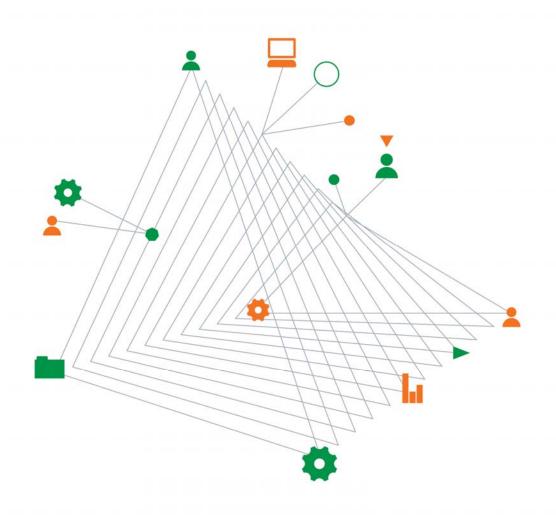


# **Bouygues Construction Australia Pty Ltd**

## **Dooleys Lidcombe Catholic Club Redevelopment**

Geotechnical Investigation Report

11 July 2016



Experience comes to life when it is powered by expertise

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## **Dooleys Lidcombe Catholic Club Redevelopment**

Prepared for Bouygues Construction Australia Pty Ltd BYCA Project Office Rear of 34 John St Lidcombe NSW 2141

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11 July 2016

#### **Document authorisation**

Our ref: GEOTLCOV25554AA-AC

For and on behalf of Coffey

**Robert Turner** 

Principal Geotechnical Engineer

# **Quality information**

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## **Table of contents**

1.	Introd	Juction1				
2.	Site a	and Prop	posed Development	1		
3.	Meth	od of inv	vestigation	2		
	3.1.	Subsu	rface investigation	2		
	3.2.	Labora	atory Testing	3		
	3.3.	Ground	dwater Monitoring	3		
4.	Subs	urface c	conditions	3		
	4.1.	Local g	geology	3		
	4.2.	Summ	ary of encountered subsurface conditions	4		
		4.2.1.	Soil conditions	4		
		4.2.2.	Rock Conditions	4		
	4.3.	Ground	dwater conditions	4		
5.	Site	geotechr	nical model	5		
6.	Reco	mmenda	ations	6		
	6.1.	Founda	ations Recommendations	6		
	6.2.	Soil an	nd Rock Excavation Conditions	7		
	6.3.	Excava	ation Support	7		
		6.3.1.	General Excavation Support Requirements	7		
		6.3.2.	Unsupported cut and fill batters	8		
		6.3.3.	Retaining Walls for Soil and Class V Rock	8		
		6.3.4.	Rock Anchors	9		
		6.3.5.	Excavation Induced ground movements	9		
		6.3.6.	Protection of adjacent structures	10		
	6.4.	Earthw	vorks	11		
		6.4.1.	Use of excavated material as engineering fill	11		
		6.4.2.	Compaction requirements and procedures	11		
		6.4.3.	CBR for preliminary design	11		
	6.5.	Ground	dwater	12		
7.	Limita	ations of	f this report	12		
lmp	ortan	t inform	nation about your Coffey Report	13		

#### **Tables**

- Table 1: Summary of geotechnical laboratory testing
- Table 2: Groundwater Monitoring Data
- Table 3: Geotechnical Units
- Table 4: Geotechnical Foundation Design Parameters for Sandstone

Table 5: Guidelines for Excavation

Table 6: Preliminary support options

Table 7: Recommended unsupported maximum batters

Table 8: Parameters for retaining wall design

Table 9: Ground Vibration Limits for Various Types of Structures

### **Figures**

Figure 1: Borehole and Section Location Plan

Figure 2: Section A-A'

Figure 3: Section B-B'

### **Appendices**

Appendix A - Borehole logs, core photographs and explanation sheets

Appendix B - Results of Laboratory Testing

### 1. Introduction

This report presents the results of a geotechnical investigation for the proposed redevelopment at Dooleys Lidcombe Catholic Club on Church Street, Lidcombe. The geotechnical investigation was commissioned by George Pontifix of Bouygues Construction Australia Pty Ltd.

The purpose of the investigation was to gather information to support structural design and construction planning for the development, as per our proposal GEOTLCOV25554AA-AA, dated 26 October 2015.

This report presents the findings of the geotechnical investigation and provides;

- General geological and description of the site and material encountered.
- Advice on foundation systems.
- Bearing capacity recommendation for design and recommended founding levels.
- Assessment of settlement under the structure and road access ways.
- Assessment of the reactiveness of clays.
- Advice on soil characteristics for design of excavation shoring systems and retaining walls.
- Advice on ease of excavation and rippability of rock.
- Advice on grades for batters (temporary and permanent) and requirements for shoring and excavation.
- Advice on acceptability of excavated material to be used as fill.
- Advice on compaction requirements and compaction procedures for fill I and any other ground improvement methods that may be cost effective.
- · Advice on ground anchor design.

## 2. Site and Proposed Development

The area of site is approximately 9,500 m<sup>2</sup> and is bounded in the south by Church Street, in the west by Olympic Drive and in the east by the existing Dooleys Lidcombe Catholic Club. The site extends to the north and encompasses the row of houses on the north side of Board Street. These houses and the section of Board Street they are on will be demolished as part of the development. The remainder of the development will replace the 230 bay car park on the corner of Olympic Drive and Church Street. Figure 1 outlines the area of the proposed development.

The proposed redevelopment comprises a 2 level club facility, a 12 level, 260 room hotel and a 2 level basement with floor level at RL10.5m. Current ground levels vary from about RL12 m to RL 15m. Insert 1 shows an indicative representation of the proposed development. The most significant structures near site are a four level residential dwelling on the corner of Ann Street and Olympic Drive (directly to the north of the structure) and the existing structures of the Dooleys Lidcombe Catholic Club.



Insert 1: Club and hotel indicative representation

The existing Dooleys Lidcombe Catholic Club is adjacent to the eastern edge of site. The existing club consists of an above ground multilevel car park, a restaurant and gaming area, a church building and a two level underground car park. We were supplied with two geotechnical investigation reports for these areas (Douglas Partners Project 37623 and 72664).

# 3. Method of investigation

## 3.1. Subsurface investigation

At the time of the field investigation, the proposed development included five basement levels. The investigation carried out was planned to address that scope of development. The field investigation consisted of eight cored boreholes completed to depths between 16.4 m and 20.0 m below ground level (BGL). Borehole locations were recorded in the field by hand-held GPS and are marked on Figure 1. The boreholes were drilled with drill rigs supplied by Terratest Drilling Pty Ltd. Drilling was undertaken from 19 to 26 November 2015.

Solid flight augers were used to drill through the asphalt (where present), surficial soils and extremely weathered bedrock. Standard Penetration Tests (SPTs) were undertaken during auger drilling at 1.5m intervals to assess in-situ strength and obtain soil samples. The rock was cored using NMLC or

HQ diamond core drilling techniques (noted on borehole logs). Additional samples were taken for chemical testing as part of testing reported in GEOTLCOV25554AA-AB.

A Coffey geotechnical engineer was present during fieldwork to identify drilling locations, record test results, log the encountered ground conditions and box the rock core. The borehole logs and rock core photographs are attached as Appendix A, together with Coffey soil and rock description and explanation sheets.

Following completion of fieldwork, selected soil samples, and the rock cores were sent to our core storage area and point load tested. The Point Load Index Strength test results are included on the attached borehole logs.

Dynamic Cone Penetrometer (DCP) Testing was undertaken on 14 December 2015. Three DCP tests were completed adjacent to BH6, BH7 and BH8 to depths between 300 mm and 1700 mm.

## 3.2. Laboratory Testing

Table 1 presents a summary of completed geotechnical laboratory testing.

Table 1: Summary of geotechnical laboratory testing

Sample Location	Material	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)
BH05, 1.0-1.2 m	Silty CLAY	8.0	29	16
BH03, 2.5-2.95 m	Siltstone	19.3	59	37
BH06, 1.5–1.95 m	CLAY	11.1	30	13
BH08, 1.0-1.45 m	CLAY	21.9	59	36

Laboratory test result certificates are contained in Appendix B.

## 3.3. Groundwater Monitoring

Standpipes were installed in BH01, BH03 and BH05 to the following depths:

- BH01 14.9 m BGL with 11.9 m screen
- BH03 8 m BGL with 5 m screen
- BH05 8 m BGL with 5.5 m screen

Details of the well installation are included in Appendix A with the borehole logs.

## 4. Subsurface conditions

## 4.1. Local geology

The Sydney 1:100,000 Geological Series Sheet indicates the Ashfield Shale is typically black to dark grey shale and laminite. The Ashfield Shale is the lowermost unit of the Wianamatta Group, and is underlain by the Mittagong Formation and the Hawkesbury Sandstone. The bedrock is overlain by natural residual soils as well as any fill from previous site use.

## 4.2. Summary of encountered subsurface conditions

#### 4.2.1. Soil conditions

Three distinct soil units were present on site, Fill, Residual Soil and extremely weathered rock material of soil strength

The fill material is brown gravelly sand and gravelly clayey sand. The sand is fine to medium grained. The gravel is fine to medium sized and sub-angular to angular. The depth of fill encountered in the boreholes ranged from 0.18 m to 0.7 m.

Residual soils were pale grey and red brown clay and silty clay of high plasticity and of stiff to very stiff consistency and up to 2.7 m thick.

Extremely weathered siltstone and interbedded sandstone and siltstone were found at the site. They were pale grey and brown, extremely weathered and of very low rock strength.

#### 4.2.2. Rock Conditions

Two rock types are present on site: laminate and interbedded sandstone and siltstone. The laminate was unweathered in all borehole locations, with the interbedded sandstone showing a range of weathering.

The interbedded sandstone and siltstone comprises between 30% and 60% sandstone and 40% and 70% siltstone, distinctly bedded at 0 to 10°. The sandstone is fine to medium grained and pale grey. The siltstone is dark grey. When weathered, a distinct brown staining is present.

The laminate is typically 70% siltstone and 30% sandstone. The sandstone is fine to medium grained and pale grey. The siltstone is dark grey. The laminations are at 0 to 5°. Laminite is distinguished from the interbedded siltstone and sandstone by the significantly thinner laminae (typically 5 to 10 mm) in comparison to thicker beds (50 mm and greater) in the interbedded sandstone and siltstone.

### 4.3. Groundwater conditions

The standpipes installed in BH01, BH03 and BH05 were read on 1 December, 2015. Rising head permeability tests were undertaken in BH01 and BH03. Groundwater measurements are presented in Table 2 as depth below ground level (BGL) and m/day for hydraulic conductivity.

Table 2: Groundwater Monitoring Data

BH ID	1 December, 2015 (m BGL)	Hydraulic Conductivity (m/day)
BH01	4.81	0.047
BH03	4.31	0.059
BH05	5.95	-

# 5. Site geotechnical model

Figures 2 and 3 present the inferred geotechnical model. This model was based on the results of the borehole drilling. Table 3 summarises the geotechnical units, and presents a description of the units, and an assessment of the rock classification in accordance with Pells, Mostyn and Walker (1998).

Table 3: Geotechnical Units

Unit	Geological Unit	Material Description Rock Mass Classification <sup>1</sup>		Unit Thickness (m)
1	Fill	Fill: Gravelly sand and clayey gravelly sand	NA	0.18 to 0.70
2	Residual Soil	Clay and silty clay	NA	1.38 to 2.7
3	Extremely Weathered Siltstone and Sandstone	Interbedded siltstone and sandstone, very low strength	Class V Shale	0.6 to 2.2
4a	Highly Weathered to Slightly Weathered Siltstone and Sandstone	Interbedded sandstone, siltstone: low to high strength.	Class III Shale	1.0 to 4.5
4b <sup>2</sup>	Fresh Siltstone and Sandstone	Interbedded sandstone and siltstone: medium to high strength.	Class II Shale	0 to 5.2
5	Fresh Laminite	Sandstone and siltstone: medium to high strength, fine sandstone laminae, typically 5- 10mm	Class II Shale	7.75 to 13.8

<sup>&</sup>lt;sup>1</sup> Rock classified as shale using the classification system by Pells, Mostyn and Walker(1998) "Foundations on Sandstone and Shale in the Sydney Region" Aust. Geomech. Jnl, Dec 1998.

<sup>2</sup> Units 4b is not present in all boreholes.

Rock classification is based on the worst condition encountered within the unit. All units may contain zones of rock with greater strength and possessing fewer defects than the indicated rock mass classification.

# 6. Recommendations

#### 6.1. Foundations Recommendations

The proposed lower basement floor level is shown on the supplied architectural plan as RL 10.5 m, which would typically require excavation to about RL 10 m. The interpreted geotechnical sections in Figures 2 and 3 indicate that excavation to RL 10 m would generally penetrate to either Units 3 or 4a.

Units 2 and 3 are not recommended as a foundation for this structure. In proposed basement areas, footings could found on Unit 4a, 4b or 5, using piled or pad footings. In areas where no basement is proposed, footings should be piled to Unit 4b or Unit 5. To reduce the risk of differential settlements over the building, it may be preferable to founding all footings on Units 4b or 5 (i.e. same rock class).

Table 4 presents serviceability and Limit State geotechnical design parameters for footing design.

Table 4: Geotechnical	Foundation	Design	Parameters for	· Shale

Unit	Serviceability End Bearing Pressure (MPa)	Ultimate End Bearing Capacity (MPa)	Ultimate Shaft Adhesion (kPa)	Young's Modulus (MPa)
4a (Class III Shale)	1 <sup>B</sup>	6 <sup>B</sup>	350 <sup>A</sup>	200
4b and 5 (Class II Shale)	3.5 <sup>C</sup>	30 <sup>c</sup>	600 <sup>A</sup>	700

- A. For piles, shaft adhesion should only be assumed where piles have a minimum socket of at least 1 pile diameter and a clean socket of roughness category R2 or better is required. Values may have to be reduced if wall smear or polish is present.
- B. Assumes that at least 40% of footings are proved by core drilling or spoon testing.
- C. Assumes that the ground condition for each footing is proved by core drilling or spoon testing.

For the use of geotechnical design parameters for Unit 4a or better, geotechnical proving of foundation conditions for individual footings will be required. Such proving would require geotechnical inspections during construction to check rock mass quality.

As noted in Section 5, there may be areas of the site where better rock is encountered at proposed founding level than indicated by the generalised geotechnical model. Higher design parameters may be feasible subject to further geotechnical assessment.

For pad footings either a working stress or limit state design method could be adopted. For piles a limit state design method should be used if the design is to comply with AS2 159-2009 "Piling – Design and installation".

Footings designed using the serviceability end bearing pressures given above should result in settlements of less than 1% of the least footing dimension. Coffey can provide detailed analysis and refinement of the foundation system to support detailed design if required.

In accordance with AS2159-2009, the geotechnical strength reduction factor,  $\Phi g$ , is dependent on assignment of an Average Risk Rating (ARR) which takes into account various geotechnical uncertainties, redundancy of the foundation system, construction supervision, and the quantity and type of pile testing. The assessment of  $\Phi g$  therefore depends on the structural design of the foundation system as well as the design and construction method, and testing (if any) to be employed by the designer and piling contractor. To assist you with preliminary design we suggest  $\Phi g$  of 0.6 be adopted for footings on shale. Coffey should review the final selection of  $\Phi g$  for detailed design.

If foundations are to resist uplift, the ultimate shaft adhesion should be reduced by applying a factor of 0.7. Uplift piles should also be checked for an inverted cone pullout mechanism.

### 6.2. Soil and Rock Excavation Conditions

A summary of the excavatability of the encountered soil and rock is contained in Table 5, and is suggested as a guide only. Excavation contractors should inspect the rock core, engineering logs and core photographs to make their own judgement as to likely productivity and specific plant.

The generalised geotechnical model suggests that most of the excavation to RL 10m would be through Units 1, 2 and 3, with some Unit 4a. Nevertheless, the ground conditions were sufficiently variable that some Unit 4b or Unit 5 could be encountered.

Table 5: Guidelines for Excavation

Material	Likely Minimum Plant Requirements			
Unit 1, Unit 2	Bulldozer blade, excavator bucket.			
Unit 3, Unit 4a	Bulldozer with ripper, excavator bucket. Higher strength zones may require a rock breaker.			
Unit 4b, Unit 5	Cat D10 or equivalent. Higher strength bands may require a rock breaker.			

The use of hydraulic impact hammers for bulk excavation, trimming the sides of excavations, and detailed excavation, will cause vibrations that could affect vibration sensitive structures and services. Assessment of the potential impacts of excavation induced vibrations should be considered as part of detailed design and excavation planning. Additional discussion of the vibration monitoring requirements is contained in Section 6.3.6.

## 6.3. Excavation Support

### 6.3.1. General Excavation Support Requirements

Permanent excavation support is typically controlled by site constraints, tolerable ground movements and requirements to restrain soil and poor quality rock. Table 6 contains a preliminary assessment of support options for the geotechnical units.

Table 6: Preliminary support options

Material	Support Options
Unit 1, Unit 2 and Unit 3	<ul> <li>Unsupported excavation at suitable batter slopes.</li> <li>Retaining walls.</li> <li>Soil nails with mesh and shotcrete (minimum 75 mm thick), with adequate drainage for the Class V shale.</li> </ul>
Unit 3	<ul> <li>Retaining walls.</li> <li>Pattern rock bolting in low strength shale and in fractured zones within the better quality rock.</li> <li>Mesh support by doweling and shotcrete (minimum 75 thick) or fibre reinforced shotcrete, with adequate drainage.</li> </ul>
Unit 4a	<ul> <li>Mesh support by doweling and shotcrete (minimum 75 thick) or fibre reinforced shotcrete, with adequate drainage.</li> <li>Isolated bolting of potential unstable rock wedges.</li> </ul>

Because the excavation is not expected to substantially penetrate Units 4a or 5, it may be prudent to adopt a full depth shoring system for the excavation.

Final assessment of shoring options will be dictated by excavation requirements with respect to tolerable ground movements and the condition of rock revealed during the excavation.

### 6.3.2. Unsupported cut and fill batters

The following batters are recommended for the design of unsupported exposed cuts and fills up to 3 m in height and above the groundwater table. Temporary batters should not be in place for longer than three months.

