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LWI/ps

## SITE INVESTIGATION REPORT

Client: Resitech Australia
Address: 71 & 73 West Parade, West Ryde
Proposed Development: Residential dwelling

### *Site Description*

Approx. area ($m^2$): 930
Approx. fall: 0.4 metres to the west, reasonable site drainage
Vegetation: Grass, trees and shrubs
Improvements: Existing dwellings

### *Geology, Fieldwork Details and Subsurface Conditions*

Reference to the Sydney geological series sheet at a scale of 1:100,000 indicate the site is underlain by Triassic Age Ashfield Shale, which is part of the Wianamatta Group. Rocks within this formation comprise shale and laminite.

Four boreholes were drilled and four Dynamic cone penetrometer (DCP) tests were carried out on February 18, 2005 at the locations shown on Drawing No. 05/1753. Restricted site access dictated some of the borehole locations. The subsurface conditions encountered are shown on the attached borehole logs.

When making an assessment of the subsurface conditions across a site from a limited number of boreholes, there is the possibility that variations may occur between test locations. The data derived from the site investigation programme are extrapolated across the site to form a geological model and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. The actual condition at the site may differ from those inferred, since no subsurface exploration programme, no matter how comprehensive, can reveal all subsurface details and anomalies.

The subsurface conditions consist generally of topsoil overlying silty clays and weathered shale. The topsoil is 0.3 to 0.4 metres thick. Natural silty clays underlie the topsoil to depths of 1.0 to 1.6 metres. The strength of these materials varies between firm to stiff and very stiff. Weathered shale is present to depths of 2.0 to 2.7 metres. Auger refusal occurred at these depths. Auger refusal occurred in BH4 in fill at a depth of 0.6 metres in fill. This fill is thought to be backfill to a sewer pipe or the like. Because of restricted site access the borehole could not be re drilled elsewhere.

No groundwater was observed in the boreholes during the fieldwork.

***Site Classification***

The classification has been prepared in accordance with the guidelines set out in the "Residential Slabs and Footings" Code, AS2870 - 1996.

Based on the subsurface conditions observed, the sites are classified *moderately reactive (M),* provided the recommendations given below are adopted and the foundations bear in natural soils.

***Foundation Design and Construction***

Pad and/or strip footings founded in natural materials underlying the topsoil may be proportioned using an allowable bearing pressure of 100 kPa. This value may be increased to 150 kPa below a depth of 0.6 metres. The minimum depth of founding must comply with the requirements of AS2870.

If a higher load carrying capacity is required, piers should be used to transfer the loads to the underlying stronger materials. Piers founded in the weathered shale may be proportioned using an allowable end bearing pressure of 600 kPa. An allowable adhesion of 50 kPa may be adopted for the portion of the shaft within the weathered shale. When founding in weathered rock adhesion in the overlying soils must be ignored.

In order to ensure the bearing values given can be achieved, care should be taken to ensure the base of the excavations are free of all loose material prior to concreting. To this end, it is recommended that all excavations be concreted as soon as possible, preferably immediately after excavating, cleaning, inspecting and approval. Pier excavations should not be left open overnight. The possibility of groundwater inflow needs to be considered when drilling the piers and pouring concrete.

The sites are considered suitable for slab on grade construction provided due regard is given to the groundsurface slope and any fill that may be present.

During foundation construction, should the subsurface conditions vary to those inferred in this report, a suitably experienced geotechnical engineer should review the design and recommendations given above to determine if any alterations are required.

***Additional Comments***

Attention is drawn to Appendix B of AS2870 - 1996 regarding the need to properly maintain the foundations. Surface drainage should be provided to avoid the possibility of water ponding near the building and the finished ground surface should fall at least 50 mm over a distance of one metre away from the building.

The above classification has been made assuming that the maximum depth of filling placed in any building platform will be 400 mm and that all footings will bear in either natural ground or in control filling. Prior to the placement of any filling the existing surface should be stripped of all vegetation and topsoil.

The above classification is based on the soil profiles observed at the time of testing. If site works are undertaken, the classification of the actual building platform may vary across the site depending upon the extent of the cut and/or fill and the degree of compaction of any fill. The designer of the footing system must take the above factors into account.

This report has been prepared assuming the site development will be limited to one or two storey residential buildings. The information and interpretation may not be relevant if the design proposal changes (eg. to a five-storey building involving major cuts during the site preparation). If changes occur, we would be pleased to review the report and advise on the adequacy of the investigation.

Laurie Ihnativ, BE, MEngSc, MBA
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