

Steven Speter
55 Robertson Road
Scotland Island NSW 2105

Attention: Mr Steven Speter
Email: steve@101-S.com

GEOTECHNICAL ADVICE
REMEDIATION OF FAILED RETAINING WALL
55 ROBERTSON ROAD, SCOTLAND ISLAND, NSW

On 28 June 2021 the undersigned, Mr Woodie Theunissen, visited the above site to inspect the slope failure that has occurred at the front of the property along the waterfront. From the north of the house the ground drops down steeply to water at an angle of about 30°. The sandstone block wall located along the front of the property had been dismantled and excavation was underway to remove that portion of the slope that had already failed, the extent of which was about 5m from the seawall and was defined by tension cracks.



At the back of the removed sandstone block wall a cut face with a height of about 2.5m had been created. The materials exposed in this cut comprised approximately 1.6m of clay fill overlying natural clay and extremely weathered siltstone bedrock. Siltstone bedrock of at least very low strength was exposed at the



base of the cut, which is at roughly the top of the seawall. Immediately behind the wall fill was exposed. The seawall had a height of about 1.5m with sandstone bedrock generally visible at the toe of the sea wall.

It is understood that a new Dintel retaining wall will be constructed to support the cut. This wall will be founded on the underlying sandstone bedrock. For the design of this wall we recommend the that the following design parameters be adopted:

- A triangular earth pressure distribution,
- A coefficient of active earth pressure, K_a , of 0.8,
- A bulk unit weight of 20kN/m^3 ,
- All surcharge loads and appropriate hydrostatic pressures must be added to the above pressures,
- Unless the existing seawall has sufficient capacity to resist the applied lateral loads all lateral loads must be transferred to the underlying sandstone bedrock by socketing piers into the bedrock. A lateral resistance of 200kPa may be adopted for that part of the pile that extends greater than 0.5m into the underlying sandstone bedrock.
- Where piles are founded on the underlying sandstone bedrock of at least very low strength they may be designed for an allowable bearing pressure of 600kPa. All piles should have a nominal socket of 0.3m.

At the time of our site visit the existing excavation had extended to roughly the alignment of the proposed wall. Near vertical cuts had been formed through the fill and natural soil. It should be noted that vertical cuts through soils are potentially unstable and may collapse at any time without warning. Consequently, we recommend that temporary batters be formed through the soil at no steeper than 1 Vertical(V):1 Horizontal(H) or the cut be temporarily propped. Even where propping is proposed, we recommend that the soils which have already slipped (i.e. those soils on the downhill side of the tension cracks) be removed and the soils behind battered. The contractor must take care during construction that the slope is appropriately supported such that the works can be safely constructed.

Drilling of piles will be completed in the intertidal zone and at times will be below sea level. Consequently, care must be taken that that portion of the pile that extends through the soils is supported and that the piles can be appropriately dewatered and cleaned prior to pouring concrete. It is possible that high strength sandstone bedrock may be encountered during the drilling of the piles and, consequently, appropriate drilling methods must be adopted to penetrate the bedrock.

Should you require any further information regarding the above, please do not hesitate to contact the undersigned.

Yours faithfully
For and on behalf of
JK GEOTECHNICS

Woodie Theunissen
Principal Associate | Geotechnical Engineer