Table 7– Recommended unsupported maximum batters

Material	Temporary Batter	Permanent Batter
Engineered Fill <sup>1</sup> (excluding high plasticity)	1(H):1(V)	1.5(H):1(V)
Cuts in Unit 2 / Unit 3 <sup>1</sup>	1.5(H):1(V)	2(H):1(V)
Cuts in Units 4a, 4b or 5 <sup>2</sup>	Vertical	Vertical

#### Notes:

- 1. Protection against erosion may be required.
- Localised or pattern rock bolting will be required to stabilise rock wedges or blocks formed by unfavourably oriented defects. Significant weaker bands in the shale may require shotcrete protection against degradation.

These recommended maximum batters are based on there being no structures or surcharge located at or near the crest of the cuts. Steeper slopes in the fill, soil and weathered rock materials would require engineer designed retaining structures. Site specific advice is required for unsupported cuts greater than 3 m in height.

Coffey should inspect the excavated faces during and at the completion of construction to assess the need for localised doweling or rock bolting to control adversely oriented defects or to identify localised layers or zones of weaker rock that may require shotcrete protection. Where such areas are identified, permanent support could comprise 24 mm (min) diameter pre-tensioned, post-grouted rock bolts with double corrosion protection or glass-fibre reinforced plastic bolts. Rock bolt lengths will depend on actual site conditions and all rock bolts are to be installed in accordance with the manufacturer's recommendations.

## 6.3.3. Retaining Walls for Soil and Class V Rock

Where excavations cannot be battered, soil and more weathered shale could be supported using shoring walls such as conventional soldier pile wall.

Other alternatives include top-down construction, internal propping or temporary anchors. Temporary anchor installation would require the permission of adjacent property owners where anchors cross boundaries or easements.

It is recommended that a detailed analysis be undertaken, including assessment of surcharge loads, to develop a suitable retention support system. As a guide, Table 8 below presents typical design parameters for retaining wall design.

Table 8: Parameters for retaining wall design

Material	Bulk unit Weight γ (kN/m3)	'Active' Earth Pressure Coefficient, K <sub>a</sub>	'At Rest' Earth Pressure Coefficient, K₀	'Passive' Earth Pressure Coefficient, K₀	C' (kPa)	φ' (degrees)
Unit 2	20	0.4	0.5	2.5	5	25
Unit 3 <sup>1</sup>	22	0.4	0.5	2.5	10	25
Unit 3 <sup>2</sup>	23	0.33	0.5	3	25	30

<sup>&</sup>lt;sup>1</sup> Values assume potential failure along clay cover joints from 50-70°

Active earth pressure coefficients should be adopted where wall movements of about 1% of the wall height can be tolerated. At rest pressure coefficients should be adopted where less movement can be tolerated. However, it should be understood that a well-constructed wall will still undergo movements of the order of 0.1% to 0.3% of the wall height where at rest pressures are adopted. Coffey can aid in detailed analysis of retaining wall movements should this be required.

Retaining walls should be designed for hydrostatic pressures unless permanent and effective drainage can be provided. Applicable surcharge loads should be added to earth pressures.

#### 6.3.4. Rock Anchors

Temporary anchors should be inclined downwards to anchor in the better quality shale.

Preliminary design of anchors may be based on a working bond stress value of:

- 350 kPa in Unit 4a
- 550 kPa in Unit 4b and 5

The actual design load capacity of anchors should be based on a performance specification, verified by proof-testing. This is particular important when anchors are constructed within the highly weathered material, where the actual ground condition encountered by the anchor may be variable.

### 6.3.5. Excavation Induced ground movements

The proposed excavation will cause some ground movements. Many factors can influence the size of these movements, from ground conditions to design and construction quality. Documented data has shown that for well-designed and constructed shoring, vertical and lateral movements can be about 0.1% to 0.3% of the retained thickness of stiff clay soils. If this aspect is critical, we can assess (possibly by numerical analysis) likely ground movements during design of the shoring system.

If your site has sensitive structures or services nearby, a relatively stiff shoring with bracing and/or tie-back anchors designed to resist pressures higher than active earth pressures may be required. Such cases should be specifically addressed by Coffey during detailed design when adjacent footing layouts and loadings are known.

In rock excavation, lateral movement occurs due to relief of *in situ* locked-in horizontal stresses and must be considered as part of design. There are relatively high natural horizontal stresses within Sydney rock, the magnitude of which varies with rock quality. From our past experience of deep

<sup>&</sup>lt;sup>2</sup> Rock mass failure

basements in Sydney, typical lateral movements range from 0.5 mm to 2 mm per metre depth of excavation, depending on rock quality and presence of bedding seams.

Lateral ground movements due to stress relief have been measured at distances of up to 1.5 to 2 times the basement depth from the edge of excavations. These typically show that movements can be up to 30% of the displacement around the excavation perimeter at a distance approximately equal to the excavation depth. Stress relief ground movements are unlikely to be significant at distances greater than twice the excavation depth. However, these approximations will be affected by local geological structures and should only be used as a rough guide.

Coffey can assess the potentially damaging effects of stress redistribution on nearby structures and their foundations as part of the detailed design process. Usually the risk of potential damage is not readily quantifiable and induced movements are not possible to avoid. We recommend a condition survey of all adjacent structures is completed before excavation begins and ground movements monitored during excavation.

### 6.3.6. Protection of adjacent structures

For the protection of adjoining structures the type of structure, location, layout, and depth should be determined at the commencement of excavation design works. This information could then be used in conjunction with available information on site ground conditions and the results of any subsequent investigations for geotechnical assessments to determine whether the excavations may affect existing structures. Depending on the complexity of the geotechnical problem, analytical methods would range from a simple empirical assessment, through to 3-dimensional finite element analyses and consultation with the project structural engineers will be required to assess possible load influences, resulting ground movements/stresses, and additional support requirements.

The use of excavation plant such as impact hammers will generate vibrations that may affect any surrounding sensitive structures and buried services. Measures to mitigate the risks associated with vibration such as the use of rock saws or rock grinders should be considered. The vibration limits in Table 9 below are commonly recommended to reduce the risk of vibration damage to sensitive receptors.

Table 9: Ground Vibration Limits for Various Types of Structures

Type of Structure	Peak Particle Velocity (mm/s)
Historic buildings or monuments	2
Residential or low rise buildings in good condition	10
Reinforced concrete commercial and industrial buildings in good condition	25

It is recommended that a limit is selected considering the structure of concern. It should be noted that limits set by the relevant authorities may override these recommendations.

Dilapidation surveys should be carried out on neighbouring structures or sensitive services prior to commencing excavation as a baseline record of their condition. Excavation trials with vibration monitoring should also be carried out to assess appropriate distances for various excavation plant to be used to limit generated vibrations, and need for ongoing vibration monitoring during site works to confirm that the limits are not exceeded.

#### 6.4. Earthworks

### 6.4.1. Use of excavated material as engineering fill

Unit 1 material (the existing gravelly sand fill) can be reused as engineering fill.

Unit 2 materials (residual soil) are typically highly plastic, and highly reactive when used as engineering fill. This does not preclude it use as engineering fill, however careful moisture control and consideration for the potential for shrink/swell ground movements is required. Over compaction of this material should be avoided as this will increase shrink/swell movements.

Contamination of Unit 1 and 2 materials is discussed in GEOTLCOV25554AA-AB, and may affect their reuse as engineered fill.

### 6.4.2. Compaction requirements and procedures

Where filling is required to form the foundation for floor slabs or pavements, ground should be prepared by stripping topsoil and unsuitable materials, and benching the ground surface so that fill can be placed in near horizontal layers.

Each bench should be proof rolled with 4 passes of smooth single-drum, non-vibratory roller of minimum weight 12 tonnes. An experienced earthworks practitioner should observe the proof rolling to detect soft, wet or heaving zones. Where these zones are encountered the affected area should be improved by appropriate methods, such as:

- Excavation of the affected soil and replacement with Engineered Fill;
- Tyning and moisture conditioning of the *in situ* material and compaction to achieve the criteria given below for Engineered Fill.

Fill supporting structures or pavements should be compacted to at least 98% Standard Maximum Dry Density (SMDD). Engineered Fill should be spread in layers not exceeding 250 mm loose thickness and moisture conditioned to Standard Optimum Moisture Content (SOMC) ±2% then compacted without delay with appropriate compaction plant.

Fill within 0.3 m depth of floor slab/pavement subgrade level should be compacted to at least 100% SMDD.

Preparation for, and construction of Engineered Fill should be carried out under Level 1 Geotechnical Inspection and Testing as defined in Section 8.2 of AS 3798 – 2007 Guidelines on earthworks for commercial and residential developments.

## 6.4.3. CBR for preliminary design

Information on site CBR was taken from DCP testing completed by Coffey within this investigation and from information gathered by Douglas Partners in their previous investigations.

Results of DCP testing indicate in-situ CBR ranging from 4% to 20% or more. These results can be misleading as they represent the CBR at the in-situ moisture content, rather than at the optimum moisture content which is typically used for laboratory testing. A laboratory CBR test completed by Douglas Partners measured a CBR of 3.5% to 4.0% at an optimum moisture content of 28.3% and a standard maximum dry density of 1.58 m/t $^3$ .

Based on these results a preliminary design subgrade CBR of 3% is recommended. This assumes the subgrade is properly prepared as per Section 6.4.2.

### 6.5. Groundwater

A separate groundwater report (GEOTLCOV25554AA-AK, dated 24 June 2016) was issued and provides comments and recommendations for a two level basement structure.

## 7. Limitations of this report

Subsurface conditions can be complex and may vary over relatively short distances – and over time. The inferred geotechnical model and recommendations in this report are based on limited subsurface investigations at discrete locations. The engineering logs describe subsurface conditions only at the investigation locations.

Further investigations may be required to support detailed design if there are scope limitations or changes to the nature of the project. We can assist with detailed design and/or to review designs, and verify that the conditions exposed are consistent with design assumptions during construction.

The attached document entitled "Important information about your Coffey report" forms an integral part of this report and presents additional information about its uses and limitations.

## Important information about your Coffey Report

As a client of Coffey you should know that site subsurface conditions cause more construction problems than any other factor. These notes have been prepared by Coffey to help you interpret and understand the limitations of your report.

# Your report is based on project specific criteria

Your report has been developed on the basis of your unique project specific requirements as understood by Coffey and applies only to the site investigated. Project criteria typically include the general nature of the project; its size and configuration; the location of any structures on the site; other site improvements; the presence of underground utilities; and the additional risk imposed by scope-of-service limitations imposed by the client. Your report should not be used if there are any changes to the project without first asking Coffey to assess how factors that changed subsequent to the date of the report affect the report's recommendations. Coffey cannot accept responsibility for problems that may occur due to changed factors if they are not consulted.

#### Subsurface conditions can change

Subsurface conditions are created by natural processes and the activity of man. For example, water levels can vary with time, fill may be placed on a site and pollutants may migrate with time. Because a report is based on conditions which existed at the time of subsurface exploration, decisions should not be based on a report whose adequacy may have been affected by time. Consult Coffey to be advised how time may have impacted on the project.

#### Interpretation of factual data

Site assessment identifies actual subsurface conditions only at those points where samples are taken and when they are taken. Data derived from literature and external data source review, sampling and subsequent laboratory testing are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact on the proposed development and recommended actions. Actual conditions may differ from those inferred to exist, because no professional, no matter how qualified. can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, owners should retain the services of Coffey through the development stage, to identify variances, conduct additional tests if required, and recommend solutions to problems encountered on site.

# Your report will only give preliminary recommendations

Your report is based on the assumption that the site conditions as revealed through selective point sampling are indicative of actual conditions throughout an area. This assumption cannot be substantiated until project implementation has commenced and therefore your report recommendations can only be regarded as preliminary. Only Coffey, who prepared the report, is fully familiar with the background information needed to assess whether or not the report's recommendations are valid and whether or not changes should be considered as the project develops. If another party undertakes the implementation of the recommendations of this report there is a risk that the report will be misinterpreted and Coffey cannot be held responsible for such misinterpretation.

# Your report is prepared for specific purposes and persons

To avoid misuse of the information contained in your report it is recommended that you confer with Coffey before passing your report on to another party who may not be familiar with the background and the purpose of the report. Your report should not be applied to any project other than that originally specified at the time the report was issued.

#### Interpretation by other design professionals

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, retain Coffey to work with other project design professionals who are affected by the report. Have Coffey explain the report implications to design professionals affected by them and then review plans and specifications produced to see how they incorporate the report findings.

#### Data should not be separated from the report\*

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way.

Logs, figures, drawings, etc. are customarily included in our reports and are developed by scientists, engineers or geologists based on their interpretation of field logs (assembled by field personnel) and laboratory evaluation of field samples.

These logs etc. should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

#### Geoenvironmental concerns are not at issue

Your report is not likely to relate any findings, conclusions, or recommendations about the potential for hazardous materials existing at the site unless specifically required to do so by the client. Specialist equipment, techniques, and personnel are used to perform a geoenvironmental assessment. Contamination can create major health, safety and environmental risks. If you have no information about the potential for your site to be contaminated or create an environmental hazard, you are advised to contact Coffey for information relating to geoenvironmental issues.

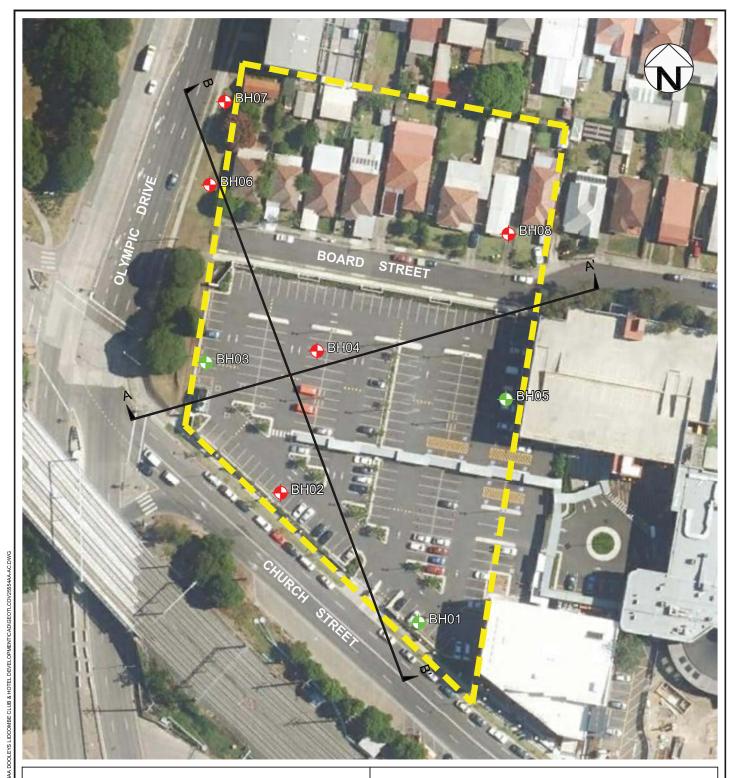
#### Rely on Coffey for additional assistance

Coffey is familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a project, from design to construction. It is common that not all approaches will be necessarily dealt with in your site assessment report due to concepts proposed at that time. As the project progresses through design towards construction, speak with Coffey to develop alternative approaches to problems that may be of genuine benefit both in time and cost.

#### Responsibility

Reporting relies on interpretation of factual information based on judgement and opinion and has a level of uncertainty attached to it, which is far less exact than the design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. To help prevent this problem, a number of clauses have been developed for use in contracts, reports and other documents. Responsibility clauses do not transfer appropriate liabilities from Coffev to other parties but are included to identify where Coffey's responsibilities begin and end. Their use is intended to help all parties involved to recognise their individual responsibilities. Read all documents from Coffey closely and do not hesitate to ask any questions you may have.

\* For further information on this aspect reference should be made to "Guidelines for the Provision of Geotechnical information in Construction Contracts" published by the Institution of Engineers Australia, National headquarters, Canberra, 1987.



