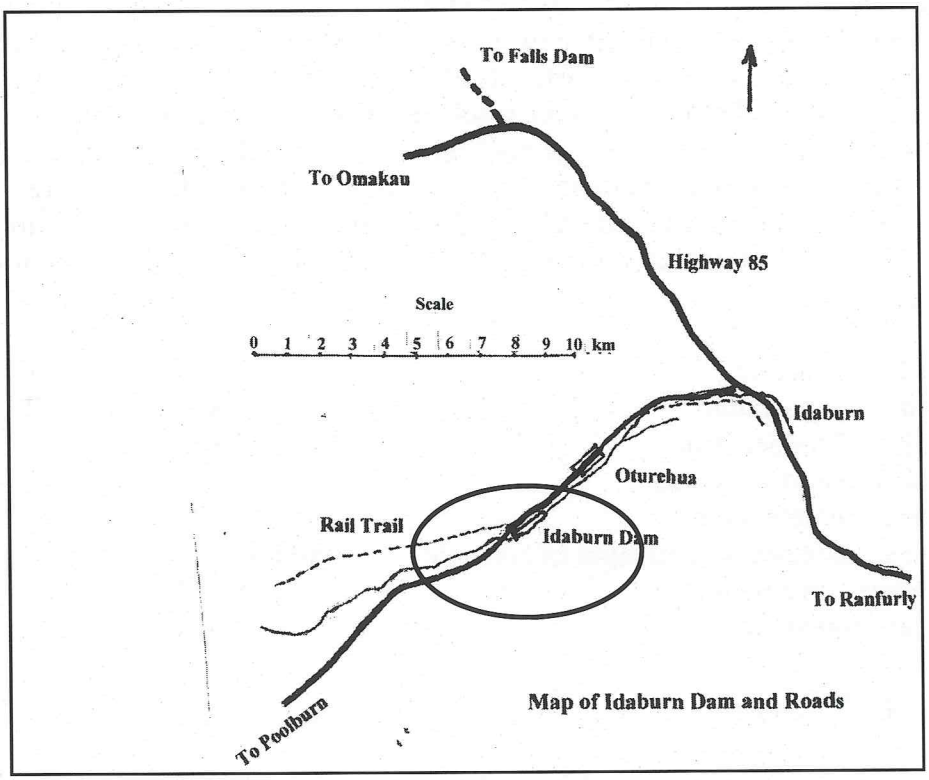
Idaburn Dam

Concrete Arch Dam	
Completed	1931
Height Above Stream bed	35ft
Radius of dam	70ft
Length of Crest	112ft



Idaburn Concrete Arch Dam

Unfortunately there is no Public Works Department file at NZ Archives relating to the Idaburn Dam and the only record found there is an entry by Lindup about the proposed Lower Manorburn Dam. The report commissioned by MAFTech and prepared by Works Consultancy Services on the serviceability of the dam provides some details on the dam. Information is also contained in the 'Report on Irrigation in Central Otago' by F. W. Lindup and J. D. Watt.

Reason for the dam

In the Lindup and Watt report, the Idaburn Dam is included under the Hawkdun Irrigation Scheme as a small addition to the scheme built in 1931 to supply an additional 500 acres of land at the head of the Ida Valley. The dam was built to store the spring flows in the Idaburn Stream.

