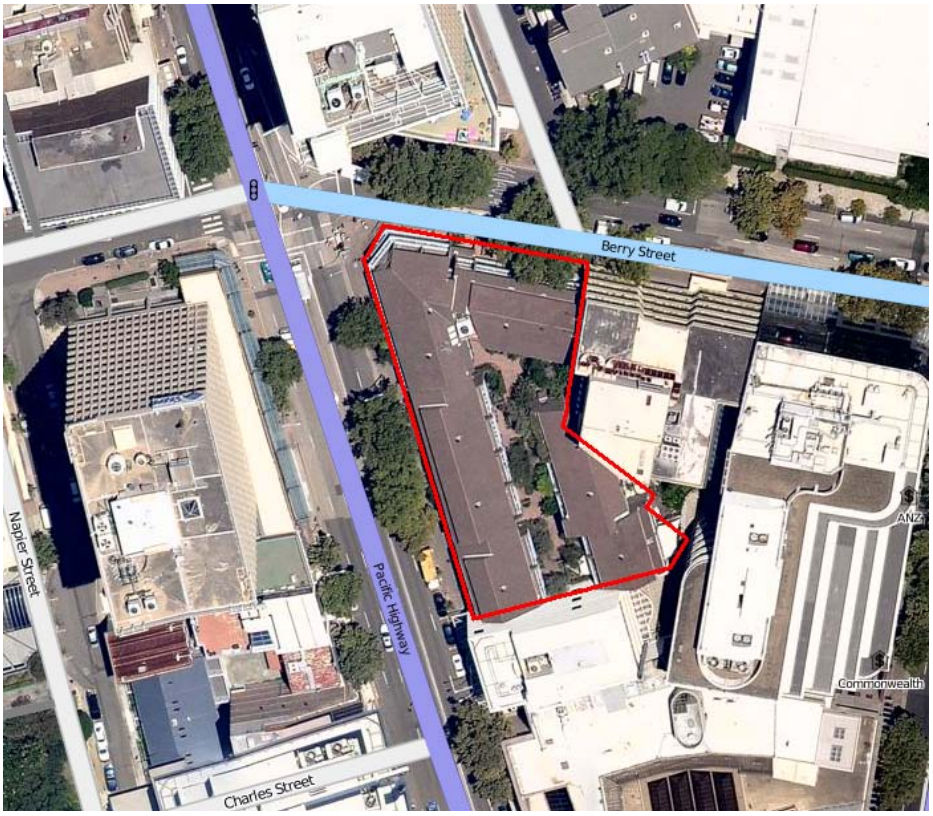
Winten Property Group

Commercial Development, 177-199 Pacific Highway, North Sydney

Desktop Study Report - Geotechnical and Groundwater



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Winten Property Group

Commercial Development, 177-199 Pacific Highway, North Sydney

Desktop Study Report - Geotechnical and Groundwater

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Approver	Jim Yang	

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Date	14 May 2010

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CONTENTS

Appendices

1 Introduction

Hyder Consulting has been commissioned by Winten Property Group to prepare a desk top study report on geotechnical and groundwater aspects in response to the Director General's Requirements for a Project Application for the site located at 177-199 Pacific Highway, North Sydney, New South Wales. The existing site is shown in Figure 1.

This report presents an assessment of the site geotechnical conditions and groundwater aspects. Our discussions and recommendations are made with respect to potential geotechnical issues that may arise from the subject site development. The possible design solutions and the potential impacts of the development on the adjacent buildings, infrastructure and utilities are discussed in this report. Also recommended are the groundwater related issues including the potential groundwater inflow towards the basement excavation and ongoing treatment of groundwater. The mitigation measures that may be employed to address the identified issues are discussed in the report.