#### **LEGEND**



BOREHOLE LOCATION



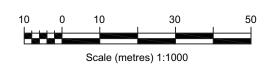
BOREHOLE LOCATION WITH PIEZOMETER



APPROXIMATE SITE BOUNDARY, HOTEL & CLUB DEVELOPMENT



SECTION LINE



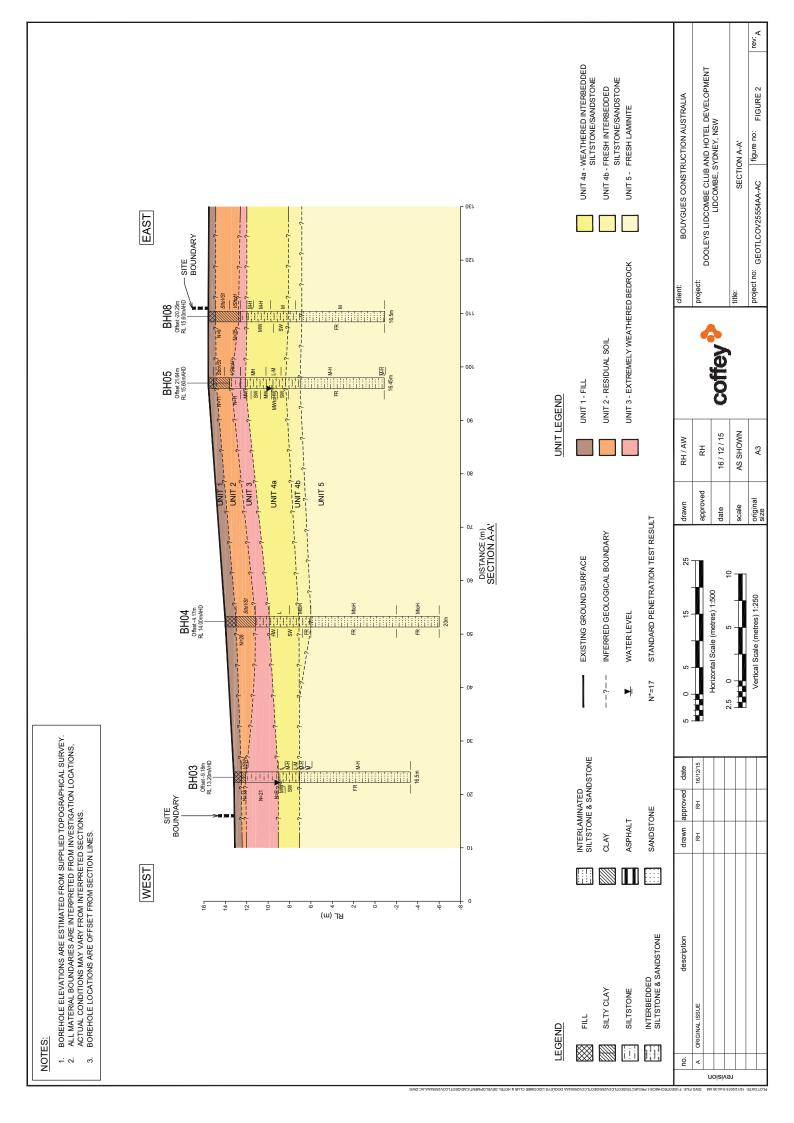
AERIAL IMAGE SOURCE: GOOGLE EARTH PRO 7.1.2 AERIAL IMAGE ©: 2015 AEROMETREX

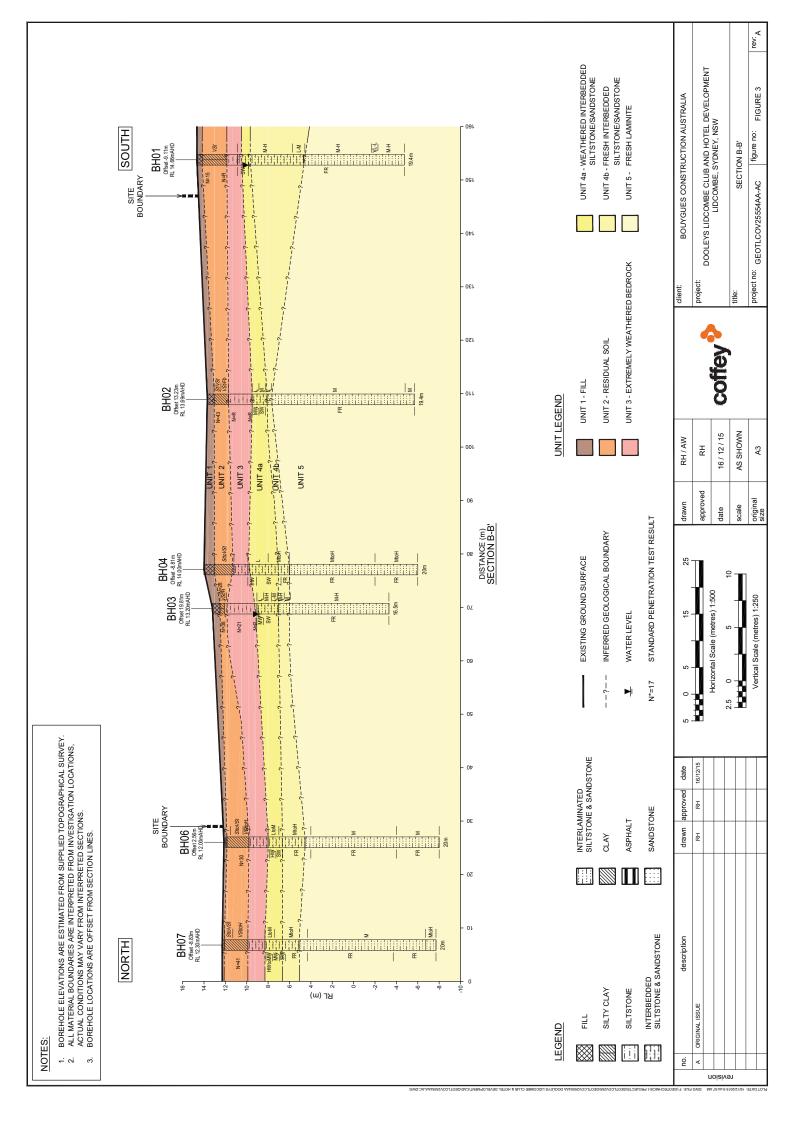
drawn	RH / AW
approved	RH
date	16 / 12 / 15
scale	AS SHOWN
original size	A4



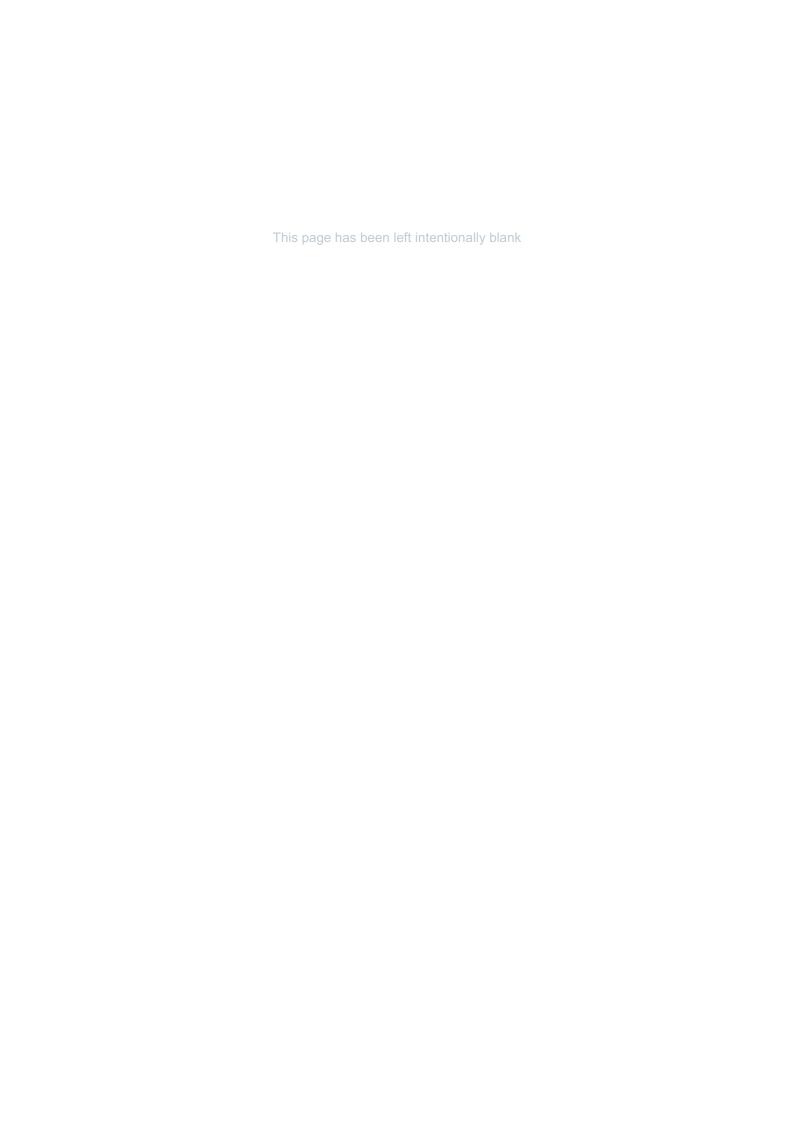
client:	BOUYGUES CONSTRUCTION AUSTRALIA
project:	DOOLEYS LIDCOMBE CLUB AND HOTEL DEVELOPMENT LIDCOMBE, SYDNEY, NSW

title:	BOREHOLE LC	CATION PL	AN	
project no:	GEOTLCOV25554AA-AC	figure no:	FIGURE 1	rev: A





Appendix A - Borehole logs, core photographs and explanation sheets





# **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

23 Nov 2015

Borehole ID.

sheet:

**BH01** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

loc	cati	on:	24-	28 Johi	ı St,	Lid	coml	be NS	SW 2141		cl	hecked l	оу:	AH
- 11				66; N: 62707			Not Spe	cified)	surface elevation: 14.66 m (AHD)		•	m horizor		DCP id.:
_	drill model: GEO205, Track mounted hole diameter : 100 mr								0 mm					
dr	drilling information material substance						l							
method &	support	1 2 penetration 3	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetro- meter (kPa)	DCP (blows/	
	s CASING s		Not Observable W	E  SPT 5, 7, 8 N*=15  SPT 19, 14, 25/130mm HB N*=R	-14 -13 -12 -11 -10	1.0 — 1.0 — 2.0 — 3.0 — 4.0 — 5.0 — 6.0 — 6.0 — 1.0 —		CH	FILL: Gravelly Clayey SAND: fine to medium grained, brown, fine to medium sub-angular to angular gravel.  Silty CLAY: high plasticity, red brown mottled pale grey.  1.3 m: becoming with some sandstone/ silstone, brown  SILTSTONE: brown and grey, extremely to highly weathered, estimated very low to low strength.  Borehole BH01 continued as cored hole	<wp< td=""><td>VSt</td><td>100</td><td></td><td>ASPHALT FILL PID(0.05-0.2m) =3.7ppm, no odours or staining observed RESIDUAL SOIL PID(0.5-0.6m) =4.6ppm</td></wp<>	VSt	100		ASPHALT FILL PID(0.05-0.2m) =3.7ppm, no odours or staining observed RESIDUAL SOIL PID(0.5-0.6m) =4.6ppm
CDF_0_9_04BB.GLB Log_CC					-8 - -7	7.0 — - - -								-
ma AE AS HA W HA	S A / A	bit show AD/T blank bit TC bit V bit	crewir ger re ger	ng*	pender E	etration  N M  Property 10-0  Water water		g to I ater shown	samples & field tests  B	moistur D dr M mo W we Wp pla	ased on ssification re / bist	Unified n System		consistency / relative density  VS very soft  S soft  F firm  St stiff  VSt very stiff  H hard  Fb friable  VL very loose  L loose  MD medium dense  D dense  VD very dense



principal:

project:

# **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

**Bouygues Construction Australia** 

Dooleys Lidcombe Catholic Club

Borehole ID. **BH01** 

2 of 4 sheet:

GEOTLCOV25554AA project no.

23 Nov 2015 date started:

date completed: 24 Nov 2015

logged by:

24-28 John St, Lidcombe NSW 2141 location: checked by: AH

position: E: 309956; N: 6270732 (Datum Not Specified) surface elevation: 14.66 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions tion, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics core run & RQD method 8 support graphic I colour, structure, minor components Œ (MPa) thickness, other) depth water 귐 particular \_ ≥ = ∃ <u>H</u> I I I I I I14 1.0 13 2.0 12 3.0 start coring at 3.80m INTERBEDDED SILTSTONE AND SW PT, 0 - 5°, IR, RO, Fe SN 4.0 **SANDSTONE**: siltstone (40%) and sandstone (60%), sandstone is fine grained, pale grey, 100% siltstone is dark grey. a=2.88 d=1.82 10 Not Observabli01/12/15 07:30 | < FR 5.0 COF BOREHOLE: CORED -9 PT, 5 - 15°, CU, RO, CN S NMLC RO, 98% 6.0 Defects are:PT, 0 - 10°, PL, unless otherwise descr a=1.42 d=1.24 04BB.GLB 7.0 PT. 5 - 15°. IR. RO. CN 99% weathering & alteration defect type planarity PL plana method & support graphic log / core recovery parting joint shear zone PL planar CU curved UN undulating residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break slightly weathered fresh eplaced with A for alteration complete drilling fluid loss no core recovered partial drilling fluid loss \*W re coating CN clean SN stain VN veneer core run & RQD PQ SPT roughness wireline core (85.0mm very low low medium VL slickensided polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) RO CO coating hiah rouah very high very rough



project:

# **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

sheet: 3 of 4

Borehole ID.

logged by:

project no. **GEOTLCOV25554AA** 

**BH01** 

TO

client: Bouygues Construction Australia date started: 23 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015

location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

n: E: 30	9956· N·									d by: <b>AH</b>	
				ace elevation: 14.6	66 m (Al	HD)		angle	e from horiz	contal: 90°	
	O205, T			ng fluid:					diameter :		
inform	nation	mate	rial substance			andto to		rock	mass defe		tono and
L (m)	epth (m)	raphic log	ROCK TYPE: grain charac	cterisics,	reathering &	strength & Is50 × = axial; O = diametral	field tests & Is(50) (MPa) a = axial;	ore run & RQD	spacing (mm)	defect descript (type, inclination, planarity, ro thickness, oth	ions oughness, coating ier)
-6 -5	9.0	80	SANDSTONE: siltstone (40%) ar (60%), sandstone is fine grained. siltstone is dark grey. (continued,	and sandstone pale grey, andstone some andstone some andstone some andstone is	ew ER	5 3 X T 5 H	a=2.91 d=1.11 a=1.06 d=0.94	99%	100	particular	gene
-4 -	11.0						a=1.15 d=0.90 a=2.31 d=1.11			– — PT, 0 - 5°, IR, RO, CN	L, RO, CN,
2	12.0						a=1.92 d=0.89	99%		_ — PT, 0 - 5°, UN, RO, CN –	Defects are PT 0 - 10° PL, RO, CN,
-1	14.0						a=0.62 d=0.56				
-0	15.0		14.66 to 14.82 m: fine grained sa	andstone band			a=0.96 d=0.57	92%		— JT, 55 - 65°, IR, RO, CN — JT, 70 - 80°, UN, RO, CN — PT, 0 - 5°, IR, RO, CN — JT, 0 - 90°, IR, RO, CN	
auger so auger di claw or l washboo NMLC o wireline wireline standard	crewing rilling blade bit re core (51.9 core (47.6 core (63.5 core (85.6 d penetral	6mm) 5mm) 0mm)	water  10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss	core rec (graphic syn no core	covered nbols indicate recovere	ny material)	RS residu XW extren HW highly DW distinc MW mode SW slight! FR fresh "W replaced w strength VL very lov	al soil nely wea weather tity weat rately we y weather ith A for a	ation* athered red hered eathered eathered	defect type pl PT parting Pl JT joint C SZ shear zone U SS shear surface S' CS crushed seam IR SM seam DB drilling break roughness CC SL slickensided C	anarity L planar U curved N undulating T stepped
d	-6 -5 -3 -1 -1 -3 -1 -1 -3 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1 -1	(E) Hadde by	(E) (E) (F) (F) (F) (F) (F) (F) (F) (F) (F) (F	material description ROCK TYPE: grain characteristic ROCK TYPE	material description RCCK TYPE: grain characterisics, colour, structure, minor components    INTERBEDDED SILTSTONE AND SANDSTONE: siltistone (40%) and sandstone (60%), andstone is fine grained, pale grey, siltistone is dark grey. (continued)    LAMINITE: siltistone (50%) and sandstone (50%), andstone is fine grained, pale grey, siltistone is dark grey. (continued)    LAMINITE: siltistone (50%) and sandstone (50%), andstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (50%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained, pale grey, siltistone is dark grey.    LAMINITE: siltistone (40%) and sandstone is fine grained.   LAMINITE:	material description ROCK TYPE: grain characteristics, colour, structure, minor components    ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, colour, structure, minor components   ROCK TYPE: grain characteristics, and structure, minor characteristics, and structure, m	material description  ROCK TYPE: grain characteristics, colour, structure, minor components  ROCK TYPE: grain characteristics, colour, structure, minor components  Sandbartone: siltstone (40%) and sandstone (60%), sandstone is fine grained, pale grey, siltstone is dark grey. (continued)  LAMINITE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey.  LAMINITE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey.  11.0  LAMINITE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey.  11.0  12.0  13.0  14.66 to 14.82 m: fine grained sandstone band  15.0  3.	material description  ROCK TYPE: grain characteristics, coolar, structure, minor components  Coolar, structure, minor comp	material description  ROCK TYPE grain characteristics, coolur, sturcture, minter components  Geographic Statements  ROCK TYPE grain characteristics, coolur, sturcture, minter components  Geographic Statements  ROCK TYPE grain characteristics, coolur, sturcture, minter components  Geographic Statements  ROCK TYPE grain characteristics, coolur, sturcture, minter components  Geographic Statements  ROCK TYPE grain characteristics, coolur, sturcture, minter components  ROCK TYPE grain characteristics, coolur, sturcture, sturcture, grain	material description ROCK TYPE: grin internationalisis, colour, structure, minor components ROCK TYPE: grin internationalisis and structure international	material description ROCK PTP: grain characteristics, colour, structure, minor components ROCK PTP: grain characteristics, discounts ROCK PTP: grain cha



## **Engineering Log - Cored Borehole**

GEOTLCOV25554AA project no. **Bouygues Construction Australia** 23 Nov 2015 date started:

Borehole ID.

sheet:

**BH01** 4 of 4

Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015 principal:

Dooleys Lidcombe Club & Hotel Development TO logged by: project:

24-28 John St, Lidcombe NSW 2141 location: checked by: AH position: E: 309956; N: 6270732 (Datum Not Specified) surface elevation: 14.66 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions (type, inclination, planarity, roughness, coating, ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support colour, structure, minor components Œ (MPa) thickness, other) depth water 300 300 300 3000 귐 \_ ≥ = ∃ <u>H</u> genera LAMINITE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey. 92% CS, 0°, Silty clay, 120 mm -PT, 0 - 5°, IR, RO, CN multiple defects, Jts at 65-80° -2 a=5.66 d=2.67 17.0 described Not Observable Defects are:PT, 0 - 10°, unless otherwise d --3 a=0.98 d=0.74 96% 18.0 a=2.00 d=0.78 19.0 Borehole BH01 terminated at 19.40 m Target depth -5 20.0  $\perp$ -6 21.0 -7 22 0 -8 04BB.GLB Log 23.0 weathering & alteration defect type planarity PL plana method & support graphic log / core recovery parting joint shear zone PL planar CU curved UN undulating residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SW FR SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break slightly weathered fresh eplaced with A for alteration ngth complete drilling fluid loss no core recovered partial drilling fluid loss \*W re coating CN clean SN stain VN veneer core run & RQD PQ SPT roughness wireline core (85.0mm very low low medium VL slickensided POL SO RO polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) CO coating hiah rouah very high very rough



# **Piezometer Installation Log**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

23 Nov 2015

Hole ID.

sheet:

**BH01** 

1 of 1

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

position: E: 309956; N: 6270732 (Datum Not Specified) surface elevation: 14.66 m (AHD) angle from horizontal: 90° equipment type: GEO205, Track mounted hole diameter: 100 mm drilling information material substance piezometer construction details bore construction license: material name drilling company:  $\Xi$ method & support driller:  $\widehat{\mathbb{E}}$ water driller's permit no.: 귐 FILL: ASPHALT FILL: Gravelly Clayey SAND able Silty CLAY CASING Not Obser AD/T Bentonite 12 SILTSTONE 3.00 m INTERBEDDED SILTSTONE AND Sand LAMINITE 12 -0 14.90 m Bentonite 16 Cuttings Borehole BH01 terminated at 19.40 m method & support graphic log / core recovery stick up & RL tip depth & RL install. date water level type see engineering log for details standpipe wate core recovered (graphic symbols indicate material) 10-Oct-12, water level on date shown no core recovered complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown



řev.

