3 Sunny Day Consequence Category Assessment

Based on the PAR and the Severity of Damage and Loss outlined above, using Table 1 of DSC information Sheet DSC13 (Rev March 2002), the Sunny Day Consequence Category is assessed to be "High A".

2 Flood Consequence Category

The dambreak analysis also considered a breach when the reservoir level was at dam crest. This is in fact well beyond any potential flood level but allows for a highly unlikely situation where by the inflow pumps continue to operate until the storage is full. The resulting dambreak flood generates only marginally greater depths than the sunny day scenario and does not result in a change in consequence category.



3 Overall Consequence Category

Based on the above, the overall Consequence Category is assessed as “**HIGH A**”..

4 Summary

The determination of the consequence category as High A will determine the design parameters for the reservoir and the monitoring and warning systems. In particular we will be recommending that appropriate instrumentation and telemetry is installed to provide an early warning system in the event of a dam failure.

Please contact us should you have any queries or wish to discuss further.

Yours faithfully

GHD Pty Ltd

A handwritten signature in black ink, appearing to read 'Richard Frost', written in a cursive style.

Richard Frost

Manager Dams

02 9239 7253

Sydney Newcastle
Railway

Eraring High Level
Canal

Proposed Eraring
Reservoir

Dora Creek



