

LYELL E.Z. EXPLORATIONS
Queenstown

CAINOZOIC ROCKS OF
MACQUARIE HARBOUR GRABEN

20 May 1960

60_316

000

MICROFILMED

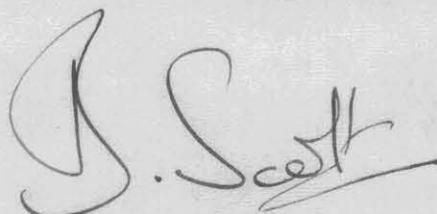
20th May,

x 60

To: Mr. G.F. Hudspeth.

Cainozoic Rocks of Macquarie Harbour Graben

The attached report is a contribution to the Cainozoic section of the projected book on Tasmanian geology which the Geological Society of Australasia is preparing. The report has been sent to M.R. Banks (Convenor) as requested in his letter to me of 18th May, 1959.



Chief Geologist, L.E.E.

Cainozoic Rocks of Macquarie Harbour Graben(Macquarie Harbour Beds)

A series of unconsolidated sands and gravels, with bands of clay and lignite, extends from Strahan and Malama southwards to the Wanderer River, covering an area of approximately 225 square miles. Fossil determinations on two carbonaceous horizons at Strahan indicate an Upper Cainozoic age (probably Pliocene) for these deposits.

The exposures on the eastern shore of Macquarie Harbour show two distinct sedimentary types: one distinguished by a predominance of sands and gravels (arenaceous group) which is placed stratigraphically above and below the other variety which is characterised by a predominance of shales and mudstones with thin bands of low rank coal and pyritic mudstone (lutaceous group). This latter group has not been seen beyond Macquarie Harbour. Combining the results of drilling by the Department of Mines in 1902 with those of mapping, a minimum thickness of 730 ft. exists of which approximately 560 ft. is below the present sea level. The sequence at the Conder River¹ is typical of that seen generally and consists of sands, pebble and cobble gravels made up of particles of Precambrian metaquartzites and quartz mica schist and of Owen Conglomerate. Particles of chert and shale occasionally occur; the section at Malama also apparently contains particles of Permian rocks and dolerite. Particles of the Dundas Group are not common but localised areas on the eastern shore of Macquarie Harbour and in Moore's Valley can contain up to 50% of detritus from this group, including particles of granite in the former locality. Cyclic sedimentation is common, as seen at Malama and at the Conder River and Moore's Valley sections. The column of 248 ft. at the Conder River can be broadly divided into five stages of which only the middle three are fully represented. Each stage is characterised by a decrease in grain size from bottom to top, from cobble and pebble gravels (+ 2") to pebble gravels (less than 2") and sands. There is also some evidence to suggest that the degree of sorting improves with decreasing grain size. At Moore's Valley, in a measured sequence of 235 ft., six cycles or parts of cycles can be distinguished, which follow the pattern already outlined at the Conder River locality except that the top unit is sometimes

¹Conder River and Moore's Valley are 18 miles south of Macquarie Harbour.

002

a thin band of lignitic clay. A minimum thickness of 600 to 700 ft. is indicated in Moore's Valley of which the bottom 100 to 200 ft. is below the present sea level. Exposures in the valley of the Spero River show a rapid variation in grain size of the sediments as they are traced over short distances; current bedding and gullying are also common with angular unconformities of up to 13 degrees. These observations all reflect unsettled conditions of deposition and it is considered that this may have been due to movement, during deposition, on the western boundary fault of the basin of accumulation which is placed immediately to the west of this locality. To the west of this fault the base of the Cainozoic sequence can be seen resting on the Dundas Group, this base is several hundred ft. above sea level.

The Macquarie Harbour Beds are believed to have been deposited during the Upper Cainozoic in a fault basin, resembling a rift valley. Continued movement on the boundary faults during deposition is indicated and the cyclic nature of the sediments could be related to this feature. Movement on these faults after deposition (post-Pliocene) is indicated by the presence of sediments at an elevation of 1000 to 1200 ft. above the present sea level.