**PHOTO 1** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH01

N.T.S.

scale

44

original size



胚

	client:	Bouygues Construction Australia
<b>^</b>	project:	Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141
	title:	LavaSOTOLa Baoo

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HOTOGR/ BH01	fig no:
CORE PHOTOGRAPH BH01	GEOTLCOV25554AA
::	project no:

rev.

PHOTO 2

	3		
RH	11/12/2015	N.T.S.	A4
approved	date	scale	original size

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rev.

**PHOTO 3** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH01

11/12/2015

date

N.T.S.

scale

44

original size





# **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

date started: 20 Nov 2015

Borehole ID.

sheet:

**BH02** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 23 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO

cat	ion:	24-	28 Joh	n St,	Lid	comi	be NS	W 2141 checked by:				AH	
position: E: 318949; N: 6251435 (Datum Not Specified) surface elevation: 13.69 m (AHD)						angle from horizontal: 90° DCP id.:				DCP id.:			
drill model: GEO205, Track mounted								ŀ	ole dian	neter : 10	0 mm		
drilling information material substance									1				
support	2 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetro- meter (kPa)	· ·	structure and additional observations
ani A		Not Observable wa	SPT 14, 20, 23 N*=43  SPT 24/110mm HB N*=R  SPT 15/90mm HB N*=R	-13 -12 -11 -10 -9	3.0 —		CH	FILL: ASPHALT: 20mm thickness.  FILL: Sandy Clayey GRAVEL: fine to medium grained, sub-rounded to angular, brown, sand is fine to medium grained.  CLAY: high plasticity, brown mottled red brown.  1.2 m: with some extremely weathered silstone, brown  SILTSTONE: brown grey, extremely to highly weathered, estimated very low strength  Borehole BH02 continued as cored hole	D		100	N4000	ASPHALT FILL no odours or staining observed RESIDUAL SOIL  WEATHERED BEDROCK
	111			-6	7.0				class	sification			
eth	auger di auger so hand au washbo hand au bit show AD/T	rewinger e ger ger	g*	M r C c pen	etration	no resi ranging refusal	istance g to I	samples & field tests  B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS yane shear neak/remouded (kPa)	moistu D dr M mo W we Wp pla	soil descr ased on l ssification re / bist et	<b>ription</b> Unified		consistency / relative density  VS very soft S soft F firm St stiff  VSt very stiff H hard Fb friable  VL very loose L loose  MD medium dense
e C C A A	the state of the s	thod auger for auger so, hand au washbor, hand au bit show. AD/IT	thod auger drilling* auger drilling* auger screwin hand auger washbore hand auger bit shown by s AD/T blank bit	thod auger drilling* auger screwing* hand auger washbore hand auger bit shown by suffix AD/T blank bit  PRO205, Track n  Samples & field tests  SPT 14, 20, 23 N*=43  SPT 14, 20, 23 N*=43  SPT 15/90mm HB N*=R	thod auger drilling* auger screwing* hand auger washbore hand auger washbore hand auger washbore hand auger bit shown by suffix blank bit how more interest in the supplies a su	thod auger drilling auger screwing hand auger washbore hand auger washbote bit shown by suffix bit shown by suffix balan bit shown by suffix bit shown by suffix bit shown by suffix balan bit shown by suffix bit shown	tition: E: 318949; N: 6251435 (Datum Not Spermodel: GEO205, Track mounted    Iling information	thon: E: 318949; N: 6251435 (Datum Not Specified) model: GEO205, Track mounted    Iling information   material subsection   material	ition: E: 318849; N: 6251435 (Datum Not Specified) model: GEO205, Track mounted    Illing Information	sion: E: 318949; N: 6251435 (Datum Not Specified) models GEC2025, Track mounted    Illing Information	ition: E: 318949; N: 6251435 (Datum Not Specified) surface elevation: 13.69 m (AHD) angle for hole diar models GEO205, Track mounted hole diar material substance	ition: E: 318949: N: 6251425 (Datum Not Specified) surface elevation: 13.69 m (AHD) angle from horizor noise diameter: 10 model EGC205. Track mounted model (EGC205, Track mounted) material substance material substance material substance material substance material substance (Part of the surface of the sur	model: EC2035, Track mounted  material substance  material substan



# **Engineering Log - Cored Borehole**

2 of 4 sheet: GEOTLCOV25554AA project no.

**BH02** 

TO

Borehole ID.

Bouygues Construction Australia client: date started: 20 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 23 Nov 2015

Dooleys Lidcombe Club & Hotel Development project: logged by: location: 24-28 John St, Lidcombe NSW 2141 ΑH checked by:

		ion				n St, Lidcombe NSW 2141					checked				
- 11	position: E: 318949; N: 6251435 (Datum Not Specified) surface elevation: 13.69 m (AHD) angle from ho drill model: GEO205, Track mounted drilling fluid: hole diameter														
$\vdash$						aterial substance rock mass defec									
dr	rilliı	ng ii	nform	ation	mate							additional observations and			
method &	pport	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 ×= axial; O = diametral	samples, field tests & Is(50) (MPa) a = axial;	core run & RQD	defect spacing (mm)	defect descriptions (type, inclination, planarity, roughness, coating, thickness, other)			
E	S	>	ĸ	ŏ	Б		<u>∞</u> ≼	3 - ≥ ± <u>≥</u> <u>₽</u>	d = diametral	გ ∞	3000 3000 3000	particular genera			
>> 11/12/2015 10:47			-13 - -12 - -11	1.0											
wingFi				4.0 —		start coring at 4.20m						JT, 70°, partially annealed			
REHOLE: CORED GEOTLCOV25554AA.GPJ < <drawingfile>&gt; 11/12/2015 10:47  — NMLC</drawingfile>	•		-9	- - 5.0 —		INTERBEDDED SILTSTONE AND SANDSTONE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey. 4.2 to 4.25 m: sandstone, fine to medium grained, pale grey	SW		a=1.09 d=0.91	89%		PT, 5°, IR, RO, CN  —PT, 0°, IR, RO, Fe SN  JT, 85 - 90°, IR, RO, Clay VN			
LE: CORED GEOTI		Not Observable	-8	6.0		5.28 to 5.46 m: interbedded siltstone and sandstone band  LAMINITE: siltstone (70%) and sandstone (30%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey.	FR	-   -   -   -   -   -   -   -   -   -	a=0.96 d=0.56						
COF BO		Not	-7	7.0		6.3 to 6.4 m: grey fine grained sandstone band			a=0.64 d=0.18	77%		— JT, 30 - 45°, IR, RO, CN — JT, 50 - 90°, CU, RO, CN			
CDF_0_9_04BB.GLB_Log			-6	- - -					a=0.60 d=0.77	77%		⇒— multiple partings			
A A C V N N N H F S	AS AD CB W	ar cl w .C N w w w st	uger di law or l lashbor lMLC di ireline ireline ireline	crewing rilling blade bit re ore (51. core (47 core (85 core (85 d penetr	9 mm) 7.6mm) 8.5mm) 5.0mm)	water inflow  complete drilling fluid loss  partial drilling fluid loss  core run & RQD	covered mbots indicate recovere	material)	weathering RS residu. XW extrem HW highly DW distinc MW moder SW slightly FR fresh "V replaced w strength VL very low M mediun H high VH very hig EH extremi	al soil nely wea weathe tly weat ately we veathe ith A for a v	athered red hered eathered ered	defect type PT parting PT parting PT parting PL planar CU curved UN undulating SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth NV veneer RO rough VR very rough			



## **Engineering Log - Cored Borehole**

Bouygues Construction Australia project no. GEOTLCOV25554AA

date started: 20 Nov 2015

Borehole ID.

sheet:

**BH02** 3 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 23 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

location: checked by: position: E: 318949; N: 6251435 (Datum Not Specified) surface elevation: 13.69 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions tion, planarity, roughness, coating, ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support graphic colour, structure, minor components Œ (MPa) thickness, other) water depth 300 300 300 3000 귐 \_ ≥ = ∃ <u>H</u> LAMINITE: siltstone (70%) and sandstone (30%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey. JT, 45°, IR, RO, CN PT, 0 - 5°, UN, RO, CN a=0.80 d=0.40 -5 JT, 40 - 60°, IR, RO, CN 9.0 SM, 5 - 10°, Silty clay, 10 mm JT, 85 - 90°, PL, RO, CN a=0.98 d=0.55 10.0 — PT, 5 - 10°, UN, RO, CN → JT, 0°, PL, RO, CN ď a=0.63 d=0.69 CS, 0°, 10 mm 11.0 S , PL - IR, RO, e described a=0.46 d=0.35 Not Observable s are:PT, 0 - 10°, unless otherwise 98% 12.0 a=0.54 d=0.69 13.0 -JT, 70 - 90°, IR, RO, CN a=0.58 d=0.52 0 14 0 COF BOREHOLE: a=2.99 d=0.99 97% --1 04BB.GLB 15.0 a=0.90 d=0.53 -2 weathering & alteration defect type planarity PL plana method & support graphic log / core recovery parting joint shear zone PL planar CU curved UN undulating residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SW FR SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break SW slightly weathered FR fresh "W replaced with A for alteration strength complete drilling fluid loss no core recovered partial drilling fluid loss coating CN clean SN stain VN veneer core run & RQD PQ SPT roughness wireline core (85.0mm very low low medium VLslickensided POL SO RO polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) CO coating hiah rouah very high very rough



project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

ing Log - Cored Borenole project no. GEOTLCOV25554AA

Borehole ID.

logged by:

sheet:

**BH02** 4 of 4

TO

client: Bouygues Construction Australia date started: 20 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 23 Nov 2015

location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

		ion:				n St, Lidcombe NSW 2	141						checke		
- 11							ace elevation: 13.6	9 m (AF	HD)				e from horiz		
$\vdash$							ng fluid:					_	diameter :		
dr	rillir	ng ir	nform	ation	mate	rial substance material description	<b></b>		ooti	mated	samples,	rock	mass defe	additional obse	nyations and
method &	npport	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain characteristic colour, structure, minor cor	cterisics,	weathering & alteration	stro & ×	ength Is50 = axial; diametral	field tests & Is(50) (MPa)	core run & RQD	spacing (mm)	defect des (type, inclination, planarit thickness	criptions y, roughness, coating , other)
E	ī,	>	Ω.	ō	5	LAMINITE: siltstone (70%) and s	andstone	≯ ro FR		≅∓₹ ∷∏	d = diametral	8 ∞	8 2 8 2 8	particular	gener
NMLC		Not Observable	3	17.0 —		(30%), distinctly laminated at 0-5 fine grained, pale grey, siltstone (continued)	°, sandstone is				a=0.53 d=0.44 a=0.37 d=0.27	97%		— CS, 0 - 5°, 10 mm -	Defects are:PT, 0 - 10°, PL - IR, RO, CN, unless otherwise described
5 10:47			5	18.0 — - - - 19.0 —							a=0.66 d=0.56	90%		→ multiple defects  → CS, 0 - 10°, IR, 30 mm  → JT, 35 - 50°, CU, RO, 0	CN
CDF_0_9_048B.GLB Log COF BOREHOLE: CORED GEOTLCOV25554AA.GPJ < <drawingfile>&gt; 11/12/2015 10.47</drawingfile>			6 - 7 8 - 9	20.0 —		Borehole BH02 terminated at 19 Target depth	.40 m							CS, 90 mm	
A C V N N H P S	NS ND NB N	au cl w C N w w w w st	uger d aw or ashbo MLC o reline reline reline andar	crewing rilling blade bit re core (51.9 core (47 core (63 core (85 d penetra	9 mm) .6mm) .5mm)	water    10/10/12, water    evel on date shown    water inflow    complete drilling fluid loss    partial drilling fluid loss    water pressure test result (lugeons) for depth interval shown		overed abols indicate recovered ithdrawn	material d		HW highly DW disting MW mode	ial soil nely wea weathe ty weat rately we y weathe vith A for a w	athered red hered eathered ored	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating





PointID : BH02 Depth Range: 8.00 - 13.00 m

	Coffey			
RH	RH	11/12/2015	N.T.S.	A4
drawn	approved	date	scale	original size

			rev:
Australia	I Development ISW 2141	Hď	PHOTOR
truction A	b & Hote combe N	HOTOGRA BH02	fig no:
Bouygues Construction Australia	Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141	CORE PHOTOGRAPH BH02	GEOTI COV25554AA
client:	project:	title:	project no:
	<b>^</b>		



řev.

PHOTO 7

project no: GEOTLCOV25554AA | fig no:

44





## **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

date started: 19 Nov 2015

Borehole ID.

sheet:

**BH03** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 19 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

1000	ition:	24-	28 Joh	n St,	Lid	comi	be NS	SW 2141		cł	necked I	oy:	AH
posit	ion: E:3	1892	9; N: 6251	470 (D	atum N	Not Spe	cified)	surface elevation: 13.20 m (AHD)	a	ingle fro	m horizor	ntal: 90°	DCP id.:
-			5, Track n	nounte	ed .				ŀ	ole dian	neter : 10	0 mm	
drill	ling info	rmati	on			mate		ostance	1			l	
method & support	2 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetro- meter (kPa)	DCP (blows/ 100 mm	1)
EHOLE: NON CORED + DCF GEOI LCOV 25554AA GF 4 < CITAMINGFIRS> 15/1 ZZO15 07.385  A HA - P A ADTI - ADTI - CASING - ADTI - CASING - ADTI - ADTI - CASING - ADTI - ADDI - AD		Not Observable With	E  E  SFT 5, 12, 26 N*=38  SPT 20, 8, 13 N*=21	-13 -13 -12 -11 -10 8	3.0 —	J	CH	FILL: Gravelly SAND: fine to medium grained, fine to medium sub-angular to angular gravel.  Silty CLAY: high plasticity, brown mottled red brown and pale grey.  1 to 1.3 m: remoulds to silty clay  SILTSTONE: brown and pale grey, extremely weathered, estimated very low strength.  Borehole BH03 continued as cored hole		VSt/H			ASPHALT FILL PID(0.05-0.2m) = 0.0ppm, no odours or staining observed PID(0.5-0.6m) = 0.0ppm RESIDUAL SOIL WEATHERED BEDROCK
meti AS HA W H * 9.B	hod auger c augers hand au washbc hand ai	crewinger ore ore ore ore ore or or or or or or or or or or or or or	ng*	pender water	etration		nter	samples & field tests  B	moistur D dry M mo W we Wp pla	soil descr ased on l ssification re / oist			



project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

**BH03** 2 of 4 sheet:

TO

GEOTLCOV25554AA

Borehole ID.

project no.

logged by:

Bouygues Construction Australia client: date started: 19 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 19 Nov 2015

location: 24-28 John St, Lidcombe NSW 2141 ΑH checked by:

-	loca	lion	. <b>Z</b>	4-20	Jon	n St, Lidcombe NSW 2141					checked	I by: <b>AH</b>	
-						470 (Datum Not Specified) surface elevation: 13.	20 m (Al	HD)			e from horizo		
-						mounted drilling fluid:					diameter : 1		
ŀ	drilli	ng ii	nform	ation	mate	erial substance material description	۰ŏ	estimated	samples,	rock	mass defect	additional obse	anyations and
	method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain characterisics, colour, structure, minor components	weathering 8 alteration	strength & Is50 × = axial; O = diametral	field tests & Is(50) (MPa)	core run & RQD	spacing (mm)	defect des (type, inclination, planari thickness	scriptions ty, roughness, coating, s, other)
ŀ	ยร	Š	<u>R</u>	ď	g		<i>m</i> ≤		d = diametral	8 %	3000 3000 3000 3000	particular	general
< <drawing file="">&gt; 11/12/2015 10:48</drawing>			-13 - -12 - -11	1.0 —									
vingFile	_		-9	4.0 —		start coring at 4.15m	100/						_
REHOLE: CORED GEOTLCOV25554AA.GPJ < <drav< td=""><td>NMLC</td><td>Not Observable 01/12/15 07:25  </td><td>- -8 -</td><td>5.0 —</td><td></td><td>INTERBEDDED SILTSTONE AND SANDSTONE: fine grained, pale grey to dark grey, siltstone (70%) and sandstone (30%), distinctly bedded at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey.</td><td>HW MW</td><td></td><td>a=1.03 d=0.33 a=1.11 d=0.37</td><td>97%</td><td></td><td>— SM, 5°, IR, Clay filled, — PT, 0 - 5°, IR, RO, CN  — JT, 70 - 85°, IR, RO, C  — CS, 0 - 15°, RO, Fe Si</td><td>- - - N - -</td></drav<>	NMLC	Not Observable 01/12/15 07:25	- -8 -	5.0 —		INTERBEDDED SILTSTONE AND SANDSTONE: fine grained, pale grey to dark grey, siltstone (70%) and sandstone (30%), distinctly bedded at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey.	HW MW		a=1.03 d=0.33 a=1.11 d=0.37	97%		— SM, 5°, IR, Clay filled, — PT, 0 - 5°, IR, RO, CN  — JT, 70 - 85°, IR, RO, C  — CS, 0 - 15°, RO, Fe Si	- - - N - -
CDF_0_9_04BB.GLB Log COF BOREHOI	NN -	Not	-7 - -6	  7.0  		<b>LAMINITE</b> : fine grained, pale grey, siltstone (70%) and sandstone (30%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey.	FR		a=0.73 d=0.40 a=0.91 d=0.57	96%		_ _ multiple partings	-
-		he:! '	0	ort.		- I	PO PC	<u>                                     </u>	weathering	& alter	1 14 1 1	defect type	planarity
	AS AD CB W	a cl w w LC N w w w w	uger dr law or l rashbor IMLC c rireline rireline rireline	crewing rilling blade bit re core (51.5 core (47 core (63 core (85 d penetre	9 mm) 7.6mm) 8.5mm) 6.0mm)	water inflow  complete drilling fluid loss  partial drilling fluid loss  core run & RQE	covered mbols indicate e recovere	material)	RS residu XW extren HW highly DW distinct MW moder	al soil nely wea weather ttly weat rately we y weather ith A for a v n	athered red hered eathered ered	PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating



Bouygues Construction Australia project no. GEOTLCOV25554AA

date started: 19 Nov 2015

Borehole ID.

sheet:

**BH03** 3 of 4

client:Bouygues Construction Australiadate started:19 Nov 2015principal:Dooleys Lidcombe Catholic Clubdate completed:19 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO

location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

- 1	posit	ion:	E: 31	8929; 1	N: 6251	470 (Datum Not Specified) surface elevation	n: 13.20 m (A	HD)		angl	e from horiz	ontal: 90°	
	drill n	node	l: GE	O205,	Track r	mounted drilling fluid:				hole	diameter : 1	00 mm	
ļ	drilli	ing i	nform	ation	mate	erial substance				rock	mass defe	cts	
	method & support	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 × = axial; O = diametral	samples, field tests & Is(50) (MPa)	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, thickness, other)	
ŀ	S 3	>	22	ō	Б	LAMINITE: fine grained, pale grey, siltstone	FR FR		d = diametral	5 ∞	8 2 8 2 8	particular	general
			-5	-		(70%) and sandstone (30%), distinctly lamin at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey. (continued)	ated					⇒— SM, 0 - 10°, Clay filled, 20 mm ⇒— SM, 0°, Clay filled, 20 mm	-
			-4	9.0 —					a=1.47 d=0.56	100%		JT, 10°, UN, SO, Pyrite VN	-
			_	10.0 —					a=0.72 d=0.46			_	-
			-3 -	-					a=0.79 d=0.48			-	-
11/12/2015 10:48		ervable	-2 -	11.0					a=0.72 d=0.46			- CS, 0°, PL 	, PL, RO, CN, described
3PJ < <drawingfile>&gt;</drawingfile>	NMLC-	Not Observable	-1	12.0					a=0.46 d=0.52	100%		-	Defects are:PT, 0 - 10°, PL, RO, CN, unless otherwise described
CDF_0_9_04BB.GLB Log COF BOREHOLE: CORED GEOTLCOV25554AA.GPJ < <drawingfile>&gt; 11/12/2015 10:48</drawingfile>			-0	13.0 —					a=0.69 d=0.56				
BOREHOLE: CORE			1	14.0 —					u 0.50			PT, 0°, PL, RO, Clay VN PT, 0°, PL, RO, Clay VN	-
IBB.GLB Log COF			- 2	15.0 —					a=1.26 d=0.47	97%		-	-
CDF_0_9_04			_	-					a=0.52 d=0.25			= JT, 75°, UN, SO, CN JT, 75°, UN, SO, CN	-
	AS AD CB W	a c w LC N w w w s te	uger d law or ashbo IMLC d ireline ireline ireline	crewing rilling blade bi re core (51 core (4' core (6) core (8) d penetr	t .9 mm) 7.6mm) 3.5mm) 5.0mm)	10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result	og / core recover core recovered (graphic symbols indicat no core recover & RQD barrel withdrawn Rock Quality Des	e material) ed	HW highly DW distinct MW mode	al soil nely wea weathe tily weat rately we y weathe ith A for a	athered red hered eathered ered	defect type PT parting PT parting PL planari TJ joint CU curver SZ shear zone SS shear surface CS crushed seam DB drilling break roughness SL slickensided POL polished SO smooth VN venee RO rough CU curver UN undula ST steppe IR Irregul CN coating SN stain SO smooth VN venee RO rough CC coatin	I ting d ar



sheet: 4 of 4
project no. **GEOTLCOV25554AA** 

**BH03** 

Borehole ID.

client: Bouygues Construction Australia date started: 19 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 19 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO

oca	tion	: 2	4-28	Joh	n St, Lidcombe NSW 2	1141					checked	d by: <b>AH</b>	
osit	ion:	E: 31	8929; 1	N: 6251	470 (Datum Not Specified) surfa	ce elevation: 13.	20 m (Al	HD)		angle	e from horiz	ontal: 90°	
drill n	node	l: GE	O205,	Track r	mounted drillin	ıg fluid:				hole	diameter : 1	100 mm	
drilli	ing i	nform	ation	mate	rial substance					rock	mass defe		
support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain charact colour, structure, minor com	terisics,	weathering & alteration	estimated strength & Is50 ×= axial; ○= diametral ⇒ □ ▼ ∓ ∰	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	defect de (type, inclination, plana	servations and escriptions rity, roughness, coating ss, other) gene
$\top$	_						FR	1111					94112
▼ NMLC		3								97%			
•			-		Borehole BH03 terminated at 16.	50 m			<del>a=0.87</del> d=0.36		<del>                                     </del>		
			-		Target depth								
		4	17.0 -										
			-										
		_	-										
			18.0 —										
		5	-										
			-										
		_											
			19.0 —										
		6	-										
			_										
		-	-										
			20.0 —										
		- <b>-</b> 7	-										
			-										
			-										
		8	21.0 -										
			-										
		_	-										
			22.0 —										
		9	-										
			-										
		-	-										
			23.0 —										
		10	-										
			-										
			-										
met AS		& supp	ort crewing		water	graphic log / co	re recove	у	weathering RS residua	al soil		defect type PT parting	<b>planarity</b> PL planar
AD CB	a cl	uger d law or	rilling blade bi	t	10/10/12, water level on date shown		covered mbols indicate	material)	XW extrem HW highly DW distinct	ely wea weather	ed	JT joint SZ shear zone SS shear surface	CU curved UN undulating ST stepped
W NMI NQ	LC N	ashbo IMLC o	ore (51.	.9 mm)	water inflow complete drilling fluid loss		e recovere		MW moders SW slightly	ately we	athered	CS crushed seam SM seam	IR Irregular
HQ PQ	W	ireline	core (47 core (63 core (85	3.5mm)	partial drilling fluid loss	core run & RQE			FR fresh *W replaced wi strength			DB drilling break roughness	coating
SPT	te	est		ation '	water pressure test result	1 1	withdrawn		VL very lov L low	/		SL slickensided POL polished	CN clean SN stain
пΑ	wireline core (85.0mm)  standard penetration test hand auger				water pressure test result (lugeons) for depth interval shown	RQD = Rock Q	ualitv Desi	gnation (%)	M medium H high	ı		SO smooth RO rough	VN veneer CO coating



### **Piezometer Installation Log**

dient: Bouygues Construction Australia project no. GEOTLCOV25554AA

Hole ID.

sheet:

**BH03** 

1 of 1

principal: Dooleys Lidcombe Catholic Club date completed: 19 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

position: E: 318929; N: 6251470 (Datum Not Specified) surface elevation: 13.20 m (AHD) angle from horizontal: 90° equipment type: GEO205, Track mounted hole diameter: 100 mm drilling information material substance piezometer construction details bore construction license: material name drilling company:  $\Xi$ method & support driller:  $\widehat{\mathbb{E}}$ water depth driller's permit no.: 귒 FILL: ASPHALT FILL: Gravelly SAND Silty CLAY 12 SILTSTONE -CASING-Bentonite AD/ 3.00 m 01/12/15 07:25 INTERBEDDED SILTSTONE AND SANDSTONE -8 Sand LAMINITE 8.00 m 8 Bentonite 12 Cuttings -0 16 Borehole BH03 terminated at 16.50 m Target depth method & support graphic log / core recovery type stick up & RL tip depth & RL install. date water level see engineering log for details standpipe wate core recovered (graphic symbols indicate material) 10-Oct-12, water level on date shown no core recovered complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown





řev.

**PHOTO 10** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH03

N.T.S.

scale

44



PointID: BH03 Depth Range: 13.00 - 16.50 m

77	COLLE	)		
문 문		11/12/2015	N.T.S.	<b>A</b> 4
drawn		date	scale	original size

client: Bouygues Construction Australia project: Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141 title: CORE PHOTOGRAPH
--

řeV.

**PHOTO 11** 

fig no:

project no: GEOTLCOV25554AA



#### **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH04** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 26 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

24-28 John St, Lidcombe NSW 2141 location: checked by: AH position: E: 318954; N: 6251461 (Datum Not Specified) surface elevation: 14.00 m (AHD) angle from horizontal: 90° DCP id.: drill model: DRILLTECH 550, Truck mounted hole diameter: 100 mm drilling information material substance DCP hand structure and classificatior bc samples & penetro meter  $\widehat{\Xi}$ method & moisture condition graphic k **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components field tests support  $\widehat{\mathbb{E}}$ depth (kPa) Ζ 9 9 9 9 FILL: ASPHALT D to M ASPHALT Е FILL: Gravelly SAND: fine to medium grained, 11111Е PID(0.2m) = 0.0ppm, nobrown, gravel is fine to medium grained, odours or staining observed PID(0.4m) = 5.2ppm <Wp becoming dark brown, gravel is, medium to coarse grained, sub-rounded to sub-angular | | | | | |13 1.0 RESIDUAL SOIL VSt to CLAY: high plasticity, brown mottled pale PID(1.5m) = 2.3ppm becoming pale grey IIIIIICASING 12 2.0 AD/T +++++WEATHERED BEDROCK INTERBEDDED SANDSTONE AND 11 SILTSTONE: pale grey to dark grey, extremely weathered, very low strength. 3.0 1111110 4.0 Borehole BH04 continued as cored hole +++++-9 5.0 -8 6.0 7.0 classification symbol & method AD auger drilling\* support samples & field tests consistency / relative density soil description bulk disturbed sample VS very soft based on Unified auger screwing' C casing disturbed sample D S soft НΔ hand auger Classification System environmental sample F St W penetration washbore SS split spoon sample stiff HA hand auger no resistance ranging to
 refusal moisture D dry M mois W wet U## undisturbed sample ##mm diameter VSt very stiff dry moist wet plastic limit liquid limit H Fb HP hand penetrometer (kPa) hard standard penetration test (SPT) water SPT - sample recovered SPT with solid cone bit shown by suffix 10-Oct-12 water level on date shown N\* VL very loose loose e.g. B AD/T L MD vane shear; peak/remouded (kPa) medium dense blank bit VS refusal dense TC bit water outflow very dense hammer bouncing



client:

project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

sheet: 2 of 4

Borehole ID.

logged by:

project no. **GEOTLCOV25554AA** 

NM

**BH04** 

Bouygues Construction Australia date started: 26 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 26 Nov 2015

ocation: 24-28 John St. Lidcombe NSW 2141 checked by: AH

loca	atior	n: <b>2</b>	4-28	Joh	n St, Lidcombe NSW 2	2141					checked	d by: <b>AH</b>	
posi	tion:	E: 31	8954; N	l: 6251	461 (Datum Not Specified) surfa	ace elevation: 14.	00 m (Al	HD)		angl	e from horiz	ontal: 90°	
-						ng fluid:					diameter :		
dril	ling	inform	ation	mate	rial substance	-				rock	mass defe		
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain charact colour, structure, minor cor	cterisics,	weathering & alteration	estimated strength & Is50 ×= axial; O= diametral  > □ Σ ፲ > □	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional obse defect desi (type, inclination, planarit thickness particular	criptions y, roughness, coating,
	Not Observable	-13 -12 -11 -10 -9 -7 -7	1.0 —  2.0 —  3.0 —  4.0 —  5.0 —  7.0 —  7.0 —		start coring at 4.10m  INTERLAMINATED SILTSTONE SANDSTONE: siltstone (50%) ar (50%), distinctly bedded at 0-5°, fine grained, pale grey, siltstone iron staining on the joints and pa	nd sandstone sandstone is is dark grey. rtings	HW SW		a=0.57 d=0.09 a=0.98 d=0.40 a=5.71 d=3.99	71%			Defects are: PT, 0°, PL, SO, Fe SN, unless otherwise described
AS AD CB W	ILC I	auger d claw or washbo NMLC d wireline wireline wireline	crewing rilling blade bit re core (51.9 core (63 core (85 d penetra	9 mm) 7.6mm) 8.5mm) 6.0mm)	water    10/10/12, water     level on date shown     water inflow     complete drilling fluid loss     partial drilling fluid loss     water pressure test result (lugeons) for depth     interval shown	no core	covered mbols indicate recovere	material) d	RS residu	al soil nely wea weathe weathe ttly weat rately w y weath with A for a	athered red thered eathered ered	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating



Bouygues Construction Australia project no. GEOTLCOV25554AA

date started: 26 Nov 2015

Borehole ID.

sheet:

**BH04** 3 of 4

client:Bouygues Construction Australiadate started:26 Nov 2015principal:Dooleys Lidcombe Catholic Clubdate completed:26 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

location: 24-28 John St, Lidcombe NSW 2141 checked by: AH

ſ	posit	ion:	E: 31	8954; N	N: 6251	461 (Datum Not Specified) surface elevat	tion: 14.0	0 m (Al	HD)		angl	e from horizo	ontal: 90°	
					H 550,	Truck mounted drilling fluid:						diameter : 1		
ļ	drilli	ng i	nform	ation	mate	rial substance					rock	mass defe		
	method & support	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components		weathering & alteration	estimated strength & Is50 ×= axial; O= diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observat defect descript (type, inclination, planarity, rc thickness, oth particular	ons ughness, coating, er)
١		×	-5	9.0 —	6	<b>LAMINITE</b> : siltstone (70%) and sandstone (30%), distinctly laminated at 0-5°, sandstoffine grained, pale grey, siltstone is dark grey.	one is	FR		a=0.89 d=0.14	91%			general -
			-4	10.0 —						a=0.66 d=0.33 a=0.51 d=0.30	98%			- - - -
File>> 11/12/2015 10:48	НО	Not Observable	-3 -	- 11.0 — - - - 12.0 —						a=0.55 d=0.12	94%		-	Defects are:PT, 0 - 10°, PL, SO, CN, unless otherwise described
BOREHOLE: CORED GEOTLCOV25554AA.GPJ < <drawingfile>&gt; 11/12/2015 10:48</drawingfile>		ÖZ	-1	- - - 13.0 —						a=0.63 d=0.40			- - - JT, 40°, UN, RO, CN	Defects are:PT, 0 unless othen
COF BOREHOLE: CORED GEOT			- -0 -	14.0 — - - -						a=0.54 d=0.32 a=2.57 d=0.60	92%		– – –– JT, 80 - 85°, UN, RO, CN –	- - - - -
CDF_0_9_04BB.GLB Log			1 -	15.0 — - - -						a=0.95 d=0.47	98%		-	-   -   -   -
	AS AD CB W	a c w _C N w w w w w te	uger d law or ashbo iMLC o ireline ireline	crewing rilling blade bit re core (51. core (47 core (63 core (85 d penetr	9 mm) 7.6mm) 3.5mm) 5.0mm)	10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss water pressure test result	c log / core  core reco (graphic symt  no core r  un & RQD  barrel wit  = Rock Qua	overed bols indicate recovere	material)	HW highly DW distinct MW mode	al soil nely wea weathe ttly weat rately we y weathe rith A for a w	athered red hered eathered ered	PT parting	



project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

sheet: 4 of 4
project no. **GEOTLCOV25554AA** 

**BH04** 

NM

Borehole ID.

logged by:

client: Bouygues Construction Australia date started: 26 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 26 Nov 2015

location: 24-28 John St. Lidcombe NSW 2141 checked by: AH

loca	atio	n: 2	24-28	Joh	n St, Lidcombe NSW 2141					checked	l by: <b>AH</b>	
posit	tion:	E: 31	8954; I	N: 6251	461 (Datum Not Specified) surface elevation: 14	.00 m (Al	HD)		angle	e from horiz	ontal: 90°	
drill r	mod	lel: DR	ILLTEC	H 550,	Truck mounted drilling fluid:				hole	diameter : 1	00 mm	
drill	ling	inforn	nation	mate	erial substance				rock	mass defe		
method & support	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 ×= axial; O= diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional obse defect des (type, inclination, planari thickness	criptions ty, roughness, coating s, other)
om HQ — HQ —	Not Observable wa	3	17.0 -		LAMINITE: siltstone (70%) and sandstone (30%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey. (continued)	ew ER		a = 2.34 d = 0.69 d = 0.35 a=0.84 d=0.43	98% 92%		particular	Defects are:PT, 0 - 10°, PL, SO, CN, each unless otherwise described
<b>*</b>		<del>-6</del>	20.0		Borehole BH04 terminated at 20.00 m Target depth			d=0.38			— JT, 70°, UN, RO, CN — JT, 80°, UN, RO, CN	
		7	21.0 —									
		8 -	22.0	-								
		9 -	23.0									
AS AD CB W	ILC } } T	auger of claw or washbo NMLC wireline wireline wireline	screwing drilling blade bi ore core (51 e core (4 e core (6) e core (8) rd peneti	t .9 mm) 7.6mm) 3.5mm) 5.0mm)	water inflow  complete drilling fluid loss partial drilling fluid loss  core run & RQI	ecovered ymbols indicate e recovered D withdrawn	material)	weathering RS residu XW extren HW highly DW distinc MW models SW slightly FR fresh Wreplaced VL very lov L low M mediur H high VH very hig EH extrem	al soil nely weather weather ately weat rately we y weather ith A for a w n	athered red hered eathered ered	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating



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**PHOTO 12** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH04

11/12/2015

N.T.S.

scale

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11/12/2015

date

approved

drawn

N.T.S.

scale

44

original size

Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141 Bouygues Construction Australia project: client:

CORE PHOTOGRAPH BH04 fig no: project no: GEOTLCOV25554AA

rev.

