City Projects Office

Road Design

Planning and Design

Indooroopilly Bridge Duplication

Geotechnical Investigation:

Desktop Review

Prepared by:
City Projects Office
Ground Engineering

Prepared for:
City Projects Office
Road Design

Reference:
210639FR001Atw

Date of Issue:
January 2021

Ground Engineering

BRISBANE CITY

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1.0 Introduction

The Road Design section of City Projects Office commissioned Ground Engineering to undertake a desktop review of available data at Indooroopilly for a proposed bridge duplication adjacent to the Jack Pesch Bridge.

This factual report presents only the borehole data available for projects previously completed in this area.

The attached document **'Important Information About Your Geotechnical Engineering Report'** should be reviewed as part of this report.

2.0 Project and Site Description

It is understood the proposed project involves the widening of Coonan Street from Belgrave Road to Westminster Road with the alignment crossing the Queensland Rail corridor at the Indooroopilly Train station and crossing the Brisbane River adjacent to the Jack Pesch Bridge.

It is the purpose of this report to collate all available geotechnical investigation data from the Ground Engineering unit database to understand the anticipated ground conditions for the proposed project.

3.0 Site Geology

The Queensland geology GIS dataset, based on the Department of Natural Resources and Mines hard copy Queensland Geology 1:100,000 published in 1986, indicates the underlying geology on the northern side of the river to comprise rocks of the Bunya Phyllite formation form the predominant underlying geology in the region consisting of slate, phyllite, arenite and metabasalt. However, an intrusive unit of Rhyollitic tuff is defined within the Witton Barracks area, extending to the north-west towards Coonan Street and southeast to the river. Geological mapping suggests the geological constituents of the rhyolitic tuff in this area include felsites (including lavas), clastics and high-level intrusive materials.

The geological maps indicate the underlying geology on the southern side of the river to comprise quaternary alluvial deposits comprising sand, silt, mud, clays and gravels with the area south of the bridge abutments shown to be underlain by Tertiary age Corinda Formation comprising mudstone, shale minor sandstone and limestone.

4.0 Previous Investigations

The Ground Engineering project database has been utilised to identify any previous investigations that have been completed within the corridor of this proposed project. Seven projects have been identified within the project corridor. These projects have been briefly described with the borehole logs and location plans relevant to each of these projects attached in **Appendix A**.

4.1 Westminster Road Bridge, Bridge Foundations (87049 - 1987)

The investigation was undertaken for the proposed widening of the bridge crossing the rail corridor at Westminster Road. There were seven boreholes drilled to depths ranging from 2 m to 6 m depth. The purpose of the boreholes was to determine the top of rock and identify the weathering profile. The boreholes were drilled to refusal by conventional augering methods with coring completed in one of the boreholes to correlate auger refusal and rock strength.

The boreholes typically encountered a residual soil profile over weathered rock. The residual soils comprised firm and stiff clays to depths of 1 m to 2 m. The rock was described as shale and generally highly weathered initially, becoming moderately weathered with greater depth.

The report provided advice on shallow foundations with 2 m long rock bolts on a 2 m grid for the eastern abutment and bored piers for the western abutment. The bored piers were recommended on the western abutment due to the variability in the rock strength throughout the investigated profile.

4.2 Walter Taylor Bridge, QR Retaining Wall (0388858 - 2002)

The investigation was undertaken to determine the subsurface ground conditions at the toe of the abutment wall of the Queensland Rail on the Chelmer side of the river. There is an 8 m high retaining wall that forms part of the railway abutment. During bikeway upgrade works involving minor excavations at the toe of this wall, a crack was observed with some outward tilting of the top of the wall. The condition of the wall was not known prior to the bikeway works. The crack was evident for the full height of the wall.

The investigation comprised one borehole drilled to 6 m depth. The subsurface profile comprised a veneer of fill material over alluvial deposits comprising loose sands to 3.5 m depth. Below this medium dense clayey sands and stiff hard sandy clays were encountered to full depth of 6 m. The soil log is not included in the report however there is a cross section showing the subsurface profile with *in situ* testing provided in the report.

The report recommended two options of underpinning that included underpinning of the wall and soil nails installed through the facing. It appears that the soil nailing option was adopted as there are numerous soil nail securing plates evident in this wall.

4.3 Indooroopilly Sewer (100360 – 2010)

The investigation was undertaken for Queensland Urban Utilities for a proposed 500 mm diameter polyethylene sewer pipe placed by directional drilling methods within a 700 mm diameter steel enveloper that crossed under the rail corridor. The proposed under bore was to connect a new section of sewer pipework from Lambert Road to the existing network within Radnor Street. The alignment under the rail was adjacent to the northern abutment pier of the Walter Taylor Bridge.

Three boreholes were drilled with two of the boreholes within the rail corridor. The boreholes were drilled to depths of 5.2 m to 7.5 m depth. The profile comprised fill materials to 3.3 m depth in borehole (BH03/10) which was completed on the bikeway approach to the Jack Pesch Bridge, with a reduced fill profile observed in the other boreholes (1.0 m to 2.7 m). The fill materials overlie weathered rock in two of the boreholes with colluvial and residual soil profile overlying the rock in the borehole (BH02/10) completed on the western side of the rail corridor. The rock encountered in the rail corridor was described as low and medium strength phyllite, with the rock core recovered from the borehole (BH03/10) completed on the bikeway, described as medium strength for the full depth of recovered core (4.54 m to 7.55 m). The report makes mention of a rock exposure at the toe of the bikeway embankment within the Witton Barracks.

4.4 Indooroopilly Sewer Rising Main (100360 – 2012)

The investigation was completed for Queensland Urban Utilities for a sewer rising main along Lambert Road, from Kew Street to Railway Avenue. The investigation comprised a total of eight boreholes. Seven of the boreholes were drilled 2.5 m to 2.95 m depth and one borehole was drilled to 4.45 m depth.

The boreholes encountered fill materials over rock from most of the alignment, with alluvial deposits encountered in the lower lying gully near Central Avenue. The rock was determined to be phyllite. The boreholes completed to the west of Clarence Road (BH06/12 & BH07/12) encountered gravelly clays, silty clays and sandy clays to full depth. This clayey material was described and residual soil with origins thought to be from the Corinda Formation.

4.5 Chelmer Pontoon (110028 - 2011)

It is understood that the pontoon was destroyed during the 2011 flood event. The records indicate the pontoon was damaged by a land slip. The investigation comprised two boreholes drilled to 4.45 m and 19.45 m depth within the parkland.

The boreholes encountered alluvial deposits to full depth and comprised mostly sands and clayey sands with some clays observed in the upper horizons to 6 m depth with a band of clay at 10.5 m to 12.5 m depth. The sands were typically medium dense, with loose sands between 8.0 m to 10 m. The clays were generally firm and stiff to 6 m and soft at 10.5 m to 12.5 m depth.

4.6 Indooroopilly Bikeway (090013 – 2017)

A staged investigation program was undertaken on this project with the Ground Engineering group completing a total of forty-one boreholes for the project between Witton Barracks and the Indooroopilly Canoe club on Radnor Street. The investigations included both marine and land-based boreholes.

The relevant boreholes, closest to the proposed bridge alignment, have been included for reference. These include land boreholes BH01/17 and BH02/17, completed within Witton Barracks at the crest of the riverbank, and marine boreholes BH24/17 to BH29/17.

Boreholes BH01/17 and BH02/17 encountered a veneer of fill material over residual soil, in BH01/17 only, and weathered rock. The upper level of the rock was described as phyllite with a deep weathering profile observed in BH01/17 to 3.4 m of extremely low strength rock (as was a strength descriptor at the time). The rock strength increased to medium and high strength below 3.4 m depth with very high strength rhyolite encountered at 6.3 m depth. This rhyolite intrusive extended to the full depth of the BH01/17 of 20.51 m. In BH02/17 the phyllite rock was low to medium strength to 9.5 m depth, medium strength from 9.5 m to 14 m and high strength to 21.1 m depth. The rhyolite intrusive was encountered at 21.1 m to the termination depth of 21.83 m.

The marine boreholes typically encountered alluvial deposits over the rock, with some colluvial deposits and residual soil overlying the rock in some boreholes. The top of rock varied in these boreholes from riverbed level to approximately 6 m depth below riverbed. The rock was generally high strength phyllite with the exception of BH27/17 and BH28/17 where the rhyolite was encountered. In BH27/17 the rhyolite was very high to extremely high strength and encountered below the alluvial deposits from 3.9 m to termination depth of 13.8 m.

In BH28/17 a band of phyllite was observed at the base of the alluvium over the rhyolite. This was described as high and very high strength.

4.7 Witton Barracks Playground & Heritage Precinct (160896 – 2018)

One borehole (BH01/18) was completed within the Witton Barracks for a children's playground proposed in the south-eastern corner of the barracks site. This project later included three additional boreholes (BH02/18 to BH04/18) for minor structures paths and ramps proposed across the site.

The subsurface profile comprised surficial fill materials to 1.2 m over alluvial, colluvial and residual soils to full depth, with the exception of BH01/18 where phyllite was encountered at 2.3 m and also in BH02/18 where rhyolite was observed at 4.3 m depth. The upper horizons, overlying the rock comprised firm to hard sandy and silty clays.

5.0 Anticipated Ground Conditions

5.1 Belgrade Road to Westminster Road

The only borehole data in this area are the boreholes completed in 1987 at the Westminster Road bridge widening. These boreholes encountered phyllite rock, of variable strength and weathering from near surface.

The geological maps indicate the predominate rock type is likely to comprise phyllite with the rhyolite intrusive shown to be present along the western side of Coonan Street with the main vein extending to the west at the intersection of Belgrave Road. Ground surface levels at the intersection of Belgrave Road and Coonan Street are at approximately 20 m AHD with the crest of the hill near Westminster Road at 28 m AHD.

The subsurface profile at the intersection of Coonan Street and Belgrave Road is expected to comprise a layer of surficial fill and colluvial materials, 1 m to 3 m in thickness, over residual soils and weathered rock. The rock at the intersection of Belgrave Road is likely to comprise low to high strength phyllite within 2m to 4 m of the ground surface. This rock level is expected to be closer to ground surface heading up the hill towards Grosvenor Road, and likely to be encountered at 1 m to 2 m below ground surface in this area. It is likely the rhyolite intrusive will also be encountered in the area between Belgrave Road and Westminster Road. The rhyolite is typically of high to very high strength with extremely high strength rock also possible. This rock could be difficult to excavate given the high strengths anticipated.

The railway corridor, located to the east of Coonan Street, is in a section of cut in this area, with the *in situ* materials exposed in some areas. Inspection of this cutting was not undertaken prior to this report however, inspection of this cut could be beneficial in providing details of excavation materials adjacent, slope angles and treatment of cut faces. It is likely that this cut is predominantly within phyllite, with the geology underlying Coonan Street and to the west of the Coonan Street, likely to include the rhyolite.

5.2 Westminster Road to Lambert Road

The available data includes the boreholes completed at the Westminster Road bridge and the boreholes completed as part of the QUU sewer rising main project (100360 - 2012). Ground surface levels in this area range from 28 m at the bridge overpass to 18 m at the intersection of Lambert Road and Railway Avenue.

Subsurface conditions at the intersection of Coonan Street and Westminster Road are expected to comprise weathered rock within 1 m of the existing surface. The rock is expected to be variable in strength, particularly on the western side of the rail corridor, as indicated by the 1987 boreholes. The rock is expected to range in strength from low to medium strength in the upper 2 m to 5 m and become stronger with depth. Rhyolite intrusives of high, very high and possibly extremely high strength are also expected in this area. Conditions approaching Lambert Road are expected to encounter stiff to hard clays near surface, the solid geology rock appear to dip to some depth, as indicated in the boreholes BH06/12 and BH07/12 from the 100360 investigative works. It is expected the clayey materials encountered in these boreholes are from the Tertiary aged Corinda Formation and comprise weathered deposits of mudstone and minor sandstone. The depth of this profile is not known however anticipated to extend to 4 m to 8 m depth. Phyllite rock is expected to be underlying this material.

5.3 Lambert Road to the riverbank crest through Witton Barracks

Ground conditions from Lambert Road to the Witton Barracks are expected to comprise stiff clay materials, from the Corinda Formation to depths of 4 m to 8 m overlying phyllite and rhyolite. The underlying rock is anticipated to be low to high strength phyllite, increasing in strength with depth and high and very high strength rhyolite.

Boreholes BH01/17 and BH02/17 completed for the Indooroopilly Bikeway project (090013) where completed at the crest of the riverbank and encountered a veneer of fill material over residual soil grading to weathered rock.

The upper level of the rock was described as phyllite with a deeper weathering profile observed in BH01/17 to 3.4 m comprising extremely low strength rock. The rock strength increased to medium and high strength below 3.4 m depth in BH01/17 and medium strength in BH02/17 below 9.5 m. Very high strength rhyolite was encountered at 6.3 m depth in BH01/17 and extended to full depth of this boreholes and encountered at 21.1m in BH02/17.

Recent piling and civil works have been completed in this area for the Indooroopilly Bikeway project. The Ground Engineering group has not been involved with the construction works, however details of the piling completed would be beneficial to any future piling works in this area in understanding the excavation of the phyllite and the rhyolite rock.

5.4 Southern Side of the River – Chelmer

Limited investigation data is available in this area and includes only two shallow boreholes and one deep borehole. The data available indicates that the alluvial material extends to 19.45 m depth in BH01/11 (110028). The geological maps indicate that the solid geology comprises the Tertiary age Corinda Formation comprising mudstone, shale minor sandstone and limestone. It is anticipated the solid geology could be at depths of 25 m to 30 m depth in this area. Perhaps there is data available for the other bridge abutments from either Main Roads or Queensland Rail that could provide details on the deeper subsurface profile and piling depths.

6.0 Groundwater

Groundwater seepages were not observed in any of the boreholes identified during the desktop review. This is due to either the boreholes not extending to the groundwater table or the drilling method masking the presence of the groundwater level. Washbore drilling methods are usually adopted in deeper boreholes below 2.5 m depth as this is a more efficient method of drilling the borehole. Washbore drilling involves drilling with water to advance the borehole and return the drill materials to the surface for inspection and logging and therefore the introduction of the water can mask the presence of groundwater.

Regional groundwater levels are anticipated to be at approximately 1 m to 2 m AHD. Localised and perched seepages and inflows are possible at higher levels. These levels are expected to vary with seasonal variations.

7.0 Safety in Design

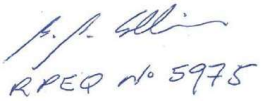
Safety in Design has been considered in relation to the desktop review of available data for this project. The outcomes of the Safety in Design process have been collated in a Risk Assessment. The risk assessment is included in **Appendix B**.

The aim of the Safety in Design assessment is to identify potential health and safety hazards associated with the proposed development, described in this report, throughout its usage as a Workplace during investigation, as well as giving due consideration to design, construction and operational phases of work. In addition, this assessment aims to identify the mitigation measures that can be put in place through the preparation of investigation works to effectively manage the risks.

8.0 Closing Comments

This report presents only the findings of previously completed geotechnical site investigations completed at within the corridor of the proposed project.

Should you have any queries concerning this investigation, please do not hesitate to contact the undersigned at any stage.



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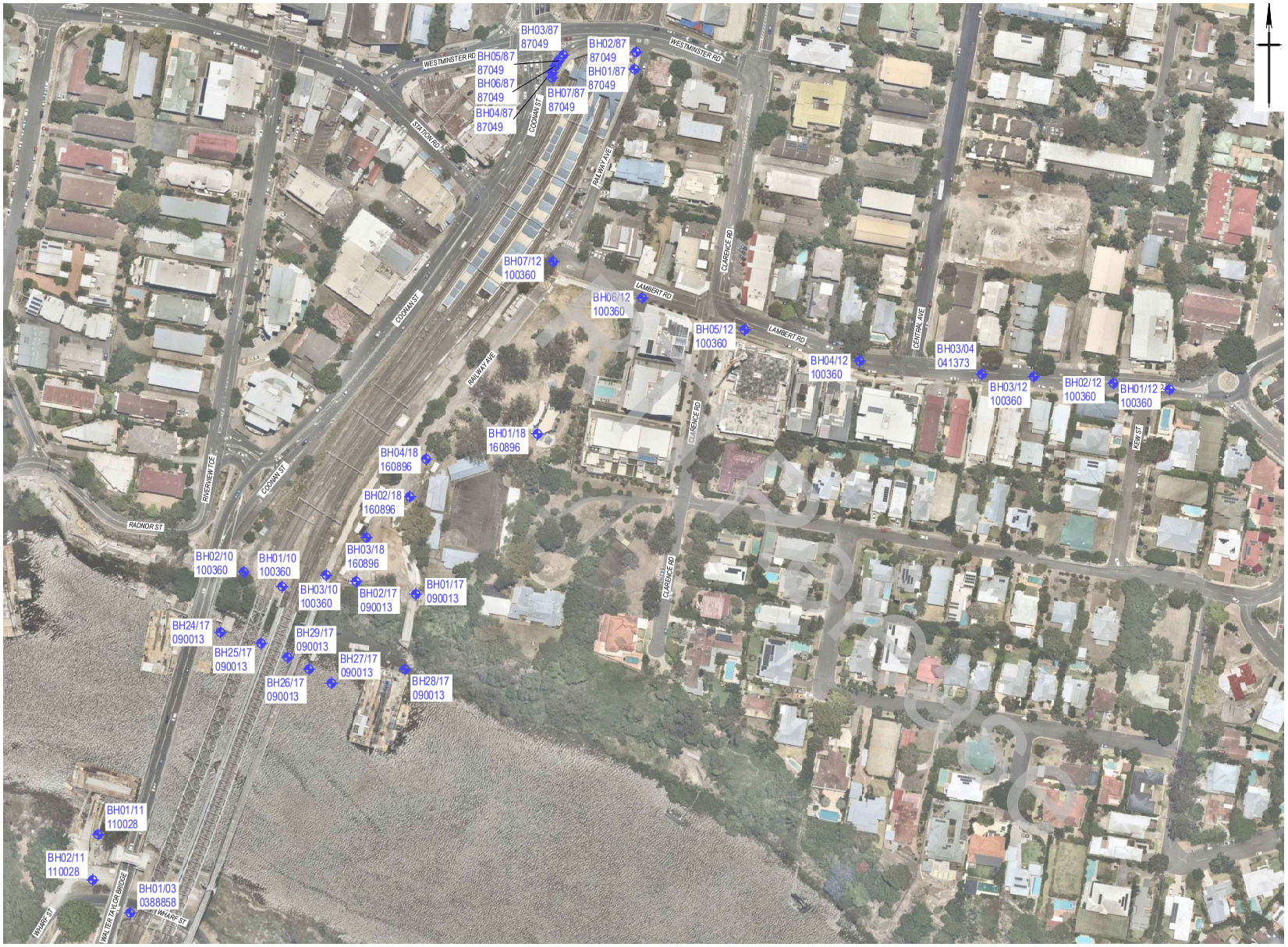
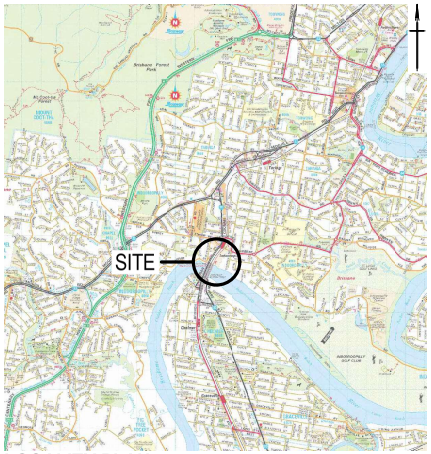
Troy Weingarth
Senior Geotechnical Engineer
Ground Engineering

Reviewed By:
Brett Collins
Consulting Geotechnical Engineer
RPEQ No. 5975





LOCALITY PLAN:
NTS

LEGEND:

BOREHOLE LOCATION - PREVIOUS INVESTIGATIONS

ACKNOWLEDGEMENT
The Consultant agrees to acknowledge the source of the Licensed Data by including on any map and/or report the following words:
'Information supplied by Nearmap, Brisbane City Council, Lender copyright'

AUTHORISED FOR ISSUE

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DRAWN	B. Magee	December 2020
CHECKED	B. Collins	December 2020
SCALE	Not To Scale	A3

PROJECT MANAGEMENT
INDOOROOPILLY BRIDGE
GEOTECHNICAL INVESTIGATION
BOREHOLE LOCATIONS

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BRISBANE CITY COUNCIL
CITY PROJECTS OFFICE
The Engineering Group - Ground Engineering

Report Reference No.	Rev.	Fig.
GE/210639	1	1

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

As the client of a consulting geotechnical engineer, you should know that site subsurface conditions cause more construction problems than any other factor. ASFE/The Association of Engineering Firms Practicing in the Geosciences offers the following suggestions and observations to help you manage your risks.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECT-SPECIFIC FACTORS

Your geotechnical engineering report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. These factors typically include: the general nature of the structure involved, its size, and configuration; the location of the structure on the site; other improvements, such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask your geotechnical engineer to evaluate how factors that change subsequent to the date of the report may affect the report's recommendations.

Unless your geotechnical engineer indicates otherwise, do not use your geotechnical engineering report:

- when the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or a refrigerated warehouse will be built instead of an unrefrigerated one;
- when the size, elevation, or configuration of the proposed structure is altered;
- when the location or orientation of the proposed structure is modified;
- when there is a change of ownership; or
- for application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problems that may occur if they are not consulted after factors considered in their report's development have changed.

SUBSURFACE CONDITIONS CAN CHANGE

A geotechnical engineering report is based on conditions that existed at the time of subsurface exploration. Do not base construction decisions on a geotechnical engineering report whose adequacy may have been affected by time. Speak with your geotechnical consultant to learn if additional tests are advisable before construction starts.Note, too, that additional tests may be required when subsurface conditions are affected by construction operations at or adjacent to the site, or by natural events such as floods, earthquakes, or ground water fluctuations. Keep your geotechnical consultant apprised of any such events.

MOST GEOTECHNICAL FINDINGS ARE PROFESSIONAL JUDGMENTS

Site exploration identifies actual subsurface conditions only at those points where samples are taken. The data were extrapolated by your geotechnical engineer who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your geotechnical engineer can work together to help minimize their impact. Retaining your geotechnical engineer to observe construction can be particularly beneficial in this respect.

A REPORT'S RECOMMENDATIONS CAN ONLY BE PRELIMINARY

The construction recommendations included in your geotechnical engineer's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Because actual subsurface conditions can be discerned only during earthwork, you should retain your geotechnical engineer to observe actual conditions and to finalize recommendations. Only the geotechnical engineer who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations are valid and whether or not the contractor is abiding by applicable recommendations. The geotechnical engineer who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Consulting geotechnical engineers prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your geotechnical engineer prepared your report expressly for you and expressly for purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the geotechnical engineer. No party should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

GEOENVIRONMENTAL CONCERNS ARE NOT AT ISSUE

Your geotechnical engineering report is not likely to relate any findings, conclusions, or recommendations

about the potential for hazardous materials existing at the site. The equipment, techniques, and personnel used to perform a geoenvironmental exploration differ substantially from those applied in geotechnical engineering. Contamination can create major risks. If you have no information about the potential for your site being contaminated, you are advised to speak with your geotechnical consultant for information relating to geoenvironmental issues.

A GEOTECHNICAL ENGINEERING REPORT IS SUBJECT TO MISINTERPRETATION

Costly problems can occur when other design professionals develop their plans based on misinterpretations of a geotechnical engineering report. To help avoid misinterpretations, retain your geotechnical engineer to work with other project design professionals who are affected by the geotechnical report. Have your geotechnical engineer explain report implications to design professionals affected by them, and then review those design professionals' plans and specifications to see how they have incorporated geotechnical factors. Although certain other design professionals may be familiar with geotechnical concerns, none knows as much about them as a competent geotechnical engineer.

