

22 November 2024

Our Ref: D2024/130885

Tim Smith
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Heritage NSW
Department of Climate Change, Energy, the Environment and Water
Locked Bag 5020
PARRAMATTA NSW 2124

Via email: tim.smith@environment.nsw.gov.au
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Dear Mr Smith

Re: Cataract Dam SHR Number 01359

WaterNSW wishes to advise that we have initiated a Critical Incident at Cataract Dam due to a developing dam safety risk. As such, this letter is provided to inform you of this incident and its relation to Cataract Dam SHR Number 01359, advise the action we will be taking, and to identify the heritage protections proposed.

By way of background, the incident is in connection with the 'spillway training wall' on the left dam abutment, which has a series of vertical post-tensioned anchors installed to hold the wall in place. A few of these anchors have failed over the course of several years and the situation and risk was being monitored. Unfortunately, two more anchors failed in close sequence in early September, leading us to initiate a critical incident and enact emergency response.

The incident is currently being managed, with risk mitigation controls being activated and response actions initiated to rectify and repair the situation. There are no current signs of cracking, movement or distress, however structural analysis reports a low factor of safety. Independent advice from WaterNSW's independent Dam Safety Technical Advisory Group has supported the decision to take immediate action to reduce risks. Failure to act could result in further anchor failures that could lead to the collapse of a training wall panel. This could then trigger a domino effect with further anchor failures and the collapse of more wall panels. Further, should we encounter flood inflows along the spillway, water could be directed towards the left abutment of the dam, which could lead to the destabilisation of the main dam wall.

The exact cause of the anchor failures in the training wall remains undetermined; however, potential contributing factors may include overstressing of the post-tensioned anchors during installation or insufficient drainage, which could result in excessive hydrostatic pressures and subsequent overloading of

the training wall. Currently, anchor failures have impacted three panels of the training wall. The urgent works will aim to reduce the loading on four panels to alleviate pressure on the structure.

WaterNSW has considered a number of options and proposes the following urgent works:

1. Preliminary geotechnical investigations.
2. Excavate approximately 0 to 1.5m of soil from behind wall panel units 1, 2, 3 and 4 of the dam spillway training wall using a small size excavator to reduce the pressure.
2. Using saw cutting methods, remove concrete barriers along the roadway.
3. Install drainage to divert water to existing surface drains on site.
4. Reinstall temporary material within the excavated area to allow for emergency access and response.
5. Compact the road using non-vibration methods.
6. Dispose of waste materials.
7. Provide safety signage and barriers.
8. Install temporary portable jersey barriers on road, where concrete barriers were removed.

Stockpiling of new and used materials will occur on the left abutment of the dam. A general concept of the excavation plan and location of stock piling is shown in the Attachment.

Heritage Implications

Due to the emergency nature of these works, WaterNSW has used Emergency Exemption 9 of the WaterNSW Standard Heritage exemptions to plan for and undertake these works. The works will begin in January/February 2025. In addition, we have also carried out an environmental impact assessment and conditioned the urgent works.

In consideration of the heritage listed items onsite, some items within the heritage fabric need to be demolished. These items are the concrete barriers and roadway behind the training wall. These items are assessed in the Cataract Dam Conservation Management Plan (CMP) (Extent Heritage, 2018) as having little heritage significance, due to their construction occurring in the 1990's.

Further, WaterNSW believes that the original training wall or original fabric of the spillway still exists in situ. This original fabric will not be impacted by the urgent repair works. The training wall, according to as built drawings, is currently buried at 2.4m to 0.6m below the road surface from unit 1 to unit 4. After excavation and road reinstatement, the training wall is expected to be 1.2m to 0.4m below the road surface. Should it be encountered, the item will not be touched and instead covered with geofabric or similar and protected with fill, as directed by the Excavation Director.

WaterNSW has considered the protection of the heritage significance of the site as paramount, and as such we have included mitigation measures in the concept design to protect heritage fabric during the works. These measures include:

1. Hoardings or other measures to be placed on, over or around the heritage fabric, especially on the dam wall itself to protect it from contact by machinery.
2. An archaeologist (qualified as an Excavation Director) will be on site when excavation of unit 4 takes place (due to the proximity to the original training wall). WaterNSW will ensure that machines

work carefully in this area and the Excavation Director will be on hand to assess and record the item if found due to the excavation.

3. Inductions for all staff onsite which includes notification of the criticality of the asset and its heritage significance.

