



Preliminary Geotechnical Assessment

Project: Alterations & Additions
30 Springvale Avenue, Frenchs Forest NSW

Prepared for:
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30 Springvale Avenue
Frenchs Forest, NSW

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Preliminary Geotechnical Assessment

For Alterations & Additions at

30 Springvale Ave, Frenchs Forest NSW

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Limitations

This report has been prepared for Greg & Jackie Szudrich, c/ Your Style, in accordance with AscentGeo Consulting Geotechnical Engineers' ('Ascent') Fee Proposal dated 6 May 2022.

The report is provided for the exclusive use of the property owners and their nominated agents for the specific development and purpose as described in the report. This report must not be used for purposes other than those outlined in the report or applied to any other projects.

The information contained within this report is considered accurate at the time of issue with regard to the current conditions on site as identified by Ascent and the documentation provided by others.

The report should be read in its entirety and should not be separated from its attachments or supporting notes. It should not have sections removed or included in other documents without the express approval of Ascent.

Overview

Background

This report presents the findings of a preliminary geotechnical investigation carried out at 30 Springvale Avenue, Frenchs Forest NSW (the 'Site'), undertaken by Ascent. This assessment has been prepared to accompany an application for DA with Northern Beaches Council.

Proposed Development

Details of the development are outlined in a series of architectural drawings prepared by Your Style, drawing numbers 1–11, dated 6 May 2022.

The works comprise the following:

- Construction of new first floor addition to existing dwelling
- Various internal alterations within existing building footprint.

Relevant Instruments

This geotechnical assessment has been prepared in accordance with the following relevant guidelines and standards:

- Northern Beaches Council – Warringah Local Environment Plan (WLEP) 2011 and Warringah Development Control Plan (WDCP) 2011
- Australian Geomechanics Society's 'Landslide Risk Management Guidelines' (AGS 2007)
- Australian Standard 1726–2017 Geotechnical Site Investigations
- Australian Standard 2870–2011 Residential Slabs and Footings.

WDCP & WLEP Landslip Risk Class

The site is mapped as **Area B** subject to specific landslip risk/geotechnical hazard mapping with reference to the Warringah (WLEP) Landslip Risk Map, Northern Beaches Council (**Image 1**).

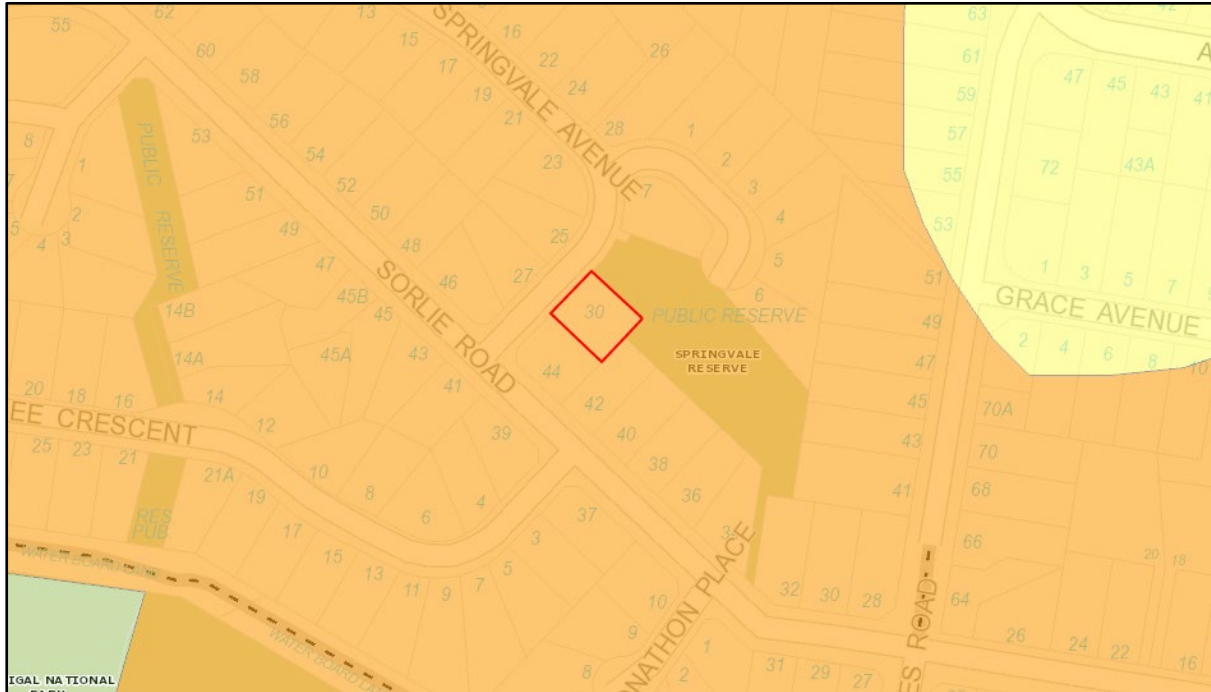
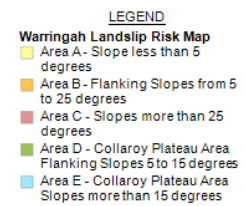


Image 1. Warringah Landslip Risk Map: 30 Springvale Avenue, Frenchs Forest NSW (© NBC Maps)



Site Description

Summary

A summary of site conditions identified at the time of our inspection is provided in Table 1.