BORING LOGS SHOULD NOT BE SEPARATED FROM THE REPORT

Geotechnical engineers develop final boring logs based upon their interpretation of the field logs (assembled by site personnel) and laboratory evaluation of field samples. Geotechnical engineers customarily include only final boring logs in their reports. Final boring logs should not under any circumstances be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process. Although photographic reproduction eliminates this problem, it does nothing to minimize the possibility of contractors misinterpreting the logs during bid preparation. When this occurs, delays, disputes, and unanticipated costs are the all-too-frequent result.

To minimize the likelihood of boring log misinterpretation, give contractors ready access to the complete geotechnical engineering report prepared or authorized for their use. (If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared and that developing construction cost estimates was not one of the specific purposes for which it was prepared. In other words, while a contractor may gain important knowledge from a report prepared for another party, the contractor would be well-advised to discuss the report with your geotechnical engineer and to perform the additional or alternative work that the contractor believes may be needed to obtain the data specifically appropriate for construction cost estimating purposes.) Some clients believe that it is unwise or unnecessary to give contractors access to their geotechnical engineering reports because they hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems. It also helps reduce the adversarial attitudes that can aggravate problems to disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY

Because geotechnical engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against geotechnical engineers. To help prevent this problem, geotechnical engineers have developed a number of clauses for use in their contracts, reports, and other documents. Responsibility clauses are not exculpatory clauses designed to transfer geotechnical engineers' liabilities to other parties. Instead, they are definitive clauses that identify where geotechnical engineers' responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your geotechnical engineering report. Read them closely. Your geotechnical engineer will be pleased to give full and frank answers to any questions.

RELY ON THE GEOTECHNICAL ENGINEER FOR ADDITIONAL ASSISTANCE

Most ASFE-member consulting geotechnical engineering firms are familiar with a variety of techniques and approaches that can be used to help reduce risks for all parties to a construction project, from design through construction. Speak with your geotechnical engineer not only about geotechnical issues, but others as well, to learn about approaches that may be of genuine benefit. You may also wish to obtain certain ASFE publications. Contact a member of ASFE of ASFE for a complimentary directory of ASFE publications.

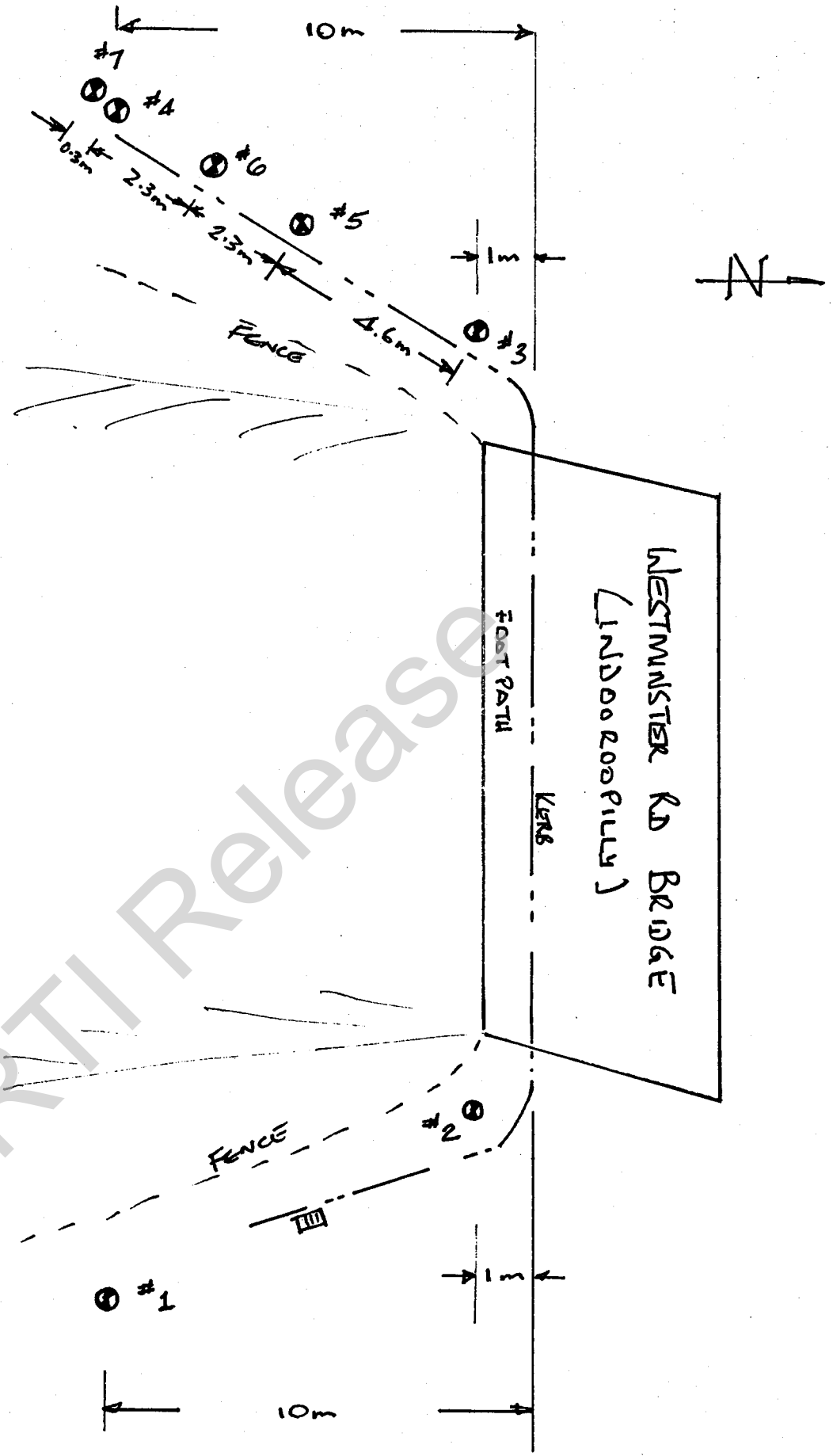
ASFE PROFESSIONAL FIRMS PRACTICING IN THE GEOSCIENCES
8811 COLESVILLE ROAD/SUITE G106/SILVER SPRING, MD 20910
TELEPHONE: 301/565-2733 FACSIMILE: 301/589-2017

IIGERO6943.5RP

Appendix A

Previous Investigation Data

87049
Westminster Bridge Widening (1987)


10m
#7
#4
#6
#5
#3
0.3m
2.3m
2.3m
4.6m
1m
FENCE
WESTMINSTER RD BRIDGE
(UNDOOROOPILLY)
FOOT PATH
KERB
FENCE
#2
#1
1m
10m

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY		Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE		E.L. 23.520
Bore No. 1	Date Of Drilling 8.4.87	Operator: A. WILLIAMS

M.C. %	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS	"V" BIT						0.6	1		CLAY - DARK GREY, SILTY, HIGH PLASTICITY, MOIST, FIRM.
											" - RED/BROWN, SILTY WITH SOME GRAVEL, HIGH PLASTICITY, MOIST, FIRM.
								1.3	2		SHALE - LIGHT BROWN, SOME CLAY SEAMS, HIGHLY WEATHERED.
									3		" - AS ABOVE.
		3.6							4		
		T.C. BIT							5		
	ROCK CORE	4.8 DIAMOND BIT				4.8		4.8	6		ROCK - SHALE, LIGHT GREY/BROWN, FINE TO MEDIUM GRAINED, MODERATELY TO HIGHLY WEATHERED. ROCK STRENGTH - MODERATE TO HIGH. POINT LOAD 0.1 - 1.0
									7		END BORE 6.0

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 3.6m
T.C. " " 4.8m

Tested By GEOFORCE PTY.LTD.

Checked By _____

Approved Signatory.....Date / /

Registered No. 1488

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT
AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY	Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE	E.L. 24.955
Bore No. 2 / Date Of Drilling 8.4.87 / Operator: A. WILLIAMS	

M.C. %	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS	"V" BIT						0.2	1		DECO. SHALE - DARK GRAY, HIGHLY WEATHERED.
								2.7	2		" - BROWN, SOME CLAY SEAMS HIGHLY WEATHERED.
									3		
									4		
		4.6						4.6	5		" - BROWN, MODERATELY WEATHERED.
		T.C. BIT							6		
		6.2							7		END BORE 6.2

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 4.6M.
T.C. " " 6.2M.

Tested By GEOCRAG PTY.LTD.

Checked By _____

Registered No. 1488

Approved Signatory.....Date / /

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY		Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE		E.L. 25.884
Bore No. 3	Date Of Drilling 8.4.87	Operator: A. WILLIAMS

M.C. %	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS	"V" BIT						0.45	1		A.C. 100MM CLAY - BROWN, SILTY, SOME GRAVEL, MEDIUM PLASTICITY, MOIST, FIRM
											" - RED/BROWN, SILTY, SOME GRAVEL, HIGH PLASTICITY, MOIST FIRM.
								2.2	2		SHALE - LIGHT BROWN, SOME CLAY SEAMS, HIGHLY WEATHERED.
									3		
									4		
									5		
		T.C. BIT						5.2			" - LIGHT BROWN, MODERATELY WEATHERED.
		5.2							6		
		6.3									END BORE 6.3
									7		

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 5.2m.
T.C. " " 6.3m

Tested By GEOPROBE PTY.LTD.

Checked By _____

Registered No. 1488

Approved Signatory.....Date / /

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY		Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE		E.L. 25.605
Bore No. 4	Date Of Drilling 8.4.87	Operator A. WILLIAMS

M.C.%	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
		"V"						0.5			A.C. 100mm MT COAT-THN METAL 400mm CLAY - RED/BROWN, SILTY, MOIST, FIRM.
								0.9	1		SHALE - BROWN, SOME CLAY SEAMS, HIGHLY WEATHERED.
		T						2.0	2		" - BROWN, MODERATELY WEATHERED.
		2.0 2.2									END BORE 2.2
									3		
									4		
									5		
									6		
									7		

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 2.0m.
T.C. " " 2.2m.

Tested By GEOPROBE PTY.LTD.

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Approved Signatory.....Date / /

Registered No. 1488

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY		Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE		E.L. 25.774
Bore No. 5	Date Of Drilling 27.4.87	Operator: A. WILLIAMS

M.C. %	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS T.C. BIT	"V" BIT 1.8						0.3	0		A.C. 90mm ROAD BASE 210mm
								0.55			CLAY - BROWN, SILTY, MEDIUM PLASTICITY, SOME GRAVEL, MOIST, FIRM.
								0.9	1		" - ORANGE/BROWN, SILTY, MEDIUM PLASTICITY, SOME GRAVEL, MOIST, STIFF
											ROCK - LIGHT BROWN, HIGHLY WEATHERED, DRY, HARD.
								1.8	2		" - BROWN, HIGHLY TO MODERATELY WEATHERED, SOME CLAY SEAMS, DRY, VERY HARD.
									3		" - AS ABOVE.
									4		
									5		" - AS ABOVE.
		6.15							6		END BORE 6.15
									7		

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 1.8m.
T.C. " " 6.15m.

Tested By GEOPROBE PTY LTD.

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Registered No. 1488

Approved Signatory.....Date / /

BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location: WESTMINSTER ROAD - INDOOROOPILLY		Report No: 21984
Project: PROPOSED WIDENING OF RAILWAY BRIDGE		E.L. 25.699
Bore No. 6	Date Of Drilling 27.4.87	Operator: A. WILLIAMS

M.C. %	Method	Bit	Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS	"V" BIT						0.34			A.C. 90mm ROAD BASE 250mm
											CLAY - BROWN, MEDIUM PLASTICITY, SOME GRAVEL, MOIST, FIRM.
								0.8	1		ROCK - BROWN, HIGHLY WEATHERED, DRY, HARD.
		1.9						1.9	2		" - BROWN, HIGHLY TO MODERATELY WEATHERED, SOME CLAY SEAMS, DRY, VERY HARD.
		T.C. BIT							3		
									4		" - AS ABOVE
									5		
		5.45									END BORE 5.45
									6		
									7		

* Pocket Penetrometer

Remarks "V" BIT MAXIMUM 1.9m
T.C. " " 5.45m

Tested By GEOPROBE PTY LTD.

Checked By _____

Registered No. 1488

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BRISBANE CITY COUNCIL - WORKS DEPARTMENT
MATERIALS SECTION

Sheet of
AS 1289.F3.1

STANDARD PENETRATION TEST REPORT AND DRILLING LOG

Location WESTMINSTER ROAD - INDOOROOPILLY	Report No: 21984
Project PROPOSED WIDENING OF RAILWAY BRIDGE	E.L. 25.690
Bore No. 7	Date Of Drilling 27.4.87 — Operator A. WILLIAMS

M.C. %	Method	Bit		Type	N	P.P.* U.C.S. kPa	From	Core	Change At	Depth (m)	Water Level	Classification and Description
	SPIRAL AUGERS	"V" BIT							0.34	1		A.C. 90mm ROAD BASE 250mm CLAY - BROWN, SILTY, MEDIUM PLASTICITY, SOME GRAVEL, MOIST, STIFF.
		T.C. BIT	1.2						0.8			ROCK - LIGHT BROWN, HIGHLY WEATHERED, DRY, HARD.
									1.2			" - LIGHT BROWN/RED, MODERATELY WEATHERED, DRY, VERY HARD.
			1.7							2		END BORE 1.7
										3		
										4		
										5		
										6		
										7		

* Pocket Penetrometer

Remarks 'V' BIT MAXIMUM 1.2m.
T.C. " " 1.7m.

Tested By GEOPROBE PTY LTD.

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Registered No. 1488

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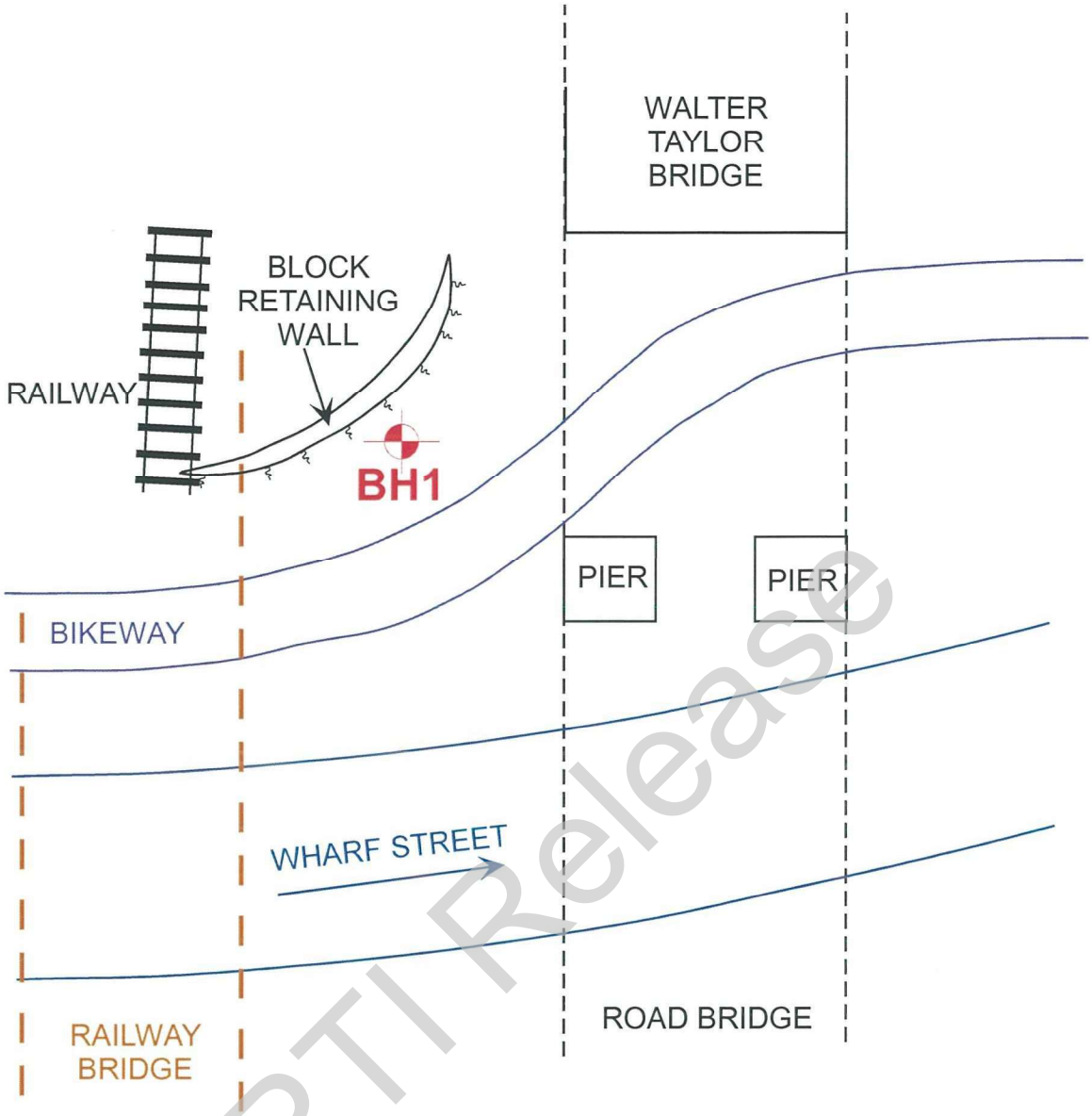
0388858
Walter Taylor Bridge, QR Retaining Wall (2002)



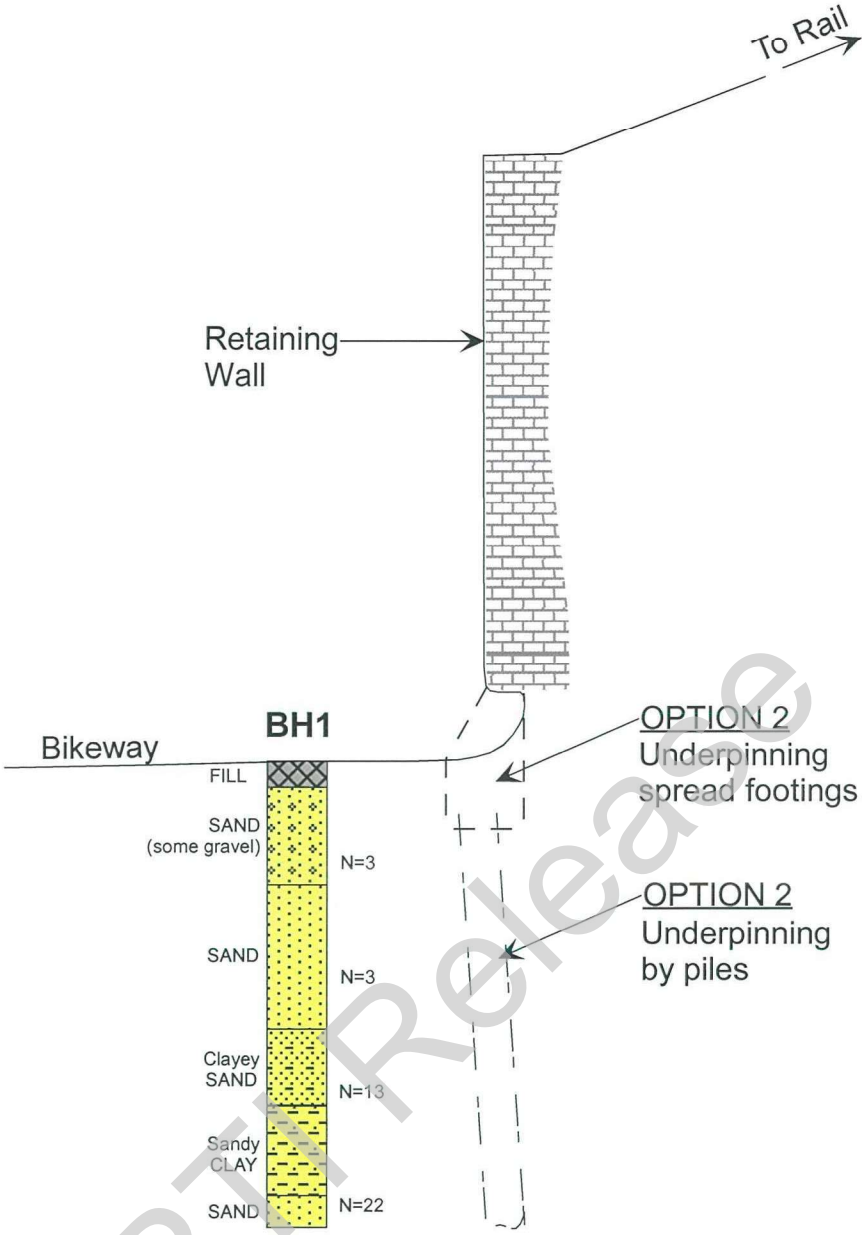
Design	P. James	July 02
Drawn	P Bowles	July 02
Checked		
Scale	SKETCH ONLY	

