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Preliminary examination of the geology of Wrest Point, Hobart

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Introduction

The peninsula of Wrest Point was examined on Friday 24 January to determine what features of the geology were readily visible and to enable a further, more detailed examination to be planned.

The object of this would be a complete description of the geology to aid the design of foundations for the proposed Wrest Point development.

Visible geology

Exposures of rock on the peninsula are restricted to the shoreline, and even there continuous exposure is prevented by brick and concrete sea walls. Away from the shore buildings and gardens prevent any exposure although construction records may be of some assistance. In addition areas of made ground appear to have been created.

Solid dolerite, as well as detached boulders, is seen along the southeast side of the peninsula as shown in the sketch plan but the solid rock cannot be traced back as far as the main coastline adjacent to Sandy Bay Road. The end of the peninsula shows very large *in situ* blocks of dolerite but whether the rock is continuous under the point is not clear as the concrete structure around the swimming pool obscures it. Large blocks are again seen in the northern point of the peninsula and can be traced part of the way down the northwest side. Where a small bay has been formed on the northwest side gently dipping soft brown gritty sandstones are seen gently dipping south and southeast, but the exact relationship to the dolerite outcrops is again not clear. To the west, as far as Sandy Bay Road, a concrete sea wall again prevents examination.

Investigation programme

The problems to be solved in any investigation of the geology are as follows:

1. What is the distribution of the dolerite on the site?
2. What is the condition of the dolerite, its Jointing and weathering and hence the bearing strength?
3. What is the distribution of the sediments?
4. What is the nature and condition of the sediments and again the bearing strength?
5. What is the relationship between the dolerite and the sediments — is the interface flat, curved or complex, horizontal or inclined?
6. Are there any other features that are not apparent, e.g. the presence of clays, or faulting, or made ground, that could affect the stability of structures to be built?

Suggested investigation procedures

Because the site is in use as an hotel, any investigation must be planned to produce the minimum of disturbance.

The problems above are inter-related and can be most easily solved by a combination of geological, geophysical and later diamond drilling work.

Point 1 on the distribution of the dolerite could be approached by a magnetometer survey of the peninsula, both on land and along the shore by boat. Dolerite is sufficiently magnetic that its presence could be detected by the disturbance of the magnetic field in its vicinity. The advantage of working from a boat would be that a continuous section could be observed unobscured by surface features, and that pipes,

fittings and reinforcement steel which could produce spurious effects would be sensibly absent.

Point 3 is the converse of Point 1, for where dolerite is absent then sediments are probably present. These would then be examined by an auger boring programme. This could easily and unobtrusively be carried out on the foreshore and in garden areas and might be supplemented by any previous construction records. Twenty bores down to about 12 feet should provide sufficient information to describe the sediments and to locate the boundary between dolerite and sediments, as well as to detect the presence of any other rocks or made ground. The holes need not be in a regular pattern and could be sited where convenient.

Point 5 is of considerable importance in the design of foundations. When the horizontal distribution of dolerite and sediments has been classified then their vertical relation could be determined by a seismic survey. This need not be a noisy procedure as small, well stemmed charges would be all that is necessary. Probably three or four days work would be required.

Points 2, 4 and 6 on the nature and condition of the dolerite and sediments and on the presence of other materials or anomalous structures would then best be settled by diamond drilling. The siting and number of holes would be guided by the results of the previous enquiry and on the design of the proposed buildings and could well await a report based on the magnetometer, augering and seismic work.

The geology of the Wrest Point peninsula is not well exposed but appears to consist of dolerite with sediments overlaid. Magnetometer, augering and seismic surveys are recommended to produce a detailed geological map on which exploratory diamond drilling can be sited.

In all about ten days work would be needed to produce this.

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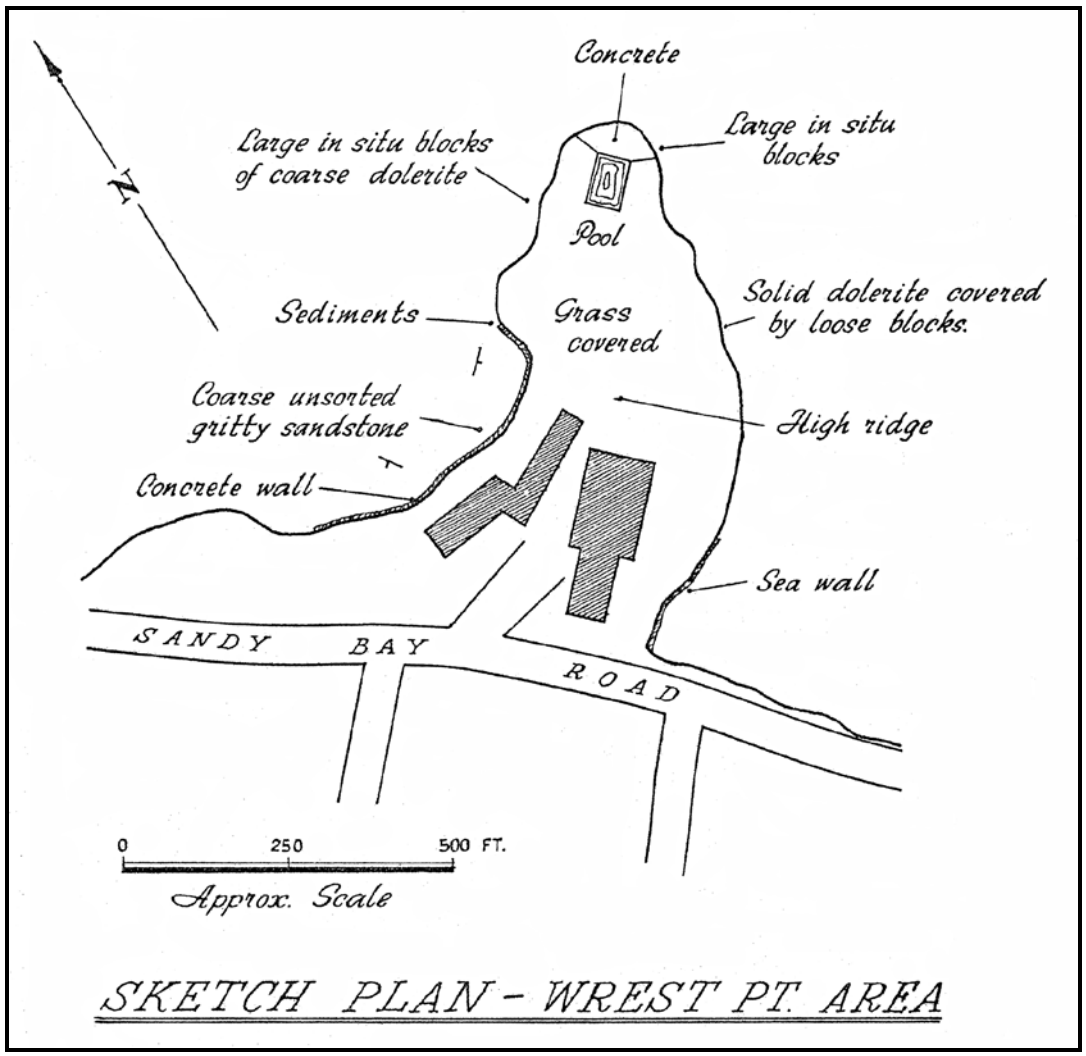

SKETCH PLAN - WREST PT. AREA