Table 1. Summary of site conditions

Parameter	Description
Site Visit	Ben Morgan, Engineering Geologist –10/05/2022
Address	30 Springvale Avenue, Frenchs Forest NSW – Lot 53 in DP 225371
Site Area m ² (approx.)	706.00m ² (by calc.)
Existing development	Single level brick house with lower ground floor garage. Semi above ground concrete swimming pool
Slope Aspect	South

Parameter	Description
Average gradient	~15 Degrees
Vegetation	Garden beds, small lawn areas, small to medium sized shrubs and trees.
Retaining Structures	Masonry walls in reasonable condition for their age.
Neighbouring environment	Residentially developed to the south. Springvale Reserve to the north and east. Springvale Avenue to the north-west.
Geology	The Sydney 1:100,000 Geological Sheet 9130 (NSW Dept. Mineral Resources, 1983) indicates that the site is underlain by the Middle Triassic Hawkesbury Sandstones of the Wianamatta Group (Rh).
Geotechnical observations	No evidence of significant settlement, slope instability, undercutting, jointing or other geotechnical hazards were identified at the time of our assessment.



Image 2. Site location: 30 Springvale Avenue, Frenchs Forest NSW (© SIX Maps NSW Gov)

Recommendations

With reference to the Australian Geomechanics Society's definitions, the existing conditions and proposed development are considered to constitute an '**ACCEPTABLE**' risk to life and a '**LOW**' risk to property provided that the recommendations outlined in **Table 2** are adhered to.

Table 2. Geotechnical Recommendations

Recommendation	Description
Soil Excavation	Minor soil excavations may be required to establish any new pad levels and footings. It is anticipated that these excavations will encounter shallow disturbed fill, minor sandy clay, and weathered sandstone bedrock. An accurate depth to bedrock is currently unknown; however, it is expected to be found at relatively shallow depths (<1.0m) across the site, where not already exposed. Provided the shallow soil profile is battered back to form a slope not steeper than 35 degrees, they should stand unsupported for a short period until permanent support is in place. Unsupported batter slopes in sandy soil will be prone to erosion in inclement weather. If permanent batters are proposed, the unsupported batter must not be steeper than 30 degrees and should be protected from erosion by geotextile fabric pinned to the slope and planted with soil binding vegetation.
Rock Excavation	All excavation recommendations as outlined below should be read in conjunction with Safe Work Australia's <i>Code of Practice: Excavation Work</i>, published in October 2018. While hard rock excavation is not anticipated with the competition of the proposed works, it is essential that any excavation through rock that cannot be readily achieved with a bucket excavator or ripper should be carried out initially using a rock saw to minimise the vibration impact and disturbance on the adjoining properties, adjacent structures and sewer infrastructure. Any rock breaking must be carried out only after the rock has been sawed and in short bursts (2–5 seconds) to prevent the vibration amplifying. The break in the rock from the saw must be between the rock to be broken and the closest adjoining structure. Hand operated pneumatic picks may be used without restriction. All excavated material is to be removed from the site in accordance with current Office of Environment and Heritage (OEH) regulations.
Vibrations	The Australian Standard AS2670.2–1990 'Evaluation of human exposure to whole-body vibrations – continuous and shock induced vibrations in buildings (1–80 Hz)' suggests a daytime limit of 5mm/s component PPV for human comfort is acceptable. If necessary, we would suggest allowable vibration limits be set at 5mm/s PPV. It is expected that rock hammers with an approximate weight of 300–500kg will be adequate to operate within these tolerances. It may be