**PHOTO 13** 

0\_9\_04BB.GLB GR6Tb1 COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV2654AA.GP1 <<DrawningFile>> 11/12/2015 10:39



řev:

**PHOTO 14** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH04

N.T.S.

scale

44



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11/12/2015

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approved

drawn

N.T.S.

date scale 44

original size

client: Bouygues Construction Australia

project: Dooleys Lidcombe Club & Hotel Development
24-28 John St, Lidcombe NSW 2141

24-28 John St, Lidcombe NSW
CORE PHOTOGRAPH

project no: GEOTLCOV25554AA fig no:

rev.

**PHOTO 15** 

CDF\_0\_9\_04BB.GLB G46Tbl COF PHOTO CORE PHOTO 1 PER PAGE GEOTLCOV25554AA.GPJ <<DrawingFile>> 11/12/2015 10



## **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH05** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: MF

location: 24-28 John St, Lidcombe NSW 2141								cł	necked l	MF					
position: E: 318977; N: 6251499 (Datum Not Specified) surface elevation: 15.60 m (AHD)									angle from horizontal: 90° DCP id.:						
$\vdash$				)5, Track n	nounte	ed				hole diameter : 100 mm					
dı	rillin	g info	rmati	on			mate		estance	I	>		I		
method &	p t				material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	hand penetro- meter (kPa)	DCP (blows/ 100 mm	<b>'</b>					
1	<b>A</b>			Е	-	_			FILL: ASPHALT	D to M				ASPHALT	
			/able	——————————————————————————————————————	-15 -	1.0		CH	FILL: Gravelly SAND: fine to medium grained, gravel is fine to medium grained, sub angular to angular.  Silty CLAY: high plasticity, pale grey mottled red brown.	<wp< td=""><td>St to VSt</td><td></td><td></td><td>RESIDUAL SOIL</td></wp<>	St to VSt			RESIDUAL SOIL	
——————————————————————————————————————	CASING —		Not Observable	0, 0, 0 N*=11 E	-14 -14	2.0			SILTSTONE: brown, extremely weathered,		VSt to H			WEATHERED BEDROCK	
VIID U7:30				SPT 10, 20/100mm HB N*=R	-13	- - - - -			very low strength.  becoming brown-grey, extremely to highly weathered, estimated very low to low strength						
15/1/61	*			14 -14	-	3.0			Borehole BH05 continued as cored hole						
COT BOREHOLE: NON CORED + DOP GEOTLOOV 255594AA, GF3 < CUTAWINGTIRE> 19/1/26/10/10/26					-12 -	4.0								- -	
JOP GEOTLOOV23334A	-11 - 									_					
HOCE. NON CONED					-10 -	6.0								-	
COL COL GABBIGEB FOR COL BONE					-9 -	7.0									
)   		             			-8	-									
AI AS H/ W	e.g. AD/T			mud casing etration	no resi rangin refusal	g to	samples & field tests  B	classification symbol & soil description based on Unified Classification System  moisture D dry M moist W wet				consistency / relative density           VS         very soft           S         soft           F         firm           St         stiff           VSt         very stiff           H         hard           Fb         friable           VL         very loose			
e.g B T				leve	el on date er inflow	Oct-12 water N* SPT - sample recovered Nc SPT with solid cone						L loose  MD medium dense  D dense  VD very dense			



principal:

### **Engineering Log - Cored Borehole**

**Bouygues Construction Australia** 

Dooleys Lidcombe Catholic Club

2 of 4 sheet:

**BH05** 

GEOTLCOV25554AA project no. date started: 25 Nov 2015

Borehole ID.

date completed: 25 Nov 2015

**Dooleys Lidcombe Club & Hotel Development** TO logged by: project: 24-28 John St, Lidcombe NSW 2141 MF checked by:

location: position: E: 318977; N: 6251499 (Datum Not Specified) surface elevation: 15.60 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions tion, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support graphic colour, structure, minor components Œ depth , (MPa) thickness, other) water 귐 particular \_ ≥ = ∃ <u>H</u> 15 I + I + I + I1.0 14 2.0 13 start coring at 3.00m SM, 0°, PL, CL Clay, 20 mm SANDSTONE: fine to medium grained, pale N/N/ grey to orange brown, indistinctly laminated. -PT, 5°, CU, RO, CN a=2.27 12 INTERBEDDED SANDSTONE AND PT. 0 - 5°. UN. RO. CN SILTSTONE: siltstone (50%) and sandstone 99% (50%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey. 4.0 SW a=0.32 d=0.21 SM, 0 - 5°, IR, Clay 11 SN, , PL, RO, Fe S described MW 5.0 Not Observable ts are:PT, 0 - 10°, unless otherwise a=2.36 d=0.54 10 PT, 0 - 5°, IR, RO, Fe SN – CS, 0°, 30 mm SZ, Fe SN, 30 mm ∫JT, 90°, PL, RO, Fe SN PT, 0 - 15°, IR, RO, Fe SN 01/12/15 07:35 MW to 6.0 91% COF BOREHOLE: SW -9 04BB.GLB 7.0 a=1.58 d=0.43 JT, 80 - 90°, IR, RO, Pyrite SN -8 FR -JT, 60 - 85°, IR, RO, CN 92% weathering & alteration planarity PL plana defect type method & support graphic log / core recovery PL planar CU curved UN undulating parting joint shear zone residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SS CS shear surface ST IR stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break slightly weathered fresh eplaced with A for alteration complete drilling fluid loss no core recovered partial drilling fluid loss \*W re core run & RQD roughness coating CN clean SN stain VN veneer PQ SPT wireline core (85.0mm very low low medium VL slickensided polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) RO CO coating hiah rouah very high very rough



project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

sheet: 3 of 4

**BH05** 

TO

project no. **GEOTLCOV25554AA** 

Borehole ID.

logged by:

client: Bouygues Construction Australia date started: 25 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

location: 24-28 John St, Lidcombe NSW 2141 checked by: MF

loc	location: 24-28 John St, Lidcombe NSW 2141									checked by: MF					
position: E: 318977; N: 6251499 (Datum Not Specified) surface elevation: 15.60 m (AHD)										angle from horizontal: 90°					
dril	ll m	ode	I: GE	O205,	Track r	nounted drillin	ng fluid:				hole diameter : 100 mm				
dr	rillir	ng ir	nform	ation	mate	rial substance					rock	mass defe	ects		
method &	rpport	water	L (m)	depth (m)	graphic log	material descriptio ROCK TYPE: grain charac colour, structure, minor con	cterisics,	weathering & alteration	estimated strength & Is50 ×= axial; O = diametral	samples, field tests & Is(50) (MPa) a = axial;	core run & RQD	defect spacing (mm)	additional observations and defect descriptions (type, inclination, planarity, roughness, coathickness, other)		
E :	ซ	š	귒	ğ	<u></u>	INTERBEDDED SANDSTONE A	ND	≱ <del>to</del>		d = diametral	8 %	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	particular ge	enera	
				9.0 —		SILTSTONE: siltstone (50%) and sar (50%), distinctly laminated at 0-10°, sine grained, pale grey, siltstone is de (continued)  LAMINITE: siltstone (60%) and sand (40%), distinctly laminated at 0-5°, sa fine grained, pale grey, siltstone is de laminated at 0-5°, sa fine grained, pale grey, siltstone is de laminated at 0-5°.	I sandstone 0°, sandstone is is dark grey. andstone °, sandstone is		*	a=1.70 d=0.56	92%		⇒— PT, 0°, RO, CN, 30 mm, multiple partings	-	
			-6 -	10.0 —					**************************************	a=1.02 d=0.64			PT, 0°, RO, CN, 30 mm, multiple partings PT, 0 - 5°, IR, RO, CN		
			-5 -	11.0 —						a=0.70 d=0.73			╤— PT, 0 - 5°, IR, RO, CN	e SN,	
NMLC		Not Observable	- <b>4</b>	12.0 —		sandstone band, fine grained, grey			***************************************	a=0.96 d=0.67	98%			Defects are:PT, 0 - 10°, PL, RO, Fe SN unless otherwise described	
			-3 -	13.0 —						a=0.90 d=0.89			-	Defects are unles	
			-2 -	14.0 —			ey		*	a=1.42 d=1.03					
			-1 -	- - 15.0 —					<b>8</b>	a=0.77 d=0.58	97%		Ē— PT, IR, multiple partings		
			-0	-					**************************************	a=0.81 d=0.67					
CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (63.5mm) SPT standard penetration test  HA bend august  water organisation test  water organisa			9 mm) 7.6mm) 3.5mm) 5.0mm)	water    10/10/12, water level on date shown water inflow complete drilling fluid loss partial drilling fluid loss    water pressure test result (lugeons) for depth	no core	covered nbols indicate recovere	material)	HW highly DW distinct MW mode	al soil nely wea weathe titly weat rately we y weathe tith A for a	athered red hered eathered ered	defect type	,			



principal:

project:

#### **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

**Bouygues Construction Australia** 

Dooleys Lidcombe Catholic Club

4 of 4 sheet:

Borehole ID.

GEOTLCOV25554AA project no.

**BH05** 

25 Nov 2015 date started:

date completed: 25 Nov 2015

logged by: TO

24-28 John St, Lidcombe NSW 2141 MF location: checked by: position: E: 318977; N: 6251499 (Datum Not Specified) surface elevation: 15.60 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions (type, inclination, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support graphic colour, structure, minor components Œ (MPa) thickness, other) depth water 300 300 300 3000 귐 particular \_ ≥ = ∃ <u>H</u> LAMINITE: siltstone (60%) and sandstone NMLC-(40%), distinctly laminated at 0-5°, sandstone is fine grained, pale grey, siltstone is dark grey. ok -1 Borehole BH05 terminated at 16.45 m Target depth 17 0 -2 18.0  $\perp$ -3 19.0 -4 20.0  $\perp$ -5 21.0 -6 22 0 04BB.GLB Log COF BOREHOLE: --7 23.0 -8 weathering & alteration defect type method & support graphic log / core recovery PL planar CU curved UN undulating parting joint shear zone residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SW FR SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) slightly weathered fresh eplaced with A for alteration seam drilling break complete drilling fluid loss no core recovered partial drilling fluid loss \*W re coating CN clean SN stain VN veneer core run & RQD roughness PQ SPT wireline core (85.0mm very low low medium VL slickensided POL SO RO polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) CO coating hiah rouah very high very rough



### **Piezometer Installation Log**

client: Bouygues Construction Australia project no.

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

Hole ID.

sheet:

**BH05** 1 of 1

GEOTLCOV25554AA

25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: MF

position: E: 318977; N: 6251499 (Datum Not Specified) surface elevation: 15.60 m (AHD) angle from horizontal: 90° equipment type: GEO205, Track mounted hole diameter: 100 mm drilling information material substance piezometer construction details bore construction license: material name drilling company:  $\Xi$ method & support driller:  $\widehat{\mathbb{E}}$ water driller's permit no.: FILL: ASPHALT FILL: Gravelly SAND Cuttings Obser Silty CLAY CASING-AD/T Not Bentonite SILTSTONE 2.50 m SANDSTONE 12 INTERBEDDED SANDSTONE AND Sand 01/12/15 07:35 -8 8.00 m LAMINITE 12 Cuttings -0 16 Borehole BH05 terminated at 16.45 m method & support graphic log / core recovery stick up & RL tip depth & RL install. date water level type see engineering log for details standpipe piezo. wate core recovered (graphic symbols indicate material) 10-Oct-12, water level on date shown no core recovered complete drilling fluid loss partial drilling fluid loss water pressure test result (lugeons) for depth interval shown



řev:

**PHOTO 16** 

fig no:

project no: GEOTLCOV25554AA

N.T.S.

scale

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rev:

**PHOTO 17** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH05

N.T.S.

scale

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řev:

**PHOTO 18** 

fig no:

project no: GEOTLCOV25554AA

44



## **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH06** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

location: 24-28 John St, Lidcombe NSW 2141							checked by: MF				MF			
position: E: 318931; N: 6251513 (Datum Not Specified) surface elevation: 12.00 m (AHD)									angle from horizontal: 90° DCP id.:					
_			ECH 550,	Truck	mount				hole diameter : 100 mm					
drill	ling info	mati	on			mate		stance		>				
method & support	1 2 penetration 3	water	samples & field tests	SRL (m)	depth (m)	graphic log	classification symbol	material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	consistency / relative density	hand penetro- meter (kPa)	DCP (blows/	structure and additional observations	
CDF_0_9_04BB.GLB Log COF BOREHOLE: NON CORED + DCP GEOTLCOV28564AA.GFP < AD/T - AD/T - CASING - C		Not Observable	E	-11 -10 -9 -7 -6 -5	1.0 —		СН	FILL: Gravelly SAND: fine grained, dark brown, gravel is medium to coarse grained, with a trace of clay.  CLAY: high plasticity, brown mottled grey.  INTERBEDDED SILTSTONE AND SANDSTONE: extremely weathered, very low strength.  with fragments of siltstone and sandstone  Borehole BH06 continued as cored hole	D to M	St to VSt to H			FILL  RESIDUAL SOIL  PID(0.2m) = 0.2ppm, no odours or staining observed  PID(0.5m) = 0.4ppm  PID(1.0m) = 0.5ppm	
meti AD AS HA W HA		crewir ger re ger	ng*	pend E wate	etration  S S  er  10-0 leve		g to iter shown	samples & field tests  B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	moistur D dr M mo W we Wp pla	ased on ssification			consistency / relative density  VS very soft  S soft  F firm  St stiff  VSt very stiff  H hard  Fb friable  VL very loose  L loose  MD medium dense  D dense  VD very dense	



2 of 4 sheet:

NM

**BH06** 

GEOTLCOV25554AA

Borehole ID.

project no.

**Bouygues Construction Australia** client: date started: 25 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: location: 24-28 John St, Lidcombe NSW 2141 MF checked by:

	position: E: 318931; N: 6251513 (Datum Not Specified) surface elevation: 12.00 m (AHD)											angle from horizontal: 90°					
drill model: DRILLTECH 550, Truck mounted drilling fluid:												diameter : 1					
dril	llinç	g info	orma	tion	mate	rial substance					rock mass defects						
method & support	1000	water	،RL (m)	depth (m)	graphic log	material descriptio ROCK TYPE: grain charac colour, structure, minor cor	cterisics,	weathering & alteration	estimated strength & Is50 ×= axial; O= diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional observa defect descrip (type, inclination, planarity, r thickness, oth particular	tions oughness, coating,			
CDF_0_9_04BB.GLB_Log_COF_BOREHOLE: CORED_GEOTLCOV25554AA.GPJ_<-DrawingFile>> 11/12/2015 10:48  — HQ — ■	Mat Observable	_	,	1.0 —		start coring at 4.00m  INTERBEDDED SILTSTONE AN SANDSTONE: siltstone (50%) ar (50%), distinctly laminated at 0-1 fine grained, pale grey, siltstone iron staining in the joints and par sandstone band  LAMINITE: siltstone (70%) and s (30%), distinctly laminated at 0-1 fine grained, pale grey, siltstone	and sandstone 0°, sandstone is is dark grey. tings  andstone 0°, sandstone is is dark grey.	HW SW		a=0.47 d=0.11 a=0.59 d=0.20 a=0.69 d=0.33	76% 86%		PT, 0°, UN, SO, Fe SN  JT, 85 - 90°, UN, SO, Fe SN  JT, 30°, UN, RO, Fe SN  CS, Fe SN, 6 mm  SM, CL Clay, 5 mm  CS, Fe SN, 5 mm  PT, 0°, PL, SO, Pyrite VN  PT, 0°, PL, SO, CN	ffects are:PT, 0°, PL, SO, Fe SN, unless otherwise described			
AS AE CE W NM NC HC SF	method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (47.6mm) HQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger			rewing lling lade bit ere (51. core (47 core (63 core (85 penetr	water    10/10/12, water				material)	weathering RS residu XW extrent HW highly DW distinct MW mode: SW slight! FR fresh Wreplaced w strength VL very loi L low M mediur H high VH very hit EH extrem	al soil nely wea weathe ttly weat rately we y weathe rith A for a w n	athered red hered eathered ered	PT parting JT joint SZ shear zone SS shear surface CS crushed seam DB drilling break  roughness SL slickensided POL polished SO smooth V	lanarity L planar U curved N undulating T stepped R Irregular  coating N clean N stain N veneer O coating			



client: Bouygues Construction Australia project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH06** 3 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

MF 24-28 John St, Lidcombe NSW 2141 location: checked by: position: E: 318931; N: 6251513 (Datum Not Specified) surface elevation: 12.00 m (AHD) angle from horizontal: 90° drill model: DRILLTECH 550, Truck mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions tion, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support colour, structure, minor components Œ depth , (MPa) thickness, other) water 300 300 300 3000 귐 \_ ≥ = ∃ <u>H</u> particular LAMINITE: siltstone (70%) and sandstone (30%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey. a=0.43 d=0.30 9.0 100% a=0.98 d=0.36 100% 10.0 a=0.91 d=0.32 | | |11.0 S 97% o, PL, SO, described a=0.53 d=0.30 Not Observable Defects are:PT, 0 - 10°, unless otherwise d 12.0 a=0.56d=0.15 13.0 -1 a=0.56 d=0.11 98% SM, Clay, 2 mm --2 14 0 COF BOREHOLE: a=1.07 d=0.40 04BB.GLB -3 15.0 100% a=0.90 d=0.44 weathering & alteration defect type planarity PL plana method & support graphic log / core recovery parting joint shear zone PL planar CU curved UN undulating residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) SW slightly weathered FR fresh "W replaced with A for alteration strength seam drilling break complete drilling fluid loss no core recovered partial drilling fluid loss coating CN clean SN stain VN veneer core run & RQD PQ SPT roughness wireline core (85.0mm very low low medium VL slickensided POL SO RO polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) CO coating hiah rouah very high very rough



Log - Cored Borehole project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH06** 

