



# SITE INVESTIGATION REPORT

15 November 2015  
JOB NUMBER: 342118

**Project No. 8168**

**BAA Multi-Purpose Project**

**Lot 32-36, 289 -297 Garth Rd, Johnswood.**



**REPORT prepared for:**  
**Simonds Homes DISPLAY Melbourne**

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## 1. INTRODUCTION

We are pleased to provide a report on our investigations undertaken at the above site to determine the ground conditions so that recommendations could be made on suitable foundation types and design parameters for the proposed Commercial development.

This report outlines footing recommendations to satisfy AS3600 in accordance with the National Construction Code Series Volumes One and Two - Building Code of Australia.

## 2. FIELDWORK

6 Boreholes were drilled at Lot . The Engineering Logs are attached as part of this report. The location of the boreholes placed is described on the Borehole Location Plan provided.

## 3. WIND SPEED ANALYSIS

During our investigation, an assessment of this site and the surrounding terrain was carried out to determine the Wind Classification Design Speed. Based on calculations using the Pro-forma Design Sheet, DC1.2 as a guide, the Wind Classification Design Speed for this site has been determined as **33m/s (N2)**.

## 4. BUSHFIRE ATTACK LEVEL

This property is **not** in a designated Bushfire Prone area.

## 5. SITE GEOLOGY

The site is located in an area of sedimentary clay.

## 6. SOIL CONDITIONS

The soil profile and condition in each borehole is described on the Engineering Logs attached.

## 7. SITE CLASSIFICATION

The site is classified as **CLASS H** in accordance with NCC General Definitions due to existing filling on this site. A characteristic surface movement ( $y_s$ ) in the range of 60mm to 75mm has been estimated for this site.

The underlying natural soil has been classified as **CLASS H2**.

*Note: The above classification is based on the site conditions not changing significantly prior to construction. In accordance with AS3600 the classification may need to be amended if the site is cut by more than 3000mm or if additional controlled or uncontrolled fill is placed.*

## 8. FOOTING RECOMMENDATIONS

### 5.1 Timber Floor System

There are no recommendations for a strip and/or pad footing system at this site.

### 5.2 Concrete Slab Floor System – Strip Footing, pad footing and slab on ground.

The use of a rigid Slab founded directly onto the compacted fill is not recommended.

This recommendation assumes that the depth of any new levelling fill will be less than 500mm and be compacted in accordance with the requirements of AS3600. The footings and slab should have a minimum of Class H2 general dimensions. In addition to the minimum requirements for a Class H2 waffle raft, additional edge beam reinforcement will be required to the top of all beams and depending on the final loading of the proposed structure widening of the slab beams may also be required. The slab and footings should be designed to withstand long term differential settlement of the filling equivalent to a hypothetical loss of support of **1.5m** in diameter occurring anywhere under the footing.

Once the site has been scraped and all vegetation, organic topsoil, roots and loose surface fill have been removed, an allowable bearing capacity of **80kPa** will exist at the surface.

Where pipes connect to the slab, flexible joints are to be incorporated to accommodate a total range of differential movement of 75mm in any direction. Allowance should also be made for differential movement by sleeving or taping pipes with foam to allow 40mm radial clearance.

*Correct drainage and site maintenance is particularly important at this site. Refer to the "General Construction and Site Maintenance Requirements" section of this report and to AS3600-2009. Surface drainage must be considered in the design of this footing system in accordance with AS3600 – 2009.. Surface drainage must be controlled from the start of construction and must be completed by the finish of construction. Subsurface drains to remove groundwater shall not be used within 1.5 metres of the building unless designed in accordance with engineering principles. These details are to be used as a guide only and this footing system must be designed by an engineer familiar with this form of construction.*

## 6. GENERAL INFORMATION

As the depth and thickness of the soil layers may vary across the site, the depths given above are guides only. Provided footings are at least the minimum size and are constructed on the recommended founding material described above, the footings will have fulfilled the requirements of this report. There is no technical reason to found all footing trenches at the same level or to make them constant in size. Any earthworks carried out over the site will change the founding depths given above. If the site is levelled by cut, then the founding depths may be reduced to the minimum values specified. If levelling fill is placed on the site, then the founding depths will increase accordingly.