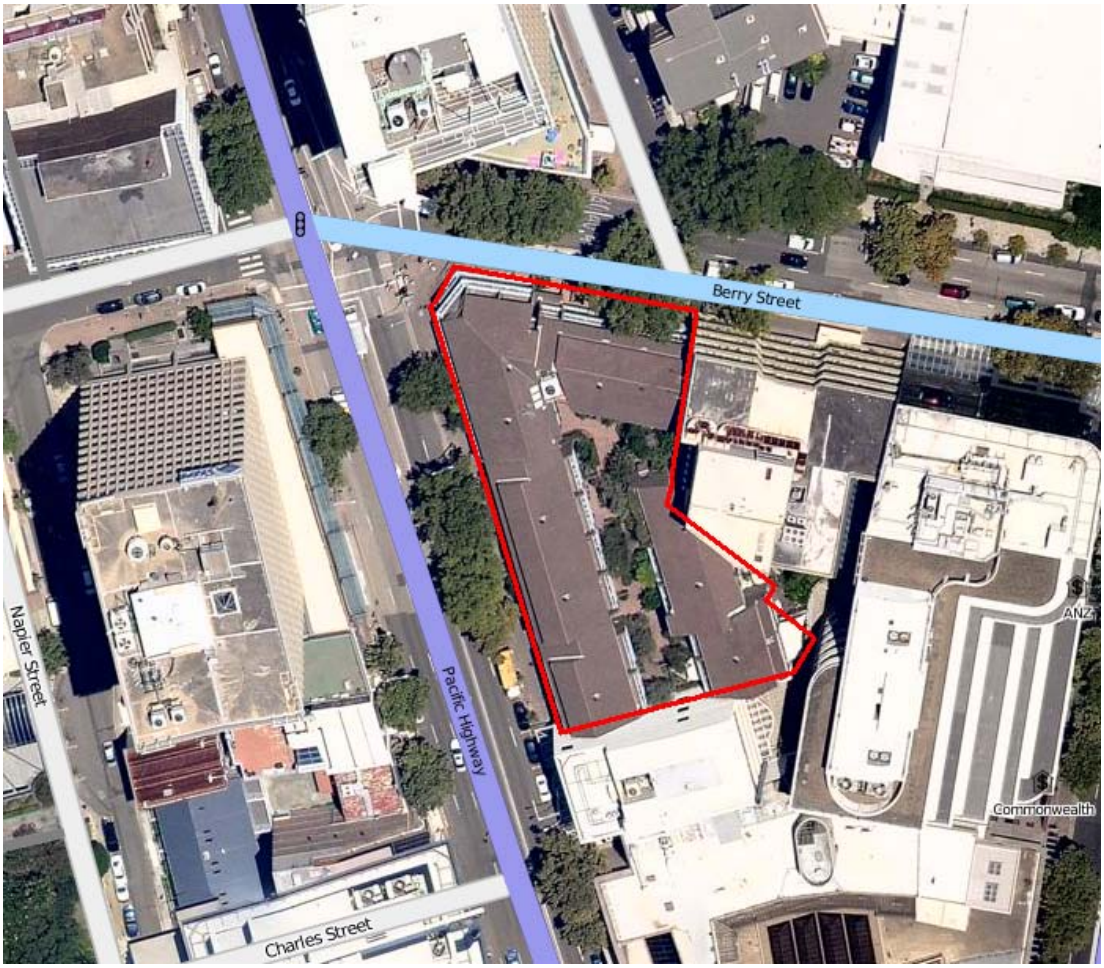

Figure 1: Existing Site Location (*"Courtesy of 'NearMap' www.nearmap.com")*

2 Information Collected

At this desk top study level we have collected the following geotechnical and groundwater related information:

- Database search to assess the surface conditions
- Review of the geological map related to the subject site
- Geotechnical information search of the surrounding sites to appreciate the sub-surface ground conditions and the groundwater information
- A site walk over inspection and evaluation to identify any potential visible risks related to the proposed development.

3 Surface Conditions

The proposed commercial building is to be located at the corner of Berry Street and Pacific Highway, North Sydney. The existing ground falls from the corner of Berry Street and Pacific Highway in an east and south direction.

The existing building is three to four stories with a basement carpark. The car park entry is from Berry Street. The building frontage is along the Pacific Highway. Below the carpark basement there is an open underground space.

The adjoining existing buildings on Berry Street and Pacific Highway are very close to the buildings on the proposed development site.

There are footpaths at both Berry Street and Pacific Highway frontages.

4 Sub-surface Conditions

4.1 Local Geology

The Sydney 1:100,000 Geological Series Sheet 9130 (1983) indicates that the site is underlain by Hawkesbury Sandstone described as medium to coarse grained quartz sandstone with very minor shale and laminite lenses.

Overlying the Hawkesbury Sandstone rock is fill and residual soil of varying thickness.

4.2 Previous Investigations

A number of geotechnical specialist consultants have established databases of their previous site investigation data. These were approached to determine whether their databases have information from developments in the vicinity of the subject site.

Jeffery and Katauskas Pty Ltd (J&K) carried out the original site investigation works for four sites within about 200m distance, and there are four boreholes at the subject site drilled in 1979 prior to development. A letter report by J&K dated 13 May 2010 outlined their findings of the sub-surface condition is presented in Appendix A of this report.

Based on the J&K report a summary of the sub-surface ground condition may be described as follows:

- Fill and residual soil of varying thickness but is expected to be of the order of 1 to 2m.
- Hawkesbury Sandstone.

We note that there is no cored log at the site and the depth of drilling was limited to a maximum of 3.4m. As such the quality of the rock at greater depth is not known.

4.3 Site Walkover

A site walkover inspection was carried out by Dr Jim Yang of Hyder Consulting. A visual inspection of the basement was carried out to assess the exposed material around the open space below the carpark.

The following was noted during the site visit:

- Sandstone bedrock exposed at the base of excavation as shown on Figure 2.
- A drain was constructed using gravel as shown on Figure 3. It was advised by Mr Bob Astill, building manager, that there used to have occasional seepage from the adjacent basement walls, and that the basement site is generally “dry” after the construction of the gravel drain.
- It can be noted from Figure 4 that the retaining wall was constructed using concrete and block works.
- Figure 5 shows the “mud” deposited at the low spots within the underground space over the past time.
- No apparent groundwater seepage was noted during the site visit

Figure 2: Exposed sandstone rock

Figure 3: Gravel drain

Figure 4: Concrete and block retaining wall

Figure 5: "Mud" settled at the low spots

4.4 Groundwater

Based on our site observation and the information provided by J&K from the following can be interpreted:

- Groundwater table is likely to be at or below the existing basement level, possibly at a depth of 3 to 5m.
- “Shallow” seepage may originate from the perched water within the soils behind the retaining walls although the source of water is unknown.
- Groundwater is likely to be present predominantly within the rock defects in the rock mass.

The quality of the groundwater is unknown at the time of writing this report.

We understand that there are deep basements to the adjoining towers at Miller Street, North Sydney and to the east. The groundwater table of the subject site may have already been drawn down by the deep basement at these sites.

5 Proposed Development

A set of concept development plans and sections are provided to Hyder Consulting by Winten Property Group. A concept plan at ground and a typical cross sections prepared by BatesSmart are presented in Appendix B.

The proposed development is primarily for commercial use with the tower being about 32 levels above ground. Up to 4 levels of basement for car parking is proposed. The typical cross-section shows that the proposed basement excavation at Pacific Highway is some10-12m.

6 Geotechnical Issues and Recommendations

The proposed basement excavation of the order of 10m to 12m depth is likely to draw down the existing ground water level down if a “drained” basement is to be constructed.

