

PRELIMINARY GEOTECHNICAL ASSESSMENT:

92 Alfred Road, Narraweena

1.0	LANDSLIP RISK CLASS (<i>Highlight indicates Landslip Risk Class of property</i>)
☐	A - Geotechnical Report not normally required
☒	B - Geotechnical Engineer (Under Council Guidelines) to decide if Geotechnical Report is required
☐	C - Geotechnical Report is required
☐	D - Geotechnical Engineer (Under Council Guidelines) to decide if Geotechnical Report is required
☐	E - Geotechnical Report required

2.0 Proposed Development

- 2.1** Demolish the existing studio and construct a new two-storey extension and garage to the downhill side of the house by excavating to a maximum depth of ~2.3m.
- 2.2** No fills are shown on the plans.
- 2.3** Details of the proposed development are shown on 4 drawings prepared by High Design, drawings numbered 1-3 1034 23, 2-3 1034 23, 3-3 1034 23, and 3a-3 1034 23, dated September, 2023.

3.0 Site Location

- 3.1** The site was inspected on the 20th October, 2023.
- 3.2** This residential property is on the high side of the road and has a SE aspect. The block runs longways to the W so the slope is a cross-fall. It is located on the gentle to moderately graded upper reaches of a hillslope. Medium Strength Hawkesbury Sandstone bedrock outcrops and steps up the property. Where sandstone is not

exposed, it is expected to underlie the surface at relatively shallow depths. The natural surface of the block has been altered with an excavation for the existing studio and with filling used for landscaping across the uphill side of the property. An excavation to a maximum depth of ~2.3m will be required to construct the proposed extension to the downhill side of the house.

3.3 The site shows no indications of historical movement in the natural surface that could have occurred since the property was developed. We are aware of no history of instability on the property.

4.0 Site Description

The natural slope rises across the property at an average angle of ~8°. At the road frontage, a concrete driveway runs up the slope to a parking area on the E side of a stable timber clad studio. The driveway and studio will be demolished as part of the proposed works. The cut for the studio has been taken entirely through Medium Strength Sandstone. No significant geological defects were observed in the cut face. Between the road frontage and the house is a gently sloping lawn. Competent Medium Strength Sandstone outcrops through the uphill side of the lawn. The single-storey house is supported on brick walls and brick piers. The external supporting brick walls display no significant signs of movement and the visible supporting brick piers stand vertical. Some of the supporting walls and piers were observed to be supported directly onto outcropping sandstone bedrock. Between the W side of the house and W common boundary is a gently sloping terraced lawn area. The terrace is supported by a rough but stable mortared stack rock retaining wall reaching ~0.7m high. A fill on the W neighbouring property is supported by a brick retaining wall that approximates the W common boundary and reaches ~1.3m high. The wall displays some horizontal cracking but no signs of deflection so is currently considered stable. The area surrounding the house is mostly lawn-covered with some paved areas. No signs of movement associated with slope instability were observed on the grounds. No cliffs or large rock faces were observed on the

property or in the near vicinity. The adjoining neighbouring properties were observed to be in good order as seen from the road and the subject property.

5.0 Recommendations

The proposed development and site conditions were considered and applied to the Council Flow Chart.

The excavation for the extension to the downhill side of the house will reach a maximum depth of ~2.3m. However, this excavation is expected to be taken almost entirely through Medium Strength Sandstone bedrock with only a thin covering of topsoil.

5.1 Vibrations

Excavations through rock should be carried out to minimise the potential to cause vibration damage to the subject house and surrounding structures. Allowing for 0.5m of back-wall drainage, the proposed excavation will be set back:

- Close to flush with the supporting wall of the subject house;
- ~2.0m from the N neighbouring house; and
- ~1.8m from the S neighbouring house.

Close controls by the contractor over rock excavation are recommended so excessive vibrations are not generated.

Dilapidation reporting carried out on the N and S neighbouring properties is recommended prior to the excavation works commencing to minimise the potential for spurious building damage claims.