## 7. GENERAL CONSTRUCTION AND SITE MAINTENANCE REQUIREMENTS

### 7.1 General

The satisfactory performance of the footings detailed in this report relies on the notes detailed below and the founding soil conditions meeting the requirements of the detail design.

### 7.2 Drainage

The ground surface and paving around the building should be graded or drained to prevent the ponding of water adjacent to footings. This may necessitate providing at least 100mm fall over the first two metres away from the building. Any paving should also be suitably sloped.

### 7.3 Vegetation

Trees and large shrubs should not be planted or allowed to exist closer to the building than 1.0 times

their expected mature height. Closer planting may be possible by the correct use of tree root barriers or an equivalent measure.

#### *7.4 Plumbing and Drainage*

Roof gutters, downpipes, stormwater and sewerage drainage should be regularly maintained to prevent leaks or overflows. Any leakages should be repaired or replaced as soon as possible. Service trenches located alongside any building should be offset at a lateral distance at least equal to their depth.

#### *7.5 Existing Services and Footings*

The presence of services on this and adjacent sites should be determined and their effect on the proposed footings considered. The depth of any adjacent building footings should be considered in the proposed footing design and construction.

#### *7.6 Masonry Articulation*

All brickwork should be well articulated by the provision of full-height joints at a maximum continuous spacing of 5m. Brickwork control joints should be provided at or near changes in foundation soil/rock type.

#### *7.7 Shrinkage Cracking For Concrete Slabs*

Surface cracking for concrete slabs is to be expected as the concrete cures. This problem is of no structural significance and will not affect the performance of the slab. However, this shrinkage cracking may transmit through brittle floor tiles causing them to crack. Therefore the placement of floor tiles should be delayed as long as possible and a flexible adhesive and a weak grout should be used.

### *7.8 Inspections*

All excavations should be carefully inspected to ensure that a suitable founding material has been reached and to check for the presence and variations in depth of filling. Please contact our office if any doubt exists.

### *7.9 Filling*

Care has been taken to identify any filling on this site. A check should however be made with all relevant authorities, e.g. local council, to locate possible former dams, creeks, etc. If any doubt exists at the time of construction regarding identification of filling, then this office should be contacted for further advice

## 8. CONSTRUCTION DIFFICULTIES AND SPECIAL SITE FEATURES

The presence of groundwater within the surface soils may lead to construction difficulties especially during wet Winter and Spring months. The sides of excavations through the surface filling and natural sands may collapse. It's recommended that a feature survey be carried out by a licensed surveyor prior to footing design in order to: locate all trees, easement pipes and adjoining structures etc. The relevant engineer should then take into account all those features at the time of design.

