

Physical Hydraulic Models

Wellington Dam Spillway, Collie, WA

Background

Wellington dam is located in the south-west of Western Australia and is used to supply irrigation water to the nearby Collie irrigation district. The dam owner, Water Corporation, engaged GHD to undertake remedial works to meet structural design requirements for flood loading. In order to evaluate the performance of the proposed upgrade works GHD engaged MHL to conduct a 2D physical model study.

Project Scope

The aim of this study was to provide designers with information on the hydraulic performance of the proposed spillway modifications.

Our Role

MHL constructed a 1:24 scale 2D slice model of the Wellington dam spillway crest and tested the hydraulic behaviour for six spillway surcharge levels. The testing programme included measurements to determine the spillway discharge rating, water surface profiles around the proposed piers and pressures on the spillway chute.

Outcomes

From the results of preliminary testing the pier noses were reshaped to be more streamlined and improve the discharge rating and water surface profile. Eyebrow deflectors were placed above gallery adit openings to induce negative pressures in this region to ensure these openings are not flooded.



Proposed pier nose design



Water surface profiles on proposed piers



PMF testing