CITY DESIGN
STRUCTURAL DESIGN
DISTRESSED QR RETAINING WALL
WHARF STREET, CHELMER
BOREHOLE LOCATION

BRISBANE CITY COUNCIL
City Design
Geotechnical & Environmental Engineering

Report Reference No.
CD/T3-G1-0388858PR001A

Fig. 1



Design	P. James	July 02
Drawn	P Bowles	July 02
Checked		
Scale	1 : 100	

CITY DESIGN
STRUCTURAL DESIGN
DISTRESSED QR RETAINING WALL
WHARF STREET, CHELMER
SECTION

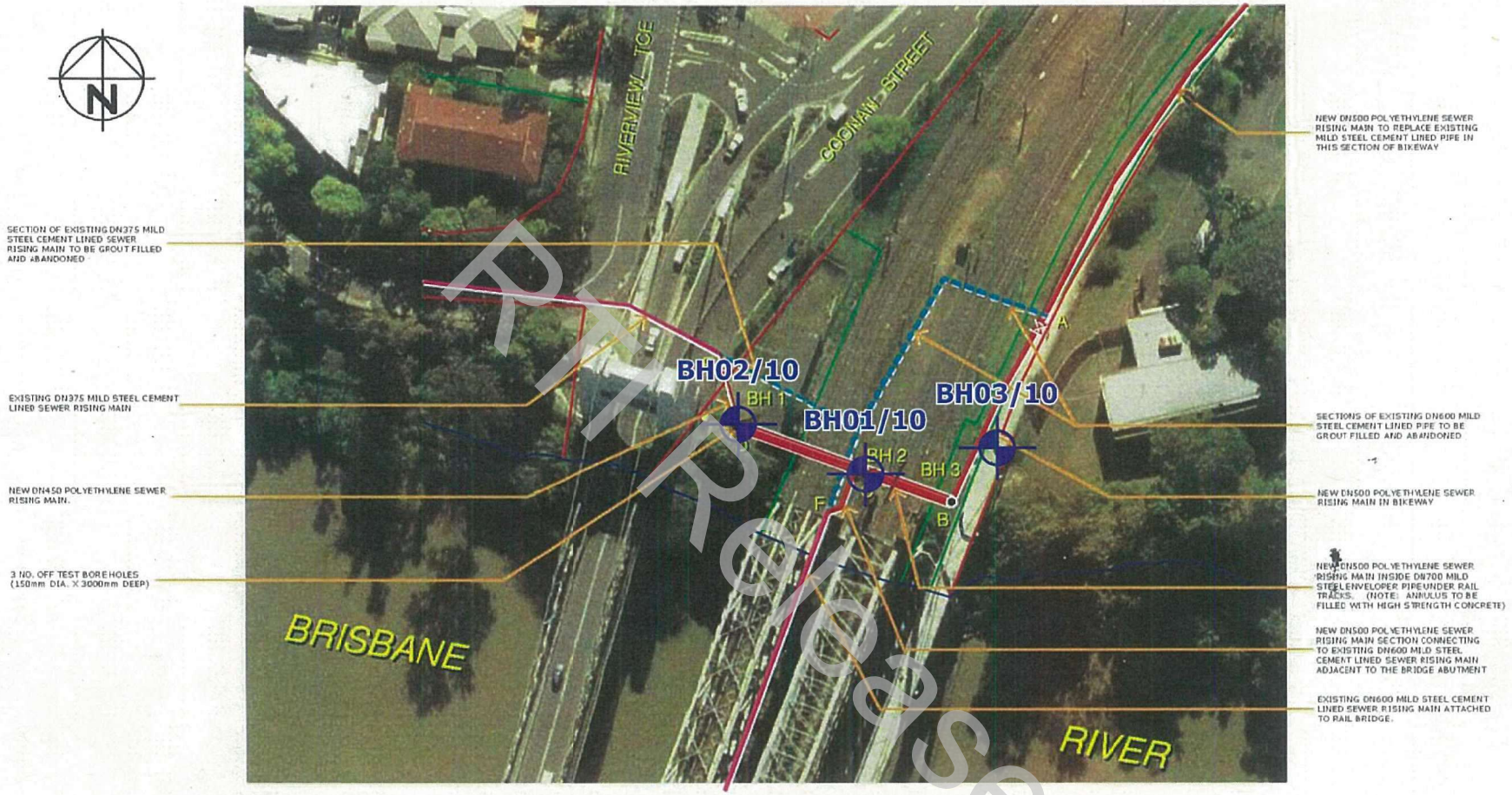
BRISBANE CITY

BRISBANE CITY COUNCIL
City Design
Geotechnical & Environmental Engineering

Report Reference No.
CD/T3-G1-0388858PR001A

Fig. **2**

100360
Indooroopilly Sewer (2010)



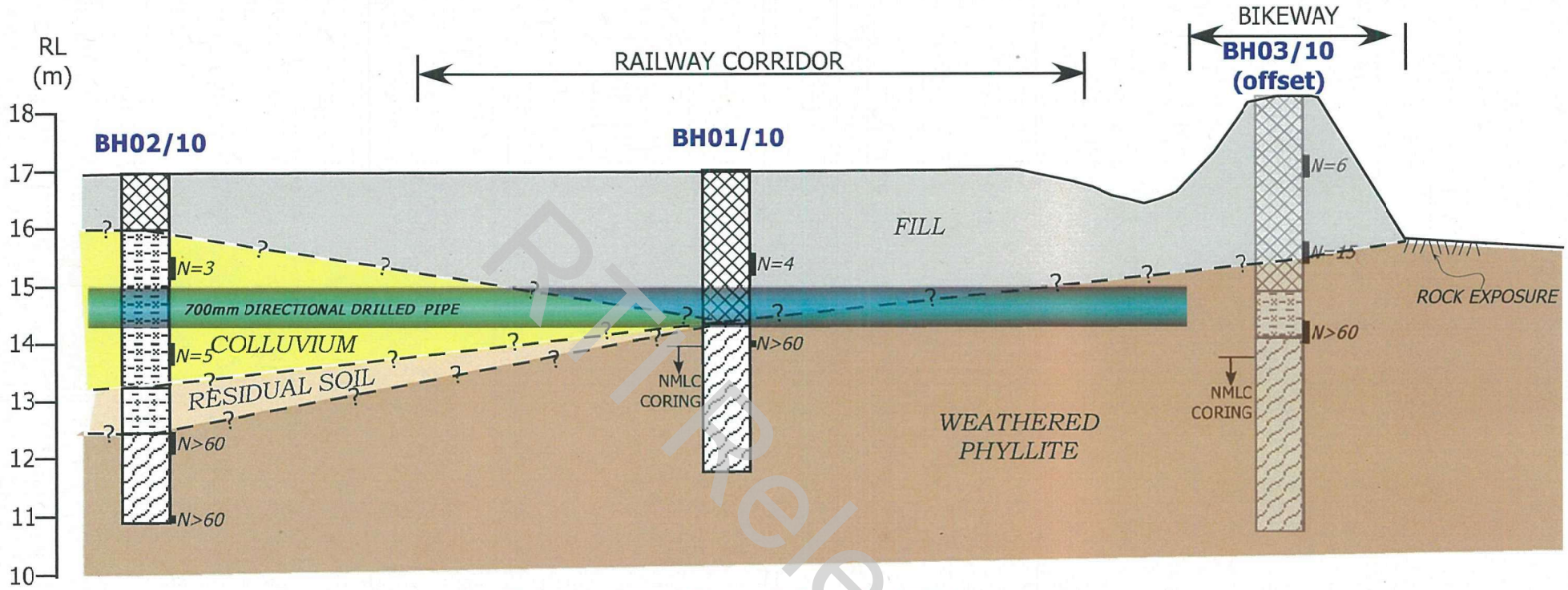
Design	T. Weingarth	June 2010
Drawn	P. Bowles	June 2010
Checked	T. Weingarth	June 2010
Scale	AS SHOWN	A4

QUEENSLAND URBAN UTILITIES
INDOOROOPILLY SEWER
GEOTECHNICAL INVESTIGATION
BOREHOLE LOCATIONS

BRISBANE CITY COUNCIL
City Design
The Engineering Group - Ground Engineering

Report Reference No.
CD/G1-100360PR001A

Fig.
1



LEGEND

- FILL
- SILTY CLAY
- GRAVELLY CLAY
- PHYLLITE
- N=3 SPT "N" Value

Design	T. Weingarth	June 2010
Drawn	P. Bowles	June 2010
Checked	T. Weingarth	June 2010
Scale	AS SHOWN	A4

QUEENSLAND URBAN UTILITIES
INDOOROOPILLY SEWER
GEOTECHNICAL INVESTIGATION
CROSS-SECTION
SHOWING BOREHOLE PROFILES

BRISBANE CITY COUNCIL
City Design
The Engineering Group - Ground Engineering

Report Reference No.
CD/G1-100360PR001A

Fig.
1

CITY DESIGN

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220
Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical BH01/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW/JAG
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 23/03/2010 COMPLETED: 23/03/2010 | ELEVATION (m): TOTAL DEPTH (m): 5.18 | AHD | EASTING: NORTHING: | MGA | HOLE ANGLE: 90° BEARING: ---

DRILLING					LITHOLOGY					SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency VS S F St VSt	Relative Density VL L MD D VD	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	NW Casing			0.5		FILL (GP) GRAVEL, coarse grained, dark brown to grey, some fin to medium grained sand	M					0.5	FILL
				1.0		FILL (Cl) GRAVELLY CLAY, medium plasticity, brown, fine to medium grained gravel						1.0	
				1.5							SPT 3, 2, 2 N=4	1.5	
				2.0								2.0	
				2.5		some timber						2.5	
				3.0		(GM) SILTY GRAVEL, fine to medium grained, mottled brown and grey	D				SPT 15/60mm(HB)	3.0	EXTREMELY TO DISTINCTLY WEATHERED PHYLLITE
				3.5		Borehole BH01/10 continued as cored hole						3.5	
				4.0								4.0	
				4.5								4.5	
				5.0								5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistancy (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

CITY DESIGN

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Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG geotechnical BH01/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW/JAG
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 23/03/2010	ELEVATION (m):	AHD	EASTING:	MGA
COMPLETED: 23/03/2010	TOTAL DEPTH (m): 5.18		NORTHING:	

HOLE ANGLE: 90°
BEARING: ---

DRILLING				LITHOLOGY							ROCK MASS DEFECTS								
Method	Support	Core Recovery%	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial	Depth (m)	RQD %	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
					0.5						0.5								
					1.0						1.0								
					1.5						1.5								
					2.0						2.0								
					2.5						2.5								
					3.0		Continued from non-cored borehole				3.0								
NMLC Coring		30			3.5		PHYLLITE, dark grey-black and orange-brown	DW			3.5	10							Core fragmented along foliation
							No Core 3.94m to 5.18m (0.59m)												
		100			4.0		PHYLLITE, dark grey-black and orange brown, well developed sub-horizontal foliation	DW		D 2.0	4.0								PT's 0-20 Ir Ro Ic on foliation
					4.5						4.5	33							PT(2) 10 Ir Ro Ic
								XW											CS 0
					5.0			DW			5.0								PT's 0-20 Ir Ro Ic

CORE LOG - GEOTECHNICAL 100360PR001A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 8/6/10

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols

- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering

- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength

- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type

- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics

- Pl - Planar
- Cv - Curved
- Un - Undulose
- Ir - Irregular
- cc - clay coated
- lc - limonite coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated
- Sm - Smooth
- St - Stepped
- Ro - Rough
- Sl - Slickensided
- Sr - Striated
- Po - Polished

CITY DESIGN

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BOREHOLE LOG geotechnical BH01/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW/JAG
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 23/03/2010	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 23/03/2010	**TOTAL DEPTH (m):** 5.18		**NORTHING:**		**BEARING:** ---

DRILLING				LITHOLOGY								ROCK MASS DEFECTS								
Method	Support	Core Recovery%	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa (D - diam, A - axial)		Depth (m)	RQD %	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
		100											33		PT's	0-20	Ir	Ro	Ic	
							Bottom of hole at 5.18 m.													

CORE LOG - GEOTECHNICAL 100360PR001A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 8/6/10

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols

- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering

- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength

- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type

- PT - Parting
- JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics

- Pl - Planar
- Cv - Curved
- Un - Undulose
- Ir - Irregular
- cc - clay coated
- lc - limonite coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated
- Sm - Smooth
- St - Stepped
- Ro - Rough
- Sl - Slickensided
- Sr - Striated
- Po - Polished

BH01/10

START OF CORE 3.10m

END OF HOLE 5.18m

QLD URBAN UTILITIES
INDOOROOPILLY SEWER RISING MAIN
GEOTECHNICAL INVESTIGATION
CD/G1-100360PR001A

CITY DESIGN

Ground Engineering
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Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG Geotechnical BH02/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 23/03/2010	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**
COMPLETED: 23/03/2010	**TOTAL DEPTH (m):** 6.03		**NORTHING:**	

HOLE ANGLE: 90°
BEARING: ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.5		FILL (GW) SANDY GRAVEL, fine to coarse grained, grey, fine to medium grained sand	D						0.5	FILL
						FILL (Cl) GRAVELLY CLAY, medium plasticity, brown, fine to medium grained gravel	M							
				1.0		some medium to coarse grained gravel							1.0	COLLUVIUM
				1.5		(Cl) GRAVELLY SILTY CLAY, medium plasticity, mottled red-brown and brown, fine to medium grained gravel						SPT 3, 2, 1 N=3	1.5	
				2.0									2.0	
				2.5									2.5	
				3.0		mottled grey and brown						SPT 3, 3, 2 N=5	3.0	
				3.5									3.5	
				4.0		(Cl) SILTY GRAVELLY CLAY, medium plasticity, mottled pale brown and pale grey, fine to medium grained gravel							4.0	RESIDUAL SOIL
				4.5		(GC) SILTY CLAYEY GRAVEL, fine to medium grained, pale brown, medium plasticity clay	D					SPT 20, 20/90mm(HB)	4.5	EXTREMELY WEATHERED PHYLLITE
				5.0									5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistancy (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

CITY DESIGN

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BOREHOLE LOG Geotechnical BH02/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 23/03/2010 COMPLETED: 23/03/2010 | ELEVATION (m): TOTAL DEPTH (m): 6.03 | AHD | EASTING: NORTHING: | MGA | HOLE ANGLE: 90° BEARING: ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			5.5		(GC) SILTY CLAYEY GRAVEL, fine to medium grained, pale brown, medium plasticity clay *(continued)*	D					5.5	EXTREMELY WEATHERED PHYLLITE
				6.0		harder bands						6.0	
						Bottom of hole at 6.03 m.					SPT 15/30mm(HB)		
				6.5								6.5	
				7.0								7.0	
				7.5								7.5	
				8.0								8.0	
				8.5								8.5	
				9.0								9.0	
				9.5								9.5	
				10.0								10.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistancy (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

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BOREHOLE LOG Geotechnical BH03/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW/JG
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/04/2010	ELEVATION (m):	AHD	EASTING:	MGA	HOLE ANGLE: 90°
COMPLETED: 9/04/2010	TOTAL DEPTH (m): 7.55		NORTHING:		BEARING: ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	HW Casing			0.5		CONCRETE	D					0.5	FILL
						FILL (SP) SAND, fine to medium grained, brown	M						
				1.0		FILL (GC) CLAYEY GRAVEL, fine to medium grained, dark grey, medium plasticity clay					SPT 6, 3, 3 N=6	1.0	
				1.5		FILL (Cl) GRAVELLY CLAY, medium plasticity, dark grey, fine to medium graiend gravel, some fine to medium graiend sand						1.5	
				2.0								2.0	
				2.5		FILL (Cl) SANDY CLAY, medium plasticity, brown, some fine to medium grained gravel, fine to medium grained sand						2.5	
Washbore - Roller Bit				3.0		FILL (GC) CLAYEY GRAVEL, fine to medium grained, dark grey to brown, medium plasticity clay					SPT 4, 7, 8 N=15	3.0	
				3.5		(Cl) SILTY CLAY, medium plasticity, mottled pale grey and orange-brown, fine grained gravel						3.5	RESIDUAL SOIL
				4.0							SPT 17, 20/60mm(HB)	4.0	
				4.5		(GM) SILTY GRAVEL, fine to medium grained, mottled orange-brown and grey, some low to medium plasticity clay						4.5	EXTREMELY WEATHERED PHYLLITE
				5.0		Borehole BH03/10 continued as cored hole						5.0	

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols

- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content

- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistancy (cohesive soils)

- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)

- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing

- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

CITY DESIGN
Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220
Dedicated to a better Brisbane

BOREHOLE LOG geotechnical BH03/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW/JG
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/04/2010	ELEVATION (m):	AHD	EASTING:	MGA
COMPLETED: 9/04/2010	TOTAL DEPTH (m): 7.55		NORTHING:	

HOLE ANGLE: 90°
BEARING: ---

DRILLING				LITHOLOGY								ROCK MASS DEFECTS									
Method	Support	Core Recovery%	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial		Depth (m)	RQD %	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
					0.5							0.5									
					1.0							1.0									
					1.5							1.5									
					2.0							2.0									
					2.5							2.5									
					3.0							3.0									
					3.5							3.5									
					4.0							4.0									
					4.5		Continued from non-cored borehole					4.5									
NMLC Coring		100			5.0		PHYLLITE, grading in parts to SCHIST, fine grained, brown-grey - dark grey-orange to brown; with white quartz as veins mostly defining well-developed foliation at 0-20deg	DW				5.0	62		CS(2)0-5					2 to 5mm thick, pale grey, soft
															JT	65		Ir	Ro	Ic

CORE LOG - GEOTECHNICAL 100360PR001A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 8/6/10

NOTE:
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Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting
- JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics
- Pl - Planar
- Cv - Curved
- Un - Undulose
- Ir - Irregular
- cc - clay coated
- ic - limonite coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated
- Sm - Smooth
- St - Stepped
- Ro - Rough
- Sl - Slickensided
- Sr - Striated
- Po - Polished

CITY DESIGN

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505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG geotechnical BH03/10

PROJECT No: CD/G1-100360PR001A

CLIENT: Qld Urban Utilities	**CONTRACTOR:** G & L Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Jacro 350	**CHECKED BY:** TW/JG
LOCATION: Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/04/2010	ELEVATION (m):	AHD	EASTING:	MGA	HOLE ANGLE: 90°
COMPLETED: 9/04/2010	TOTAL DEPTH (m): 7.55		NORTHING:		BEARING: ---

DRILLING				LITHOLOGY							ROCK MASS DEFECTS									
Method	Support	Core Recovery%	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial	Depth (m)	RQD %	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring		100			5.5		PHYLLITE, grading in parts to SCHIST, fine grained, brown-grey - dark grey-orange to brown; with white quartz as veins mostly defining well-developed foliation at 0-20deg *(continued)*				5.5	62		CS	10				1mm thick, grey, along foliation, soft
					6.0						6.0			CS	15				1mm thick, grey, soft
														FT	10	Ir	Ro	Ic	along foliation, some clay
		31			6.5						6.5			Core fragmented along foliation, 5-10deg, Ic					
														PTs	5	Ir	Ro-Smlc		
					7.0						7.0	100		JT(5)	40-75	Ir	Ro	Ic	
					7.5						7.5								
							Bottom of hole at 7.55 m.												
					8.0						8.0								
					8.5						8.5								
					9.0						9.0								
					9.5						9.5								
					10.0						10.0								

NOTE:

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- EH - Extremely High

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- Sm - Smooth
- St - Stepped
- Ro - Rough
- Sl - Slickensided
- Sr - Striated
- Po - Polished

BH03/10

QLD URBAN UTILITIES
INDOOROOPILLY SEWER RISING MAIN
GEOTECHNICAL INVESTIGATION
CD/G1-100360PR001A

Appendix B

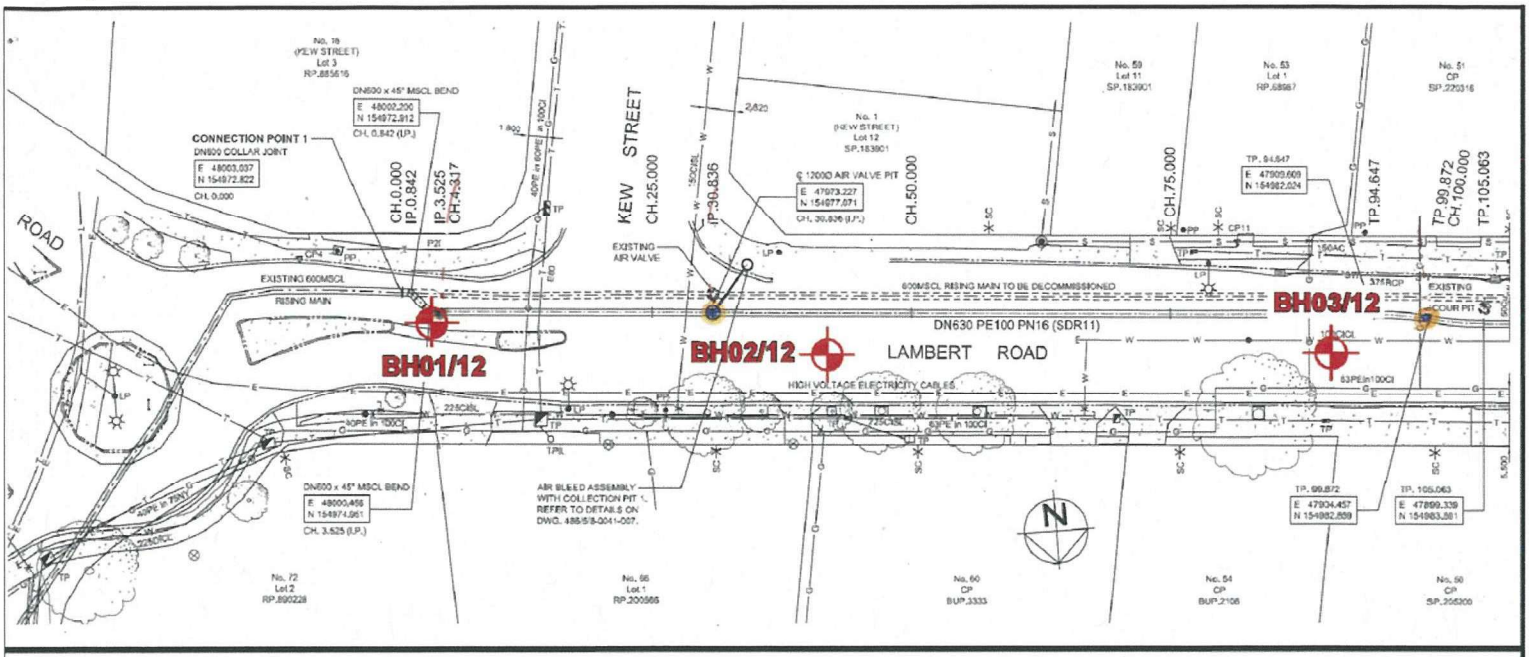
Point Load Test Results

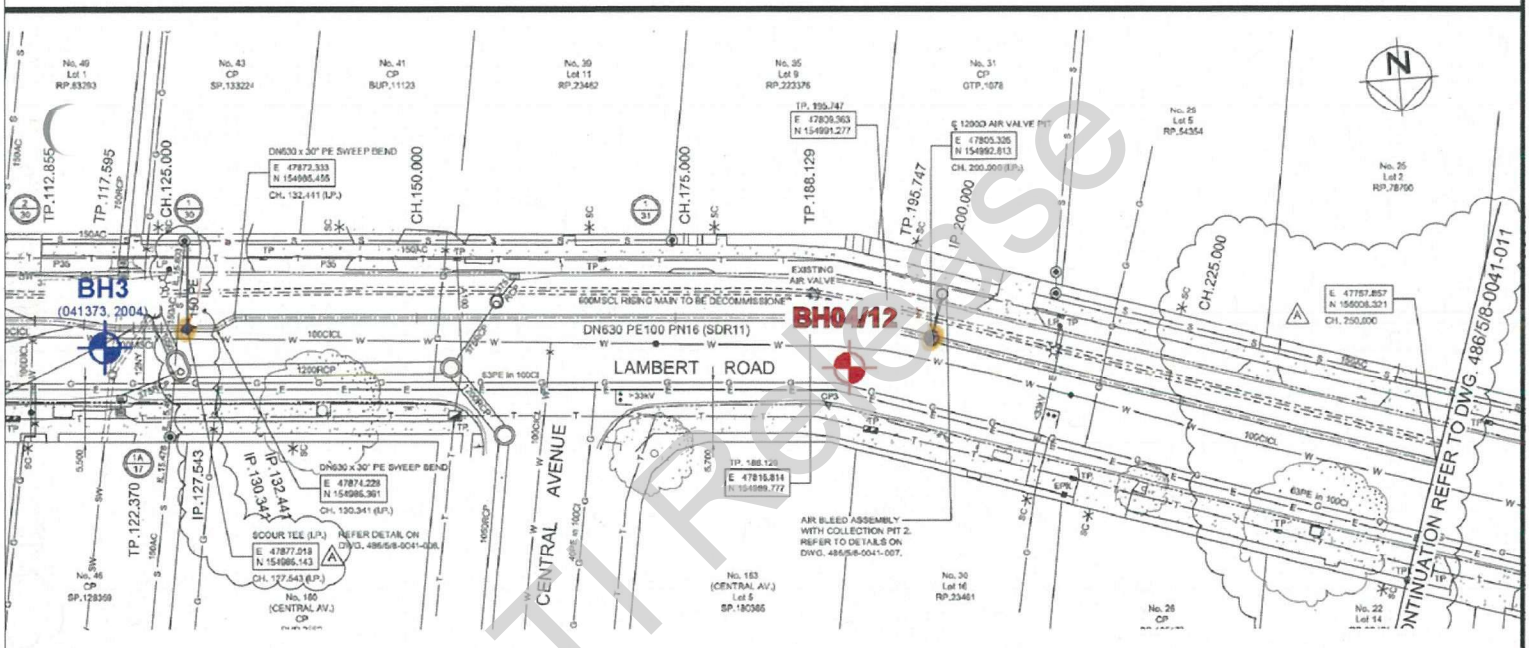
POINT LOAD STRENGTH TEST RESULTS

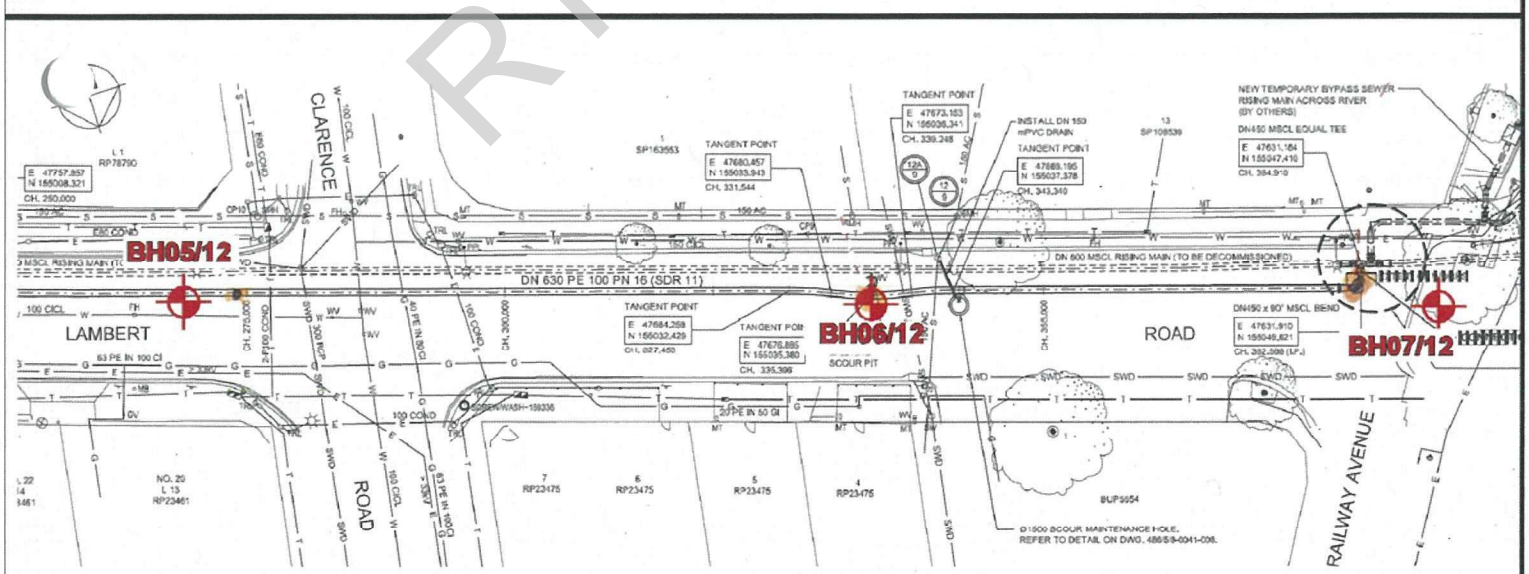
Client:	Queensland Urban Utilities	**Test Machine:**	Point Load Tester - Model 6500
Project no.:	CD/G1-100360	**Test Locality:**	Geotechnical Laboratory
Project:	Sewer Pipe	**Tested by:**	Troy W
Location:	Indooroopilly	**Date:**	28-Apr-10

