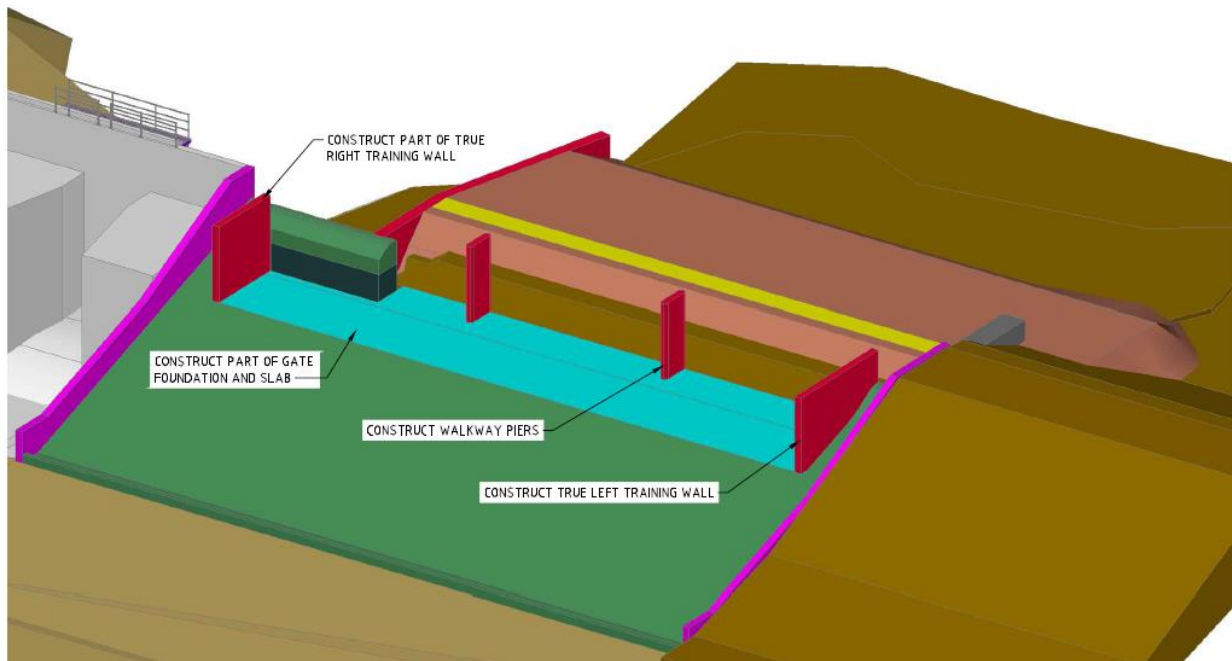


Opuha Dam Downstream Weir Enhancement – Construction Update No. 5



Construction works continue to progress on schedule for the Opuha Dam Downstream Weir Enhancement. The enhancement project will increase the flood capacity of the existing concrete spillway section of the downstream weir from approximately 120 m³/s to 250 m³/s. The work is due to be completed by ?

Since my previous post approximately four weeks ago, we have now moved into Stage 4 of the construction works, as shown on the schematic below from our 3D model. This stage of the construction works comprises the main structural concreting for the upgraded spillway. The key components include; the new gate slab (light blue), new internal training walls (red), raising the existing external training walls (pink), and constructing new walkway piers (red).



STAGE 4

Concrete Works

The structural concrete works are relatively straightforward. The key challenge was understanding the as-built nature and condition of the existing concrete works that would have to integrate with the new concrete works. The concrete spillway was constructed in the late 1990's so as-built details were available, and it was concluded that the spillway is generally in good condition.

Another challenge for the concrete works has been the site's remote location away from major urban areas and accessed via gravel road. The dam upgrade is also being undertaken during the New Zealand winter, with the site subject to relatively low night-time temperatures (typically between 0 and -10°C) and occasional snow storms. On this basis, careful planning of concrete pours is required, together with the application of cold weather concreting techniques.

Below are two images of some of the completed concrete works, which still need minor finishing works. The first image shows one of the existing training walls which has been raised, with the new internal training wall and new bridge piers behind. The second image shows one of the completed bridge piers, which will support a steel walkway over the upgraded concrete spillway. Previously, access across the spillway was not possible while it was spilling, so the new walkway will provide permanent access to the control building and right abutment area.



Downstream Erosion Protection Works

In addition to the main structural concrete works, construction has also been progressing on the erosion protection works immediately downstream of the concrete spillway. The erosion protection works are designed to prevent potential erosion downstream of the spillway due to the increased flood flows which can be passed by the upgraded spillway (and slight increase in flow velocities expected due to the upgrade).

The key components of the erosion protection works are a new cutoff designed to prevent any backward erosion undermining the concrete spillway, and a new steel fibre reinforced concrete slab in the 'stilling basin' area. As can be seen in the image below, the cutoff trench has been excavated down into rock and will soon be ready for steel and concrete. The toe of the existing spillway can be seen on the left, with the existing erosion protection slab on the right (on which the new erosion protection slab will be constructed once it is cleared and prepared).



Construction Schedule

Major structural concrete works are now complete and work has commenced on Stage 5 of the construction works, which is the installation of the 26m wide and 1.8m high mechanical gate (Obermeyer). I will provide a further update in around a week's time to detail how the gate install is progressing.

After gate installation is complete, work will focus on the remaining downstream erosion protection works and removing the temporary works (cofferdam). This allows for completion of the remaining concrete works upstream of the gate, in the location of the cofferdam. Gate commissioning is scheduled for early September 2016, as per the original programme.



- Owner: Opuha Water Limited
- Contractor: Breens Construction Company
- Designer: MWH Global
- ETC: Tim Anderson