Details of the dam

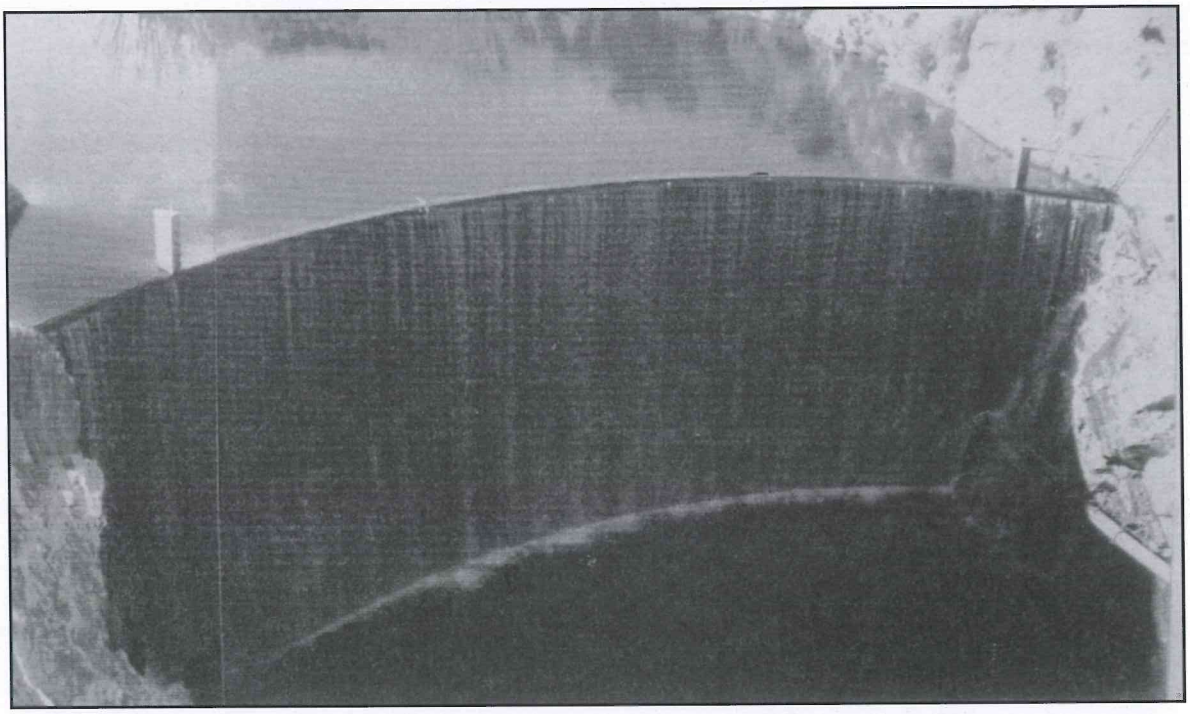
The concrete arch dam was built 35ft above the stream bed, has a crest length of 112ft, and a radius of 70ft. It varies in thickness from 2ft at the crest, to 4ft 6 inches at the base, and the dam is reinforced on the upstream face both vertically and horizontally. Storage of water is over a lake surface area of 20 acres. The dam uses the whole length of the crest for a spillway, with the energy of the water spilled dissipated in a plunge pool formed in the rock below the dam. The foundations of the dam are embedded a minimum of 2ft 6 inches into the rock. There are three vertical construction joints which were keyed and sealed by copper water stops to allow grouting of the joints. The 'As Built Plan' which was signed by J. T. Gilkison in 1932 gives the following schedule of quantities:

Yards of concrete	350
Yards of excavation	404
Length of copper strip	250ft
Tons of reinforcing steel	2.4
Tons of cement used	80
Average compressive strength of concrete	3480 lbs/sq in
Average concrete mix	1- 5.2
Water cement ratio	0.9