Axial Testing Sample Description	W1 (mm)	W2 (mm)	(W1+W2)/2 (mm)	Platen Separation D (mm)	D/W 0.3<D\W<1.0	De (mm)	De2 4/pi(W.D) (mm2)	Failure Load P(kN)	Is (P/De2)1000 (MPa)	F (De/50)^0.45	**Is(50) Is.F (MPa)**
			0		#DIV/0!	0.00	0.00		#DIV/0!	0.00	**#DIV/0!**
Diametral Testing Sample Description	Length B(mm)		Notes	Platen Separation D (mm)	B/D>1		D2 (mm2)	Failure Load P(kN)	Is (P/D2)1000 (MPa)	F (D/50)^0.45	**Is(50) Is.F (MPa)**
BH1 4.38-4.46m	80			52	1.5		2704	0.52	0.19	1.02	**0.20**
BH3 5.33-5.43m	100			52	1.9		2704	0.64	0.24	1.02	**0.24**
BH3 7.38-7.46m	80			52	1.5		2704	0.79	0.29	1.02	**0.30**

100360
Indooroopilly Sewer Rising Main (2012)







DIAGRAMMATIC ONLY DO NOT SCALE FROM THIS FIGURE

LEGEND

- CURRENT BOREHOLE LOCATION
- PREVIOUS BOREHOLE LOCATION

Design	T. Weingarth	Sept. 2012
Drawn	P. Bowles	Sept. 2012
Checked	T. Weingarth	Sept. 2012
Scale	AS SHOWN	A3

QUEENSLAND URBAN UTILITIES
INDOOROOPILLY SEWER RISING MAIN
LAMBERT ROAD, INDOOROOPILLY

BOREHOLE LOCATIONS

BRISBANE CITY COUNCIL
City Projects Office
Planning & Design - Ground Engineering

Report Reference No.
100360PR002A

Fig. **1**

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG Geotechnical — BH01/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 2.59		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.5		ASPHALT AND ROADBASE	D						0.5	FILL
				1.0		(GM) CLAYEY SILTY GRAVEL, fine to medium grained, pale brown, low to medium plasticity clay	M					SPT 30/150mm(HB)	1.0	EXTREMELY WEATHERED PHYLLITE
				1.5									1.5	
				2.0									2.0	
				2.5								SPT 25/90mm(HB)	2.5	
						Bottom of hole at 2.59 m.								
				3.0									3.0	
				3.5									3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

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- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

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- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
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Sampling/Testing

- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL 100360PR002A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 1.../12

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG Geotechnical — BH02/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 2.80		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.0		ASPHALT AND ROADBASE	D						0.0	FILL
				0.5		(CI) SILTY GRAVELLY CLAY, medium plasticity, mottled red-brown and pale brown, fine grained gravel	M						0.5	RESIDUAL SOIL
				1.0		(GC) SILTY CLAYEY GRAVEL, fine to medium grained, pale brown, medium plasticity clay						SPT 14, 21, 24 N=45	1.0	EXTREMELY WEATHERED PHYLLITE
				1.5									1.5	
				2.0									2.0	
				2.5								SPT 12, 30/150mm	2.5	
				3.0		Bottom of hole at 2.80 m.							3.0	
				3.5									3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

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- F - Firm
- St - Stiff
- VSt - Very Stiff
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- D - Dense
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- VS - Vane Shear
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SOIL LOG - GEOTECHNICAL 100360PR002A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 1/../12

CITY PROJECTS OFFICE

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505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical — BH03/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 2.95		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.0		ASPHALT AND ROADBASE	D						0.0	FILL
				0.5		FILL (GC) CLAYEY GRAVEL, fine to medium grained, brown, medium plasticity clay, some fine to coarse grained sand	M						0.5	COLLUVIUM
				1.0		(Cl) GRAVELLY CLAY, medium plasticity, mottled red-brown and grey, fine grained gravel						SPT 5, 7, 9 N=16	1.0	
				1.5									1.5	
				2.0		(Cl) SILTY GRAVELLY CLAY, medium plasticity, mottled pale grey and brown, fine grained gravel							2.0	RESIDUAL SOIL
				2.5									2.5	
				3.0		(Cl) GRAVELLY CLAY, medium plasticity, mottled grey and brown, fine to medium grained gravel						SPT 6, 8, 8 N=16	3.0	EXTREMELY WEATHERED PHYLLITE
				3.5		Bottom of hole at 2.95 m.							3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

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BOREHOLE LOG Geotechnical — BH04/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 2.90		**NORTHING:**		**BEARING:** ---

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Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.0		ASPHALT AND ROADBASE	D						0.0	FILL
				0.5		(CI) GRAVELLY CLAY, medium plasticity, mottled red-brown and grey, fine grained gravel	M						0.5	RESIDUAL SOIL
				1.0								SPT 4, 4, 4 N=8	1.0	
				1.5									1.5	
				2.0		(CI) GRAVELLY SILTY CLAY, medium plasticity, mottled pale grey and brown, fine to medium grained gravel							2.0	EXTREMELY WEATHERED PHYLLITE
				2.5		(GM) CLAYEY SILTY GRAVEL, fine to medium grained, pale brown and grey, medium plasticity clay						SPT 19, 18, 30/100mm	2.5	
				3.0		Bottom of hole at 2.90 m.							3.0	
				3.5									3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

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BOREHOLE LOG Geotechnical — BH05/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities
PROJECT: Indooroopilly Sewer Rising Main
LOCATION: Lambert St Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Hydrapower Scout
NOTES:

LOGGED BY: TW
CHECKED BY: TW

DATE COMMENCED: 9/09/2012
COMPLETED: 9/09/2012
ELEVATION (m): AHD
TOTAL DEPTH (m): 2.53
EASTING: MGA
NORTHING:
HOLE ANGLE: 90°
BEARING: ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.0		ASPHALT AND ROADBASE	D						0.0	FILL
				0.5		FILL (GC) CLAYEY GRAVEL, fine grained, grey, medium plasticity clay	M						0.5	RESIDUAL SOIL
						(Cl) GRAVELLY CLAY, medium plasticity, red-brown, fine grained gravel								
				1.0		(GC) CLAYEY GRAVEL, fine to medium grained, pale brown and grey, medium plasticity clay						SPT 6, 19, 30/110mm(HB)	1.0	EXTREMELY WEATHERED PHYLLITE
				1.5									1.5	
				2.0									2.0	EXTREMELY TO DISTINCTLY WEATHERED PHYLLITE
				2.5									2.5	
						Bottom of hole at 2.53 m.						SPT 20/25mm(HB)		
				3.0									3.0	
				3.5									3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistancy (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH06/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 4.45		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	▼		0.5		ASPHALT AND ROADBASE	D					0.5	FILL
						FILL (CI) GRAVELLY CLAY, medium plasticity, brown, fine to medium grained gravel	M						
				1.0		(CI) GRAVELLY CLAY, medium plasticity, dark grey, fine grained gravel, some fine to medium grained sand	W				SPT 1, 0, 0 N=0	1.0	ALLUVIUM
				1.5								1.5	
				2.0								2.0	
				2.5		(CI) GRAVELLY SILTY CLAY, medium plasticity, mottled red-brown and grey, fine to coarse grained sand, fine grained gravel					SPT 4, 5, 8 N=13	2.5	RESIDUAL SOIL
				3.0								3.0	
				3.5								3.5	
				4.0							SPT 3, 6, 7 N=13	4.0	
				4.5		Bottom of hole at 4.45 m.						4.5	
				5.0								5.0	

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL 100360PR002A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 1/3/12

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG Geotechnical — BH07/12

PROJECT No: 100360PR002A

CLIENT: Queensland Urban Utilities	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Sewer Rising Main	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** TW
LOCATION: Lambert St Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/09/2012	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/09/2012	**TOTAL DEPTH (m):** 2.95		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			0.0		ASPHALT AND ROADBASE	D						0.0	FILL
				0.5		(CI) GRAVELLY CLAY, medium plasticity, brown, fine to medium grained gravel, some fine to medium grained sand	M						0.5	RESIDUAL SOIL
						(SC) CLAYEY SAND, fine to medium grained, brown, low to medium plasticity clay, some fine grained gravel								RESIDUAL SOIL
				1.0		(CI) GRAVELLY SANDY CLAY, medium plasticity, mottled red-brown and brown, fine to medium grained sand, fine grained gravel						SPT 5, 8, 11 N=19	1.0	
				1.5									1.5	
				2.0									2.0	
				2.5								SPT 18, 20, 16 N=36	2.5	
				3.0		Bottom of hole at 2.95 m.							3.0	
				3.5									3.5	
				4.0									4.0	
				4.5									4.5	
				5.0									5.0	

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols

- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

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- VSt - Very Stiff
- H - Hard

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- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing

- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

Appendix B

Borehole Log BH3 from CD/W5-G1/041373PR001Atw

CITY DESIGN

Geotechnical and Environmental Engineering
503 St Pauls Tce, Fortitude Valley, QLD 4006
Phone: (07) 340 30788 Facsimile: (07) 340 30691

BOREHOLE LOG geotechnical — BH3

PROJECT No: CD/W5-G1/041373

CLIENT: Drainage Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Releif Drainage	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** DW
LOCATION: Sandy Creek, Indooroopilly	**NOTES:**	

DATE COMMENCED: 28/09/2004	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 28/09/2004	**TOTAL DEPTH (m):** 4.45		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS, S, F, St, VSt, H)	Relative Density (VL, L, MD, D, VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	None Observed		0.0		ASPHALT AND ROADBASE	M					0.0	FILL
				0.5		FILL (GW) SILTY SANDY GRAVEL, fine to medium grained, brown, fine to medium grained sand						0.5	
				1.0		(Cl) SILTY CLAY, medium to high plasticity, grey, some fine to medium grained sand					SPT 1, 2, 1 N=3	1.0	ALLUVIUM
				1.5								1.5	
				2.0		(Cl) GRAVELLY CLAY, medium plasticity, mottled red-brown and grey, fine to medium grained gravel						2.0	
				2.5							SPT 6, 8, 16 N=24	2.5	
				3.0								3.0	
				3.5		some fine to medium grained sand						3.5	
				4.0							SPT 8, 11, 17 N=28	4.0	
				4.5		Bottom of hole at 4.45 m.						4.5	
				5.0								5.0	

NOTE:

LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols

- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content

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- W - Wet
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- W_l - Liquid Limit

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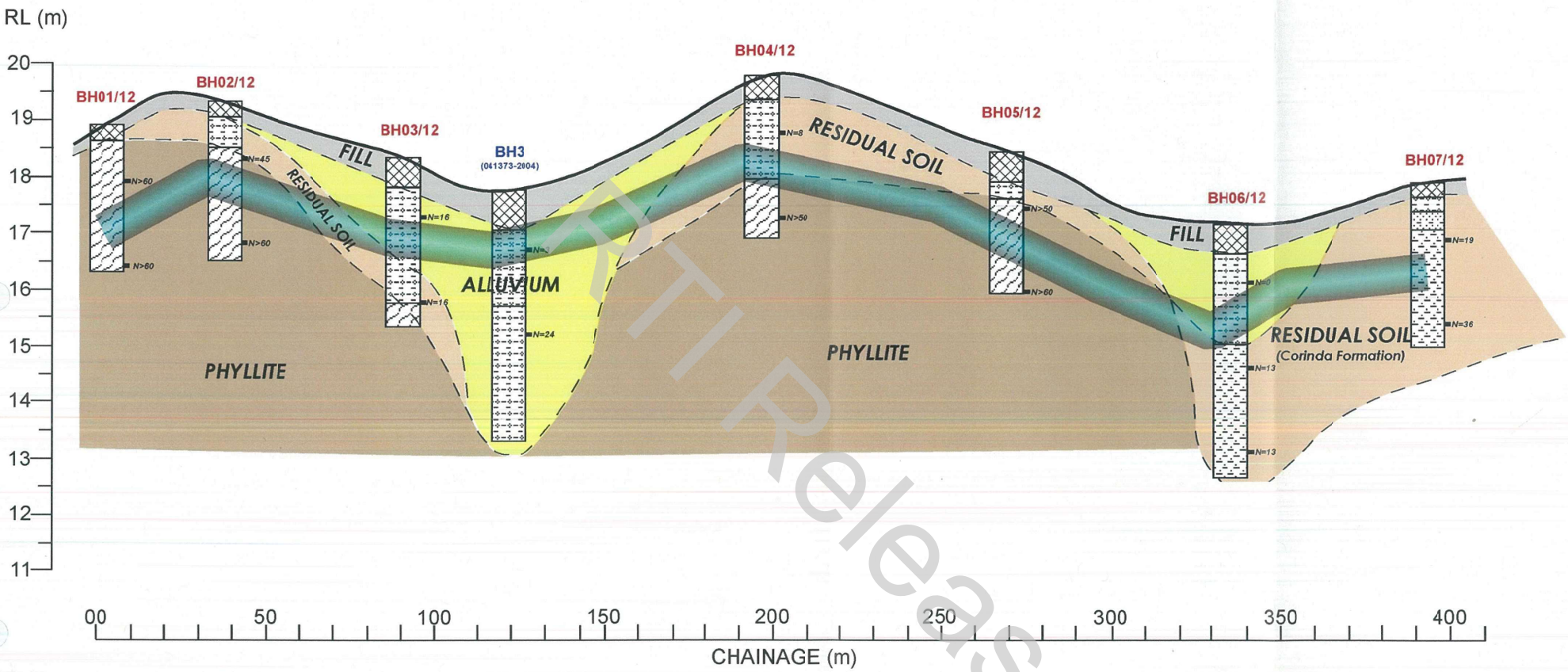
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)

- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing

- Bs - Bulk Sample
- Dist - Disturbed Sample
- SPT - Standard Penetration test
- SS - Split Spoon
- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter



DIAGRAMMATIC ONLY
DO NOT SCALE
FROM THIS FIGURE

Design	T. Weingarth	Sept. 2012
Drawn	P. Bowles	Sept. 2012
Checked	T. Weingarth	Sept. 2012
Scale	AS SHOWN	A3

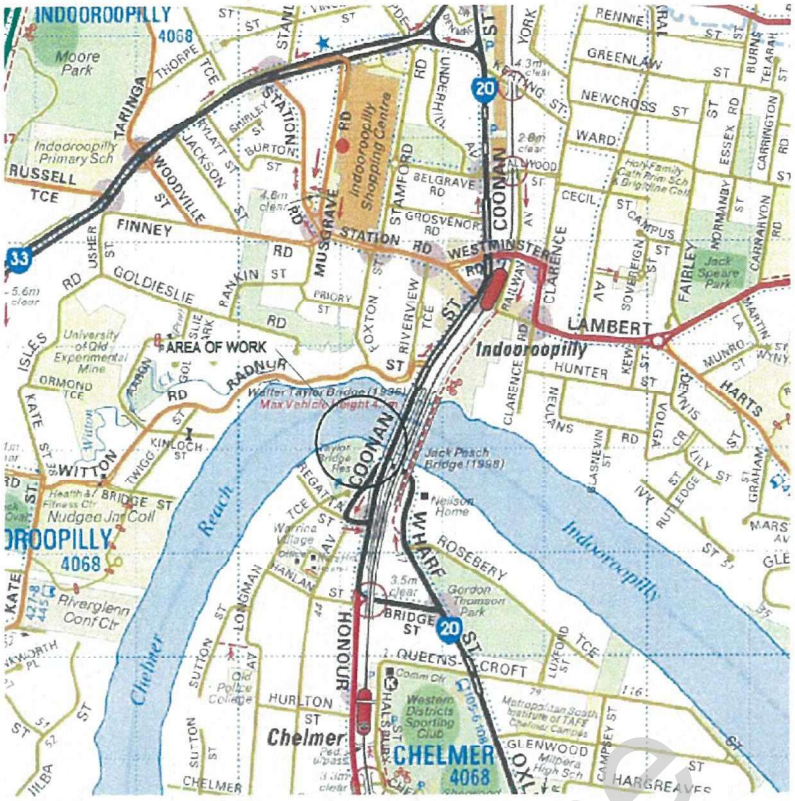
QUEENSLAND URBAN UTILITIES
INDOOROOPILLY SEWER RISING MAIN
LAMBERT ROAD, INDOOROOPILLY
LONGITUDINAL SECTION

BRISBANE CITY COUNCIL
City Projects Office
Planning & Design - Ground Engineering

Report Reference No.
100360PR002A

Fig.
2

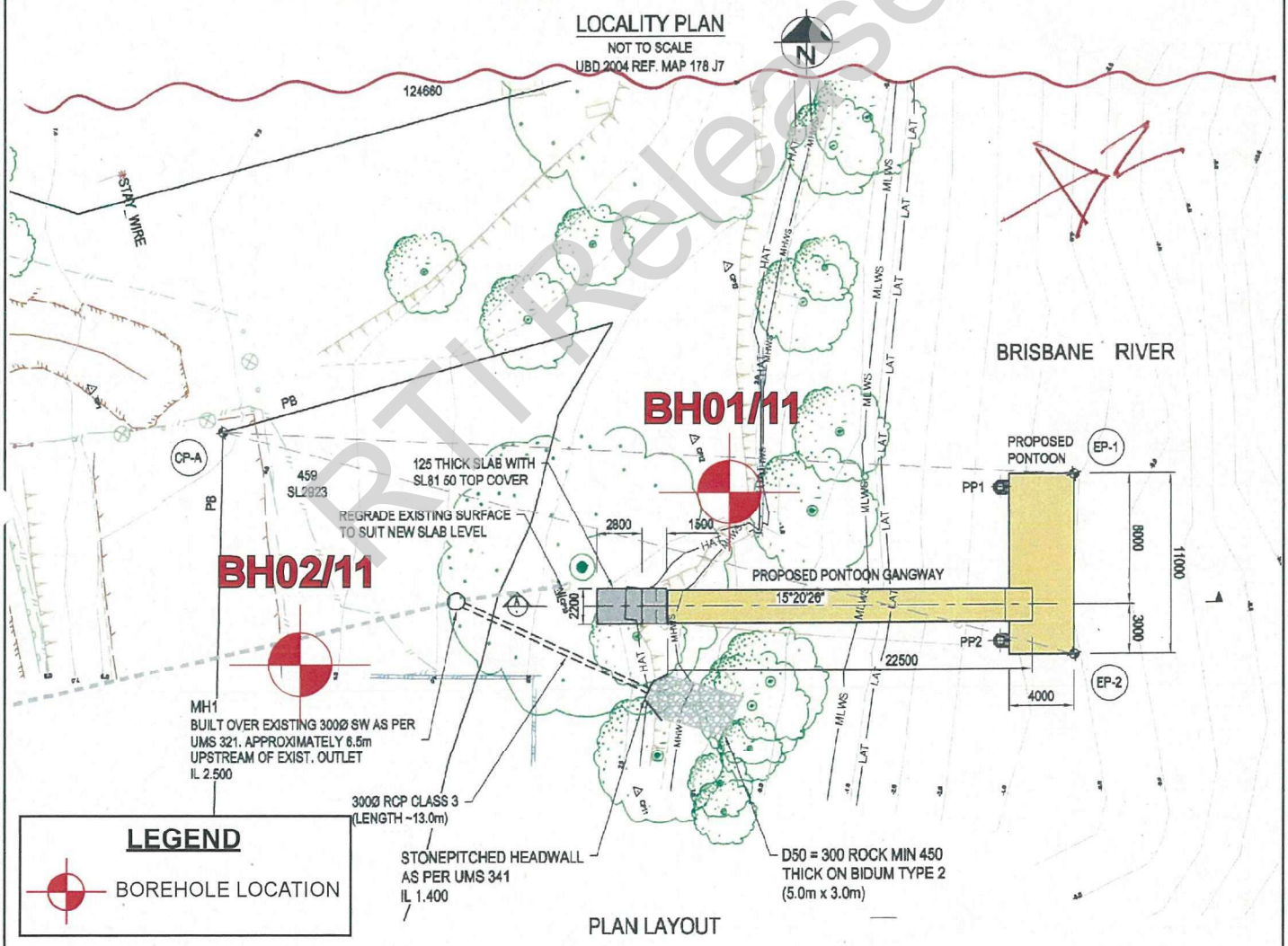
110028
Chelmer Pontoon (2011)



LOCALITY PLAN

NOT TO SCALE

UBD 2004 REF. MAP 178 J7



PLAN LAYOUT

Design	K. Atkins	Feb. 2011
Drawn	P. Bowles	Feb. 2011
Checked	K. Atkins	Feb. 2011
Scale	AS SHOWN	A4