4 of 4

client: Bouygues Construction Australia date started: 25 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 25 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM location: 24-28 John St. Lidcombe NSW 2141 checked by: MF

loca	atio	n: 2	24-28	Joh	n St, Lidcombe NSW 2	141		checked by: <b>MF</b>						
posit	tion:	E: 31	8931; <b>N</b>	N: 6251	513 (Datum Not Specified) surfa	ce elevation: 12.0	00 m (Al	HD)		angl	e from horiz	ontal: 90°		
drill r	nod	lel: DR	ILLTEC	H 550,	Truck mounted drillin	ig fluid:				hole diameter : 100 mm				
drill	ing	inforn	ation	mate	rial substance					rock	mass defe			
method & support	water	RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain charact colour, structure, minor com	terisics,	weathering & alteration	estimated strength & Is50 ×= axial; O= diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	defect d (type, inclination, plans	oservations and lescriptions arity, roughness, coating less, other)	
E HQ - HQ	Not Observable w		17.0 —		LAMINITE: siltstone (70%) and s (30%), distinctly laminated at 0-1 fine grained, pale grey, siltstone i (continued)	0°, sandstone is	FR FR		a=0.79 d=0.40  a=0.61 d=0.28  a=1.23 d=0.31	100%		= SM, Clay, 5 mm	Defects are:PT, 0 - 10°, PL, SO, CN,	
<u> </u>			21.0 —		Borehole BH06 terminated at 20. Target depth	00 m								
method & support  AS auger screwing  AD auger drilling  claw or blade bit  W washbore  NMLC NMLC core (51.9 mm)  NQ wireline core (47.6mm)  HQ wireline core (83.5mm)  PQ wireline core (85.0mm)  SPT standard penetration  test  hand auger			crewing rilling blade bi re core (51. core (47. core (63. core (85. d penetr	9 mm) 7.6mm) 3.5mm) 5.0mm)	water    10/10/12, water     level on date shown     water inflow     complete drilling fluid loss     partial drilling fluid loss     water pressure test result (lugeons) for depth     interval shown	no core	covered mbols indicate recovere vithdrawn	material)	weathering RS residu XW extrer HW highly DW distinc MW mode SW slight! FR fresh "W replaçed w strength VL very lov L low M mediur H high VH very hig EH extrem	al soil nely wea weathe ttly weat rately we y weathe rith A for a w m	athered red hered eathered ered	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating	



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11/12/2015

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scale date

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Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141 Bouygues Construction Australia CORE PHOTOGRAPH BH06 project: client:

project no: GEOTLCOV25554AA

fig no:

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**PHOTO 19** 



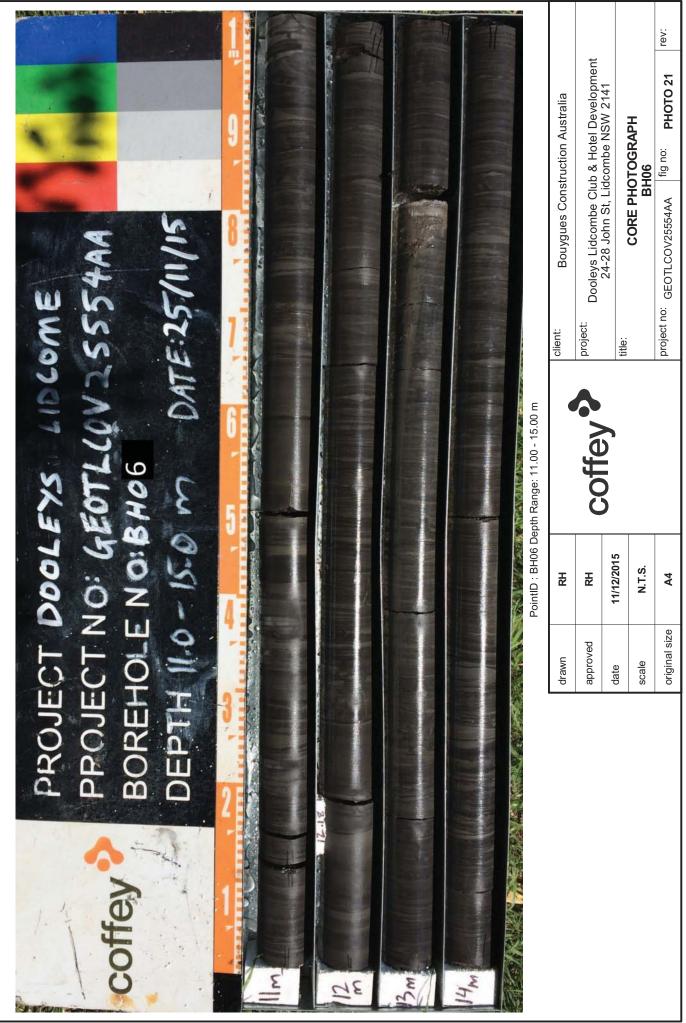
PointID: BH06 Depth Range: 7.00 - 11.00 m

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RH	RH	11/12/2015	N.T.S.
drawn	approved	date	scale

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original size

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on Australia	Hotel Development oe NSW 2141	зкарн	<sup>2:</sup> PHOTO 20
ructi	o & F	TOC 06	fig no:
Bouygues Construction Australia	Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141	CORE PHOTOGRAPH BH06	GEOTLCOV25554AA
	project:	title:	project no:





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**PHOTO 22** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH

11/12/2015

date

N.T.S.

scale

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rev.

**PHOTO 23** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH06

11/12/2015

N.T.S.

scale

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## **Engineering Log - Borehole**

client: Bouygues Construction Australia date started: 24 Nov 2015

Borehole ID.

sheet:

**BH07** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

24-28 John St, Lidcombe NSW 2141 MF location: checked by: position: E: 318935; N: 6251535 (Datum Not Specified) surface elevation: 12.30 m (AHD) angle from horizontal: 90° DCP id.: drill model: DRILLTECH 550, Track mounted hole diameter: 100 mm drilling information material substance DCP material description hand structure and classificatior gol samples & penetro meter method & support  $\widehat{\Xi}$ **SOIL TYPE**: plasticity or particle characteristic, colour, secondary and minor components condition field tests graphic I  $\widehat{\mathbb{E}}$ depth (kPa) Ζ 100 200 300 400 FILL: Gravelly SAND: fine to medium grained, D to M dark brown, gravel is medium to coarse grained, with a trace of silt. -12 <Wp St to RESIDUAL SOIL PID(0.2m) = 0.0ppm, no CLAY: high plasticity, brown mottled grey. odours or staining observed  $\Box$ 1 0 VSt to PID(1.0m) = 0.0ppm| | | | | | |PID(1.5m) = 0.0ppm N\*=41 becoming pale grey AD/T 2.0 10 WEATHERED BEDROCK INTERBEDDED SILTSTONE AND SANDSTONE: extremely weathered, very low +++++3.0 Borehole BH07 continued as cored hole 8  $\square$ 5.0 6.0 -6 7.0 -5 classification symbol & method AD auger drilling\* support samples & field tests consistency / relative density soil description bulk disturbed sample VS very soft based on Unified auger screwing' C casing disturbed sample D S soft НΔ hand auger Classification System environmental sample F St penetration washbore SS split spoon sample stiff HA hand auger no resistance ranging to
 refusal moisture D dry M mois W wet U## undisturbed sample ##mm diameter VSt very stiff H Fb HP hand penetrometer (kPa) dry moist hard standard penetration test (SPT) water wet plastic limit liquid limit SPT - sample recovered SPT with solid cone bit shown by suffix 10-Oct-12 water level on date shown N\* VL very loose loose e.g. B AD/T L MD vane shear; peak/remouded (kPa) VS medium dense blank bit dense TC bit water outflow very dense hammer bouncing



client:

# **Engineering Log - Cored Borehole**

**BH07** sheet: 2 of 4

GEOTLCOV25554AA

Borehole ID.

project no.

Bouygues Construction Australia date started: 24 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015 project: Dooleys Lidcombe Club & Hotel Development logged by: NM

24-28 John St. Lidcombe NSW 2141 location: checked by: MF

_	loca	ation	: Z	4-28	Joh	n St, Lidcombe NSW 2141					checked	l by: <b>MF</b>	
						535 (Datum Not Specified) surface elevation: 12.	30 m (A	HD)			e from horizo		
					_	Track mounted drilling fluid:					diameter : 1		
ŀ	drill	ing i	nform	ation	mate	erial substance material description		estimated	samples,	rock	defect	additional obse	nyations and
	method & support	water	RL (m)	depth (m)	graphic log	ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	strength & Is50 × = axial; O = diametral	field tests & Is(50) (MPa) a = axial;	core run & RQD	spacing (mm)	defect desc (type, inclination, planarity thickness,	criptions y, roughness, coating, other)
ŀ	E ⊠	>	22	ō	5		5 €		d = diametral	გ ∞	8 2 8 2 8	particular	general
10:48			-12 -11 -10										
REHOLE: CORED GEOTLCOV25554AA.GPJ < <drawingfile>&gt; 11/12/2015 10:48</drawingfile>			-8 7	4.0		start coring at 4.00m  INTERBEDDED SILTSTONE AND SANDSTONE: siltstone (50%) and sandstone (50%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey. iron staining in the joints and partings	HW to MW MW		a=0.60 d=0.24	81%		JT, 85 - 90°, UN, RO, F PT, 0°, UN, SO, Fe SN PT, 0°, UN, SO, Fe SN SM, Clay, 3 mm  SM, Clay, 5 mm JT, 80°, PL, SO, Fe SN	ds are.PT, 0° PL, SO, F In less otherwise describu
HOLE: CORED GEOTI	— HQ	Not Observable		sandstone band, pale grey	FR		a=1.71 d=1.19			— PT, 0°, PL, SO, Fe SN — PT, 0°, PL, SO, Fe SN — PT, 0°, PL, SO, Fe SN			
COF BO			-6 -	7.0		sandstone band, pale grey			a=1.60 d=0.13	95%			-
CDF_0_9_04BB.GLB Log			-5 -	- - -		<b>LAMINITE</b> : siltstone (70%) and sandstone (30%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey.			a=0.98 d=0.23			-	
	method & support AS auger screwing AD auger drilling CB claw or blade bit W washbore NMLC NMLC core (51.9 mm) NQ wireline core (63.5mm) PQ wireline core (63.5mm) PQ wireline core (85.0mm) SPT standard penetration test HA hand auger			crewing rilling blade bit re ore (51. core (47 core (85 core (85 d penetr	.9 mm) 7.6mm) 3.5mm) 5.0mm)	water inflow  complete drilling fluid loss partial drilling fluid loss  core run & RQI	covered mbols indicate recovered	material)	HW highly DW distinct MW moder	al soil nely wea weathe ttly weat rately w y weath ith A for a w n	athered red thered eathered ered	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating



# **Engineering Log - Cored Borehole**

gilleering Log - Cored Borellole project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH07** 3 of 4

client:Bouygues Construction Australiadate started:24 Nov 2015principal:Dooleys Lidcombe Catholic Clubdate completed:24 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: NM

location: 24-28 John St, Lidcombe NSW 2141 checked by: MF

irill n	node	el: DRI			535 (Datum Not Specified) surface elevation: Track mounted drilling fluid:	<u> </u>			_	from horiz diameter : 1		
drilli	ing i	nform	ation	mate	rial substance				rock	mass defe	cts	
support	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 ×= axial; O = diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	defect de (type, inclination, plana	servations and scriptions rity, roughness, coatin ss, other)
		-4	9.0 —		<b>LAMINITE</b> : siltstone (70%) and sandstone (30%), distinctly laminated at 0-10°, sandstone fine grained, pale grey, siltstone is dark grey. (continued)	FR		a=0.58 d=0.33	95%		-	
		-3 -	-					a=1.41 d=0.40			=	
		-2	10.0					a=0.87 d=0.51	97%		-	
	rvable	-1	11.0					a=1.47 d=0.56			-	PL, SO, CN,
— рн —	Not Observable	-0	12.0					a=0.67			-	Defects are:PT, 0 - 10°, PL, SO, CN,
	1				a=0.73 d=0.11			-	Def			
		2	- 14.0 — - -					a=1.91	100%		SM, Clay, 10 mm	
		3	15.0					d=0.51		                 	- -	
		_	-					a=0.86 d=0.19	100%		-	
AS AD CB W	a a c w LC N w w w	uger di law or l vashbo IMLC d vireline vireline vireline tandare	crewing rilling blade bi	.9 mm) 7.6mm) 3.5mm) 5.0mm)	water inflow complete drilling fluid loss partial drilling fluid loss core run & F	e recovered hic symbols indicate core recover	e material) ed	HW highly DW distinct MW model	ial soil mely weat weather ctly weath rately we y weathe	thered ed nered athered red	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain
НА	h	est and au	iger				ignation (%)	M mediur H high VH very hi EH extrem	gh		SO smooth RO rough VR very rough	VN veneer CO coating



project:

# **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

GEOTLCOV25554AA project no.

Borehole ID.

logged by:

sheet:

**BH07** 

4 of 4

NM

Bouygues Construction Australia client: date started: 24 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 24 Nov 2015

24-28 John St. Lidcombe NSW 2141 checked by: ME

loca	ation	n: <b>2</b>	24-28	Joh	n St, Lidcombe NSW 2141					checked	l by: <b>MF</b>	
posi	tion:	E: 31	8935; 1	N: 6251	535 (Datum Not Specified) surface elevation: 12.	30 m (Al	HD)		angl	e from horiz	ontal: 90°	
drill ı	mode	el: DR	ILLTEC	H 550,	, Track mounted drilling fluid:				hole	diameter : 1	00 mm	
drill	ling i	inforn	nation	mate	erial substance				rock	mass defe		
method & support	water	RL (m)	depth (m)	graphic log	material description  ROCK TYPE: grain characterisics, colour, structure, minor components	weathering & alteration	estimated strength & Is50 X = axial; O = diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	additional obsidefect des defect des (type, inclination, planar thickness	scriptions ity, roughness, coating, s, other)
lns OH	Not Observable wa	4 5 6	17.0 — 18.0 — 19.0 —		LAMINITE: siltstone (70%) and sandstone (30%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey. (continued)  LAMINITE: siltstone (30%) and sandstone (70%), distinctly laminated at 0-10°, sandstone is fine grained, pale grey, siltstone is dark grey.	ew FR		a=0.97 d=0.30 a=1.00 d=0.59 a=1.15 d=0.65	100% 95%		particular  -  -  -  -  -  -  -  -  -  -  -  -  -	Defects are:PT 0 - 10° PL, SO, CN, unless otherwise described
			20.0		Borehole BH07 terminated at 20.00 m Target depth							
AS AD CB W	a v V ILC N V V V V V	auger d claw or washbo NMLC o wireline wireline wireline	crewing Irilling blade bi ire core (51 core (4 core (6) core (8) d peneti	9 mm) 7.6mm) 3.5mm) 5.0mm)	water inflow  complete drilling fluid loss partial drilling fluid loss  core run & RQI	covered mbols indicate e recovered	material)	weathering RS residu XW extren HW highly DW distinc MW model SW slightly FR fresh "W replaced w Trength VL very low M mediur H high VH very hig EH extrem	al soil nely wea weathe ttly weat rately we y weathe rith A for a w	athered red hered eathered ered	defect type PT parting JT joint SZ shear zone SS shear surface CS crushed seam SM seam DB drilling break roughness SL slickensided POL polished SO smooth RO rough VR very rough	planarity PL planar CU curved UN undulating ST stepped IR Irregular  coating CN clean SN stain VN veneer CO coating





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**PHOTO 25** 

fig no:

project no: GEOTLCOV25554AA

CORE PHOTOGRAPH BH07

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client: Bouygues Construction Australia	project: Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141	title: CORE PHOTOGRAPH BH07	project no: GEOTLCOV25554AA fig no: PHOTO 26
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approved

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N.T.S.

scale date

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rev:





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**PHOTO 28** 

fig no:

project no: GEOTLCOV25554AA

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# **Engineering Log - Borehole**

client: Bouygues Construction Australia project no. GEOTLCOV25554AA

Borehole ID.

sheet:

**BH08** 

1 of 4

principal: Dooleys Lidcombe Catholic Club date completed: 26 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO
location: 24-28 John St, Lidcombe NSW 2141 checked by: MF

loca	tio	n:	24-	28 Johi	n St,	Lide	comi	be NS	SW 2141		cl	hecked by:		MF
positi	ion:	E: 3	1901	0; N: 6251	500 (D	atum N	lot Spe	cified)	surface elevation: 15.60 m (AHD)	a	ingle fro	m horizontal: 9	90°	DCP id.:
drill n	nod	lel: Gl	020	5, Track n	nounte	ed				r	ole diar	meter : 100 mm	1	
drill	ing	info	mati	on	1		mate		stance					
method & support	_	2 penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	classification symbol	material description  SOIL TYPE: plasticity or particle characteristic, colour, secondary and minor components	moisture	consistency / relative density	hand penetro-meter (kPa)	ws/ mm)	structure and additional observations
H H H H				E E	_ -15 -	1.0		CH	FILL: Gravelly CLAY: fine to medium grained, high plasticity, brown to dark brown, smell of fertiliser.  CLAY: high plasticity, pale grey mottled red brown.	~Wp	St to VSt			FILL PID(0.2m) = 4.5ppm, no odours or staining observed PID(0.05-0.7m) = 4.7ppm  RESIDUAL SOIL  PID(1.0-1.1m) = 4.4ppm
— AD/T — CASING —			Not Observable	3, 4, 5 N*=9	-14	2.0 —			with ironstone gravel		VSt to H			
				SPT 6, 12, 23 N*=35	-13	3.0			SILTSTONE: grey and brown, extremely weathered, estimated very low strength.					BEDROCK
					-11 -10 -9 -8	4.0 — 5.0 — 7.0 —			Borehole BH08 continued as cored hole	classa	sification			
meth AD AS HA W HA * e.g. B T	ai ha w ha bi A bl	uger d uger so and au ashbo and au it show D/T lank bi C bit	crewir ger e ger	ng*	pen wate	etration  or of the control of the c		ater shown	samples & field tests  B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remouded (kPa) R refusal HB hammer bouncing	moistur D dr M mo W we Wp pla	ased on ssificatio	ription Unified n System	F S V L L M C	firm St stiff //St very stiff H hard Fib friable //L very loose L loose //D medium dense



principal:

project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

**Bouygues Construction Australia** 

Dooleys Lidcombe Catholic Club

2 of 4 sheet:

Borehole ID.

GEOTLCOV25554AA project no.

