

LLYN BODLYN DAM
GWYNEDD, WALES, UNITED KINGDOM**Waterproofing of Reservoirs, Lakes and Channels****Problem**

Llyn Bodlyn reservoir is located above the village of Tal-y-Bont near Barmouth Gwynedd. Access to the reservoir is along approximately 5km of stone surfaced track that continues from the end of a minor road that leaves the A496 at the village of Tal-y-Bont. Operation and maintenance of the reservoir is the responsibility of Dwr Cymru / Welsh Water. The existing dam is a masonry gravity dam. The crest width of around 1.10m a vertical upstream face and a downstream face battered at 1(H):2.2(V) inclination. The maximum height of the dam above the downstream ground level is given as 3.25m. The length of the dam crest is around 100m, excluding the length of the spillweir, which is in-line with the dam crest. During a supervision of the site, it has been noted that there are significant leakages coming through the masonry dam and the toe of the dam is wet underfoot. The combination of these factors led to concerns of the dam's stability due to hydraulic loading.

Solution

Mott MacDonald Bentley (MMB) has been commissioned by Dŵr Cymru Welsh Water to carry out remedial works of the dam and a rockfill berm on the downstream face of the dam is the most favourable design solution. The scope of the project includes installation of a drainage channel collecting seepage flows through away from the dam. The proposed stabilising berm, approximately 6m wide, will span approximately 80 metres. The proposed height of the berm is 1.5m above the ground level and the width of the top surface is envisaged to be 4.3m. The top surface of the berm requires protection system against erosion in an event of the dam overtopping.

The erosion control system was designed to withstand the scour impact of the water jet coming over a dam crest, wave action and erosion due to high velocities. Some option such as articulated concrete block mattress (ACBM), geocell system and even geosynthetics concrete lining with sacrificial stone rip rap were considered.

Client: DŴR CYMRU/WELSH WATER**Designer / Consultant:** MMB - Mott MacDonald Bentley**Contractor:** J N Bentley**Products used (Qty.)****Date of construction:** 10/2016 - 11/2016[Google Maps](#)[Google Earth](#)

Downstream face of the dam to be supported by the proposed berm



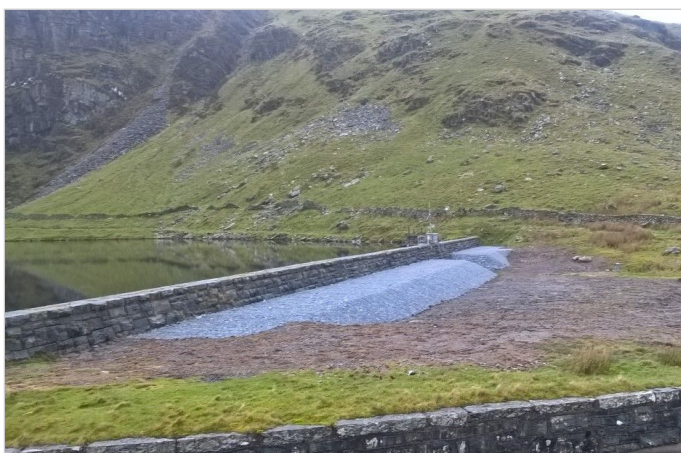
View along the dam



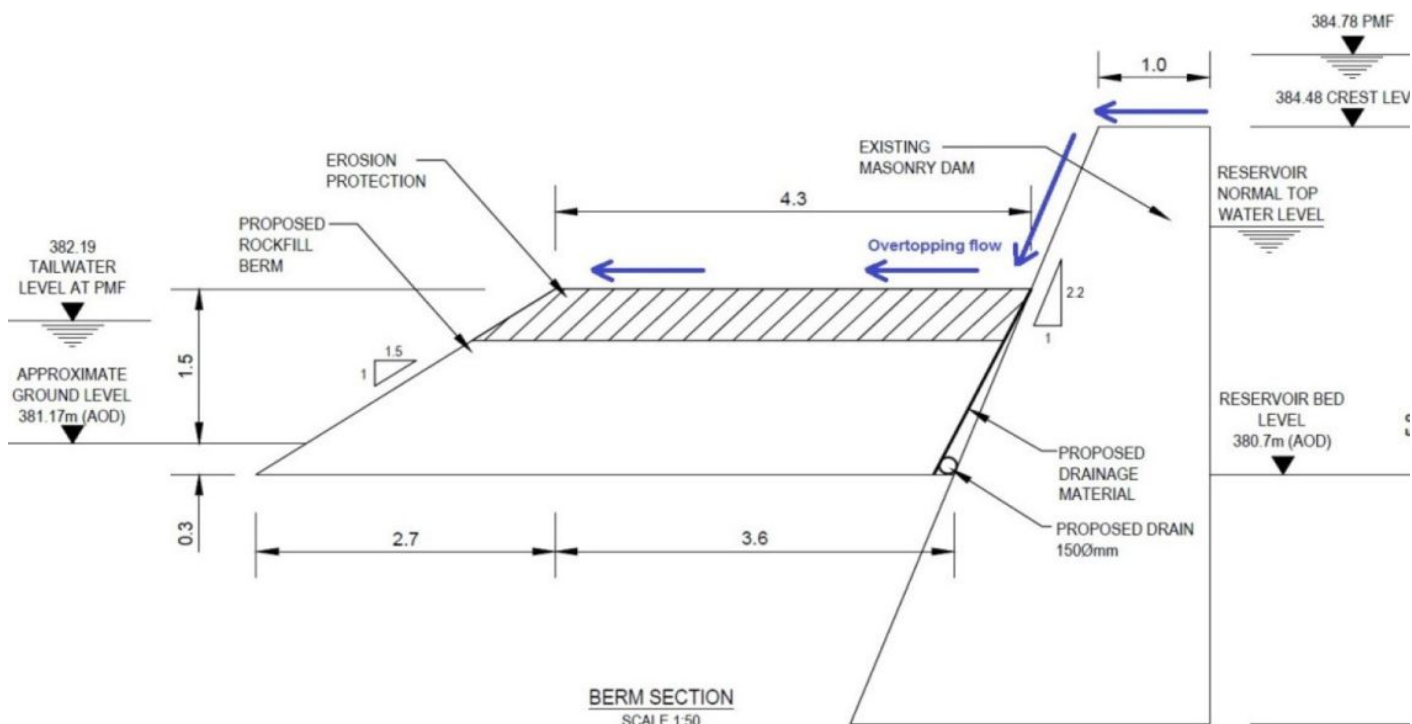
During construction maintenance



View of the Reno Mattress during construction



Construction completed



Typical section of the proposed repair works