CITY DESIGN
STRUCTURAL DESIGN
FR CHELMER PONTOON
BOREHOLE LOCATIONS

BRISBANE CITY COUNCIL
City Design
The Engineering Group - Ground Engineering

Report Reference No.
CD/P7-G1/110028PR001A

Fig. **1**

CITY DESIGN

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220
Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical BH01/11

PROJECT No: CD/P7-G1/110028PR001A

CLIENT: Structural Design
PROJECT: Chelmer Pontoon
LOCATION: Near Walter Taylor Bridge
CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40L
NOTES:
LOGGED BY: KA
CHECKED BY: TW

DATE COMMENCED: 21/04/2011
COMPLETED: 21/04/2011
ELEVATION (m): AHD
TOTAL DEPTH (m): 19.45
EASTING: MGA
NORTHING:
HOLE ANGLE: 90°
BEARING: ---

DRILLING					LITHOLOGY						SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	HW Casing			1		FILL (SP) SAND, fine to medium grained, brown	M						1.0	FILL
						FILL (GC) CLAYEY GRAVEL, fine to medium grained, brown, medium to high plasticity clay						SPT 2, 2, 3 N=5		
				2		FILL (Cl) GRAVELLY CLAY, medium to high plasticity, mottled brown, orange and grey, fine to medium grained gravel							2.0	
Washbore - Blade Bit				3		(Cl) CLAY, medium to high plasticity, brown, some fine to medium grained sand						SPT 2, 4, 6 N=10	3.0	ALLUVIUM
				4		(SP) SAND, fine to medium grained, brown						SPT 5, 6, 7 N=13	4.0	
				5		(SC) CLAYEY SAND, fine to medium grained, brown, medium to high plasticity clay							5.0	
						(Cl) CLAY, high plasticity, black								
				6		(Cl) SANDY CLAY, medium to high plasticity, dark grey, fine to medium grained sand						SPT 1, 0, 3 N=3	6.0	
				7		(SP) SAND, fine to medium grained, dark grey							7.0	
												SPT 7, 10, 12 N=22		
				8									8.0	
	Mud Circulation			9		fine to coarse grained, some medium to high plasticity clay						SPT 2, 1, 3 N=4	9.0	
				10									10.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
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Sampling/Testing
- Bs - Bulk Sample
- Dist - Disturbed Sample
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- N - SPT 'N' Value
- PP - Pocket Penetrometer
- VS - Vane Shear
- U_{50} - Undisturbed Sample/Diameter

CITY DESIGN
Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220
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BOREHOLE LOG Geotechnical BH01/11

PROJECT No: CD/P7-G1/110028PR001A

CLIENT: Structural Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** KA
PROJECT: Chelmer Pontoon	**EQUIPMENT:** Fox B40L	**CHECKED BY:** TW
LOCATION: Near Walter Taylor Bridge	**NOTES:**	

DATE COMMENCED: 21/04/2011	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 21/04/2011	**TOTAL DEPTH (m):** 19.45		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Blade Bit	Mud Circulation			11		fine to coarse grained, some medium to high plasticity clay *(continued)*	M				SPT 5, 6, 7 N=13	11.0	ALLUVIUM
				12		(CH) CLAY, high plasticity, dark grey					SPT 0(RW)	12.0	
				13		(SP) SAND, fine to medium grained, dark grey					SPT 4, 5, 8 N=13	13.0	
				14		fine to coarse grained sand						14.0	
				15							SPT 7, 8, 9 N=17	15.0	
				16							SPT 6, 7, 9 N=16	16.0	
				17								17.0	
				18							SPT 5, 7, 21 N=28	18.0	
				19							SPT 7, 9, 6 N=15	19.0	
				20		Bottom of hole at 19.45 m.						20.0	

SOIL LOG - GEOTECHNICAL CD-P7-G1-110028PR001A(LOGS).GPJ CITY DESIGN DATA TEMPLATE.GDT 18/5/11

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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CITY DESIGN

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Facsimile: (07) 3340220

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BOREHOLE LOG Geotechnical BH02/11

PROJECT No: CD/P7-G1/110028PR001A

CLIENT: Structural Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** KA
PROJECT: Chelmer Pontoon	**EQUIPMENT:** Fox B40L	**CHECKED BY:** TW
LOCATION: Near Walter Taylor Bridge	**NOTES:**	

DATE COMMENCED: 21/04/2011	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 21/04/2011	**TOTAL DEPTH (m):** 4.45		**NORTHING:**		**BEARING:** ---

DRILLING			LITHOLOGY							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Material Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support			1		FILL (SP) GRAVELLY SAND, fine to medium grained, brown, fine to medium grained gravel	M					1.0	FILL
				2		(SC) CLAYEY SAND, fine to medium grained, orange-brown, medium to high plasticity clay					SPT 2, 3, 4 N=7	2.0	ALLUVIUM
				3							SPT 1, 3, 6 N=9	3.0	
				4							SPT 4, 8, 10 N=18	4.0	
				5		Bottom of hole at 4.45 m.						5.0	
				6								6.0	
				7								7.0	
				8								8.0	
				9								9.0	
				10								10.0	

NOTE:

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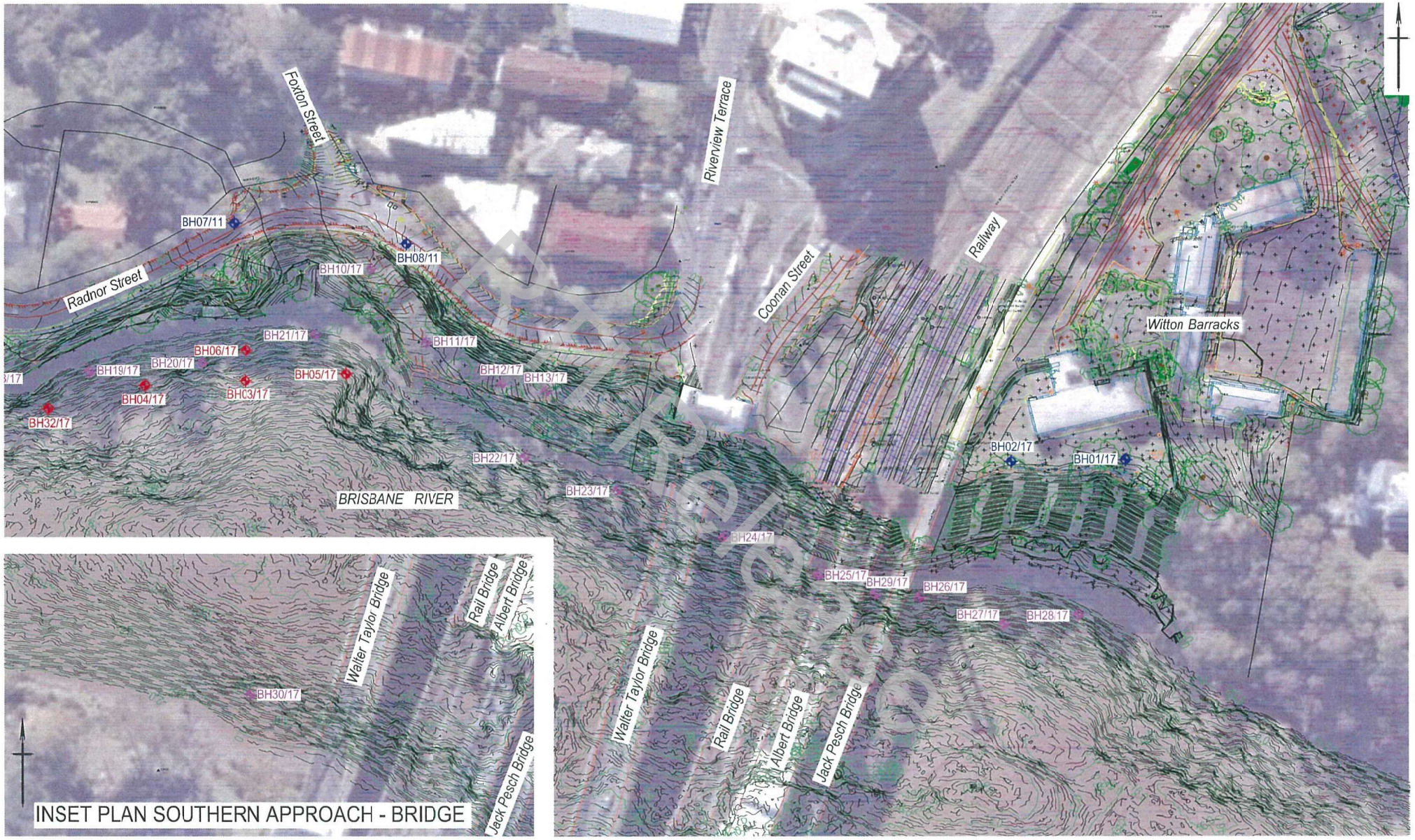
090013
Indooroopilly Bikeway (2017)



LEGEND:

- BOREHOLE LOCATION - CURRENT INVESTIGATION 2017 FR003A
- PROPOSED BOREHOLE LOCATION ARUP
- BOREHOLE LOCATION - PREVIOUS INVESTIGATION 2017 FR002A
- BOREHOLE LOCATION - PREVIOUS INVESTIGATION 2011 & 2017

20 10 0 20 40 60 80 100

SCALE 1 : 1000 AT A3 METRES

AUTHORISED FOR ISSUE

DRAWN	E. Polichronis	February 2018
CHECKED	B. Collins	February 2018
SCALE	As Shown	A3

ROAD DESIGN
INDOOROOPILLY PROPOSED BIKEWAY
RANDOR STREET, INDOOROOPILLY
GEOTECHNICAL INVESTIGATION
BOREHOLE LOCATIONS

webmap

ACKNOWLEDGEMENT

BRISBANE CITY COUNCIL
CITY PROJECTS OFFICE
The Engineering Group - Ground Engineering

Report Reference No.	Rev.	Fig.
GE/090013 FR003A	1	2

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical

BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES						SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation / Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples / Test Results / Remarks	Depth (m)	
Solid Auger - TC Bit	HW Casing	Not Observed Above 2.5m	0.0		**FILL (GM) SILTY GRAVEL,** fine to medium, brown	M					0.0	**FILL**
			0.5		**(CI) GRAVELLY CLAY,** medium plasticity, brown, fine gravel						0.5	**RESIDUAL SOIL**
			1.0		**PHYLLITE,** brown, some orange brown, extremely low strength					SPT 4, 7, 8 N=15	1.0	**EXTREMELY WEATHERED PHYLLITE**
			1.5								1.5	
			2.0								2.0	
			2.5								2.5	
Washbore - Roller Bit	Mud Circulation		3.0							SPT 6, 16, 15 N=31	3.0	
			3.5		**PHYLLITE,** mottled yellow brown and grey, low to medium strength						3.5	**DISTINCTLY WEATHERED PHYLLITE**
			4.0		Borehole BH01/17 continued as cored hole						4.0	
			4.5								4.5	
			5.0								5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

CITY PROJECTS OFFICE
Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES								ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg		Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
					0.5							0.5								
					1.0							1.0								
					1.5							1.5								
					2.0							2.0								
					2.5							2.5								
					3.0							3.0								
					3.5							3.5								
					4.0		Continued from non-cored borehole					4.0								
NMLC Coring	Mud Circulation	100			4.5		**PHYLLITE**, foliated, mottled grey with orange brown along foliation. Frequent quartz veining, foliation sub-horizontal 10°- 20°	DW		A 0.61		4.5	0							Refer Attached Graphic Defect Log
					5.0							5.0								

CORE LOG - GEOTECHNICAL GE 090013 PR002A LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/17

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- Ic - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

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BOREHOLE LOG Geotechnical — BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
	5.5		**PHYLLITE,** foliated, mottled grey with orange brown along foliation. Frequent quartz veining, foliation sub-horizontal 10°- 20° *(continued)*			A 0.06 D 0.21
	6.0			XW		
				DW		A 0.26
	6.5		**RHYOLITE,** fine grained, mottled green grey with orange brown with occasional phenocrysts	SW		
	7.0					D 6.13 A 8.47
	7.5					
	8.0		green grey with orange brown staining to defects	SW-Fr		
	8.5					D 9.08
	9.0					
	9.5					
	10.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
5.5	0							Refer Attached Graphic Defect Log
6.0	24							
6.5								
7.0	82							
7.5								
8.0								
8.5	93							
9.0								
9.5								
10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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- Water Level (date)
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- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

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BOREHOLE LOG Geotechnical — BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
	10.5		green grey with orange brown staining to defects *(continued)*			D 5.21 A 7.19
	11.0					
	11.5					
	12.0		pale grey to pink	Fr		
	12.5					D 10.17
	13.0					
	13.5					
	14.0					A 1.27
	14.5					
	15.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
10.5	93							Refer Attached Graphic Defect Log
11.0								
11.5								
12.0								
12.5								
13.0	69							
13.5								
14.0								
14.5	71							
15.0								

NOTE:
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Soil Description and Classification Symbols based on AS 1726

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- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Ic - limonite coated
- cc - clay coated
- ctc - calcite coated
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
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Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical — BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa (D - diam A - axial I - irreg)
	15.5		pale grey to pink *(continued)*			
	16.0					A 8.28
	16.5					
	17.0					
	17.5					
	18.0					
	18.5					
	19.0					
	19.5					
	20.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
15.5	71							Refer Attached Graphic Defect Log
16.0								
16.5								
17.0								
17.5	95							
18.0								
18.5								
19.0								
19.5								
20.0								

NOTE:
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BOREHOLE LOG Geotechnical

BH01/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/03/2017	**TOTAL DEPTH (m):** 20.51		**NORTHING:**		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES								ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg		Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100			20.5		pale grey to pink *(continued)*					20.5	95							Refer Attached Graphic Defect Log
							Bottom of hole at 20.51 m.													
					21.0							21.0								
					21.5							21.5								
					22.0							22.0								
					22.5							22.5								
					23.0							23.0								
					23.5							23.5								
					24.0							24.0								
					24.5							24.5								
					25.0							25.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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- H - High
- VH - Very High
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CITY PROJECTS OFFICE
Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 0274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH01/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPSOSED BIKEWAY
LOCATION: RANDOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 4.00m

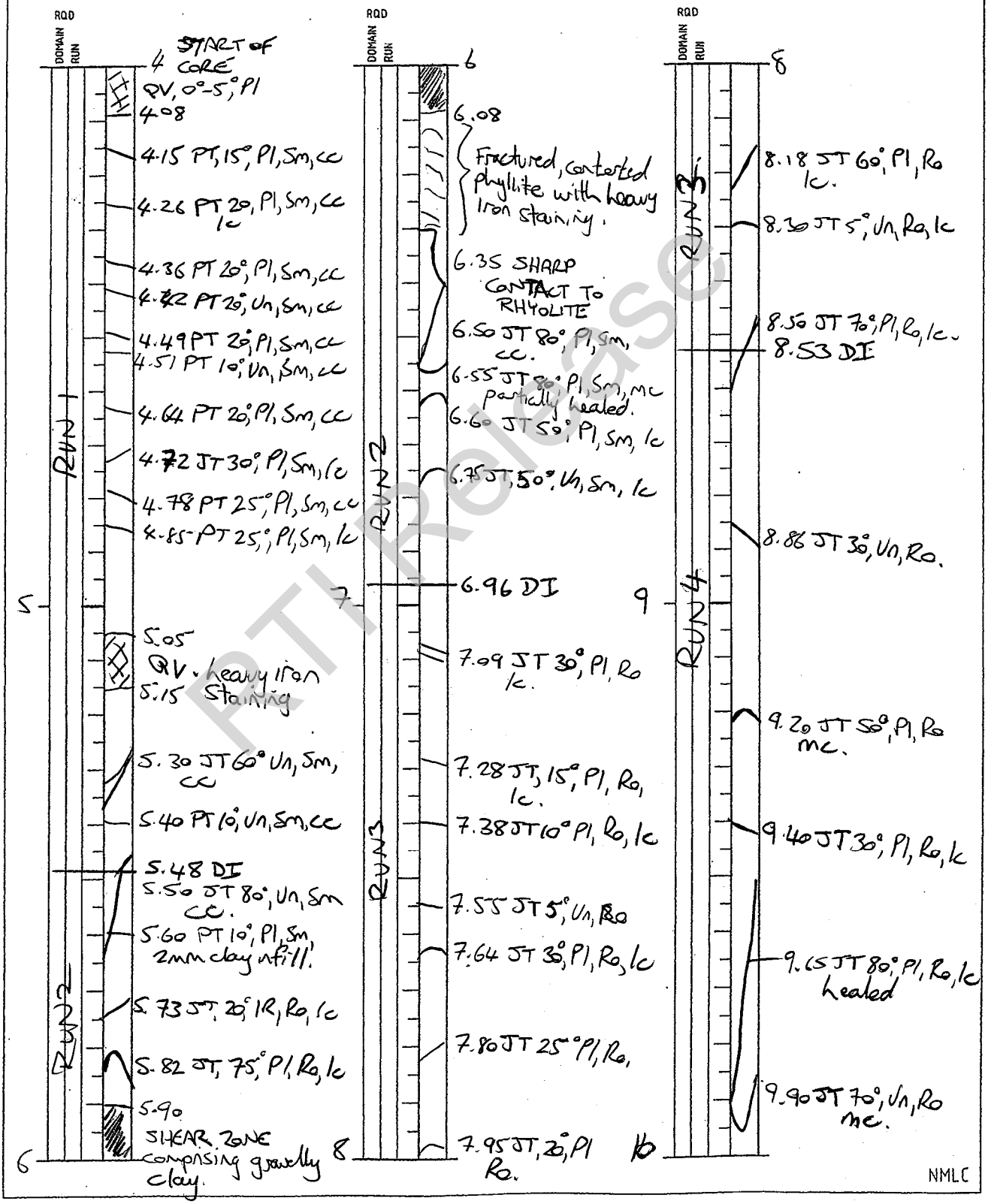
END OF CORE: 20.51 m

Sheet 1 of 3

GRAPHIC DEFECT LOG

Project INDOOROOPILLY BIKEWAY Borehole No. BH01/17

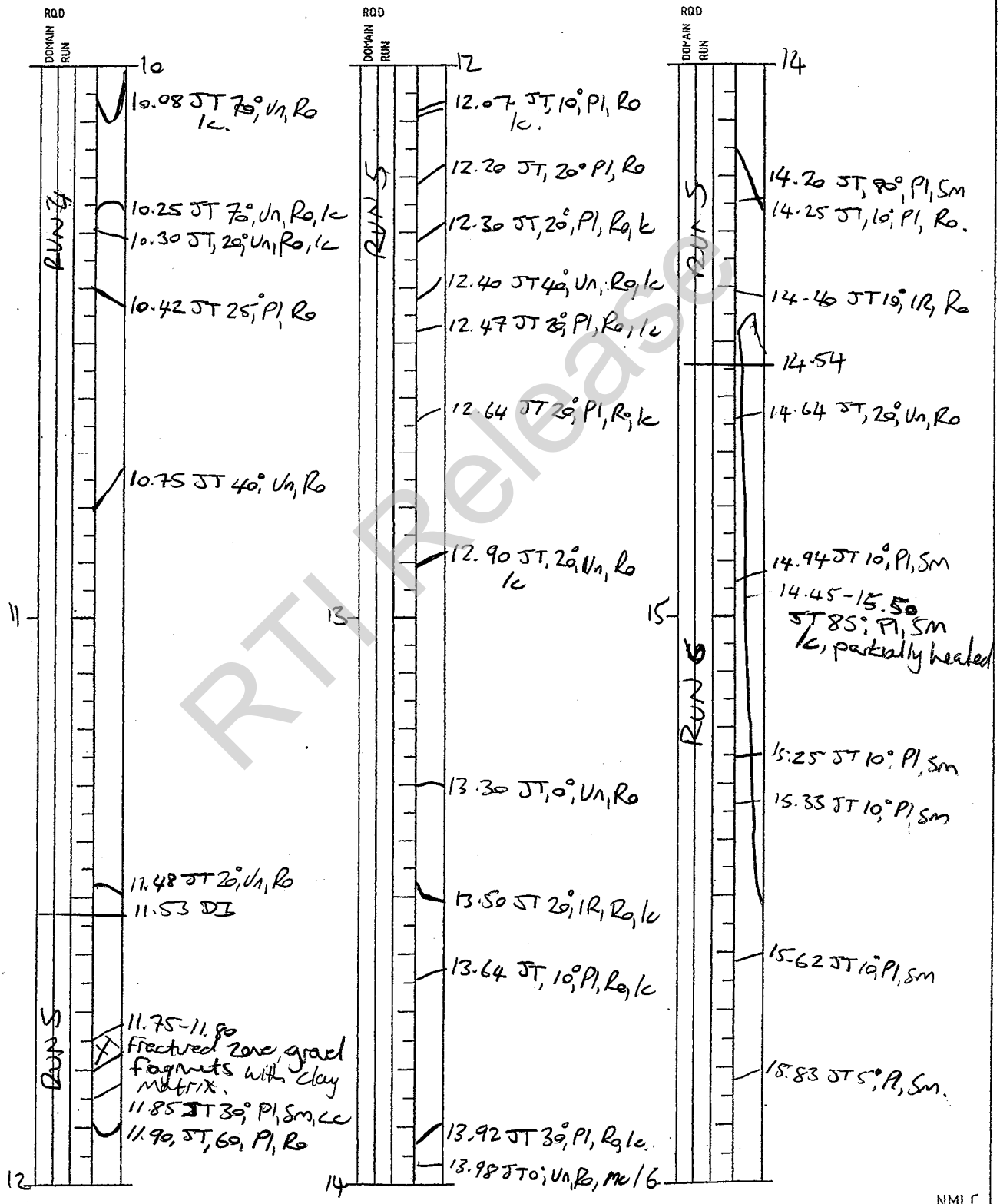
Job No. 090013 Date 28/03/17 Logged By BK.