Near vertical excavation in soil and residual as well as the very low strength shale or sandstone will require shoring system during construction and for the long term stability. Excavation within the good quality can be near vertical with localised rock support.

Based on our evaluation of the collected information and our past similar project experience we consider that the proposed development is feasible at this concept stage from geotechnical and groundwater perspectives. However we anticipate that the following key issues related to geotechnical and groundwater aspects should be considered in the post concept design development and construction:

1 Noise and vibration – There are two sources of noise and vibration. The first one is anticipated from demolition works of the existing building. The second one is expected to be from the excavation works for the basement. These activities may have a potential adverse impact on the adjacent buildings and people working or living in these buildings. Appropriate design and construction methodologies can be developed to mitigate these issues.

2 Services and utilities will need to be identified and relocated if required prior to demolishing and excavation works.

3 Retaining or shoring system may be required for the existing building during demolition and for the excavation of the basement levels to ensure structural integrity of the adjacent buildings and basements.

4 Temporary and/or permanent shoring system will be required to retain the soil and residual as well as the weak sandstone overlying the good quality sandstone so that the basement excavation can be carried out in a safe manner.

5 Groundwater inflow is likely to be encountered during basement excavation. The volume and quality of the groundwater will depend upon the characteristics of the defects within the rock mass and the water recharge source.

6 Ground movement may occur due to stress relief resulting from the basement excavation. The magnitude of movement is dependent upon the lock in stresses within the rock mass. It often occurs in a sudden and rapid manner, which may lead to instability of the excavated rock face and cracking /movement in slabs of the adjacent buildings as well as the utilities and underground services such as water mains. Appropriate design solutions and construction methodologies can be developed to mitigate these issues.

7 Any significant geological features such as water-bearing dyke intersecting the project or in the close vicinity of the subject site that may have an impact on the development should be identified and considered.

In order to address the above key issues we recommend that a comprehensive geotechnical site investigation be carried out after the concept plan approval but prior to detail design and development. The geotechnical investigation plan should be designed such that the identified key issues will be appropriately addressed.

Appendix A

Letter Report from J&K

Jeffery and Katauskas Pty Ltd

CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
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Tel: 02 9888 5000 • Fax: 02 9888 5001
Email: engineers@jkgroup.net.au

13 May, 2010
Ref: 24019WNlet

Hyder Consulting Pty Ltd
Level 45, 141 Walker Street
NORTH SYDNEY NSW 2060

ATTENTION: Dr Jim Yang

Dear Sir

DESKTOP STUDY
PROPOSED DEVELOPMENT
177-199 PACIFIC HIGHWAY, NORTH SYDNEY, NSW

This letter reports the results of a desktop study for the proposed development at 177-199 Pacific Highway, North Sydney, NSW. The study was commissioned by Dr Jim Young of Hyder Consulting Pty Ltd by email dated 6 May 2010 and was carried out as outlined in our email dated 5 May 2010.

From email correspondence with Dr Jim Young of Hyder consulting Pty Ltd, we understand that a Part 3 application is being made for a proposed development at the above address. For this application, information is required on anticipated subsurface conditions, both geotechnical and hydrogeological.

The scope of this study was limited to providing existing subsurface information from previous investigations completed on nearby sites.

NEARBY SITES IDENTIFIED

The following nearby sites were identified from our database as having relevant subsurface information obtained during previous geotechnical investigations:

Site 1: Pacific Highway – approximately 200m to the north west of the site.
Site 2: Berry Street – approximately 150m to the west of the site.
Site 3: McLaren Street – approximately 200m to the north of the site.
Site 4: Pacific Highway – approximately 150m to the north of the site..
Site 5: Same site address as current project.

One borehole each from Sites 1 though 4 inclusive, and four borehole logs from Site 5 have been included with this report. The approximate location of the subject site and the nearby sites is shown on the attached Figure 1.

OVERVIEW

The 1:100,000 Geological Map of Sydney indicates that the site is underlain by Hawkesbury Sandstone.

The boreholes on the nearby sites generally disclosed a subsurface profile comprising surficial fill over residual clayey soils over sandstone bedrock at shallow to moderate depth. The upper portion (around 2m to 3m) of the sandstone bedrock is generally of poorer quality, with shale bands and extremely low strength bands encountered in a number of the boreholes as well as zones of core loss. At depth the sandstone bedrock is generally of good quality however, though some clay and shale seams will likely be present within the better quality sandstone

Seepage would be expected from the upper profile, say about 3m to 5m depth.

GENERAL COMMENTS

Occasionally, the subsurface conditions between the completed boreholes may be found to be different (or may be interpreted to be different) from those expected. Variation can also occur with groundwater conditions, especially after climatic changes. If such differences appear to exist, we recommend that you immediately contact this office.

This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose. Copyright in this report is the property of Jeffery and Katauskas Pty Ltd. We have used a degree of care, skill and diligence normally exercised by consulting engineers in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report. The report shall not be reproduced except in full.

Should you require any further information regarding the above please do not hesitate to contact the undersigned.

Yours faithfully
For and on behalf of
JEFFERY AND KATAUSKAS PTY LTD

Nicholas Smith
Geotechnical Engineer

Bruce Walker
Principal.

