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**DAVIES GEOTECHNICAL  
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# Memo

<b>To:</b> Prue Rydstrand	<b>From:</b> Warwick Davies
<b>Email:</b> prydstrand@googlemail.com	<b>Pages:</b> 5
<b>Copy:</b>	<b>Date:</b> 15 July 2021
<b>Re:</b> No. 1110 Barrenjoey Road DA - Geotech report and findings DA2021/0200	<b>Our Ref:</b> 21-019.B

Dear Prue,

As discussed, I have prepared commentary following my review of the new documentation available yesterday on Council's DA-tracking web site.

I understand from the text message forwarded yesterday by Jordan Davies at Council that all responses received are to be provided to the Local Planning Panel via a MEMO by end of this week. These are to include "*any amended recommended conditions*".

I have prepared Amended Conditions 7, 9 & 15, which are detailed in the attachment herewith. I am including a Word version of the Amended Conditions for you to forward on to Jordan Davies for his use.

Yours faithfully,

**DAVIES GEOTECHNICAL PTY LTD**

per



Warwick N Davies MIE Aust CPEng NER (Civil)  
Principal Geotechnical Engineer

[b21019M.docx](#)

Attachment:

## **ATTACHMENT – W Davies Review/Commentary, NBC Development Application Assessment**

The comments below follow a review undertaken of the NBC Development Application Assessment Report posted on Council's DA-tracking web site on 9 July 2020.

The review was carried out on 14 July 2021 with the benefit of additional information listed below, posted by Council on the web site on 14 July, following an earlier report prepared by Davies Geotechnical Pty Ltd, referenced 21-019.A dated 5 July 2021. The additional information comprises:

- An Addendum Report by the project arborist Rain Tree Consulting, dated 13 July 2021,
- An updated geotechnical report by the project geotechnical engineer Crozier Geotechnical Consultants, dated 13 July 2021, and
- A review summary letter by Crozier Geotechnical Consultants dated 13 July 2021, detailing aspects of the original geotechnical report that have been updated.

We note that both of the documents now provided by Crozier Geotechnical Consultants include reference specifically to our initial report dated 5 July 2021.

We provide our comments on the new documentation within the framework of our original review report.

### **Addendum Report by Rain Tree Consulting**

The commentary offered by Rain Tree in regard to Trees 21 & 22 relates to "*minor encroachment from the existing footprint ..... will unlikely affect the vitality of the tree*" and "*Minor .... (TPZ) occupancy of low level impact and encroachment within TPZ*".

The commentary is not relevant to the geotechnical issue raised in our initial review, which concerns potential impact of uncontrolled excavation resulting in a collapse of the excavation and portion of the slope above.

A response by Rain Tree on the ability of the trees concerned to survive a loss of a substantial proportion of the soil mass from the root zone, resulting from a collapse failure of the slope, would be more pertinent to the issue, and to the need for engineering controls that are aimed specifically at preventing such a failure.

### **Updated Report by Crozier Geotechnical Consultants**

The updated report now includes commentary on the revised architectural design, particularly with regard to the proposed Secondary Dwelling and associated bulk excavation adjacent to the boundary with No.1100 Barrenjoey Rd.

The updated report maintains the earlier generic recommendations for engineering matters to be dealt with at the Construction Certificate stage of the project, but does not embrace any of the specific recommendations of our review report which were provided with a view to strengthening the approval conditions to be framed by Council.

We note the conditions of approval recommended in the Assessment Report (posted 9 July) predate the amended Crozier Report of 13 July.

Consequently, we have prepared suggested amended conditions detailed below for relevant parts of the approval.

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## Development Application Assessment Report

The explanatory and commentary sections of the Assessment Report nominate the Conditions of Approval for implementing controls or special requirements where deemed appropriate by Council, for example:

- **7.2 Earthworks** – *Comment:* The proposed earthworks will not result in unreasonable amenity impacts on adjoining properties. **Conditions have been included** in the recommendation of this report to limit impacts during excavation/construction.
- **7.7 Geotechnical Hazards** – *Comment:* The application has been reviewed by Council's Development Engineer, who is supportive of the proposal, **subject to conditions of consent**.

The **Conclusion** to the Assessment Report states: "*The issues raised in the public submissions are considered to be addressed by way of the amended plans and the issues regarding impact to the vegetation to be retained and geotechnical hazards associated with the development have been addressed by the submitted expert reports, the recommendations of these reports forming conditions of development consent*" (our underlining).