GRAPHIC DEFECT LOG

Project INDOOROOPILLY BIKEWAY Borehole No. BH01/17

Job No. 09013 Date 28/03/17 Logged By BAC

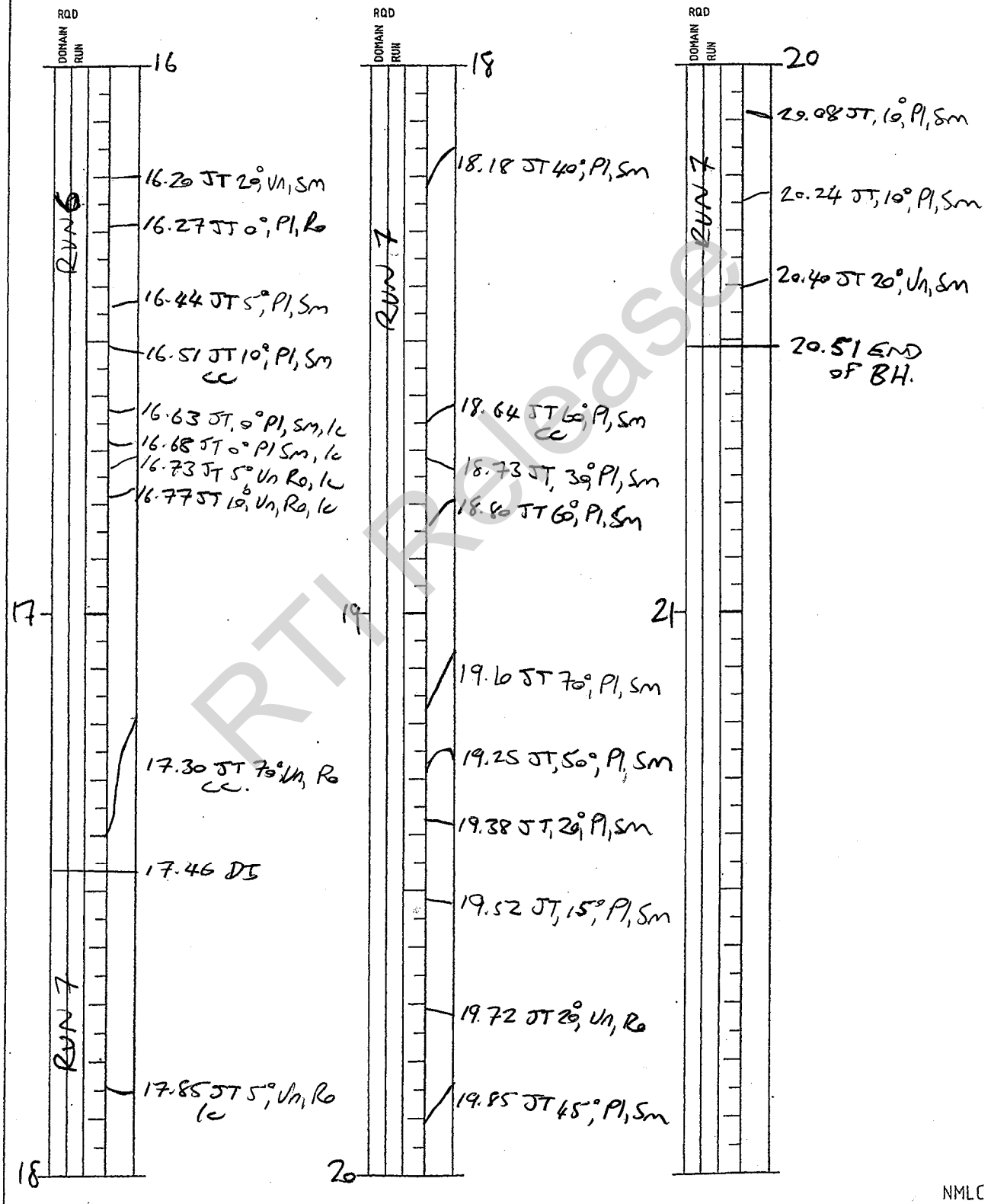


NMLC

GRAPHIC DEFECT LOG

Project INDOOROOPILLY BIKEWAY Borehole No. BH01/17

Job No. 090013 Date 28/03/17 Logged By BAC.



NMLC

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BOREHOLE LOG Geotechnical — BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	HW Casing	Not Observed Above 1.1m		0.5		**FILL (GM) SILTY GRAVEL,** fine to medium, brown	M					0.5	**FILL**
						PHYLLITE, grey, low to medium strength							**DISTINCTLY WEATHERED PHYLLITE**
				1.0		medium strength						1.0	
				1.5		Borehole BH02/17 continued as cored hole						1.5	
				2.0								2.0	
				2.5								2.5	
				3.0								3.0	
				3.5								3.5	
				4.0								4.0	
				4.5								4.5	
				5.0								5.0	

NOTE:
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Soil Description and Classification Symbols based on AS 1726

Water Symbols
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Moisture Content
- D - Dry
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- W_p - Plastic Limit
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Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

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BOREHOLE LOG Geotechnical — BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
					0.5						0.5								
					1.0		Continued from non-cored borehole				1.0								
NMLC Coring	Mud Circulation	100			1.5		**PHYLLITE,** foliated, mottled dark grey and brown with frequent quartz veining, foliations sub-horizontal 5° - 20° with iron staining	DW		D 0.10	1.5	0							Refer Attached Graphic Defect Log
					2.0						2.0								
					2.5			XW DW		A 0.48	2.5								
		100			3.0			XW DW			3.0	0							
					3.5						3.5								
					4.0			XW SW			4.0								
		100			4.5						4.5	26							
					5.0						5.0								

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- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- Ic - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

CITY PROJECTS OFFICE
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BOREHOLE LOG Geotechnical — BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
	5.5		**PHYLLITE,** foliated, mottled dark grey and brown with frequent quartz veining, foliations sub-horizontal 5° - 20° with iron staining *(continued)*			D 0.20 A 0.59
	6.0					
	6.5					
	7.0			SW-Fr		
	7.5					A 0.71
	8.0			SW		
	8.5					
	9.0					
	9.5					
	10.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
5.5	26							Refer Attached Graphic Defect Log
6.0								
6.5								
7.0	33							
7.5								
8.0								
8.5								
9.0	21							
9.5								
10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

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BOREHOLE LOG Geotechnical

BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
	10.5		**PHYLLITE,** foliated, mottled dark grey and brown with frequent quartz veining, foliations sub-horizontal 5° - 20° with iron staining *(continued)*			
	11.0					
	11.5					A 0.18
	12.0					
	12.5					
	13.0		**PHYLLITE,** foliated, dark grey and grey with frequent quartz veining, foliations sub-horizontal with occasional iron staining	Fr		D 1.33 A 1.57
	13.5			SW		
	14.0			Fr		
	14.5					
	15.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
10.5	21							Refer Attached Graphic Defect Log
11.0								
11.5								
12.0	10							
12.5								
13.0								
13.5	73							
14.0								
14.5								
15.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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BOREHOLE LOG Geotechnical — BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
	15.5		**PHYLLITE,** foliated, dark grey and grey with frequent quartz veining, foliations sub-horizontal with occasional iron staining *(continued)*			
	16.0					
	16.5			SW		
	17.0					A 0.42
	17.5			Fr		
	18.0					
	18.5					
	19.0					D 2.06 A 0.52
	19.5					D 0.27 A 1.31
	20.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
15.5	73							Refer Attached Graphic Defect Log
16.0								
16.5								
17.0	50							
17.5								
18.0								
18.5								
19.0	52							
19.5								
20.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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BOREHOLE LOG Geotechnical

BH02/17

PROJECT No: 090013 FR001A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** TW/BAC
PROJECT: Indooroopilly Proposed Bikeway	**EQUIPMENT:** Comacchio Geo 305	**CHECKED BY:** GB
LOCATION: Randor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 9/03/2017	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 9/03/2017	**TOTAL DEPTH (m):** 21.83		**NORTHING:**		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (EL VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100			20.5		**PHYLLITE,** foliated, dark grey and grey with frequent quartz veining, foliations sub-horizontal with occasional iron staining *(continued)*	DW-SW		A 0.58	20.5	52							Refer Attached Graphic Defect Log
					21.0			XW/SW			21.0								
					21.5		**RHYOLITE,** fine grained, green grey with red brown mottling			D 1.32	21.5								
							Bottom of hole at 21.83 m.												
					22.0						22.0								
					22.5						22.5								
					23.0						23.0								
					23.5						23.5								
					24.0						24.0								
					24.5						24.5								
					25.0						25.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
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Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 0274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH02/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPSOSED BIKEWAY
LOCATION: RANDOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 1.10m

END OF CORE: 19.00 m

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Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 0274774 Fax (07) 33340220

CORE PHOTOGRAPH **BH02/17**
Geotechnical

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPSOSED BIKEWAY
LOCATION: RANDOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 19.00m

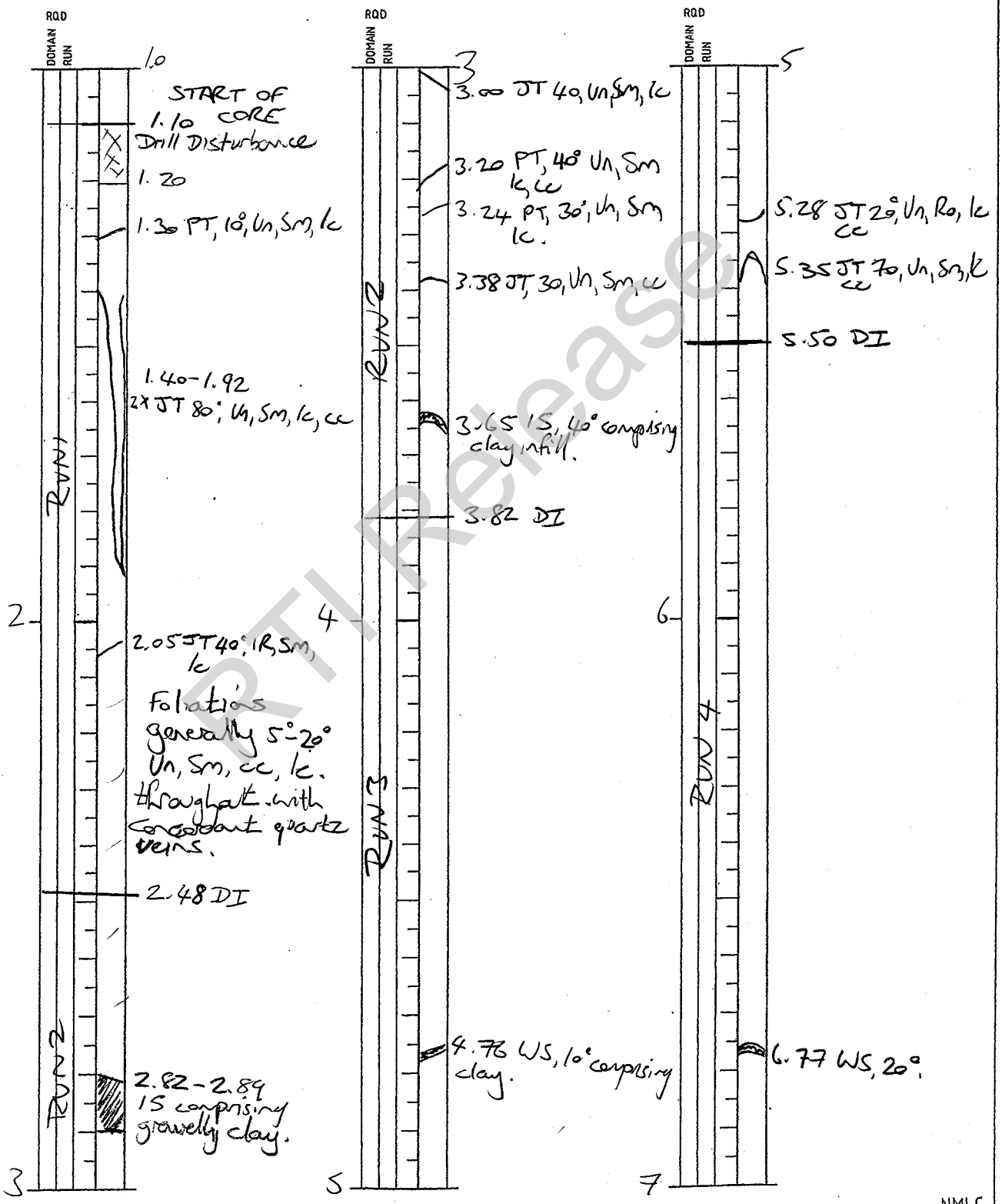
END OF CORE: 21.83 m

Sheet 1 of 4

GRAPHIC DEFECT LOG

Project INDOOROOPILLY BIKEWAY Borehole No. BH02/17

Job No. 090013 Date 3/03/17 Logged By BAC

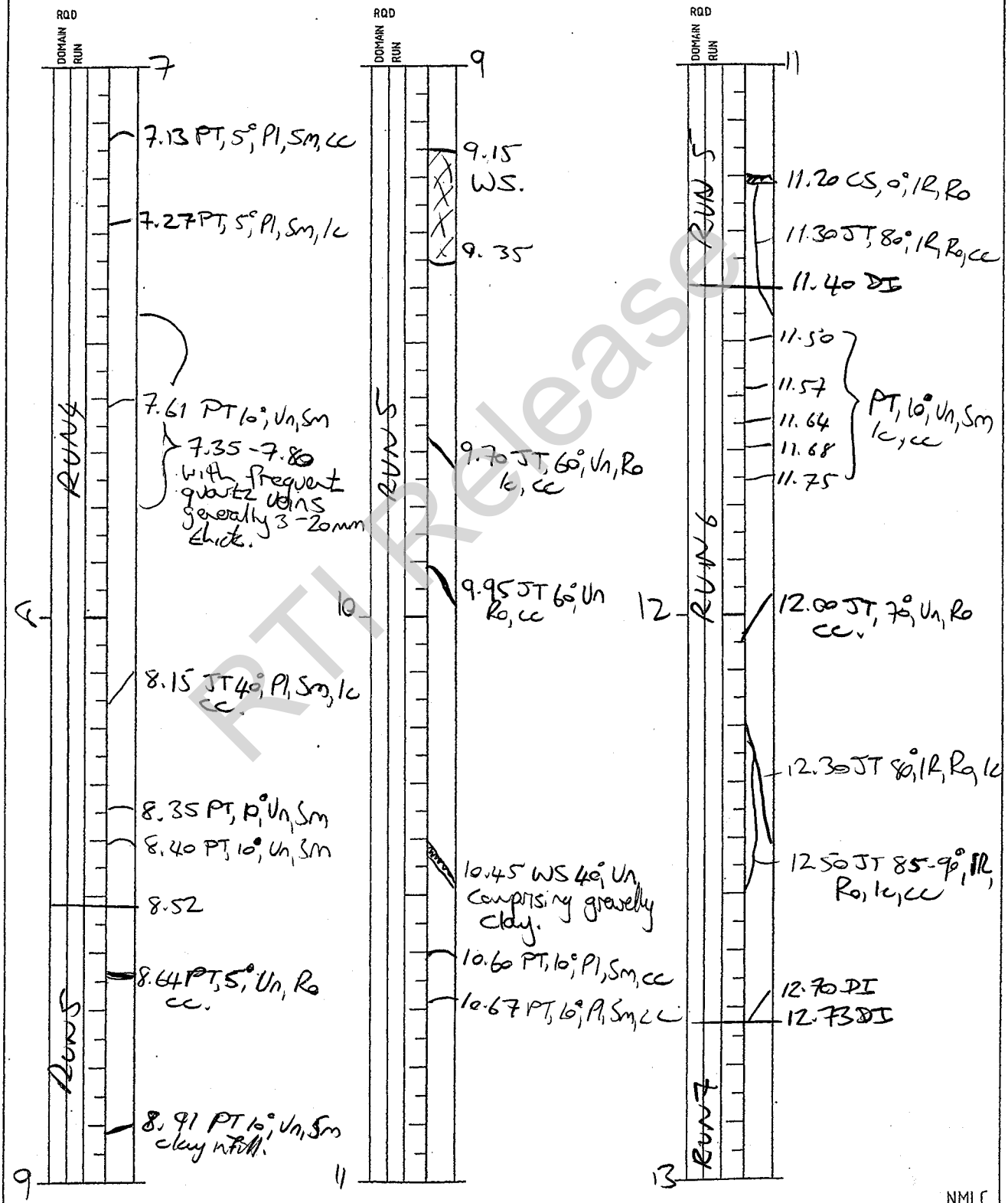


NMLC

GRAPHIC DEFECT LOG

Project INDOOROOPILLY BLWM Borehole No. BH02/17

Job No. 090013 Date 30/03/17 Logged By BJC

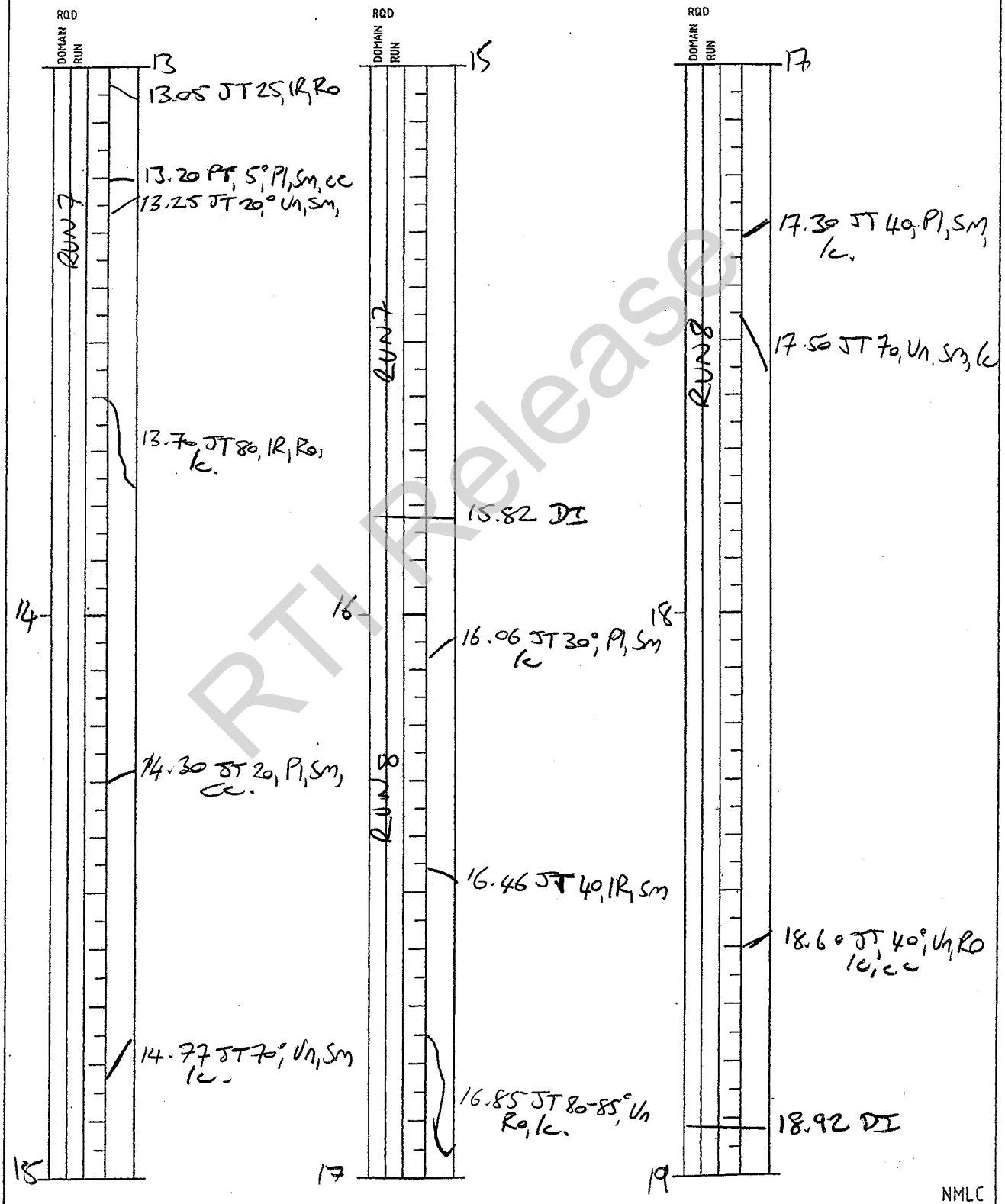


NMLC

GRAPHIC DEFECT LOG

Project INDOOROOPILLY B'WAY Borehole No. BH02/17

Job No. 090013 Date 30/03/17 Logged By BAC

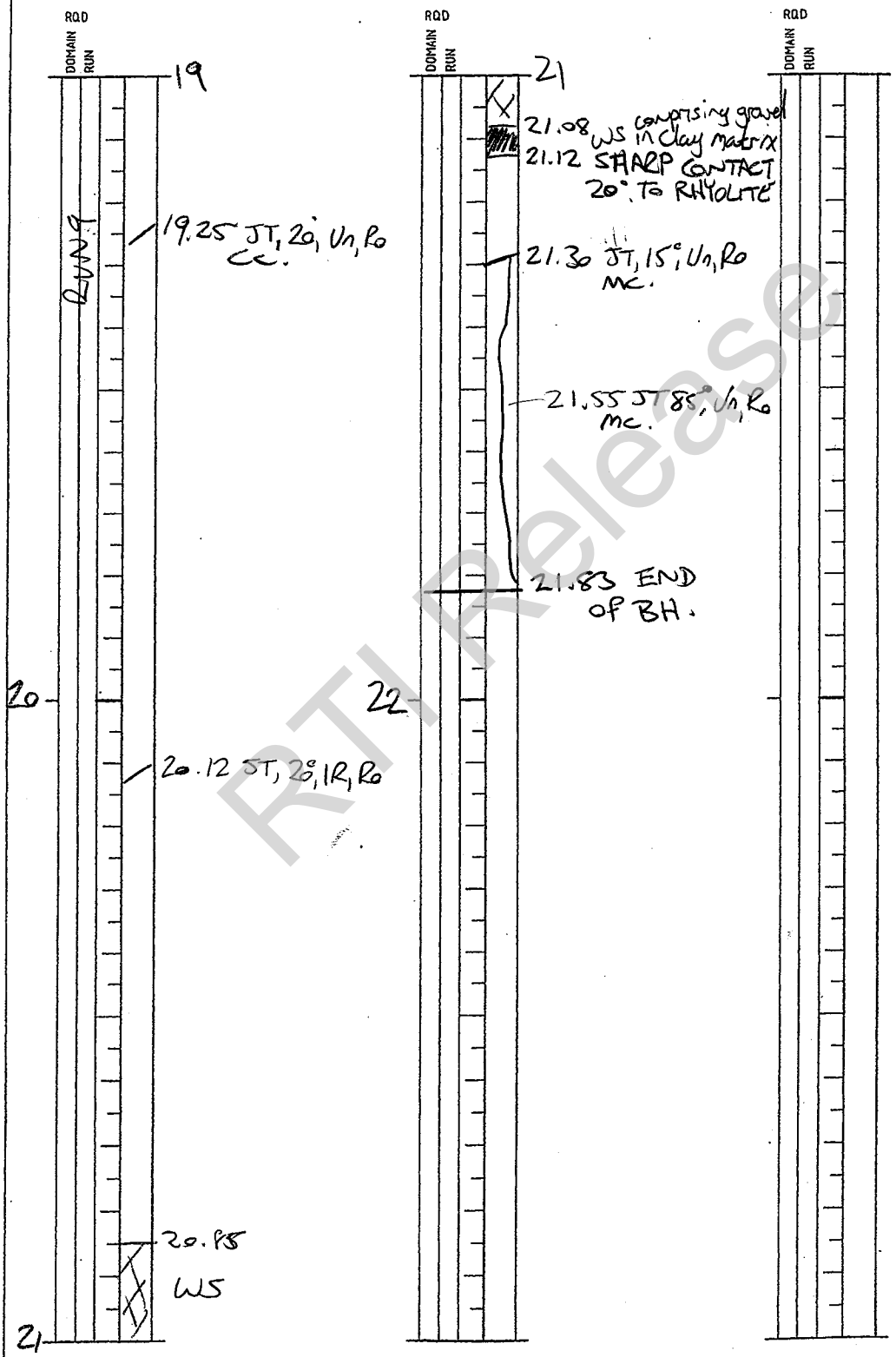


NMLC

GRAPHIC DEFECT LOG

Project INDOOROOPILLY Borehole No. BH02/17

Job No. 09003 Date 30/03/17 Logged By BAC



NMLC

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BOREHOLE LOG Geotechnical — BH24/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL/BAC
CHECKED BY: BAC

DATE COMMENCED: 18/01/2018
COMPLETED: 18/01/2018
ELEVATION (m): -2.77 AHD
TOTAL DEPTH (m): 10.92
EASTING: 47425.45 BSCG02
NORTHING: 154836.91
HOLE ANGLE: 90°
BEARING: ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Roller Bit	Mud Circulation HW Casing		-3.0	0.5		**PHYLLITE,** grey and brown, medium strength							0.5	**DISTINCTLY WEATHERED PHYLLITE**
			-3.5	1.0		**PHYLLITE,** grey and brown, low strength to medium strength							1.0	**EXTREMELY WEATHERED TO DISTINCTLY WEATHERED PHYLLITE**
			-4.0	1.5		Borehole BH24/17 continued as cored hole							1.5	
			-4.5	2.0									2.0	
			-5.0	2.5									2.5	
			-5.5	3.0									3.0	
			-6.0	3.5									3.5	
			-6.5	4.0									4.0	
			-7.0	4.5									4.5	
			-7.5	5.0									5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical

BH24/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BAC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 18/01/2018
COMPLETED: 18/01/2018
ELEVATION (m): -2.77 **AHD**
TOTAL DEPTH (m): 10.92
EASTING: 47425.45 **BSCG02**
NORTHING: 154836.91
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				-3.0	0.5		Continued from non-cored borehole				0.5								
				-3.5	1.0						1.0								
NMLC Coring	Mud Circulation	100		-4.0	1.5		**PHYLLITE,** foliated, grey and dark grey with concordant quartz veining, foliations subhorizontal	SW-Fr		D 5.51 A 1.17	1.5	49							Refer Attached Graphic Defect Log
				-4.5	2.0						2.0								
				-5.0	2.5						2.5								
				-5.5	3.0					D 1.34 A 2.86	3.0								
		100		-6.0	3.5						3.5	46							
				-6.5	4.0						4.0								
				-7.0	4.5			Fr		D 3	4.5								
				-7.5	5.0						5.0								

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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Soil Description and Classification Symbols based on AS 1726

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BOREHOLE LOG Geotechnical — BH24/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL/BAC
CHECKED BY: BAC

DATE COMMENCED: 18/01/2018
COMPLETED: 18/01/2018
ELEVATION (m): -2.77 **AHD**
TOTAL DEPTH (m): 10.92
EASTING: 47425.45 **BSCG02**
NORTHING: 154836.91
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		-8.0	5.5		**PHYLLITE,** foliated, grey and dark grey with concordant quartz veining, foliations subhorizontal *(continued)*			A 3.17	5.5	100							Refer Attached Graphic Defect Log
				-8.5	6.0						6.0								
				-9.0	6.5					A 2.4 D 0.53	6.5								
		100		-9.5	7.0						7.0	58							
				-10.0	7.5						7.5								
				-10.5	8.0					A 3.67 D 0.52	8.0								
				-11.0	8.5						8.5								
		100		-11.5	9.0						9.0	80							
				-12.0	9.5					A 2.16 D 0.62	9.5								
				-12.5	10.0						10.0								

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH24/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BAC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 18/01/2018	**ELEVATION (m):** -2.77 AHD	**EASTING:** 47425.45 BSCG02	**HOLE ANGLE:** 90°
COMPLETED: 18/01/2018	**TOTAL DEPTH (m):** 10.92	**NORTHING:** 154836.91	**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		-13.0	10.5		**PHYLLITE,** foliated, grey and dark grey with concordant quartz veining, foliations subhorizontal *(continued)*			A 5.06 D 1.94	10.5	80							Refer Attached Graphic Defect Log
				-13.5															
					11.0		Bottom of hole at 10.92 m.				11.0								
				-14.0															
					11.5						11.5								
				-14.5															
					12.0						12.0								
				-15.0															
					12.5						12.5								
				-15.5															
					13.0						13.0								
				-16.0															
					13.5						13.5								
				-16.5															
					14.0						14.0								
				-17.0															
					14.5						14.5								
				-17.5															
					15.0						15.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- mc - manganese coated
- qc - quartz coated

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH24/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
LOGGED BY: BAC
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
CHECKED BY: BPC
LOCATION: RADNOR STREET, INDOOROOPILLY

START OF CORE: 1.10m

END OF CORE: 10.92m

CITY PROJECTS OFFICE GRAPHIC DEFECT LOG BH24/17

PAGE 1 OF 2.

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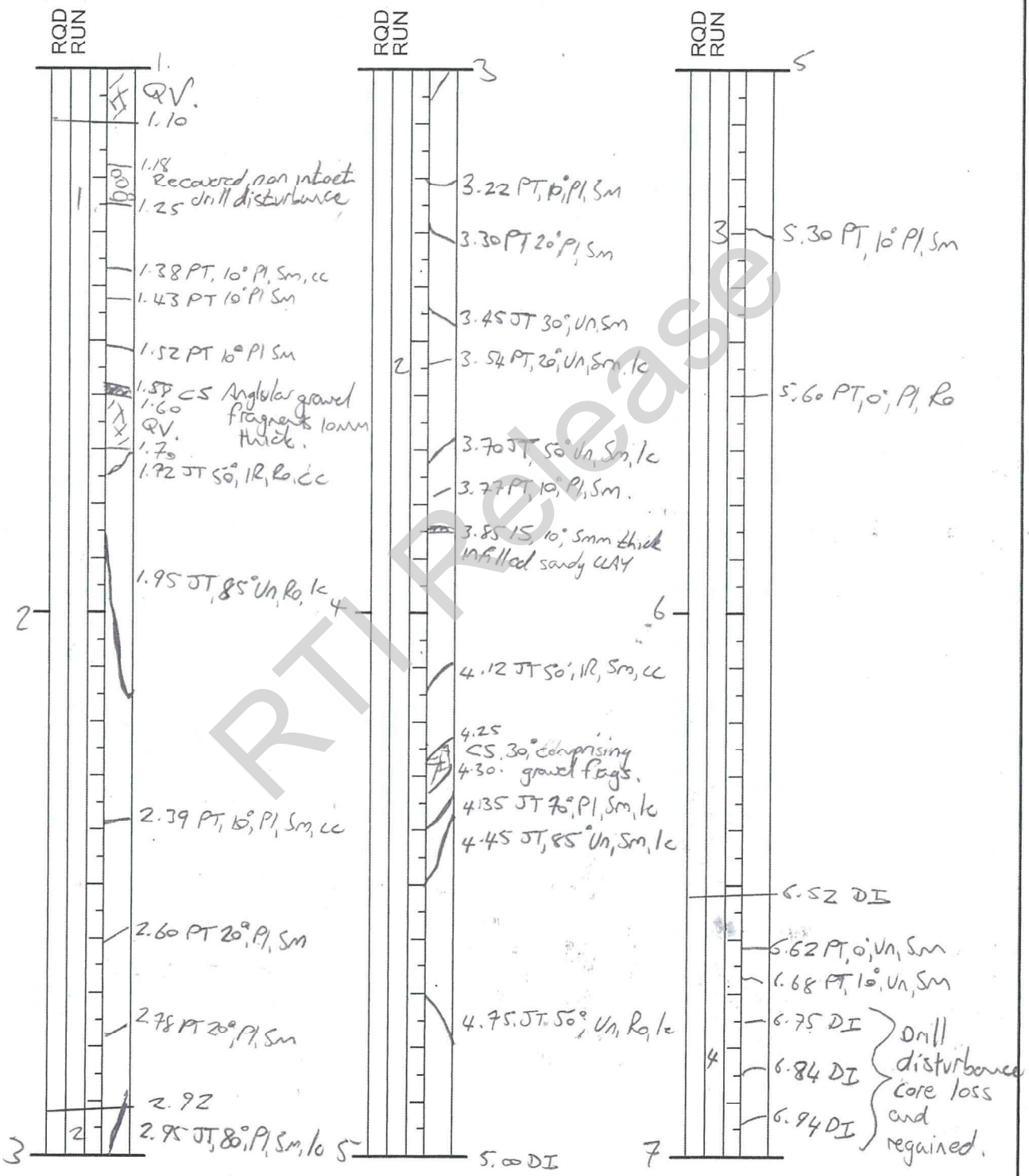
PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 06/02/18



NMLC

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505 St Pauls Tce, Fortitude Valley QLD 4006
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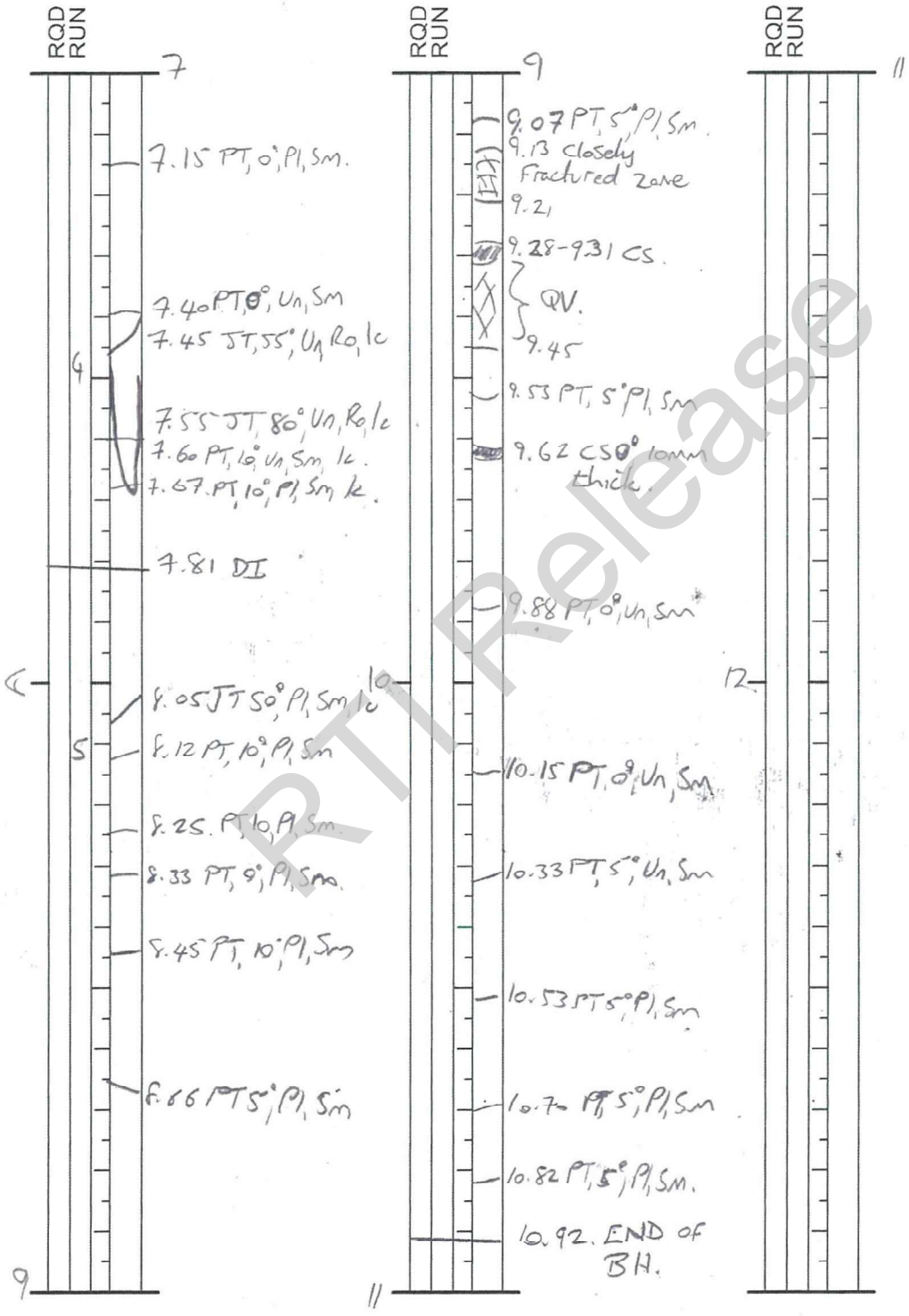
GRAPHIC DEFECT LOG

BH24 / 17
PAGE 1 OF 2

PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 06/02/18



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Phone: (07) 30274774 Fax: (07) 33340220

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BOREHOLE LOG Geotechnical — BH25/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL/BAC
CHECKED BY: BAC

DATE COMMENCED: 19/01/2018
COMPLETED: 19/01/2018
ELEVATION (m): -3.92 **AHD**
TOTAL DEPTH (m): 11.48
EASTING: 47451.52 **BSCG02**
NORTHING: 154826.32
HOLE ANGLE: 90°
BEARING: ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples / Test Results / Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-4.0	0.5		**COBBLES/BOULDERS (PHYLLITE),** grey and brown, medium strength in very low density matrix							0.5	**COLLUVIUM**
Mud Circulation			-4.5	1.0		**(GP) SANDY GRAVEL,** fine to medium gravel, medium grained sand, brown and pale grey							1.0	**ALLUVIUM**
			-5.0			**(GC) CLAYEY GRAVEL,** fine to medium, pale brown, grey, medium plasticity clay,								
			-5.5	1.5		**PHYLLITE,** grey and brown, low to medium strength						SPT 30/50mm (HB)	1.5	**EXTREMELY WEATHERED TO DISTINCTLY WEATHERED PHYLLITE**
				2.0									2.0	
			-6.0	2.5		Borehole BH25/17 continued as cored hole							2.5	
			-6.5	3.0									3.0	
			-7.0	3.5									3.5	
			-7.5	4.0									4.0	
			-8.0	4.5									4.5	
			-8.5	5.0									5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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Phone: (07) 30274774 Fax: (07) 33340220

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BOREHOLE LOG Geotechnical — BH25/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BAC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 19/01/2018
COMPLETED: 19/01/2018
ELEVATION (m): -3.92 **AHD**
TOTAL DEPTH (m): 11.48
EASTING: 47451.52 **BSCG02**
NORTHING: 154826.32
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				-4.0	0.5						0.5								
				-4.5	1.0						1.0								
				-5.0	1.5						1.5								
				-5.5	2.0		Continued from non-cored borehole				2.0								
NMLC Coring	Mud Circulation	100		-6.0	2.5		**PHYLLITE,** foliated, brown and grey with concordant quartz veining, foliations subhorizontal 0° - 20°	DW			2.5	13							Refer Attached Graphic Defect Log
				-6.5	3.0			DW-SW		A 1.64 D 1.11	3.0								
		100		-7.0	3.5						3.5								
				-7.5	4.0						4.0	0							
		100		-8.0	4.5					A 0.78 D 0.52	4.5	63							
				-8.5	5.0			SW			5.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

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- RS - Residual Soil
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Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
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Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
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- lc - limonite coated
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- Po - Polished
- mc - manganese coated
- qc - quartz coated

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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BOREHOLE LOG Geotechnical — BH25/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BAC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 19/01/2018
COMPLETED: 19/01/2018
ELEVATION (m): -3.92 **AHD**
TOTAL DEPTH (m): 11.48
EASTING: 47451.52 **BSCG02**
NORTHING: 154826.32
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		-9.0	5.5		**PHYLLITE,** foliated, brown and grey with concordant quartz veining, foliations subhorizontal 0° - 20° *(continued)*	Fr		A 1.84 D 1.73	5.5	63							Refer Attached Graphic Defect Log
				-9.5	6.0						6.0								
				-10.0	6.5						6.5								
		100		-10.5	7.0						7.0								
				-11.0	7.5					A 2.4 D 0.32	7.5								
				-11.5	8.0						8.0	63							
				-12.0	8.5						8.5								
				-12.5	9.0						9.0								
				-13.0	9.5					D 0.48 A 2.09	9.5	86							
		100		-13.5	10.0						10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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- cc - clay coated
- ctc - calcite coated
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- mc - manganese coated
- qc - quartz coated

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BOREHOLE LOG Geotechnical — BH25/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL/BAC
CHECKED BY: BAC

DATE COMMENCED: 19/01/2018
COMPLETED: 19/01/2018
ELEVATION (m): -3.92 AHD
TOTAL DEPTH (m): 11.48
EASTING: 47451.52 BSCG02
NORTHING: 154826.32
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS									
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa (D - diam, A - axial, I - irreg)	Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		14.0	10.5		**PHYLLITE,** foliated, brown and grey with concordant quartz veining, foliations subhorizontal 0° - 20° *(continued)*			A 2.93 D 0.42	10.5	86							Refer Attached Graphic Defect Log
				14.5	11.0						11.0								
				15.0	11.5						11.5								
				15.5	12.0		Bottom of hole at 11.48 m.				12.0								
				16.0	12.5						12.5								
				16.5	13.0						13.0								
				17.0	13.5						13.5								
				17.5	14.0						14.0								
				18.0	14.5						14.5								
				18.5	15.0						15.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
- RS - Residual Soil
- XW - Extremely Weathered
- DW - Distinctly Weathered
- SW - Slightly Weathered
- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

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- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- mc - manganese coated
- qc - quartz coated

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

CITY PROJECTS OFFICE
Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH25/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
LOGGED BY: BAC
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
CHECKED BY: BPC
LOCATION: RADNOR STREET, INDOOROOPILLY

START OF CORE: 2.00m

END OF CORE: 11.48m

CITY PROJECTS OFFICE GRAPHIC DEFECT LOG **BH 25/17**

PAGE 1 OF 2

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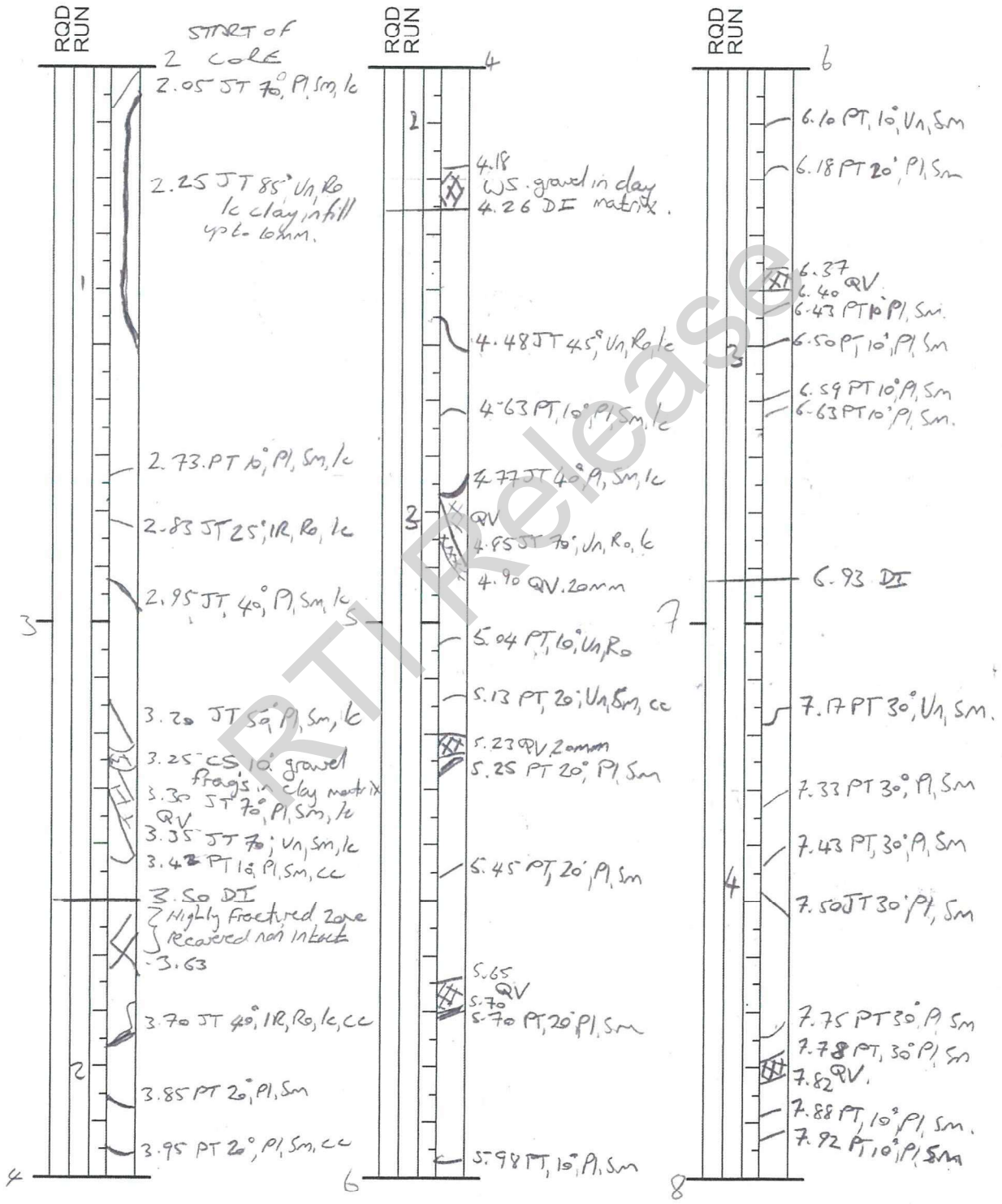
PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BA
DATE: 06/02/18



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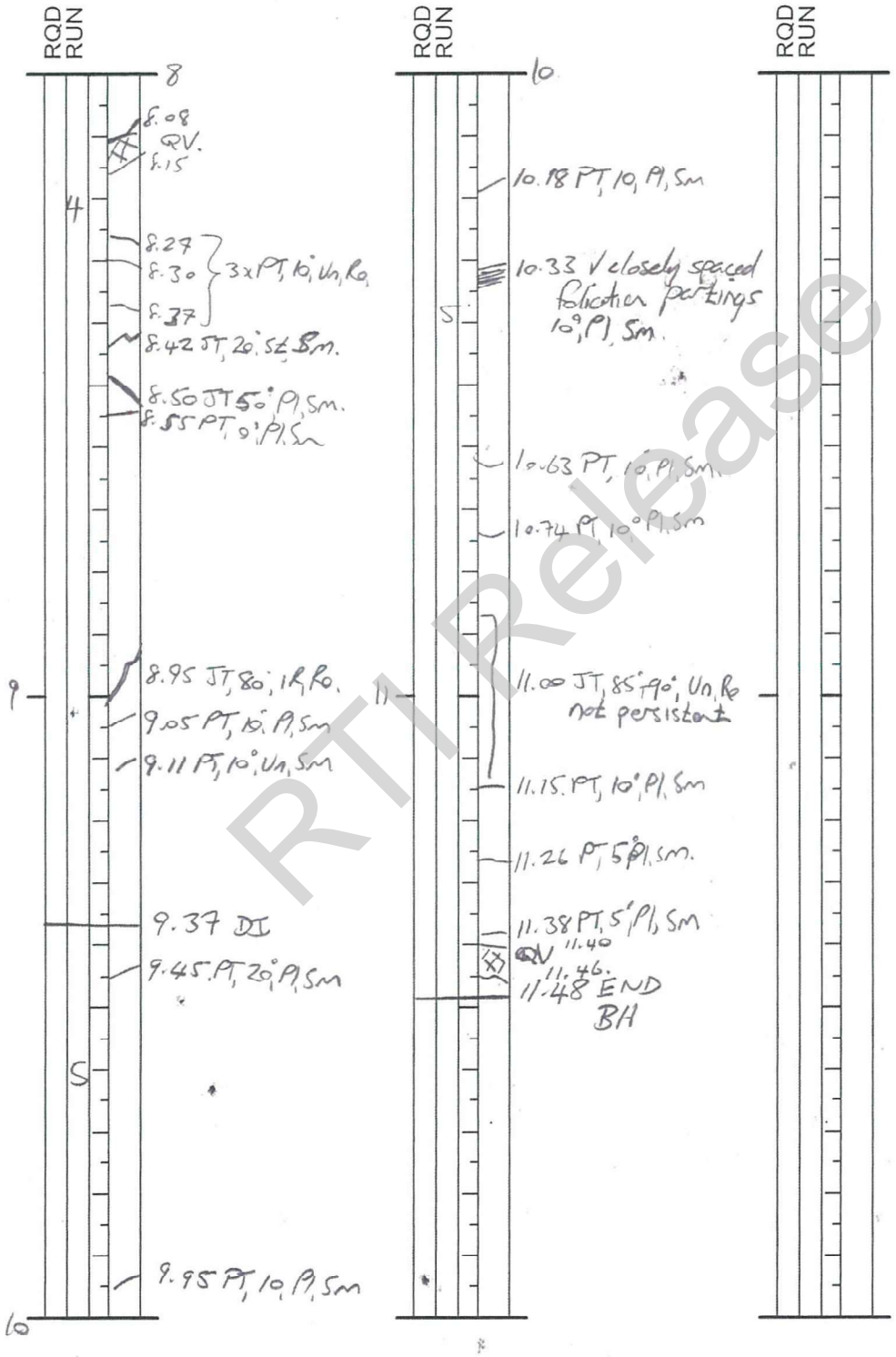
GRAPHIC DEFECT LOG

BH 25/17

PROJECT NUMBER: 09003
PROJECT: INDOOROOPILLY BIKEWAY.