**BH08** 

date started: 26 Nov 2015

date completed: 26 Nov 2015

TO logged by:

24-28 John St, Lidcombe NSW 2141 MF location: checked by:

position: E: 319010; N: 6251500 (Datum Not Specified) surface elevation: 15.60 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions tion, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics core run & RQD method 8 support graphic I colour, structure, minor components Œ (MPa) thickness, other) depth water 귐 particular \_ ≥ ± ∃ H I I I I I I15 1.0 14 2.0  $\perp$ 13 3.0 start coring at 3.61m INTERBEDDED SILTSTONE AND MW **SANDSTONE**: Siltstone (60%) dark grey and Sandstone (40%), distinctly distinctly bedded at ο× d=0.59 4.0 90% 0-10, sandstone is fine grained, pale grey, CS, 0 - 10°, IR, 10 mm
PT, 0 - 10°, IR, RO, Fe SN
PT, 0 - 5°, CU, RO, CN
PT, 5°, UN, RO, CN
PT, 5°, IR, RO, CN siltstone is dark grev. ¢ a=0.79 d=0.10 11 5.0 JT, 80 - 90°, PL, RO, Fe SN -CS, 0 - 5°, IR, RO, CN Observable 10 PT, 0°, IR, RO, Fe SN CORED – PT, 0 - 5°, IR, RO, CN ∽ CS, 0°, IR, RO, Fe SN, 35 mm Ş ok a=1.22 d=0.57 59% 6.0 COF BOREHOLE: becoming grey and dark grey CS, 0°, IR, RO, Fe SN, 10 mm a=1.34 d=0.79 ¬PT, 0°, IR, RO, Fe SN ¬PT, 0°, IR, RO, Fe SN -9 04BB.GLB 7.0 -JT, 90°, IR, RO. Fe SN — PT, 5°, IR, RO, Clay CO — PT, 0°, IR, RO, Fe SN — PT, 0°, IR, RO, CN  $^{*}$ -8 FR 92% weathering & alteration defect type planarity PL plana method & support graphic log / core recovery PL planar CU curved UN undulating parting joint shear zone residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break SW slightly weathered FR fresh "W replaced with A for alteration strength complete drilling fluid loss no core recovered partial drilling fluid loss coating CN clean SN stain VN veneer core run & RQD roughness PQ SPT wireline core (85.0mm very low low medium VLslickensided polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) RO CO coating hiah rouah very high very rough



client:

principal:

project:

## **Engineering Log - Cored Borehole**

Dooleys Lidcombe Club & Hotel Development

**Bouygues Construction Australia** 

Dooleys Lidcombe Catholic Club

**BH08** 3 of 4 sheet:

Borehole ID.

GEOTLCOV25554AA project no.

date started: 26 Nov 2015

date completed: 26 Nov 2015

TO logged by:

24-28 John St, Lidcombe NSW 2141 MF location: checked by:

position: E: 319010; N: 6251500 (Datum Not Specified) surface elevation: 15.60 m (AHD) angle from horizontal: 90° drill model: GEO205, Track mounted drilling fluid: hole diameter: 100 mm drilling information material substance rock mass defects weathering & alteration material description estimated defect additional observations and field tests & Is(50) defect descriptions (type, inclination, planarity, roughness, coating, spacing (mm) ROCK TYPE: grain characterisics  $\widehat{\Xi}$ core run & RQD support graphic colour, structure, minor components  $\widehat{\Xi}$ depth (MPa) thickness, other) water 300 300 300 3000 귐 \_ ≥ ± ∃ H INTERBEDDED SILTSTONE AND **SANDSTONE**: Siltstone (60%) dark grey and Sandstone (40%), distinctly distinctly bedded at PT, 5°, IR, RO, CN T, 9, 9, 10, RO, CN

PT, 0 - 5°, IR, RO, CN

PT, 10°, CU, RO, CN

PT, 0°, IR, RO, CN 0-10, sandstone is fine grained, pale grey, siltstone is dark grey. (continued) a=0.53 d=0.71 **LAMINITE**: Siltstone (60%) dark grey and Sandstone (40%), distinctly laminated at 0-5° 9.0 sandstone is fine grained, pale grey, siltstone is 92% fine grained sandstone band, 150 mm, pale grey a=0.78 d=0.33 6 10.0 a=0.61 d=0.27 -5 11.0 C, e, PL, RO, described a=0.70 d=0.45 Not Observable Defects are:PT, 0 - 10°, unless otherwise d 100% 12.0 a=1.32 d=0.33 3 13.0 a=0.64 d=0.43 -2 14 0 COF BOREHOLE: I I I I√JT, 70°, IR, RO, CN PT, 0 - 5°, CU, RO, CN d=0.28 94% JT, 75 - 85°, IR, RO, CN 04BB.GLB 15.0 -0 a=0.67 d=0.54 weathering & alteration defect type planarity PL plana method & support graphic log / core recovery PL planar CU curved UN undulating parting joint shear zone residual soil auger screwing auger drilling claw or blade bit extremely weathered highly weathered distinctly weathered 10/10/12, water level on date shown HW DW MW SS CS shear surface stepped Irregular washbore water inflow moderately weathered crushed seam NMLC NMLC core (51.9 mm)
NQ wireline core (47.6mm)
HQ wireline core (63.5mm) seam drilling break SW slightly weathered FR fresh "W replaced with A for alteration strength complete drilling fluid loss no core recovered partial drilling fluid loss coating CN clean SN stain VN veneer core run & RQD roughness PQ SPT wireline core (85.0mm very low low medium VLslickensided polished smooth barrel withdrawn test hand auger water pressure test result (lugeons) for depth interval shown НА RQD = Rock Quality Designation (%) RO CO coating hiah rouah very high very rough



# **Engineering Log - Cored Borehole**

Borehole ID. **BH08** sheet: 4 of 4

GEOTLCOV25554AA

project no.

Bouygues Construction Australia client: date started: 26 Nov 2015

principal: Dooleys Lidcombe Catholic Club date completed: 26 Nov 2015

project: Dooleys Lidcombe Club & Hotel Development logged by: TO 24-28 John St. Lidcombo NSW 2141 ahaakad h N/I

UCal	ion:	24-28	Joh	n St, Lidcombe NSW 2	141					checked	d by: <b>MF</b>	
ositio	on: E:3	19010; N	l: 6251	500 (Datum Not Specified) surfa	ce elevation: 15.6	60 m (Al	HD)		angle	e from horiz	ontal: 90°	
drill m	odel: GE	O205,	Track r	nounted drillin	ig fluid:				hole	diameter : 1	00 mm	
drillir	ng infori	nation	mate	rial substance					rock	mass defe	cts	
support	water RL (m)	depth (m)	graphic log	material description ROCK TYPE: grain charac colour, structure, minor com	terisics,	weathering & alteration	estimated strength & Is50 ×= axial; O= diametral	samples, field tests & Is(50) (MPa) a = axial; d = diametral	core run & RQD	defect spacing (mm)	defect de (type, inclination, plana	servations and escriptions arity, roughness, coati ss, other)
	> "	1 0				FR		d didiriotidi	0 -	8 - 8 - 8	particular	gen
NMLC		-							94%			
*	1	+		Borehole BH08 terminated at 16.	50 m			a=0.83 d=0.49				<del>\</del>
	'	_		Target depth								
		17.0 —										
		-										
		-										
	2											
		18.0 —										
		-										
		-										
	3	-					i i i i i			liiiii		
		-										
	-	19.0 —										
	4	-										
		-										
	-	20.0 —					Lilli					
		-										
	5											
		_										
		21.0 —										
		-										
		-										
	6											
		22.0 —										
	-	_										
		-										
	7	-										
		23.0 —										
	-	23.0 -										
		-										
	8	-										
		-					Liiiii					
	nod & sup			water	graphic log / cor	e recove	ry	weathering RS residu		ation*	defect type PT parting	<b>planarity</b> PL planar
AS AD CB	auger	screwing drilling r blade bit		10/10/12, water level on date shown	core red	covered		XW extrem HW highly	nely wea weathe	ed	JT joint SZ shear zone	PL planar CU curved UN undulating
Ν	washb C NMLC	ore		water inflow	(graphic syr	nbols indicate		DW distinct MW moder	tly weat ately we	hered eathered	SS shear surface CS crushed seam	ST stepped IR Irregular
NIVILI NQ HQ	wirelin	core (51.) e core (47 e core (63	(.6mm)	complete drilling fluid loss partial drilling fluid loss	no core	recovere	d	FR fresh	/ weathe		SM seam DB drilling break	-
PQ SPT	wirelin	e core (85 ard penetr	.0mm)	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	core run & RQD			*W replaced w strength VL very lov		iteration	roughness SL slickensided	coating CN clean
HA	test hand a			water pressure test result		ithdrawn		L low M mediun			POL polished SO smooth	SN stain VN veneer
				(lugeons) for depth interval shown	RQD = Rock Qu	ality Desi	gnation (%)	H high VH very hig			RO rough VR very rough	CO coating





푼

drawn

PointID: BH08 Depth Range: 8.00 - 13.00 m

Вс	Dooleys 24-2	
client:	project:	
	coffey 🍑	

11/12/2015

胚

approved

N.T.S.

scale date

44

original size

ction Australia & Hotel Development	OGRAPH 8	fig no: PHOTO 30
Bouygues Construction Australia Dooleys Lidcombe Club & Hotel Development 24-28 John St, Lidcombe NSW 2141	CORE PHOTOGRAPH BH08	GEOTLCOV25554AA
client: project:	title:	project no:



řev.

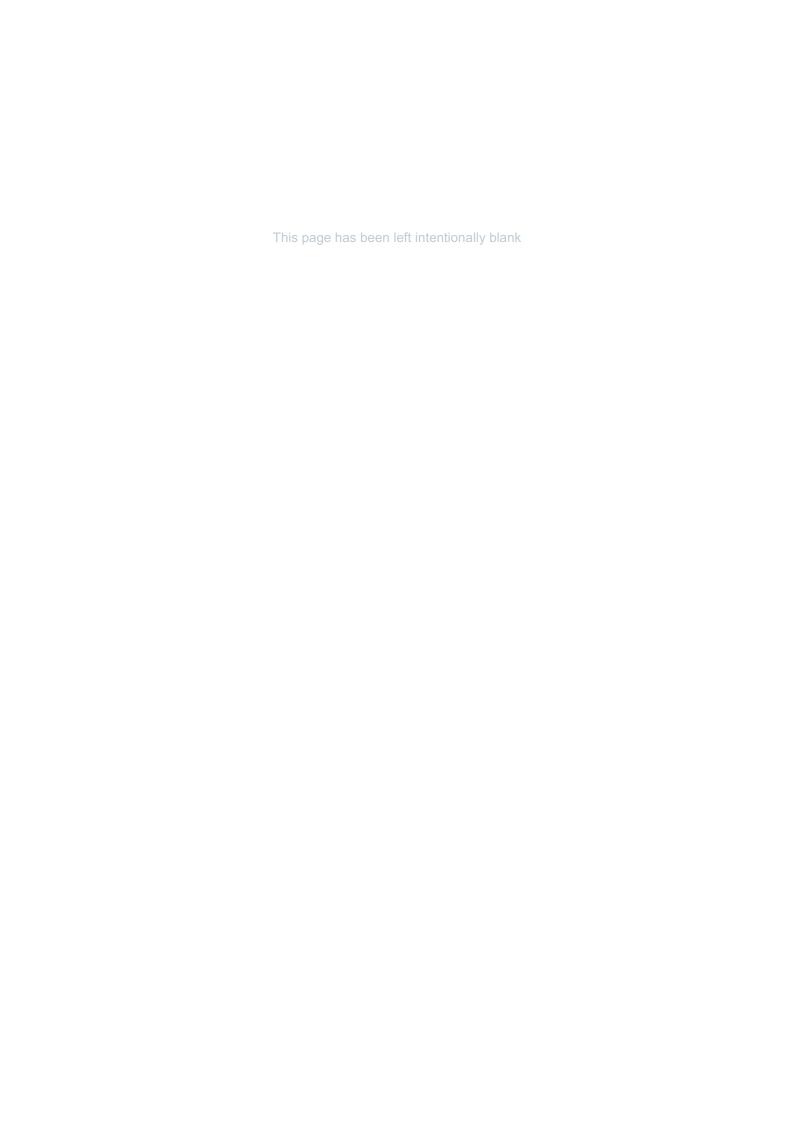
**PHOTO 31** 

fig no:

project no: GEOTLCOV25554AA

44







Coffey Testing Pty Ltd ABN 92 114 364 046 4 Rothwell Ave. (PO Box 329) Concord West NSW 2138

Phone: +61 (2) 9736 3922 Fax: +61 (2) 9743 5860

### Report No: CWES15S-06760-1 Issue No: 1

Material Test Report

Client: Coffey Geotechnics Pty Ltd (Chatswood)

PO Box 5275

West Chatswood NSW 1515

Principal:

Project No.: INFOCWES00517AA

Project Name: GEOTLCOV25554AA - DOOLEYS LIDCOMBE CLUB AND HOTEL DEVELOPMENT

Lot No.: TRN:



Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory: Lachlan Smith (Senior Geotechnician)
NATA Accredited Laboratory Number:431

Date of Issue: 14/12/2015

### Sample Details

Sample ID: CWES15S-06760

Client Sample: BH05
Date Sampled: 01/12/2015
Source: Ex. Site

Material:

Specification: No Specification
Sampling Method: Submitted by client
Project Location: Church St, Lidcombe

Sample Location: BH05

1.0-1.2m

#### Test Results

Description	Method	Result Limits
Moisture Content (%)	AS 1289.2.1.1	8.0
Sample History	AS 1289.1.1	Air-dried
Preparation	AS 1289.1.1	Dry Sieved
Linear Shrinkage (%)	AS 1289.3.4.1	N/A
Mould Length (mm)		0
Crumbling		No
Curling		No
Cracking		No
Liquid Limit (%)	AS 1289.3.1.2	29
Method		One Point
Plastic Limit (%)	AS 1289.3.2.1	13
Plasticity Index (%)	AS 1289.3.3.1	16
Date Tested		14/12/2015

#### Comments



Coffey Testing Pty Ltd ABN 92 114 364 046 4 Rothwell Ave. (PO Box 329) Concord West NSW 2138

Phone: +61 (2) 9736 3922 Fax: +61 (2) 9743 5860

## Report No: CWES15S-06763-1

Issue No: 1

# Material Test Report

Coffey Geotechnics Pty Ltd (Chatswood) Client:

PO Box 5275

West Chatswood NSW 1515

Principal:

INFOCWES00517AA Project No.:

Project Name: GEOTLCOV25554AA - DOOLEYS LIDCOMBE CLUB AND HOTEL DEVELOPMENT

Lot No.: TRN:



Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory: Lachlan Smith (Senior Geotechnician) NATA Accredited Laboratory Number:431

Date of Issue: 14/12/2015

### Sample Details

Sample ID: CWES15S-06763

Client Sample: **BH08** Date Sampled: 01/12/2015 Source: Ex. Site

Material:

No Specification Specification: Sampling Method: Submitted by client Project Location: Church St, Lidcombe

Sample Location: BH08

1.0-1.45m

### Test Results

Description	Method	Result Limits
Moisture Content (%)	AS 1289.2.1.1	21.9
Sample History	AS 1289.1.1	Air-dried
Preparation	AS 1289.1.1	Dry Sieved
Linear Shrinkage (%)	AS 1289.3.4.1	8.0
Mould Length (mm)		125
Crumbling		No
Curling		No
Cracking		No
Liquid Limit (%)	AS 1289.3.1.1	59
Method		Four Point
Plastic Limit (%)	AS 1289.3.2.1	23
Plasticity Index (%)	AS 1289.3.3.1	36

#### Comments



Coffey Testing Pty Ltd ABN 92 114 364 046 4 Rothwell Ave. (PO Box 329) Concord West NSW 2138

Phone: +61 (2) 9736 3922 Fax: +61 (2) 9743 5860

## Report No: CWES15S-06762-1

Issue No: 1

# Material Test Report

Client: Coffey Geotechnics Pty Ltd (Chatswood)

PO Box 5275

West Chatswood NSW 1515

Principal:

Project No.: INFOCWES00517AA

Project Name: GEOTLCOV25554AA - DOOLEYS LIDCOMBE CLUB AND HOTEL DEVELOPMENT

Lot No.: TRN:



Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory: Lachlan Smith (Senior Geotechnician) NATA Accredited Laboratory Number:431 Date of Issue: 14/12/2015

### Sample Details

Sample ID: CWES15S-06762

Client Sample: BH06
Date Sampled: 01/12/2015
Source: Ex. Site

Material:

Specification: No Specification
Sampling Method: Submitted by client
Project Location: Church St, Lidcombe

Sample Location: BH06

1.5-1.95m

#### Test Results

Description	Method	Result L	Limits
Moisture Content (%)	AS 1289.2.1.1	11.1	
Sample History	AS 1289.1.1	Air-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	5.5	
Mould Length (mm)		125	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	30	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	13	

#### Comments



Coffey Testing Pty Ltd ABN 92 114 364 046 4 Rothwell Ave. (PO Box 329) Concord West NSW 2138

Phone: +61 (2) 9736 3922 Fax: +61 (2) 9743 5860

### Report No: CWES15S-06761-1

Issue No: 1

# Material Test Report

Client: Coffey Geotechnics Pty Ltd (Chatswood)

PO Box 5275

West Chatswood NSW 1515

Principal:

Project No.: INFOCWES00517AA

Project Name: GEOTLCOV25554AA - DOOLEYS LIDCOMBE CLUB AND HOTEL DEVELOPMENT

Lot No.: TRN:



Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory: Lachlan Smith (Senior Geotechnician) NATA Accredited Laboratory Number:431 Date of Issue: 14/12/2015

### Sample Details

Sample ID: CWES15S-06761

Client Sample: BH03
Date Sampled: 01/12/2015
Source: Ex. Site

Material:

Specification: No Specification
Sampling Method: Submitted by client
Project Location: Church St, Lidcombe

Sample Location: BH03

2.5-2.95m

#### Test Results

Description	Method	Result L	Limits
Moisture Content (%)	AS 1289.2.1.1	19.3	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	9.0	
Mould Length (mm)		125	
Crumbling		No	
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.1	59	
Method		Four Point	
Plastic Limit (%)	AS 1289.3.2.1	22	
Plasticity Index (%)	AS 1289.3.3.1	37	

#### Comments