Excavation methods are to be used that limit peak particle velocity to 5mm/sec at the subject house and N and S neighbouring houses. Vibration monitoring will be required to verify this is achieved. The vibration monitoring equipment must include a light/alarm so the operator knows if vibration limits have been exceeded. It also must log and record vibrations throughout the excavation works.

In Medium Strength Rock or better, techniques to minimise vibration transmission will be required. These include:

- Rock sawing the excavation perimeter to at least 1.0m deep prior to any rock breaking with hammers, keeping the saw cuts below the rock to be broken throughout the excavation process.
- Limiting rock hammer size.
- Rock hammering in short bursts so vibrations do not amplify.
- Rock breaking with the hammer angled away from the nearby sensitive structures.
- Creating additional saw breaks in the rock where vibration limits are exceeded.
- Use of rock grinders (milling head).

Should excavation induced vibrations exceed vibration limits after the recommendations above have been implemented, excavation works are to cease immediately and our office is to be contacted.

It is worth noting that vibrations that are below thresholds for building damage may be felt by the occupants of the subject and neighbouring houses.

5.2 Excavation Support

The excavation is expected to be taken almost entirely through Medium Strength Sandstone and is shown on the plans to come close to flush with the existing subject house wall.

During the excavation process, the geotechnical consultant is to inspect the excavation as it approaches no less than 0.8m horizontally from the foundations of the house to confirm the stability of the cut to go flush with the footings.

During the excavation process, the geotechnical consultant is to inspect the excavation as it is lowered in 1.5m intervals to ensure the ground materials are as

expected and no wedges or other geological defects are present that could require additional support. Should additional ground support be required, this will likely involve the use of mesh, sprayed concrete, and rock bolts.

Upon completion of the excavation, it is recommended all cut faces be supported with retaining walls to prevent any potential future movement of joint blocks in the cut faces that can occur over time, when unfavourable jointing is obscured behind the excavation faces. Additionally, retaining walls will help control seepage and to prevent minor erosion and sediment movement.

All excavation spoil is to be removed from site following the current Environmental Protection Agency (EPA) waste classification guidelines.

6.0 Inspections

The client and builder are to familiarise themselves with the following required inspections as well as council geotechnical policy. We cannot provide geotechnical certification for the owner or the regulating authorities if the following inspections have not been carried out during the construction process.

- During the excavation process, the geotechnical consultant is to inspect the excavation as it approaches no less than 0.8m horizontally from the foundations of the house to confirm the stability of the cut to go flush with the footings.
- The geotechnical consultant is to inspect the excavation in 1.5m intervals as it is lowered to ensure the ground materials are as expected and that no temporary support is required.

White Geotechnical Group Pty Ltd.



