Jack Hodgson Consultants Pty Limited
CONSULTING CIVIL, GEOTECHNICAL AND STRUCTURAL ENGINEERS
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STABILITY REPORT FOR HOUSE & LAND AT 60 BINBURRA AVENUE AVALON

This Report is based on a surface inspection of the subject property. It did not include any excavation/sub-surface investigation of the site or opening up of any existing structures on the site. The inspection was focused at observing any cracks or other signs of movement in the land or any structures on it which could indicate land instability. It is not intended to be a complete assessment of the structure with regard to structural adequacy.

Experience over a period of some forty years in the Pittwater and Warringah areas and inspection of some 15,000 slopes in that period form the background to this Report. This assessment of the risk of instability regarding landslides is according to the current guidelines issued by the Australian Geomechanics Society.

1. SITE DESCRIPTION.

1.1 The site was recently inspected on the 20th February 2015.

1.2 This roughly rectangular shaped residential block is situated on the low side of the road and has a northerly aspect. It is located approximately half way up the gentle to moderate slope that rises up from Barrenjoey road to the coastal scarp of Bangalley Head to the east. From the road frontage the block drops to the north at angles of some 15 degrees before levelling-off beyond the house to the north.

1.3 From the road frontage a concrete drive cuts the slope and provides off street parking for the block (Photos 1 & 2). Some cracking and movement has occurred in the concrete driveway slab and cracks are evident running diagonally across the upper portion of the slab (Photos 3 & 4). These cracks are not interpreted to be recent features and are the result of causes undetermined, but the driveway slab is considered stable in its current condition. The road reserve is lawn covered and gently sloping to the north. The cut for the driveway and the slope above are supported by treated timber soldier pile walls that terrace the slope (Photos 2 & 5). While considered stable in their current condition some settlement and deflection was observed in the walls. A small paved area is situated toward the top of the terraces (Photo 6). This paving and its supporting ground have experienced settlement as a result of inadequate compaction of the underlying fill or the washing out of fine grained material from behind the timber wall (Photo 7). In ideal conditions treated timber walls of this kind can be expected to last 15-20 years. We would recommend the walls be monitored for signs of further movement. Should this be identified we would recommend the walls

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be replaces with similar, engineered treated timber soldier pile retaining walls. Pedestrian access to the house is via a timber pathway that extends along parallel to the driveway before spanning to the first floor of residence (Photos 8 & 9). The cut for the house is supported by stable treated timber soldier pile walls (Photo 9). Access around the house is possible along concrete corridors that extend along the eastern and western boundaries (Photos 10 & 11). A large timber deck extends from the northern side of the ground floor beyond which lies a small paved patio (Photo 12). A large, near level, lawn covered yard extends to the northern boundary of the block (Photo 13). Portions of the yard, particularly the northern end and south-western corner, are populated with small to medium shrubs and trees. No evidence of significant slope instability was identified at the time of our inspection.

1.4 The two-level masonry and clad house is in excellent condition. The external walls of the house display no significant cracking or evidence of settlement or movement.

2. GEOLOGY OF THE SITE.

2.1 The site is underlain by the variable interbedded sandstones, siltstones and shales of the Narrabeen Group. The Narrabeen Group Rocks are Late Permian to Middle Triassic in age with the early rocks not outcropping in the area under discussion. The materials from which the rocks were formed consist of gravels, coarse to fine sands, silts and clays. They were deposited in a riverine type environment with larger floods causing fans of finer materials. The direction of deposition changed during the period of formation. The lower beds are very variable with the variations decreasing as the junction with the Hawkesbury Sandstones is approached. This is marked by the highest of persistent shale beds over thicker sandstone beds which are similar in composition to the Hawkesbury Sandstones.

2.2 The slope materials are colluvial in origin at the surface and become residual with depth. They consist of topsoil over sandy clays and clays that merge into the weathered rock at depths varying from 0.5 to 2.5 metres or deeper where filling has been carried out.

3. SURROUNDING AREA.

The site and properties adjacent to the subject site are classified as potential Landslip Risk on the Council Geotechnical Hazard Map due to the moderate flanking slopes. Our observations from the subject site indicate the surrounding properties do not present an immediate risk of instability to the subject property.

4. DRAINAGE OF THE SITE.

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Overland stormwater flow entering the site from the adjoining properties was not evident. Normal overland runoff could enter the site from above during heavy or extended rainfall.

5. REMEDIAL WORKS.

We would recommend that the treated timber soldier pile retaining walls situated at the southern end of the property be monitored periodically for evidence of further movement. Should this be identified, we would recommend the walls be removed and replaced with engineered retaining walls.

No remedial works are required at this time.

6. STABILITY OF THE SITE.

It is our opinion based on observation at inspection, the land and dwelling likely achieves an **'Acceptable'** Level of Risk by reference to Landslip Risk Management data published by the Australian Geomechanics Society March 2007, and as adapted in 2009 by the Geotechnical Risk Management Policy by Pittwater Council. Although considered stable in its current condition we would recommend to maintain the Acceptable level of risk, the remedial works outlined above will need to be undertaken to the relevant engineering and construction standards.