Recommendation	Description
	necessary to move to smaller rock hammers or to rotary grinders or rock saws if vibrations limits cannot be met. (The operators or manufacturers of the plant used on site should be consulted to assure these vibration tolerances can be adhered to.) The propagation of vibrations can be mitigated by pulsing the use of rock hammers, i.e., short bursts, utilising line sawing along boundaries.
Fill	Any new fill on the Site is to be comprised of local sand, clay, and weathered rock. Existing organic topsoil should be cleared and stockpiled for later use, prior to the placement of any new fill. All fill material is to be placed in layers not more than 250mm thick and compacted to not less than 95% of Standard Optimum Dry Density at plus or minus 2% of Standard Optimum Moisture Content. All fill is to be placed in accordance with AS 3798–2007 ‘Guidelines on earthworks for commercial and residential developments.’ Fill should not be placed on the site outside of the lateral extent of new engineered retaining walls. The retaining walls should be in place prior to the placement of new fill, with suitable permanent and effective drainage of backfill.
Excavation Support	If required, vertical or subvertical excavation through weathered bedrock should stand unsupported permanently. Where permanent sandstone excavations are required, drainage channels should be installed at the base of the excavations to adequately discharge any natural seepage that may occur. We would recommend that the unconsolidated material overlying bedrock be battered back to the appropriate angle, as outlined above. Exposed soil batters should be covered to prevent excessive infiltration or evaporation of moisture and to prevent erosion. Provided the appropriate batter angles mentioned above are achieved and any exposed soil batter is covered to prevent excessive infiltration or evaporation of moisture, no requirement for significant excavation support is anticipated. We would recommend that vertical rock excavation be set back a minimum of 250mm from any existing footings to be retained. The assumptions made in this report are based on our visual assessment and the known geology of the area. For more accurate information of depth to rock, rock strength and quality, additional ground testing may be required.

Recommendation	Description
Retaining Structures	Bulk unit weights of 20kN/m³ and 22kN/m³ should be adopted for the retained soil and weathered rock, respectively. Any retaining structures to be constructed as part of the site works are to be backfilled with suitable free-draining materials wrapped in a non-woven geotextile fabric (i.e., Bidim A34 or similar) to prevent the clogging of the drainage with sediment.
Sediment and Erosion Control	Appropriate design and construction methods shall be required during site works to minimise erosion and provide sediment control. Any stockpiled soil will require erosion control measures, such as siltation fencing and barriers, to be designed by others.
Footings	We would recommend that all new footings are taken to and founded directly upon the underlying weathered bedrock using piers as required. The allowable bearing pressure for footings taken to bedrock is 600kPa. Higher allowable bearing capacities may be achievable subject to further testing and/or inspection and certification of excavated footings. It is essential that the foundation materials of all footing excavations be inspected and approved before steel reinforcement and concrete is placed. This inspection should be scheduled while excavation plant and operators are still on site, and before steel reinforcement has been fixed, or concrete booked.
Stormwater	All stormwater collected from hard surfaces is to be collected and piped to the council stormwater network through adequately designed pipe networks, easements and any storage tanks or on-site detention that may be required by the regulating authorities, and in accordance with all relevant Australian Standards and the detailed stormwater management plan by others.
Inspections	It is essential that the foundation materials of any new footing excavations be inspected and approved by Ascent before steel reinforcement and concrete is placed. Failure to engage Ascent for the required hold point/excavation/foundation material inspections may negate our ability to provide final geotechnical sign off or certification.
Conditions Relating to Design and Construction Monitoring	To comply with Northern Beaches Council conditions and/or Private Certifier requirements it may be necessary at the following stages for Ascent to:

Recommendation	Description
	• review the geotechnical content of all structural designs prior to the issue of Construction Certificate • complete the abovementioned excavation hold point and/or foundation material inspections during construction to ensure compliance to design with respect to stability and geotechnical design parameters • at Occupation Certificate stage (project completion), Ascent must have inspected and certified excavations and foundation materials. A final site inspection may be required at this stage.

Should you have any queries regarding this report, please do not hesitate to contact the author of this report, undersigned.

For and on behalf of **AscentGeo** Consulting Geotechnical Engineers,



Ben Morgan BSc, MAIG RPGeo
Managing Director | Engineering Geologist



References

Australian Geomechanics Society (March 2007), Landslide Risk Management, Australian Geomechanics 42(1).

Australian Standard 1289.6.3.2–1997 Methods of Testing Soils for Engineering Purposes.

Australian Standard 1726–2017 Geotechnical Site Investigations.

Australian Standard AS2670.1–2001 Evaluation of human exposure to whole-body vibration. Part 1: General requirements.

Australian Standard 2870–2011 Residential Slabs and Footings.

Australian Standard 3798–2007 Guidelines for Earthworks for Commercial and Residential Developments.

Herbert C., 1983, Sydney 1:100 000 Geological Sheet 9130, 1st edition. Geological Survey of New South Wales, Sydney.

Northern Beaches Council online mapping, Landslip Risk Map (WLEP 2011).

NSW Department of Finance, Services and Innovation, Spatial Information Viewer, maps.six.nsw.gov.au.

Safe Work Australia (October 2018). Code of Practice: Excavation Work.