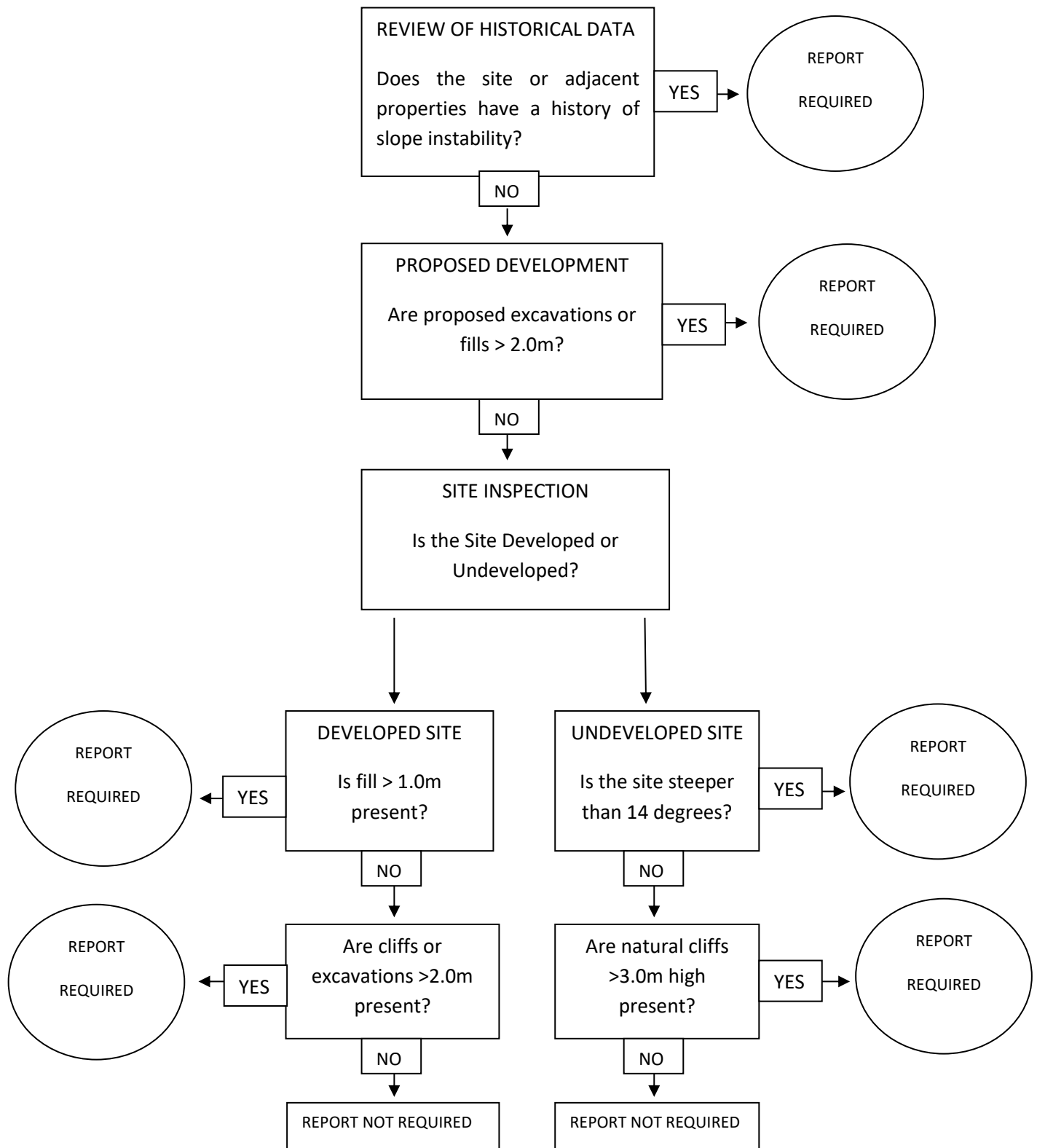
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Preliminary Assessment Flow Chart – Northern Beaches Council (Warringah)



Information about your Preliminary Assessment

This Preliminary Assessment relies on visual observations of the surface features observed during the site inspection. Where reference is made to subsurface features (e.g., the depth to rock) these are interpretations based on the surface features present and previous experience in the area. No ground testing was conducted as part of this assessment and it is possible subsurface conditions will vary from those interpreted in the assessment.

In some cases, we will recommend no further geotechnical assessment is necessary despite the presence of existing fill or a rock face on the property that exceed the heights that would normally trigger a full geotechnical report, according to the Preliminary Assessment Flow Chart. Where this is the case, if it is an existing fill, it is either supported by a retaining wall that we consider stable, or is battered at a stable angle and situated in a suitable position on the slope. If it is a rock face that exceeds the flow chart limit height, the face has been deemed to be competent rock that is considered stable. These judgements are backed by the inspection of over 5000 properties on Geotechnical related matters.

The proposed excavation heights referred to in section 2.0 of this assessment are estimated by review of the plans we have been given for the job. Although we make every reasonable effort to provide accurate information excavation heights should be checked by the owner or person lodging the DA. If the excavation heights referred to in in section 2.0 of this assessment are incorrect, we are to be informed immediately and before this assessment is lodged with the DA.
