GROUND TESTING: To accompany the existing Geotechnical Report
87 Alexandra Crescent, Bayview

1. Scope

Core drilling was carried out to further delineate and confirm the ground materials beyond the extent of the testing already carried out for the geotechnical report attached. Where additional information was gained for design purposes that was not anticipated in the geotechnical report, it has been added to this document.

The drilling was carried out on the 11th October, 2021 to the 12th October, 2021 and the site was previously inspected on the 29th June, 2020.

2. Subsurface Investigation

Two bore holes (BH) were drilled at the location of the proposed lift and lift accessway to determine the depth and strength of the rock. The drill used was a hand portable rig running an NMLC core barrel. The drill log summaries are as follows:

BORE HOLE 1 (~RL72.9) **–** BH1 (Photo 1)

Depth (m)	**Material Encountered**
0.0 to 1.0	**FILL**.

Start of Bore Hole at 1.0m:

1.0 to 2.2	**CLAY**, brown orange and grey, stiff.
2.2 to 2.4	**EXTREMELY LOW STRENGTH SHALE**, grey.
2.4 to 3.0	**VERY LOW STRENGTH SHALE**, grey and black/dark brown.
3.0 to 4.14	**LOW STRENGTH SHALE**, black/dark brown, grey and orange, parting at variable intervals of between 2cm to 13cm.
4.14 to 4.31	**CORE LOSS**.
4.31 to 7.1	**LOW STRENGTH SHALE**, black/dark brown and grey, with grey sandstone laminite, parting at variable intervals of between 2cm to 12cm.

End of hole @ 7.1m in Low Strength Shale. No watertable encountered.

BORE HOLE 2 (~RL73.0) – BH2 (Photo 2)

Depth (m)	Material Encountered
0.0 to 0.6	**CLAY**.

Start of Bore Hole at 0.6m:

0.6 to 1.3	**EXTREMELY LOW STRENGTH SHALE**, grey, brown and orange.
1.3 to 1.76	**VERY LOW STRENGTH SHALE**, grey and black/dark brown.
1.76 to 1.83	**CORE LOSS**.
1.83 to 2.7	**VERY LOW STRENGTH SHALE**, grey, black/dark brown and orange, with thin grey sandstone laminite, parting at variable intervals of between 4cm to 12cm.
2.7 to 4.28	**LOW STRENGTH SHALE**, black/dark brown, grey and orange, parting at variable intervals of between 4cm to 12cm.
4.28 to 4.39	**CORE LOSS**.
4.39 to 4.84	**LOW STRENGTH SHALE**, black/dark brown and grey, parting at variable intervals of between 2cm to 8cm.
4.84 to 4.94	**CORE LOSS**.
4.94 to 7.2	**LOW STRENGTH SHALE**, black/dark brown, grey and orange, with thin grey sandstone laminite, parting at variable intervals of between 2cm to 8cm.

End of hole @ 7.2m in Low Strength Shale. No watertable encountered.

3. Geological Observations/Interpretation

The Bore Hole results indicate the proposed lift and lift accessway is underlain by firm to stiff clays and shale of variable strength with some thin fine to medium grained sandstone laminite layers.

In summary the ground conditions were as follows:

Depth (m)	Material Encountered
0.0 to 1.5	**CLAY**.
1.5 to 3.0	**VERY LOW STRENGTH SHALE** (Class IV)
3.0 to 7.0	**LOW STRENGTH SHALE** (Class III)

No free water encountered.

Note: In the location of BH1 ~1.0m of fill was present over the natural profile.

The ground materials are as expected/interpreted in the Geotechnical report. The drilling confirms the recommended excavation support advice in the attached Preconstruction Meeting Report. The recommended sprayed concrete retaining walls are to be supported by rock bolts with the following Bond Stress parameters:

Fill: N/A

Clay: 20kPa (ultimate)

Extremely Low Strength Shale: 50kPa (ultimate)

Very Low Strength Shale: 100kPa (ultimate)

Low Strength Shale: 300kPa (ultimate)

The bond stresses are 'ultimate' so should have a suitable safety factor applied.

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Photo 1: BH1


BH2 START @ 0.6m
1m
2m
3m
4m
5m
6m
7m
CORE LOSS
CORE LOSS
CORE LOSS
BH2 END @7.2m
12/10/2021

Photo 2: BH2

87 Alexandra Crescent, Bayview
Preconstruction Meeting

The site was inspected on 22nd September 2021.

It is proposed to cut a ~6.0m deep trench into the slope and excavate under the house to provide a level walkway from the carport to the proposed lift shaft that will provide access to the two levels of the house.

The first stage of this proposal is to get a better understanding of the underlying rock, as the nature of the ground materials influences all other aspects of design. This is done by drilling two exploration holes to depths of ~ 8.0m in the line of the proposed accessway, one of which will be under the house.

This work is considered technically complex and will need to be carried out in stages involving short lifts of excavation followed by ground support works. This type of work is also labour intensive and relatively slow due to the stop start nature of the required staged process. These factors combine to make the works relatively expensive and subject to cost blow outs.

We envisage over the line of the excavation under the house, that the existing supporting house piers will be removed and supported with beams that span the proposed cut. Where the excavation is under brick house walls the walls will need to be needled and supported by concrete beams or similar support. This support will be designed by the structural engineer and needs to be installed before the excavation is commenced under the house.

Pre-empting the recommended drilling and assuming a clay/weathered shale profile underlies the site, for safety purposes we envisage the excavation stages will involve lowering the excavation ~ 1.5m in depth and progressing laterally a maximum of ~ 3.0m before installing support. Support will likely involve a sprayed concrete wall supported by rock bolts drilled and grouted into the excavation face. The total shoring operation would involve nailing

~150mm wide strip drain to the excavation face for back wall drainage, covering the drainage in mesh supported by bolts grouted into the excavation face, then spraying the cut face with concrete to form the wall. The structural engineer will detail the wall design once the ground materials have been confirmed by the exploration drilling.

This is a brief outline of the required process, if there are any questions don't hesitate to contact us.

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