Encl: Borehole Logs from Nearby Sites (8 boreholes)
Figure 1: Sketch Plan Showing Approximate Location of Subject Site and Nearby Sites

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 101 1/2

BOREHOLE LOG

Client:

Project: PROPOSED UNIT DEVELOPMENT

Location: SITE 1

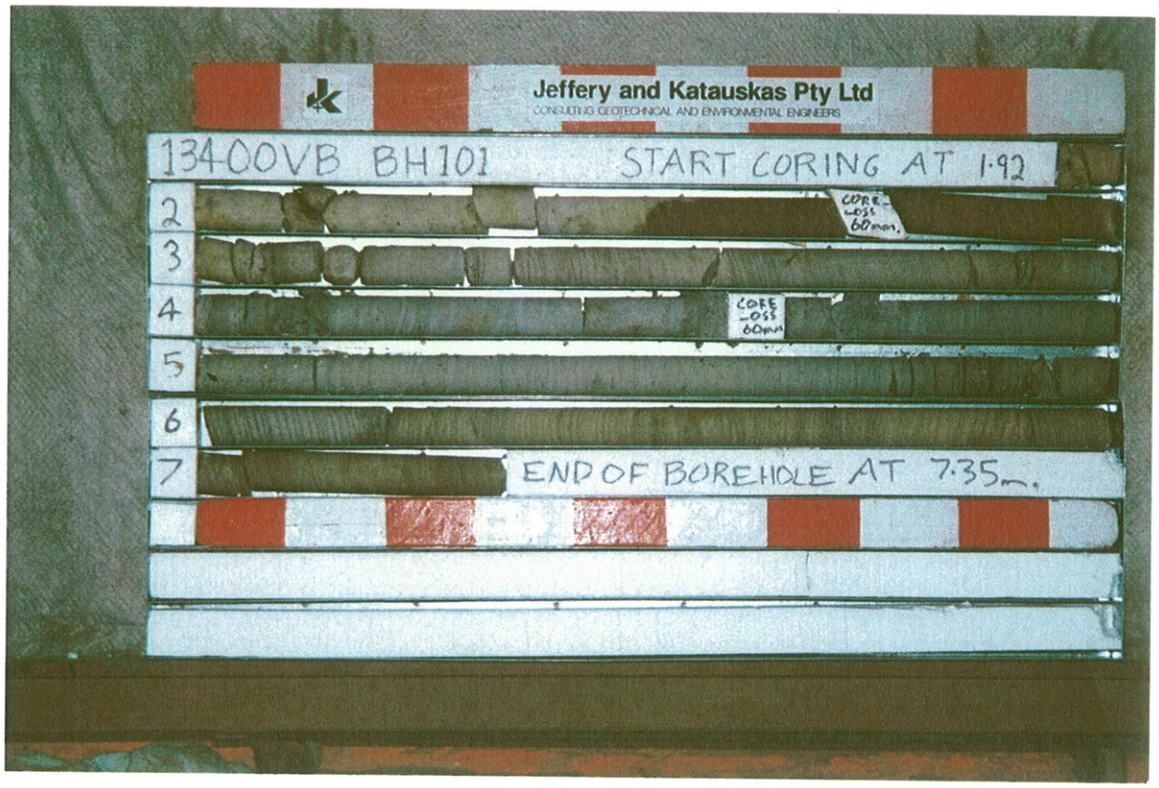
Job No. 13400VB **Method:** HAND AUGER **R.L. Surface:** ≅ 79.0m

Date: 7-9-01 **Datum:** ASSUMED

Logged/Checked by: A.H./

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION OF AUGERING						0			FILL: Silty sandy clay topsoil.				WEED COVER
									FILL: Silty sandy clay, low to medium plasticity, dark grey mottled red brown, trace of ironstone gravel.	MC > PL			
								CH	SILTY CLAY: high plasticity, light grey mottled red brown, with a trace of roots to 3mm.	MC > PL	VSt		RESIDUAL
						1						200 250	HP ON REMOULDED SAMPLE
									as above, but with siltstone bands.				
						2			REFER TO CORED BOREHOLE LOG				
						3							
						4							
						5							
						6							
						7							

SITE 1


Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
13400VB BH101
START CORING AT 1.92
CORE LOSS 60mm.
CORE LOSS 60mm
END OF BOREHOLE AT 7.35m.

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 101 2/2

CORED BOREHOLE LOG

Client:

Project: PROPOSED UNIT DEVELOPMENT

Location: SITE 1

Job No. 13400VB **Core Size:** TT56 **R.L. Surface:** ≅ 79.0m

Date: 7-9-01 **Inclination:** VERTICAL **Datum:** ASSUMED

Drill Type: MELVELLE **Bearing:** - **Logged/Checked by:** A.H./ DNS

Water Loss/Level	Barrel Lift	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_S(50)$ EL VL L M H VH EH	DEFECT DETAILS DEFECT SPACING (mm) 500 300 100 50 30 10	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
		1		START CORING AT 1.92m					
		2		SANDSTONE: fine to medium grained, light grey, with bands of yellow orange at 10mm to 50mm spacing, bedded at 15°.	SW	M	×		- J, 35°, Un, R, CLAY COATING - J, 20°, P, S, CLAY COATING
				as above,	DW				
FULL RETURN				but red brown, with bands of light grey 1mm to 2mm.t. at 10mm to 50mm spacing.	DW	M			
		3		CORE LOSS 0.06m					- CS, 0°, 3mm-5mm.t
				SANDSTONE: fine to medium grained, red brown, with bands of light grey 1mm to 2mm.t at 10mm to 50mm spacing, bedded at 15°.			×		
WATER LOSS				as above,					
		4		but light grey, with dark grey bands 1mm to 2mm.t, bedded at 15°-20°.			×		- XWS, 60mm.t
PARTIAL RETURN				CORE LOSS 0.06m					- XWS, 30mm.t
		5		SANDSTONE: fine to medium grained, light grey with dark grey bands 1mm to 2mm.t, bedded at 15°-20°.	DW	M			
		6					×		- Be, 0°, CLAY COATED - CS, 0°, 40mm.t
FULL RETURN						H			
		7					×		
				END OF BOREHOLE AT 7.35m					
		8							