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Photo 1

Photo 2

Photo 3

Photo 4

Photo 5

Photo 6

Photo 7

Photo 8

Photo 9

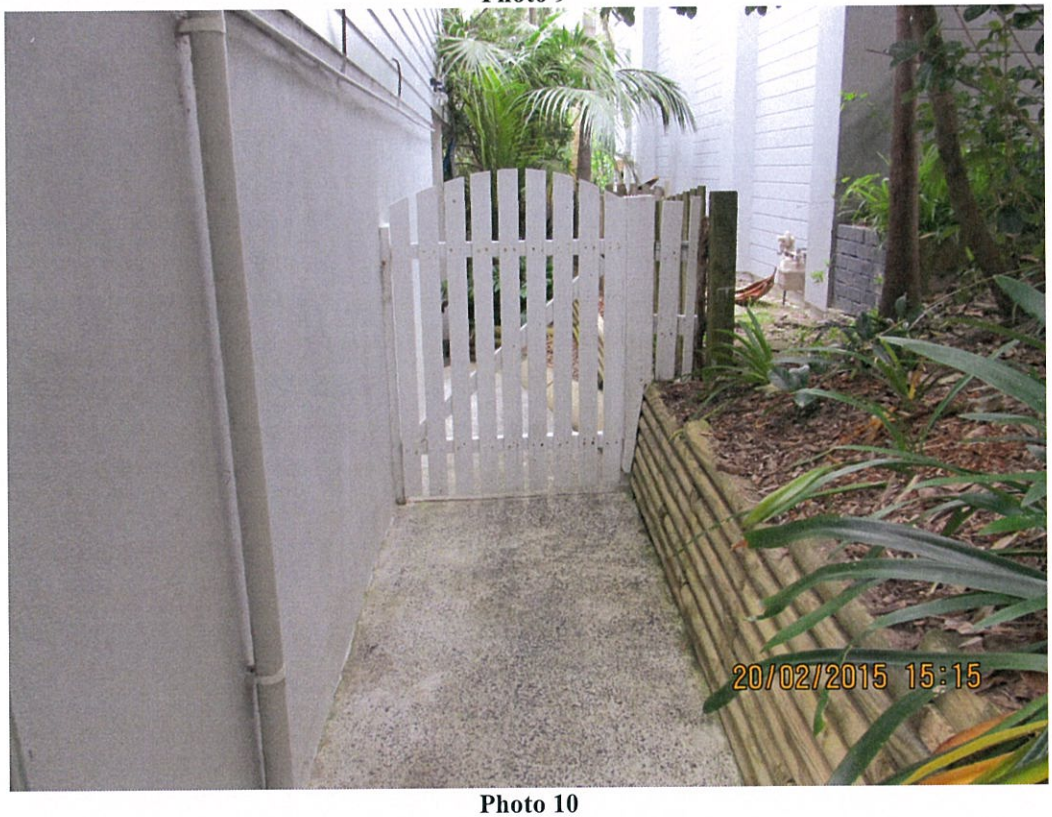

Photo 10

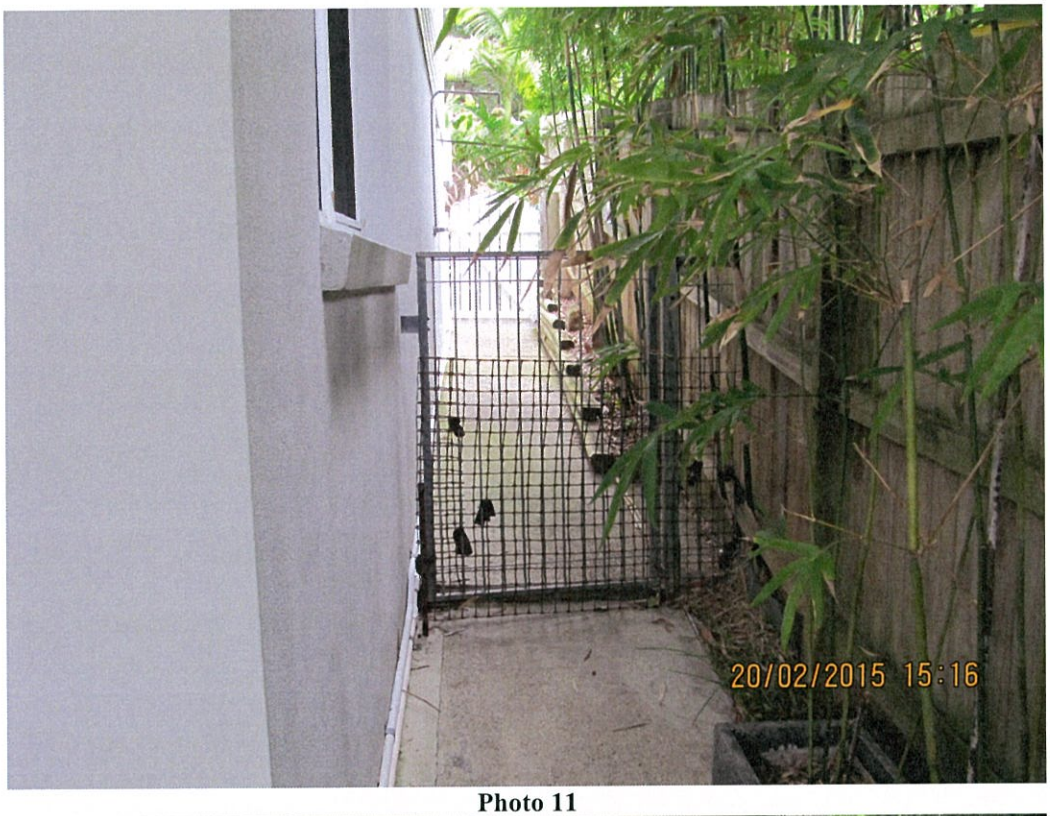

Photo 11

Photo 12

Photo 13