Crozier Geotechnical Consultants
Unit 12/ 42-46 Wattle Road
Brookvale NSW 2100
ABN: 96 113 453 624
Phone: (02) 9939 1882
Email: info@croziergeotech.com.au
Crozier Geotechnical Consultants a division of PJC Geo - Engineering Pty Ltd

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Development Officer
Northern Beaches Council.

Geotechnical Assessment for revised architectural drawings at Lot 3, 1110 Barrenjoey Road, Palm Beach

We understand that design changes to the Development Application (DA2021/002) have been made along with submissions by adjoining property owners prompting a request by Council for additional geotechnical review and assessment.

As a result we have reviewed the following documents:

1. Our Report titled "Geotechnical Site Investigation for Proposed Development at Lot 3, 1110 Barrenjoey Road, Palm Beach", Project No.: 2020-232, Dated: 15th December 2020.
2. Architectural Drawings by Jorge Hrdina Architects Pty Ltd, Project No.: 2004, Drawing No.: DA2000, DA2001 to DA2005, DA2220, DA5000, DA5001, Revision: A Dated: 15/06/2021 and Drawing No.: DA2222 Dated: 13/07/21
3. Survey Drawing - Adam Clerke Surveyors Pty Ltd, Reference No.: 20688S, Dated: 23/11/2020
4. Geotechnical Review Report, Davies Geotechnical, Project No.: 21-019.A, Dated: 05/07/2021

It is understood that there have been changes to the architectural design since the compilation of our original Geotechnical Report. Alterations to the proposed works include details of a secondary dwelling, the replacement of the front retaining wall, new southern side setbacks, new pool and pool deck configuration, notes about boulder interactions, minor internal adjustments such as marginal FFL changes, the inclusion of a ground floor services room and altered roofing features.

Details of the secondary structure within the south western corner of the block show the existing block retaining wall is to be largely removed with bulk excavation required into the soil slope to the east. Bulk excavation appears to be required to approximately ≤3.2m depth that will extend to within 0.90m of the boundary, to allow a side set back of 1.204m for the dwellings south wall. It also appears the excavation will intersect a large sandstone boulder on site with a palm tree positioned directly to the east of this boulder.

Based on proximity to boundaries and structures along with the slope It is envisaged that safe batter slopes will not be achievable for the secondary structure excavation. Therefore, shoring walls (i.e. bored piles or similar) will need to be installed prior to excavation or a staged excavation and anchored shotcrete system installed during works to ensure stability of the excavation faces including the south boundary and adjacent boulders/trees. Excavation is anticipated to intersect largely colluvium and residual soils including hard clays, along with sandstone boulders with potential for shale/siltstone bedrock within deeper/eastern portions of excavation.

The replacement and upgrade of the existing retaining wall within the eastern portion of the site will require careful consideration, as several boulders, including a very large boulder which continues into the neighbouring property to the north, are situated adjacent to the existing wall. Further recommendations on retaining wall design parameters will be provided upon detailed geotechnical investigation including cored boreholes conducted by CGC, as referenced in our geotechnical report.

The updated pool and decking configuration has resulted in a side setback increase to 2.5m from the south boundary. The pool/deck level at R.L. 20.100 is generally above ground surface levels but will require isolated excavation into the upper surface of an existing boulder which outcrops above the natural slope by up to 2.0m.

Also, the updated Ground Floor level plan has an entry FFL lowered by 0.18m and there has been an inclusion of a small services compartment adjacent to the lift shaft on the ground floor level. These works have negligible alteration to the previous design geotechnical assessment/conditions.

Reference has been made, within Drawing No.: DA2004, to a boulder(s) within the eastern portion of the site; “rock cut back or retained as required”. It should be noted that for any rock fall hazards, the preference is removal however this may be difficult to achieve in the current conditions. If this cannot be completed, then stabilising systems are required (i.e. rock bolts/shotcrete). Geotechnical assessment must be completed prior to any boulder removal or stabilisation works.

The geotechnical report submitted with the Development Application has been updated to match the architectural design drawings being submitted and is attached with this letter report.

The critical aspects of design and further geotechnical investigation include the replacement of the front retaining wall and excavation for the secondary dwelling, the excavation for the garage and main structure, the confirmation of bedrock depth and nature along with assessment of sandstone boulders to be removed/stabilised.

The underlying geology of the area is exposed within numerous natural cliff lines and excavations for existing developments within 500m of the site that have been inspected/mapped and assessed by Crozier Geotechnical Consultants, thus providing an indication of the nature of the underlying bedrock and potential landslip hazards. This exposure in combination with our extensive knowledge and experience related to developments in the local area provided the basis to provide a geotechnical report for DA submission based on an initial site investigation comprising DCP testing and site mapping only (due site access limitations).

This preliminary data will be utilised in combination with the results of more detailed investigation to provide accurate site-specific parameters and controls to allow design and construction.

Sub-surface parameters and design controls were not provided at the initial report to ensure that design could not commence until completion of the detailed investigation and reporting.

Numerous similar excavations have been undertaken in the local area for residential properties, which when undertaken with geotechnical and structural engineering design and construction control have maintained “Acceptable” risk levels during excavation and construction. The details for this control will be supplied within structural design drawings and documentation if development application approval is achieved.

Hope the above comments meet Council’s requirements, if we can be of further assistance in regard to this matter please don’t hesitate to contact the undersigned.

Yours faithfully,

Troy Crozier

Principal

MAIG. RPGeo.: Geotechnical and Engineering

Registration: 10197.