Jeffery and Katauskas Pty Ltd
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BOREHOLE LOG

Borehole No. 2 1/2

Client:

Project: PROPOSED MULTI-STOREY BUILDING

Location: SITE 2

Job No. 16318V
Date: 17-10-01

Method: SPIRAL AUGER
INTERTECH 550

Logged/Checked by: A.H./

R.L. Surface: ≅ 82.4m
Datum: ASSUMED

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION						0		CL	FILL: Silty clay, high plasticity, grey mottled red brown, with fragments of concrete, brick and ironstone gravel.	MC < PL	(H)	-	
									SILTY CLAY: medium plasticity, grey brown mottled red brown, with ironstone bands.				BANDS OF LOW TO MODERATE 'TC' BIT RESISTANCE
				■	SPT 20/0mm REFUSAL	1							
						2							
						3		-	SANDSTONE: fine grained, light grey brown, with some clay bands.	XW	EL	-	-
						4			REFER TO CORED BOREHOLE LOG				
						5							
						6							
						7							

SITE 2


Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS
16318V BORE HOLE 2 START CORING AT 3.9m
4
5
CORE LOSS
6
0.4m.
7
0
9
END@9.80m

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. **2** 2/2

CORED BOREHOLE LOG

Client:

Project: PROPOSED MULTI-STOREY BUILDING

Location: SITE 2

Job No. 16318V **Core Size:** NMLC **R.L. Surface:** ≅ 82.4m

Date: 17-10-01 **Inclination:** VERTICAL **Datum:** ASSUMED

Drill Type: INTERTECH 550 **Bearing:** - **Logged/Checked by:** A.H./

Water Loss/Level	Barrel Lift	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, structure, minor components.	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_S(50)$ EL VL L M H VH EH	DEFECT DETAILS DEFECT SPACING (mm) 500 300 100 50 30 10	DESCRIPTION Type, inclination, thickness, planarity, roughness, coating. Specific / General
		3		START CORING AT 3.9m					
		4		SANDSTONE: fine grained, red brown, with occasional light grey bands and iron indurated bands.	DW	M			- XWS, 150mm.t - XWS, 210mm.t - CS, 0°, 30mm.t - J, 80°, P, R
		5		SHALE: dark grey brown.	XW	EL-VL			
				CORE LOSS 0.4m					
		6		SANDSTONE: fine to medium grained, light grey brown mottled red brown bedded at 10-20°.	DW	M			- CS, 0°, 5mm.t
		7		as above, but light grey.					- CS, 0°, 1mm.t - XWS, 40mm.t - CS, 0°, 2mm.t
		8							
		9				L M			- CS, 0°, 3mm.t - XWS, 20mm.t
				END OF BOREHOLE AT 9.8m					

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. **3** 1/1

BOREHOLE LOG

Client:

Project: PROPOSED ALTERATIONS AND ADDITIONS

Location: SITE 3

Job No. 19695SL **Method:** SPIRAL AUGER JK250 **R.L. Surface:** ≈ 81.0m

Date: 22-8-05 **Datum:** AHD

Logged/Checked by: H.D./

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION & AFTER 1.5 HRS						0			CONCRETE: 100mm.t				
								-	FILL: Silty sandy clay, medium plasticity, dark brown, with fine to medium grained ironstone gravel.	MC < PL	-	-	
					SPT 12/150mm REFUSAL			CL	SANDY CLAY: medium plasticity, brown, with XW shale seams.	MC≈PL	VSt	350	
						1		-	SANDSTONE: fine to medium grained, light grey banded red brown.	DW	M	-	LOW TO MODERATE 'TC' BIT RESISTANCE
								-	SHALE: dark grey, with clay and XW shale bands.		L		MODERATE RESISTANCE WITH LOW BANDS
						2							
								-	SANDSTONE; fine to medium grained, red brown stained light grey.		L-M		MODERATE RESISTANCE
						3			SANDSTONE: fine to medium grained, light grey, with shale seams.		L		MODERATE RESISTANCE WITH LOW BANDS
						4							
									SANDSTONE; fine to medium grained, light grey.	SW	H		HIGH RESISTANCE
						5							
									END OF BOREHOLE AT 5.4m				
						6							
						7							

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 1 1/2

BOREHOLE LOG

Client:

Project: PROPOSED MIXED USE DEVELOPMENT

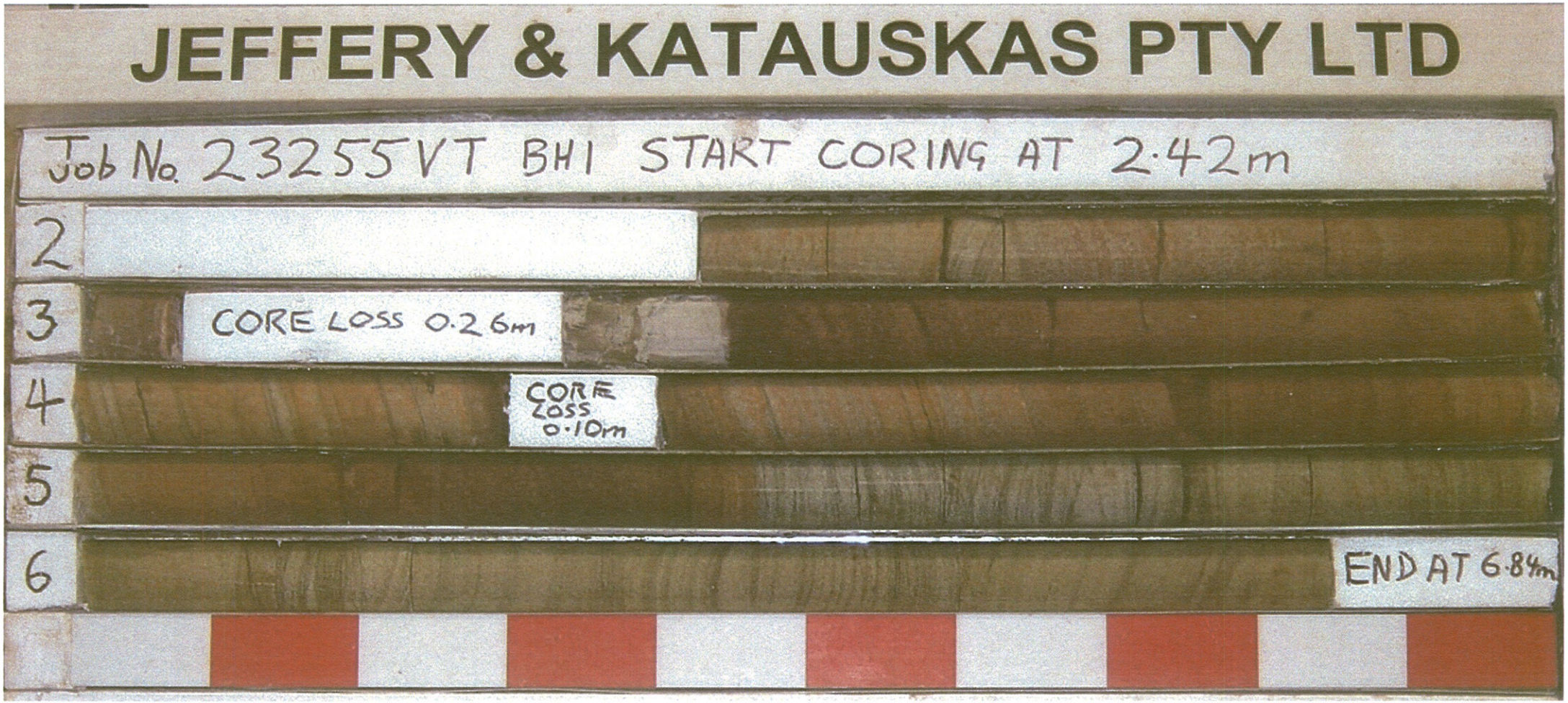
Location: SITE 4

Job No. 23255VT **Method:** SPIRAL AUGER JK250 **R.L. Surface:** ≈ 74.1m

Date: 7-8-09 **Datum:** AHD

Logged/Checked by: M.P./

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES D8	SAMPLES DS	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLET -ION						0			CONCRETE: 120mm.t				NO OBSERVED REINFORCEMENT
					N = 6 2,3,3	1		-	FILL: Sandy gravel, fine to coarse grained, grey, igneous. as above, but with silt and sandstone gravel, and a trace of clay fines, brick fragments and slag.	M	-	-	APPEARS POORLY COMPACTED
					N > 3 0,3/ 100mm REFUSAL	2		SC	CLAYEY SAND: fine to medium grained, yellow brown mottled brown, with a trace of fine to medium grained ironstone gravel.	M	VL	-	
								-	SANDSTONE: fine to medium grained, light grey, orange and red brown.	DW	L-M	-	LOW TO MODERATE 'TC' BIT RESISTANCE
									REFER TO CORED BOREHOLE LOG				
						3							
						4							
						5							
						6							
						7							


JEFFERY & KATAUSKAS PTY LTD
Job No. 23255VT BH1 START CORING AT 2·42m
2
3
CORE LOSS 0·26m
4
CORE LOSS 0·10m
5
6
END AT 6·84m

SITE 4

Jeffery and Katauskas Pty Ltd
CONSULTING GEOTECHNICAL AND ENVIRONMENTAL ENGINEERS

Borehole No. 1 2/2

CORED BOREHOLE LOG

Client:

Project: PROPOSED MIXED USE DEVELOPMENT

Location: SITE 4

Job No. 23255VT **Core Size:** NMLC **R.L. Surface:** ≈ 74.1m

Date: 7-8-09 **Inclination:** VERTICAL **Datum:** AHD

Drill Type: JK250 **Bearing:** - **Logged/Checked by:** M.P./

Water Loss/Level	Barrel Lift	Depth (m)	Graphic Log	CORE DESCRIPTION (Rock Type, grain characteristics, colour, structure, minor components.)	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_S(50)$ (EL VL L M H VH EH)	DEFECT DETAILS: DEFECT SPACING (mm) (500 300 100 50 30 10)	DEFECT DETAILS: DESCRIPTION (Type, inclination, thickness, planarity, roughness, coating.) Specific / General
		2		START CORING AT 2.42m					
				SANDSTONE: fine to medium grained, light grey and orange brown, cross bedded at 20-30°.	DW	L-M	×		
		3		as above, but red brown.		M-H	×		
				CORE LOSS 0.26m	DW	M-H			- XWS, 0°, 60mm.t
				SANDSTONE: fine to medium grained, light grey.			×		
				as above, but red orange brown, cross bedded at 22°.			×		
		4		as above, but with grey cross bedded at 15-20°.			×		
90% RET-URN				CORE LOSS 0.10m	DW	M-H			
				SANDSTONE: fine to medium grained, orange brown, grey and red brown, cross bedded at 15-20°.			×		
		5					×		
				SANDSTONE: fine to medium grained, light grey, with dark grey cross bedding at 0-20°.	SW		×		
		6					×		
							×		
		7		END OF BOREHOLE AT 6.84m					
		8							
		9							

JEFFERY AND KATAUSKAS PTY. LTD.