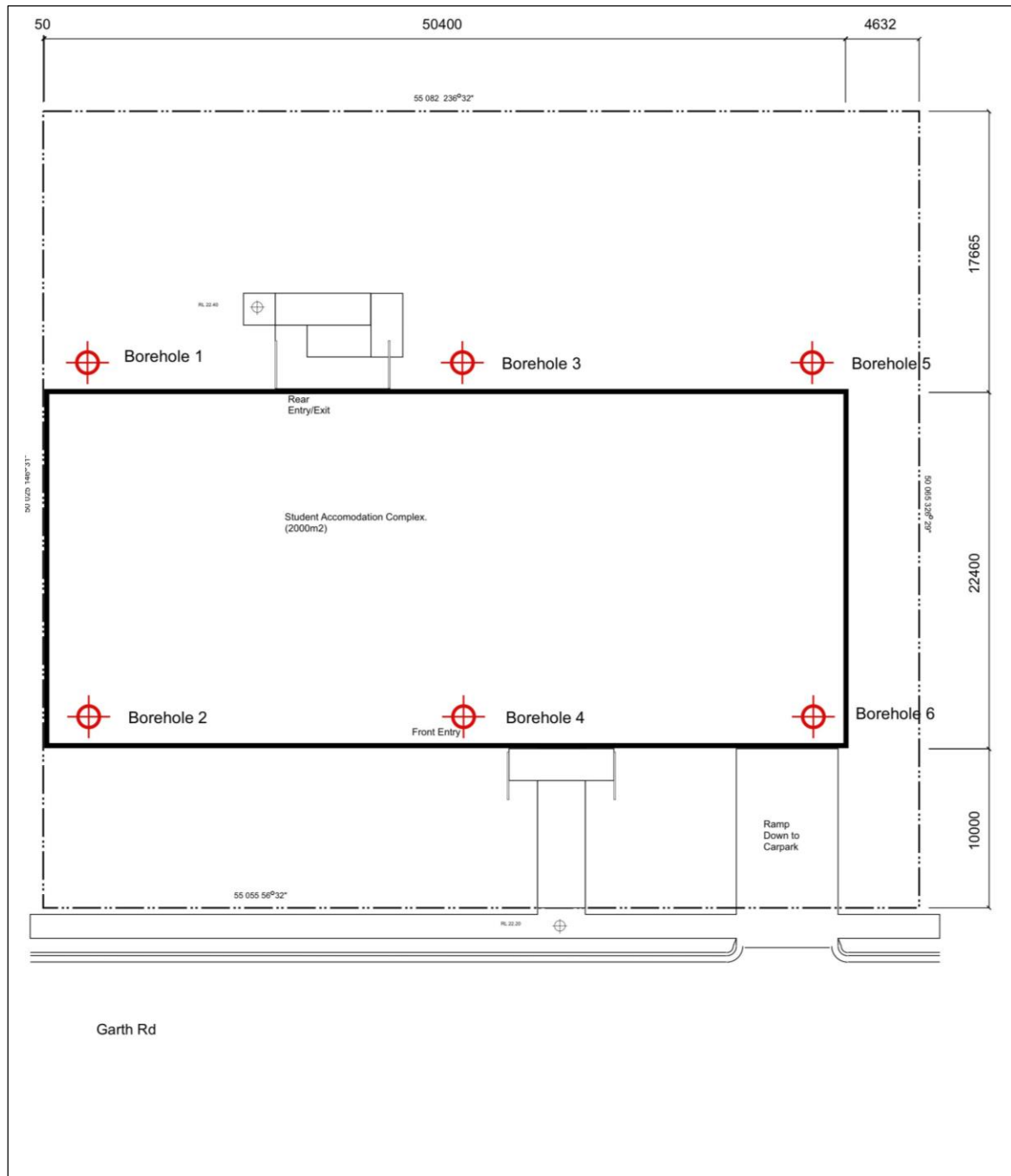
Existing trees and large shrubs may be located too close to proposed footings (refer to the above). If so, then vegetation should either be removed or root barriers designed and constructed. Alternatively, footings may be deepened to 2000mm or founded directly onto bedrock if encountered at shallower depths than 2000mm.



## 9. Borehole location plan

### PROPOSED construction

Lot 32-36, 289 -297 Garth Rd, Johnstown.



## 10. Engineering Log

Bore Hole 1					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600					
1800	Clay Grey/Yellow		Clay	Moist	100kPa
2000					
2200					
2400					
2600					
2800					
3000	Clay Yellow/Brown		Firm Clay	Dry	200kPa
3200					
3400					

Bore Hole 2					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600					
1800	Clay Grey/Yellow		Clay	Moist	100kPa
2000					
2200					
2400					
2600					
2800					
3000	Clay Yellow/Brown		Firm Clay	Dry	200kPa
3200					
3400					

Bore Hole 3					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600					
1800	Clay Grey/Yellow		Clay	Moist	100kPa
2000					
2200					
2400					
2600					
2800	Clay Yellow/Brown		Firm Clay	Dry	200kPa
3000					
3200					
3400					

Bore Hole 4					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600					
1800	Clay Grey/Yellow		Clay	Moist	100kPa
2000					
2200					
2400					
2600					
2800	Clay Yellow/Brown		Firm Clay	Dry	200kPa
3000					
3200					
3400					

Bore Hole 5					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600	Clay Grey/Yellow		Clay	Moist	100kPa
1800					
2000					
2200					
2400	Clay Yellow/Brown		Firm Clay	Dry	200kPa
2600					
2800					
3000					
3200					
3400					

Bore Hole 6					
Depth (mm)	Description		Soil Type	Moisture content	Bearing Capacity
200	Sand and loose fill grey/Brown		Fill	Wet	<50kPa
400					
600					
800	Silty Clay Light Grey		Silty Clay	Moist	50kPa
1000					
1200					
1400					
1600	Clay Grey/Yellow		Clay	Moist	100kPa
1800					
2000					
2200					
2400	Clay Yellow/Brown		Firm Clay	Dry	200kPa
2600					
2800					
3000					
3200					
3400					