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Sean Dew,  
213 Tooronga Road,  
Terrey Hills NSW 2084

### **Preliminary Landslip Risk Assessment for 213 Tooronga Road, Terrey Hills**

This letter report details the results of a preliminary landslip assessment required by Northern Beaches Council to accompany Building Certificate and a S4.55 Modification Application. It is a walk over visual assessment of the stability of the existing property and then a review of the supplied proposed works design. No insitu testing was undertaken.

The following documents have been supplied and relied upon reporting:

- Architectural Drawing – by LEXITECTURE Pty Ltd, Date: 05.12.23, Project No.: 2206, Revision: 5, Drawing No.: C-001, C-009, C-101, C-201, C-300, C-301, C-302 and C-1100.
- Survey Plan – by Steve Davey and Associates Pty Ltd Land and Engineering Surveyors, Survey dated: June/July 2022 and Sheet 1 of 2 and 2 of 2.

The assessment follows the guidelines as set out in Section E10-Landslip Risk of Warringah Councils 2011 LEP Planning Rules.

#### **1. Landslip Risk Class:**

The site is located within Landslip Risk Class “B” as per Landslip Risk Map sheet \_LSR006 and is classified as Flanking Slopes 5° to 25°.

#### **2. Proposed Work:**

It is understood that the proposed works involve minor alterations and additions including converting an existing barn (located within the southern portion of the site) into a recreational area which will require the minor extension of the existing building towards the south (for a proposed new double garage) and an open pergola around the northern sides of the existing barn.

It is understood that the proposed works may require minor excavation into bedrock ( $\leq 1.0\text{m}$  north and  $\leq 1.50\text{m}$  high) to allow for the construction the open pergola around the barn.

It is further understood that the proposed work will not require bulk excavation or filling.

#### **3. Site Location:**

The site (approximately 2.02-hectare) is located on the low northern side of Tooronga Road. Tooronga Road comprises a gently east dipping bitumen pavement. Along the sides of the pavement are unpaved strips (approximately 1.0m wide) gently north dipping and adjacent to a grass lawn which gently dips south, forming a gully which gently dips east. Adjacent to the road pavement (at the centre of the site) is a concrete cross-over driveway and leads to a concrete carparking area and allows vehicular access into the site. The road reserve and site entrance appeared in good condition with no sign of ground movement, cracking or underlying geotechnical issues.

The southern portion of the site contains broad grass lawns and are surrounded by relatively large trees along the site front and side boundaries.

Within the eastern grass lawn is a single storey brick and timber 'barn' surrounded by a gravelled forecourt along the western side, a garden along the northern and eastern sides. The garden along the northern side of the building extends north approximately  $\leq 3.0\text{m}$  to an east-west striking sandstone vertical cut (Photograph-2) which is approximately 1.5m high and reduces its level down to the same level as the garden towards the east. The ground along the southern side of the barn (Photograph-1) exposes excavated sandstone bedrock. The barn area has been excavated into the slope exposing sandstone bedrock to the north which contains sandstone bedrock. The sandstone bedrock is classified as medium strength (based on tactile assessment), fine to medium grained and contains gently east dipping cross beddings and appeared stable (Photograph-2). The barn and surrounding ground appeared in good condition with no signs of excessive ground movement or underlying geotechnical issues.



*Photograph-1: The barn. View looking east.*



*Photograph-2: Excavated bedrock. View looking north.*

Approximately 5.0m south from the barn, the bedrock steeply ( $-30^\circ$ ) dips south and contains relatively large boulders on the top. An approximately 2.0m wide x 1.50m high x 2.0m long boulder was observed to be marginally stable (Photograph-3) and is located on the higher northern side of the eastern front lawn with medium sized trees (approximately 5.0m tall trees, 0.50m diameter trunk) between the front eastern grass lawn and boulder.



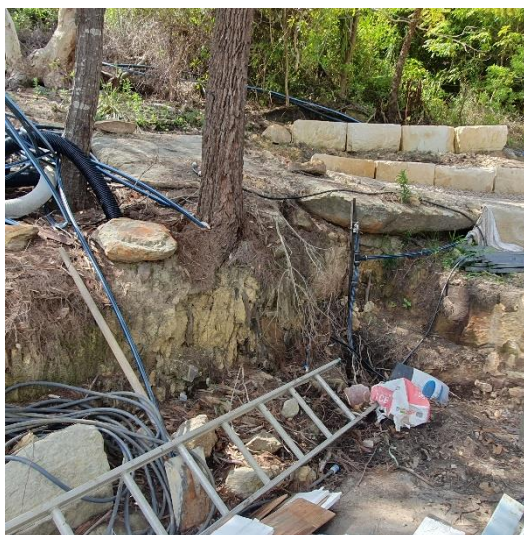
*Photograph-3: Marginally stable sandstone boulder.*

Between the two front grass lawns is a concrete driveway that continues north to a two storey timber and rendered brick residential dwelling and contains an inground swimming pool directly to the north. The dwelling extends to the common western boundary and at least >30m from the other site boundaries. The site-dwelling appeared in good condition with no signs of cracking, settlement or underlying geotechnical issues.