BOREHOLE LOG

Borehole No. 1

Client:
Project: PROPOSED COMMERCIAL DEVELOPMENT
Location: SITE 5

Job No. 1006
Date: 18·12·79

Method: TRUCK MOUNTED GEMCO AUGER RIG

Groundwater record	Samples	FIELD TESTS	Depth (m.)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition	Consistency/ Rel. Density	Hand Penetrometer Readings kPa.	Remarks
DRY			1			FILL clayey sand & silty sand grey		L		
			2		CL	SANDY CLAY: medium plasticity mottled yellow brown and red.	M<PL	F to St.		MAX 'V' Bit
			3			SANDSTONE: medium grained red brown and brown, moderately weathered, very weak				Uniform drilling effort with 'TC' bit.
						END BHC 3·4m				

JEFFERY AND KATAUSKAS PTY. LTD.

BOREHOLE LOG

Borehole No. 2

Client:
Project: PROPOSED COMMERCIAL DEVELOPMENT
Location: SITE 5

Job No. 1006
Date: 18·12·79
Method: TRUCK MOUNTED GEMCO AUGER RIG

Groundwater record	Samples	FIELD TESTS	Depth (m.)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition	Consistency/ Rel. Density	Hand Penetrometer Readings kPa.	Remarks
				XX		FILL: road base				
DRY.			1		CL	SANDY CLAY: medium plasticity yellow brown with red mottling at depth.	M>PL	St		
			2		SC	CLAYEY SAND light grey dried				
			3			SANDSTONE: medium grained, white with red brown bands, moderately weathered, very weak				Uniform drilling effort with 'TC' Bit.
						END BHC 3.4m.				

JEFFERY AND KATAUSKAS PTY. LTD.

BOREHOLE LOG

Borehole No. 3

Client:
Project: PROPOSED COMMERCIAL DEVELOPMENT
Location: SITE 5

Job No. 1006
Date: 18·12·79

Method: TRUCK MOUNTED GEMCO AUGER RIG

Groundwater record	Samples	FIELD TESTS	Depth (m.)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition	Consistency/ Rel. Density	Hand Penetrometer Readings kPa.	Remarks
				XX		FILL: road base				
Dry			1			extremely weak SANDSTONE: medium grained, brown and light grey with red bands moderately weathered, weak to medium strong				Slow uniform drilling effort with TC Bit.
			2			END BH@ 1.5m				
			3							

JEFFERY AND KATAUSKAS PTY. LTD.