In our opinion, the conditions of development consent are inadequate for providing a robust level of engineering control for the construction stage of the proposed development. The reasons and support for this opinion are developed and enumerated in our review report referenced herein.

In recognition of the essential thrust and recommendations of our review report, amended Conditions 7, 9 and 15 are detailed below for consideration and adoption by Council.

Amendments (new text) is highlighted yellow for understanding of where changes have been added. Other changes (re-ordering or paragraph edits) are not highlighted.

### 7. **Pier Footing Design Near Trees to be Retained**

- a) Pier footing and structural layout plans for the external works shall be developed in coordination with an Arborist with AQF minimum Level 5 qualifications in arboriculture and a qualified Structural Engineer.
- b) The Arborist shall review, comment, recommend design revision as required and approve the pier footing and building layout to ensure the locations of piers and structures will be manageable in terms of tree protection measures, **in accordance with the recommendations of the Arboricultural Impact Assessment dated 14 January 2021 prepared by Rain Tree Consulting and Australian Standard 4970-2009 Protection of Trees on Development Sites.**
- c) The Arborist shall submit certification to the Certifying Authority that the locations of the pier footings and structures are accepted via the agreed pier footing and structural layout plans prior to the issue of a Construction Certificate.

Reason: Tree protection.

### 9. **Geotechnical Report Recommendations have been Incorporated into Designs and Structural Plans**

The recommendations of the risk assessment required to manage the hazards as identified in the Geotechnical Report prepared by Crozier Geotechnical Consultants dated **13 July 2021** are to be incorporated into the construction plans.

Additionally, the following must be undertaken as part of the Construction Certificate process:-

(a) Prior to commencement of any excavation works on the site, a Stage 1 geotechnical investigation is to be undertaken, comprising boreholes and any further investigations as required.

(b) The information from the Stage 1 investigation must be reviewed by the project geotechnical engineer at a Hold Point in the engineering design to allow review of the engineering design prior to commencement of any Stage 2 piling work or bulk excavation.

(c) The geotechnical engineer shall provide details on important subsurface conditions and suitable guidance to the structural design for excavation retention and for suitable and necessary engineering controls that must be implemented to ensure stable excavation.

(d) A Construction Methodology Statement (CMS) is to be determined, incorporating an Excavation Management Plan (EMP), and controls/hold points are to be confirmed. The CMS/EMP is to incorporate or cross reference to:

- excavation and support design, with regard for potential impacts of the excavation upon No.1110 and other adjoining properties;
- staging, Hold Points, geotechnical controls;
- monitoring of (i) the excavation support for lateral deflection, (ii) the surface conditions along the boundary and building settlements on adjoining property, (iii) ground vibrations, and (iv) any other aspects of the construction deemed important and necessary for protection of; adjoining property;
- confirmation of geotechnical parameters for the structural engineer's design;
- geotechnical review of the design and monitoring program;
- an independent review carried out by a suitably qualified and experienced geotechnical engineer.

Prior to issue of the Construction Certificate, Form 2 of the Geotechnical Risk Management Policy for Pittwater (Appendix 5 of P21 DCP) is to be completed and submitted to the Accredited Certifier.

Details demonstrating compliance are to be submitted to the Certifying Authority prior to the issue of the Construction Certificate.

Reason: To ensure geotechnical risk is mitigated appropriately.

## 15. **Structural Adequacy and Excavation Work**

Excavation work is to ensure the stability of the soil material of adjoining properties, the protection of adjoining buildings, services, structures and / or public infrastructure from damage using underpinning, shoring, retaining walls and support where required.

All retaining walls are to be structurally adequate for the intended purpose, designed and certified by a Structural Engineer, except where site conditions permit maximum

height of 900mm above or below ground level and at least 900mm from any property boundary.

Design of all retaining walls must comply with AS3700, AS3600 and AS1170 and timber walls with AS1720 and AS1170.

Designs for all retaining walls, as well as for temporary and permanent excavation support systems, are to be reviewed by the project geotechnical engineer in accordance with Condition 9 of this approval, prior to any excavations being undertaken.

Details demonstrating compliance are to be submitted to the Principal Certifying Authority prior to the issue of the Construction Certificate.

Reason: To provide public and private safety.

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