Future works

WaterNSW has initiated a project that will fast track the permanent solution to this issue. These permanent works are included as part of the Cataract Dam Safety Upgrade. It is our intention to consult with Heritage NSW on the permanent solutions when we are at the 50% detailed design stage. We hope to obtain your feedback on the permanent work solutions via a pre-lodgement meeting, prior to lodging a section 60 application.

If you have any concerns on this matter, please contact [REDACTED]

Regards

[REDACTED]

[REDACTED]
Incident Controller
WaterNSW

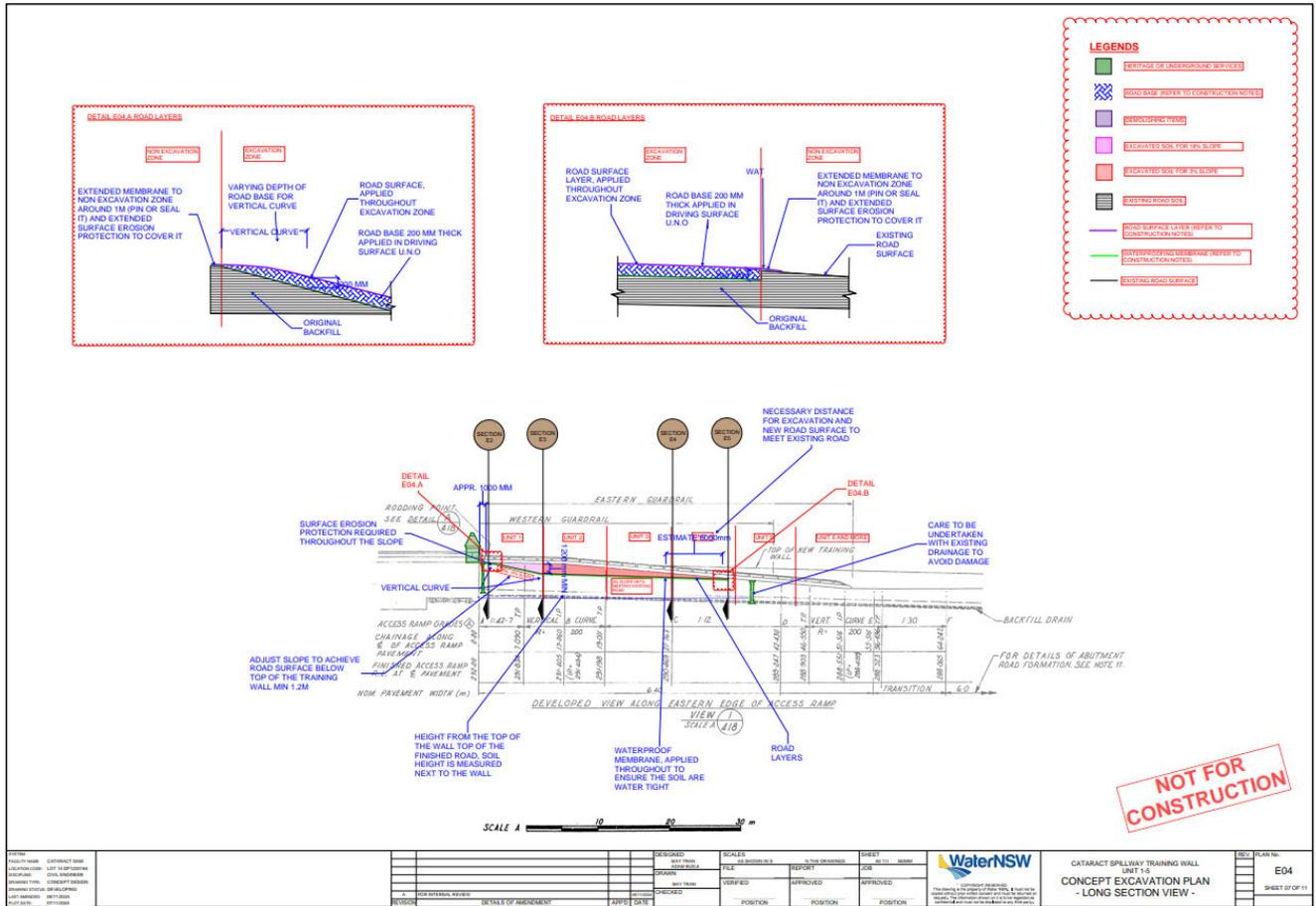


Figure 1 : Concept Excavation Plan - Long Section View