BOREHOLE LOG

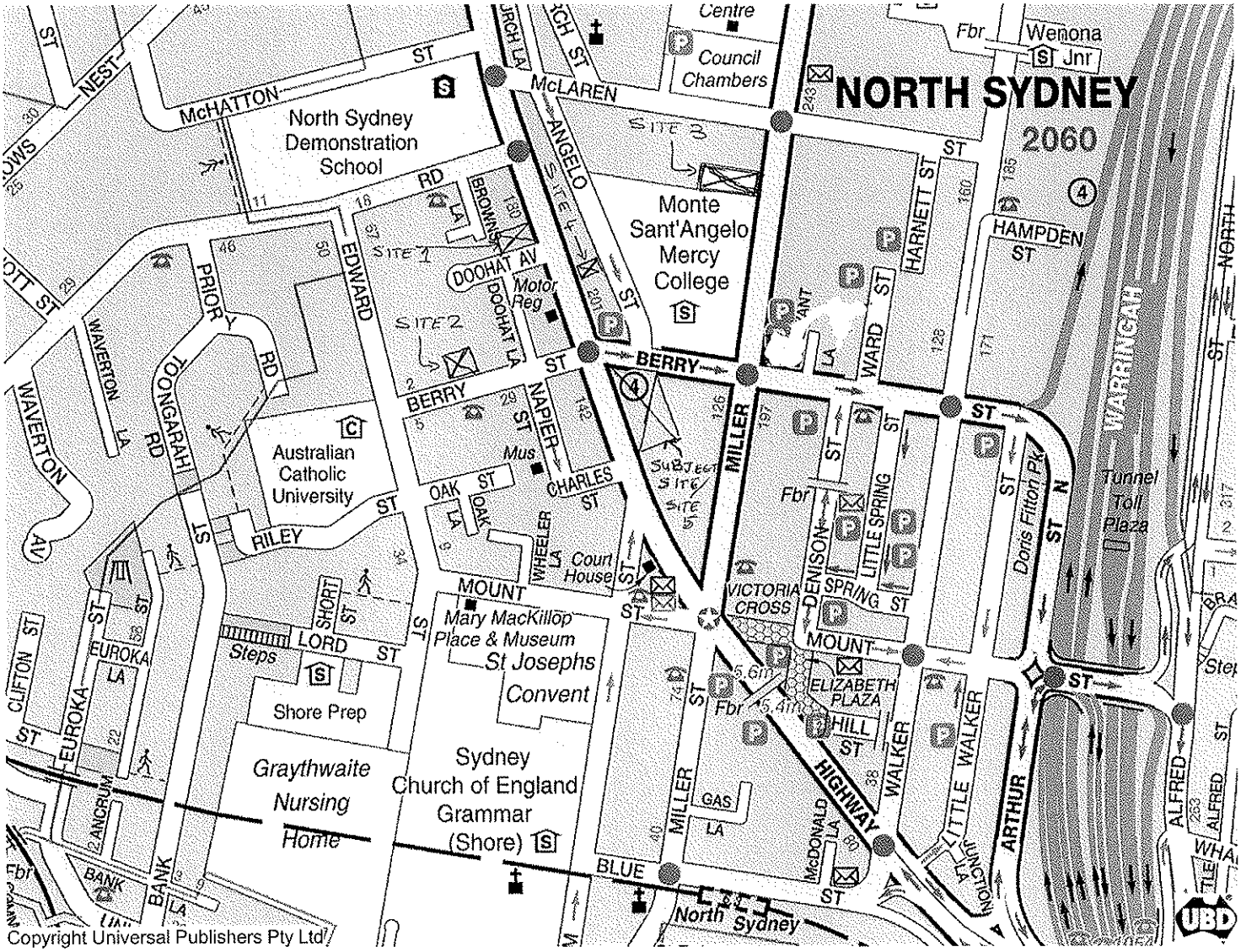
Borehole No. 4

Client:
Project: PROPOSED COMMERCIAL DEVELOPMENT
Location: SITE 5

Job No. 1006
Date: 18·12·79

Method: TRUCK MOUNTED GEMCO AUGER RIG

Groundwater record	Samples	FIELD TESTS	Depth (m.)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition	Consistency/ Rel. Density	Hand Penetrometer Readings kPa.	Remarks
				XX		FILL: road base				
Dry.			1			SANDSTONE: medium grained white, highly weathered with clayey shale bands				
			2			SANDSTONE: medium grained, moderately weathered, red brown medium strong to strong.				Max 'V' Bit. Very slow uniform drilling effort with 'TC' Bit.
			3			END BH @ 3.2m				



SKETCH PLAN SHOWING APPROXIMATE LOCATION OF SUBJECT SITE AND NEARBY SITES.

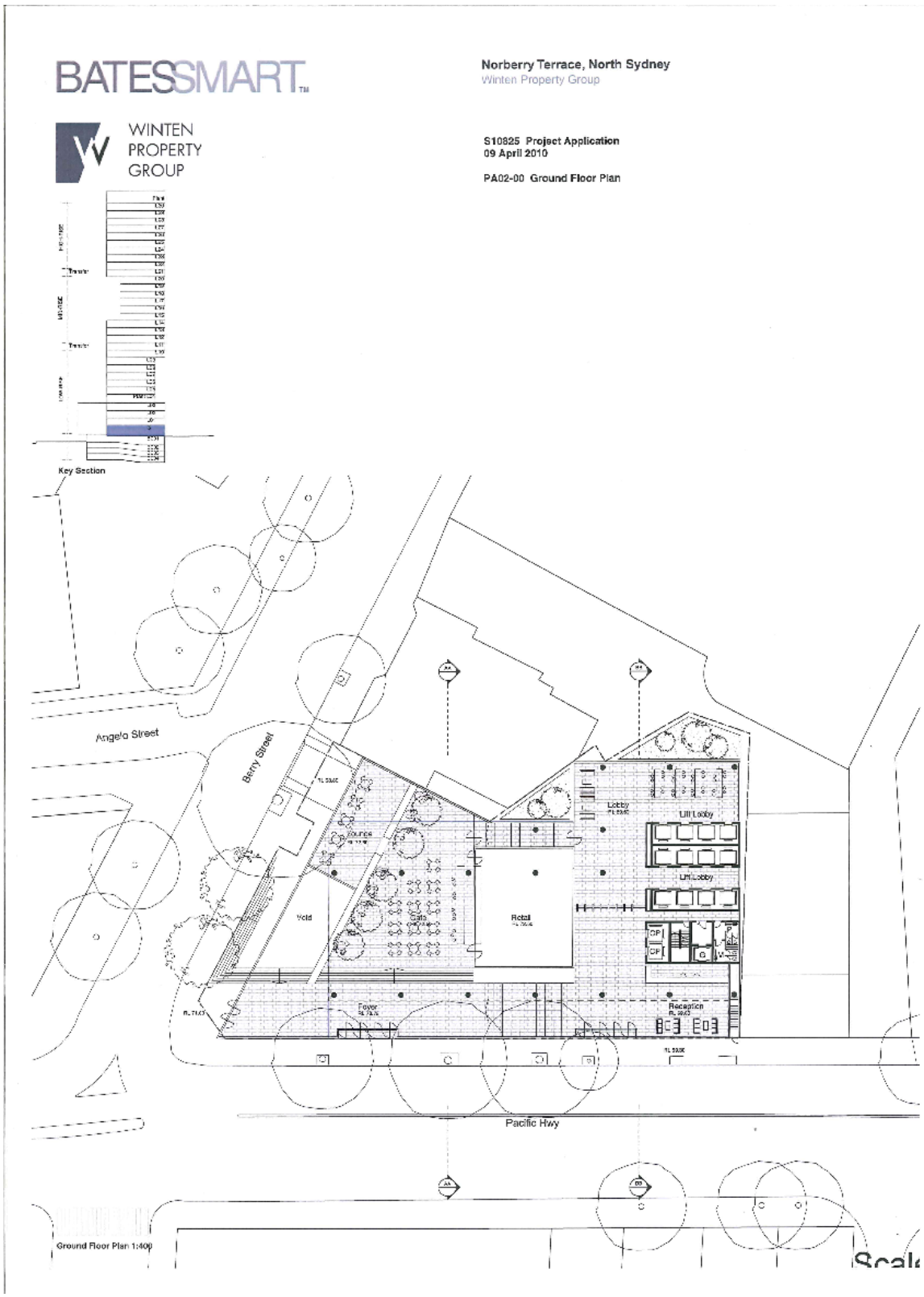
Jeffery and Katauskas Pty Ltd

Report No. 24019WN Figure No. 1

NOT TO SCALE

Appendix B

Architectural Plan and Sections


BATESSMART
WINTEN PROPERTY GROUP
Norberry Terrace, North Sydney
Winten Property Group
S10825 Project Application
09 April 2010
PA02-00 Ground Floor Plan
Key Section
Angelo Street
Berry Street
Lobby
Lift Lobby
Lift Lobby
Void
Retail
Foyer
Reception
Pacific Hwy
Ground Floor Plan 1:400