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# 33. UNDERGROUND WATER SUPPLY FOR GOLF COURSE – BICHENO

by M. J. Longman

At the request of Mr P. Shadforth the nine-hole golf course at Bicheno was visited to determine the possibility of obtaining sufficient underground water to supply the tees and greens.

## LOCATION

The golf course is situated on the coastal plain, two miles N of Bicheno, between the Tasman Highway and the sea. The site which varies in elevation between 20 and 45 feet above sea level, is bounded on the inland side by dolerite hills up to 1,000 feet high and on the seaward side by coastal dunes.

## GEOLOGY

The rocks in the area are Triassic sandstone and shale which have been intruded by Jurassic dolerite. The contact is horizontal and is adjacent and parallel to the road on the western margin of the course.

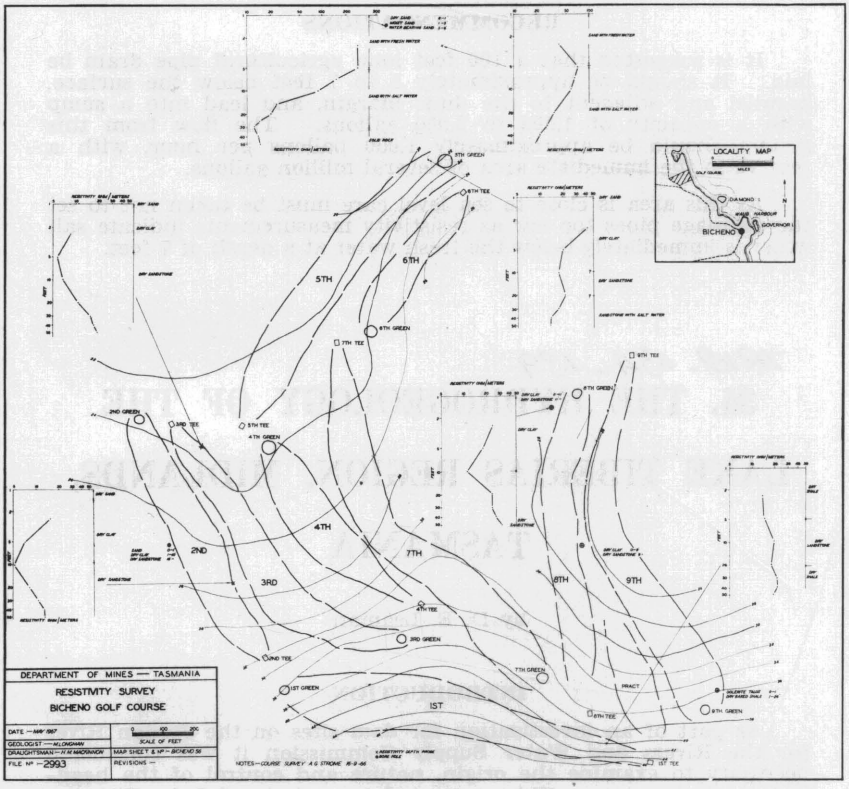


FIGURE 31

The weathered rock is clay and sandy clay. It is 10-12 feet deep over the major part of the course but near the dolerite contact weathering is reduced to approximately 2 feet. Overlying the whole area is a veneer of sand varying between 18 inches thick on the eastern margin to 6 inches thick on the western margin. Between the golf course and the sea is a line of dunes up to 30 feet high.

## HYDROLOGY

Five test bores (hand boring plant) and eight resistivity depth probes were put down to determine the water bearing potential of the area (see plan). These indicate that most of the area is dry and no water can be obtained from under the golf course itself. The best area for obtaining water is immediately behind the coastal dunes and a test bore and resistivity probes indicate that water can be obtained at a depth of 5 feet. Analysis of the water by conductivity meter indicates a salt content of 1,000 parts per million. This can be tolerated by grass.

## RECOMMENDATIONS

It is suggested that a 100 feet long agricultural pipe drain be laid. It should be approximately 5 to 7 feet below the surface, parallel and adjacent to the dune margin, and lead into a sump with a capacity of 1,000 to 2,000 gallons. The flow from this system should be approximately 1,000 pallons per hour, with a reserve in the immediate area of several million gallons.

As this area is close to sea level care must be taken not to set the drainage pipes too low as resistivity measurements indicate salt water is immediately below the fresh water at a depth of 7 feet.