The northern portion of the block also contains open grass lawns which are gently south dipping ( $<5^\circ$ ) and within the centre rear of the site is a single storey timer building which is currently under renovation. The building is surrounded by a concrete slab and contains a gravel driveway to the north (approximately 1.50m higher than the concrete driveway). The concrete driveway and building have been excavated (approximately 1.50m deep) into the slope and exposes residual natural material/extremely weathered bedrock to the north (supporting the gravel higher driveway) (Photograph-4). To the north-west of the concrete driveway, the excavation exposes silty sandy fill and tree roots of an approximately 5m high tree located directly adjacent to the excavation (Photograph-4). The driveways and building appeared in good condition, however the tree appeared marginally stable.



*Photograph-4: Residual material/EW bedrock. View looking east.*



*Photograph-5: Tree located directly adjacent to the excavation. View looking north.*

The northern end of the site contains undisturbed bush which contains relatively tall trees ( $\leq 10$ m tall) and boulders. The ground slope is gently south dipping and signs of unstable boulders or ground underlying geotechnical issues was not observed.

#### **4. Neighbouring Property Conditions:**

The neighbouring property to the east (No. 191 Tooronga Road) contains a block of similar size to the site. The property contains a single storey rendered masonry dwelling with an inground swimming pool to the north, within the centre of the block. The property is surrounded by large open grass lawns with large trees along the perimeter of the block. A stable with an attached garage is located to the south of the property-dwelling (approximately 10m from the common boundary) and a shed is to the north of the property dwelling (approximately 10m from the common boundary). The northern rear of the block contains a dam (approximately 10m from the common boundary) and a tennis court within the eastern rear of the property. Limited observation was possible to the property structures from the site, however the ground along the common boundary appeared in good condition, with no sign of ground movement or underlying geotechnical issues.

The neighbouring property to the west (No. 195 Tooronga Road) contains a block of similar size to the site. The property contains a dwelling within the centre of the property surrounded by a driveway and open grass lawns with large trees along the perimeter of the block. Another building is located within the south-eastern portion of the block. Limited observation was possible to the property structures from the site, however the ground along the common boundary appeared in good condition, with no sign of ground movement or underlying geotechnical issues.

Limited observation was possible to the neighbouring property to the north due to the undisturbed bush. However, from available satellite view (SIX MAPs) it was observed that vehicular access is possible via gravel driveways from the north-eastern and north-western corners of the block. Potential building structures is observed within the centre eastern portion of the property and within the south-western rear of the block. The ground adjacent to the common boundary appeared in good condition with no signs of excessive ground movement, unstable boulder or underlying geotechnical issues.

#### 5. Assessment:

Based on the above items and on Councils flow chart check list (Page: 2 of 2 in Section E10), i.e., does the present site or proposed development contain:

- |                                |     |
|--------------------------------|-----|
| • History of Landslip          | No  |
| • Proposed Excavation/Fill >2m | No  |
| • Site developed               | Yes |
| • Existing Fill >1m            | No  |
| • Site Steeper than 1V:4H      | No  |
| • Existing Excavation >2m      | No  |
| • Natural Cliffs >3m           | No  |

It is considered that a detailed Landslip Risk Assessment for this S4.55 Application is not required. However, it is recommended that the marginally stable boulder identified to the south of the barn (Photograph-3) be supported via the construction of a piers (down to bedrock) below the southern end of the boulder to prevent it from rolling. Additionally, it is recommended that the tree located directly adjacent to the driveway excavation (Photograph-5) be supported or removed to prevent this from falling to the nearby structure.

It is also recommended that all new footings be extended down to competent bedrock. Based on our site inspection, sandstone bedrock outcrop was observed directly to the south of the existing barn.

6. **Date of Assessment:** 22<sup>nd</sup> January 2024.

7. **Assessment by:**



Marvin Lujan  
Geotechnical Engineer (Honours)