Construction of the dam

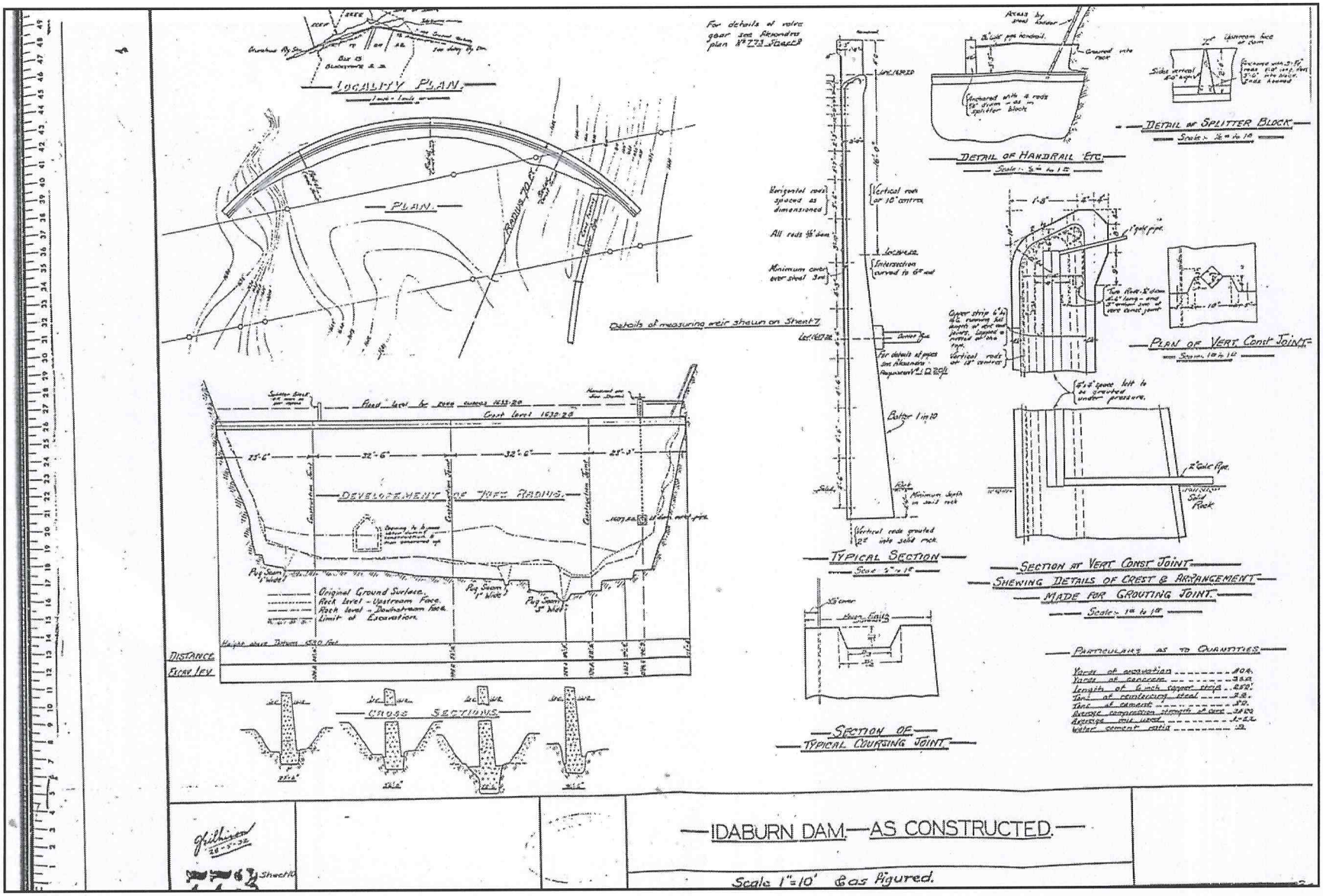
The dam was built with 3ft concrete lifts, and no horizontal sealing was used between the lifts. However vertical copper strips were placed in the three vertical construction joints. Concrete was placed in the dam by the use of a bottom dump truck running inside the vertical frames of the boxing. Lindup, in a letter to Head Office, commented that he had not been able to devise a more economical or efficient way of placing concrete in a structure of this size and concluded by saying that the dam was water tight and showed no signs of distress in 1932.

The Idaburn Dam was built while the Poolburn structure was still being finished, and it is likely that men who constructed the dam came from this work force before they transferred to the Falls Dam. Gilkison, who was the engineer on the Poolburn Dam, appears to have been associated with the work as does the Resident Engineer Lindup at Alexandra. The 'As Built Plan' refers to concrete strength, and the testing would have been done at the Poolburn Dam laboratory or at Falls Dam where it was relocated.



The front face of the dam with the overflow across the whole width of the arch. The pipe outlet is on the right of the photograph with access down a vertical ladder to the valve stem. The dam has a classic 'U' shape with near vertical abutments on both sides of the valley.

A recent photograph taken above the right abutment. The shaped crest can be seen with two splitters to improve the water discharge during floods. The pipeline is visible on the left side of the stream, tucked under the downstream cliffs. A natural pool has been formed downstream of the spillway by the flood discharge.


LOCALITY PLAN.
PLAN.
DEVELOPEMENT OF TRET RADIUS.
CROSS SECTIONS.
TYPICAL SECTION
SECTION OF TYPICAL COURSING JOINT
DETAIL OF HANDRAIL ETC.
DETAIL OF SPLITTER BLOCK
PLAN OF VERT. CONST. JOINT.
SECTION AT VERT. CONST. JOINT SHEWING DETAILS OF CREST & ARRANGEMENT MADE FOR GROUTING JOINT.
PARTICULARS AS TO QUANTITIES.
IDABURN DAM.—AS CONSTRUCTED.
Scale 1"=10' as figured.
Sheet 6