LOGGED BY: BAC
DATE: 06/02/18



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BOREHOLE LOG Geotechnical — BH26/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BPC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 15/01/2018
COMPLETED: 15/01/2018
ELEVATION (m): -3.37 **AHD**
TOTAL DEPTH (m): 13.40
EASTING: 47479.65 **BSCG02**
NORTHING: 154820.16
HOLE ANGLE: 90°
BEARING: ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-3.5	0.5		**COBBLES/BOULDERS (PHYLLITE),** grey and brown, medium strength in very low density matrix							0.5	COLLUVIUM/ALLUVIUM
			-4.0	1.0									1.0	
			-4.5	1.5		**(GC) CLAYEY GRAVEL,** medium to coarse, pale brown and grey, medium plasticity clay, trace cobbles possible							1.5	RESIDUAL SOIL
	NW Casing		-5.0	2.0									2.0	
			-5.5	2.5		**PHYLLITE,** brown and grey, very low to low strength							2.5	EXTREMELY WEATHERED PHYLLITE
			-6.0	3.0		**PHYLLITE,** brown and grey, low to medium strength							3.0	EXTREMELY WEATHERED TO DISTICTLY WEATHERED PHYLLITE
			-6.5	3.5		Borehole BH26/17 continued as cored hole							3.5	
			-7.0	4.0									4.0	
			-7.5	4.5									4.5	
			-8.0	5.0									5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

CITY PROJECTS OFFICE
Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220
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BOREHOLE LOG Geotechnical — BH26/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 15/01/2018	**ELEVATION (m):** -3.37 AHD	**EASTING:** 47479.65	**BSCG02**	**HOLE ANGLE:** 90°
COMPLETED: 15/01/2018	**TOTAL DEPTH (m):** 13.40	**NORTHING:** 154820.16		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength VL L M H VH EH	Is_{50} MPa D - diam A - axia I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				3.5	0.5						0.5								
				-4.0	1.0						1.0								
				-4.5	1.5						1.5								
				-5.0	2.0						2.0								
				-5.5	2.5						2.5								
				-6.0	3.0		Continued from non-cored borehole				3.0								
NMLC Coring	Mud Circulation	100		-6.5			**PHYLLITE,** foliated, grey and brown with concordant quartz veining, foliations subhorizontal 0° - 20°	DW-SW		A 0.16									Refer Attached Graphic Defect Log
					3.5		**SHEAR ZONE** comprising angular gravel sized fragments in clay matrix	XW			3.5								
				-7.0				SW				11							
					4.0		**PHYLLITE,** foliated, grey and brown with concordant quartz veining, foliations subhorizontal 0° - 20°				4.0								
							3.87m to 3.90m crushed seam, gravel fragments			A 0.29									
				-7.5			4.05m to 4.13m crushed seam, gravel fragments	DW		D 0.07									
					4.5			SW			4.5								
		100		-8.0			4.50m to 4.88m **SHEAR ZONE** comprising gravelly sandy **CLAY** clayey **GRAVEL** in places. Clay surfaces occasionally polished. 4.50m to 4.55m quartz gravel	XW				0							
								SW											
		100			5.0						5.0	50							

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
RS - Residual Soil
XW - Extremely Weathered
DW - Distinctly Weathered
SW - Slightly Weathered
Fr - Fresh

Estimated Strength
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Defect Type
PT - Parting JT - Joint
IS - Infill Seam
CS - Crushed Seam
WS - Weathered Seam
SS - Soil Seam
SZ - Sheared Zone
QV - Quartz Vein
FT - Fault

Surface Shape/Characteristics/Coating
Pl - Planar
Cv - Curved
Un - Undulose
St - Stepped
Ir - Irregular
lc - limonite coated
cc - clay coated
ctc - calcite coated
Sm - Smooth
Ro - Rough
Sl - Slickensided
Po - Polished
mc - manganese coated
qc - quartz coated

CITY PROJECTS OFFICE

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505 St Paul's Tce, Fortitude Valley Qld 4006
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Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH26/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 15/01/2018	**ELEVATION (m):** -3.37 AHD	**EASTING:** 47479.65	**BSCG02**	**HOLE ANGLE:** 90°
COMPLETED: 15/01/2018	**TOTAL DEPTH (m):** 13.40	**NORTHING:** 154820.16		**BEARING:** ---

DRILLING

Method	Support	Core Recovery %	Groundwater
NMLC Coring	Mud Circulation	100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
-8.5	5.5		**PHYLLITE,** foliated, grey and brown with concordant quartz veining, foliations subhorizontal 0° - 20° *(continued)*	DW		
-9.0	6.0			SW		
-9.5	6.5			DW		
-10.0	7.0			SW		A 1.82
-10.5	7.5			SW-Fr		A 0.96 D 1.87
-11.0	8.0			Fr		
-11.5	8.5					
-12.0	9.0					A 1.11 D 1.61
-12.5	9.5					
-13.0	10.0					

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
5.5	50							Refer Attached Graphic Defect Log
6.0								
6.5								
7.0								
7.5	91							
8.0								
8.5								
9.0	97							
9.5								
10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
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- L - Low
- M - Medium
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- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
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- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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BOREHOLE LOG Geotechnical — BH26/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 15/01/2018	**ELEVATION (m):** -3.37 AHD	**EASTING:** 47479.65	**BSCG02**	**HOLE ANGLE:** 90°
COMPLETED: 15/01/2018	**TOTAL DEPTH (m):** 13.40	**NORTHING:** 154820.16		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axia I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		13.5	10.5		**PHYLLITE,** foliated, grey and brown with concordant quartz veining, foliations subhorizontal 0° - 20° *(continued)*			A 2.55 D 2.16	10.5	97							Refer Attached Graphic Defect Log
		100		14.0	11.0						11.0								
				14.5	11.5						11.5								
				15.0	12.0						12.0	83							
				15.5	12.5					A 2.31 D 0.23	12.5								
				16.0	13.0						13.0								
				16.5	13.5		Bottom of hole at 13.40 m.				13.5								
				17.0	14.0						14.0								
				17.5	14.5						14.5								
				18.0	15.0						15.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
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- L - Low
- M - Medium
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- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Ic - limonite coated
- cc - clay coated
- ctc - calcite coated
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- mc - manganese coated
- qc - quartz coated

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Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH26/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
LOCATION: RADNOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 3.00m

END OF CORE: 13.40m

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Ground Engineering
505 St Pauls Tce, Fortitude Valley QLD 4006
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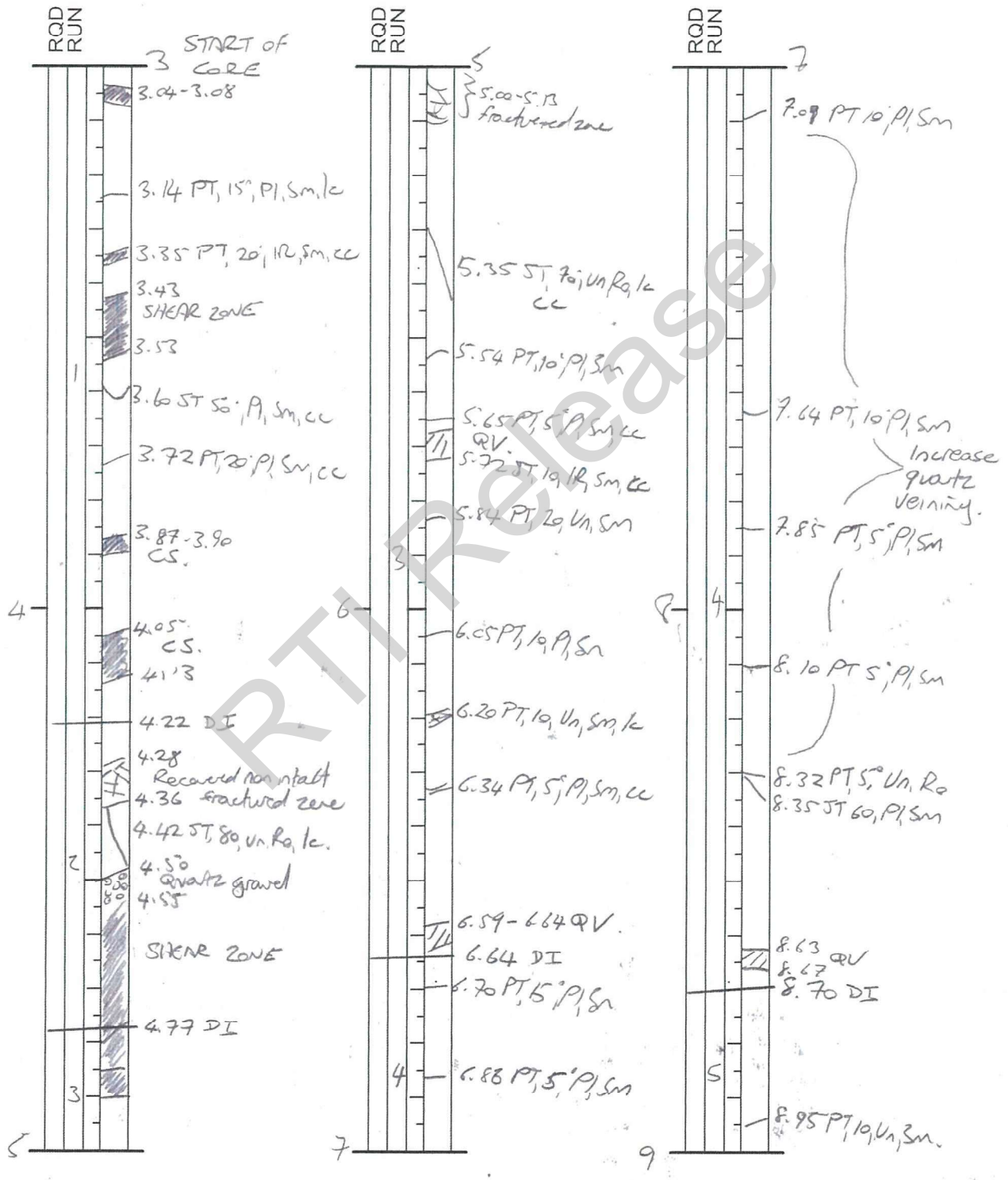
GRAPHIC DEFECT LOG

BH26/17

PROJECT NUMBER: 09-013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 31/01/18



NMLC

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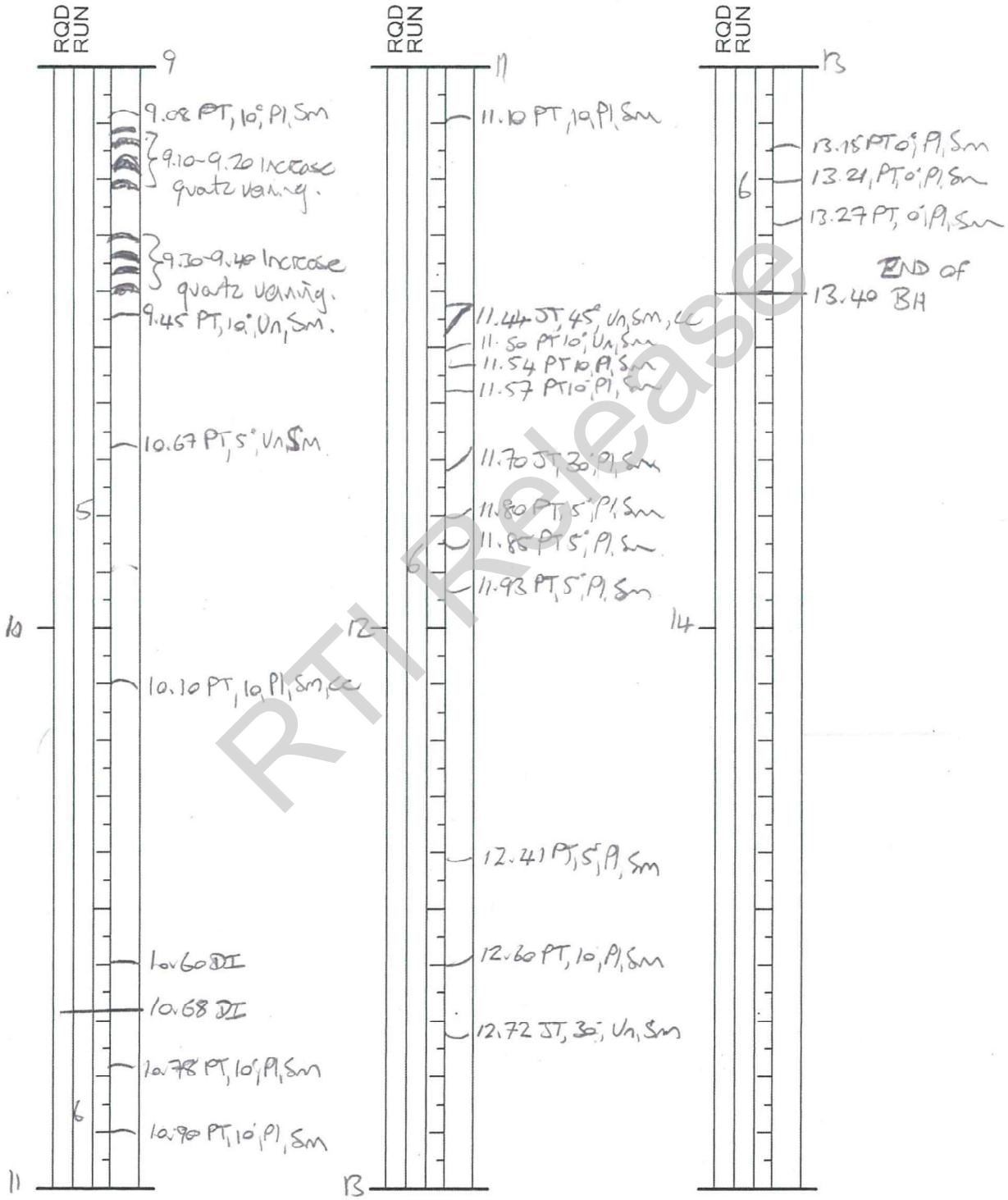
Ground Engineering
505 St Pauls Tce, Fortitude Valley QLD 4006
Dedicated to a better Brisbane Phone: (07) 30274774 Fax: (07) 33340220

GRAPHIC DEFECT LOG

BH 26 / 17

PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 01/02/18



NMLC

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505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220

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BOREHOLE LOG Geotechnical — BH27/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 12/01/2018	**ELEVATION (m):** -7.50 AHD	**EASTING:** 47503.3	**BSCG02**	**HOLE ANGLE:** 90°
COMPLETED: 12/01/2018	**TOTAL DEPTH (m):** 13.78	**NORTHING:** 154812.68		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-8.0	0.5		**(CI/CH) SILTY CLAY,** medium to high plasticity, dark grey						0.5	**ALLUVIUM**
			-8.5	1.0		bands of fine to medium grained sand						1.0	
			-9.0	1.5								1.5	
			-9.5	2.0								2.0	
			-10.0	2.5							SPT RW	2.5	
			-10.5	3.0								3.0	
			-11.0	3.5								3.5	
			-11.5	4.0		**RHYOLITE,** pale grey and brown, fine grained, medium strength						4.0	**DISTINCTLY WEATHERED RHYOLITE**
	Mud					Borehole BH27/17 continued as cored hole							
			-12.0	4.5								4.5	
			-12.5	5.0								5.0	

SOIL LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

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Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical — BH27/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly
CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:
LOGGED BY: OL
CHECKED BY: BPC

DATE COMMENCED: 12/01/2018
COMPLETED: 12/01/2018
ELEVATION (m): -7.50 **AHD**
TOTAL DEPTH (m): 13.78
EASTING: 47503.3 **BSCG02**
NORTHING: 154812.68
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				-8.0	0.5						0.5								
				-8.5	1.0						1.0								
				-9.0	1.5						1.5								
				-9.5	2.0						2.0								
				-10.0	2.5						2.5								
				-10.5	3.0						3.0								
				-11.0	3.5						3.5								
				-11.5	4.0						4.0								
							Continued from non-cored borehole												
NMLC Coring	Mud Circulation	100		-12.0	4.5		**RHYOLITE,** fine grained, pale brown, mottled red brown in places with fine gravel sized phenocrysts in places	SW		D 6.19 A 9.92	4.5	71							Refer Attached Graphic Defect Log
				-12.5	5.0						5.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
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- Complete Loss

Weathering
RS - Residual Soil
XW - Extremely Weathered
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Estimated Strength
EL - Extremely Low
VL - Very Low
L - Low
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Defect Type
PT - Parting JT - Joint
IS - Infill Seam
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Surface Shape/Characteristics/Coating
Pl - Planar
Cv - Curved
Un - Undulose
St - Stepped
Ir - Irregular
Sm - Smooth
Ro - Rough
Sl - Slickensided
Po - Polished
lc - limonite coated
cc - clay coated
ctc - calcite coated
mc - manganese coated
qc - quartz coated

CITY PROJECTS OFFICE
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505 St Paul's Tce, Fortitude Valley Qld 4006
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Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH27/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BPC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 12/01/2018
COMPLETED: 12/01/2018
ELEVATION (m): -7.50 **AHD**
TOTAL DEPTH (m): 13.78
EASTING: 47503.3 **BSCG02**
NORTHING: 154812.68
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		13.0	5.5		**RHYOLITE,** fine grained, pale brown, mottled red brown in places with fine gravel sized phenocrysts in places *(continued)*	Fr			5.5	71							Refer Attached Graphic Defect Log
				13.5	6.0						6.0								
				14.0	6.5						6.5								
				14.5	7.0					A 9.32 D 8.70	7.0								
		100		15.0	7.5						7.5								
				15.5	8.0						8.0								
				16.0	8.5						8.5	82							
				16.5	9.0						9.0								
				17.0	9.5						9.5								
				17.5	10.0					D 9.15	10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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- Ro - Rough
- Sl - Slickensided
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- cc - clay coated
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BOREHOLE LOG Geotechnical — BH27/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 12/01/2018	**ELEVATION (m):** -7.50 AHD	**EASTING:** 47503.3	BSCG02	**HOLE ANGLE:** 90°
COMPLETED: 12/01/2018	**TOTAL DEPTH (m):** 13.78	**NORTHING:** 154812.68		**BEARING:** ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - lreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		18.0	10.5		**RHYOLITE,** fine grained, pale brown, mottled red brown in places with fine gravel sized phenocrysts in places *(continued)*			A 11.27	10.5	82							Refer Attached Graphic Defect Log
		100		18.5	11.0						11.0	30							
				19.0	11.5					A 3.26 D 7.91	11.5								
		100		19.5	12.0						12.0	47							
				20.0	12.5						12.5								
				20.5	13.0					A 5.81	13.0								
				21.0	13.5						13.5								
							Bottom of hole at 13.78 m.												
				21.5	14.0						14.0								
				22.0	14.5						14.5								
				22.5	15.0						15.0								

NOTE:
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CITY PROJECTS OFFICE
Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH27/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
LOCATION: RADNOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 4.20m

END OF CORE: 13.78m

CITY PROJECTS OFFICE GRAPHIC DEFECT LOG **BH 27/17**

PAGE 1 OF 2

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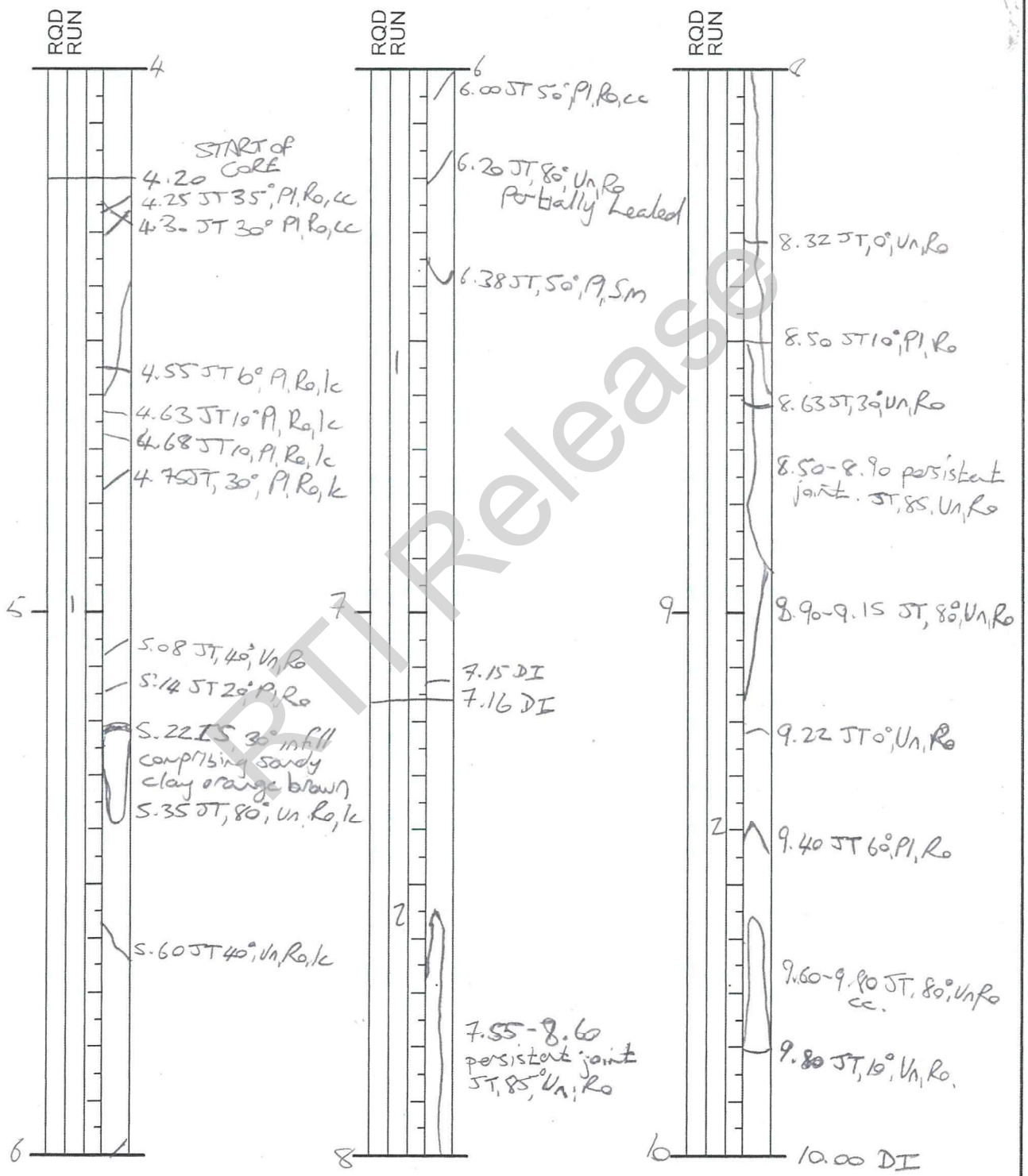
PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 30/01/18



NMLC

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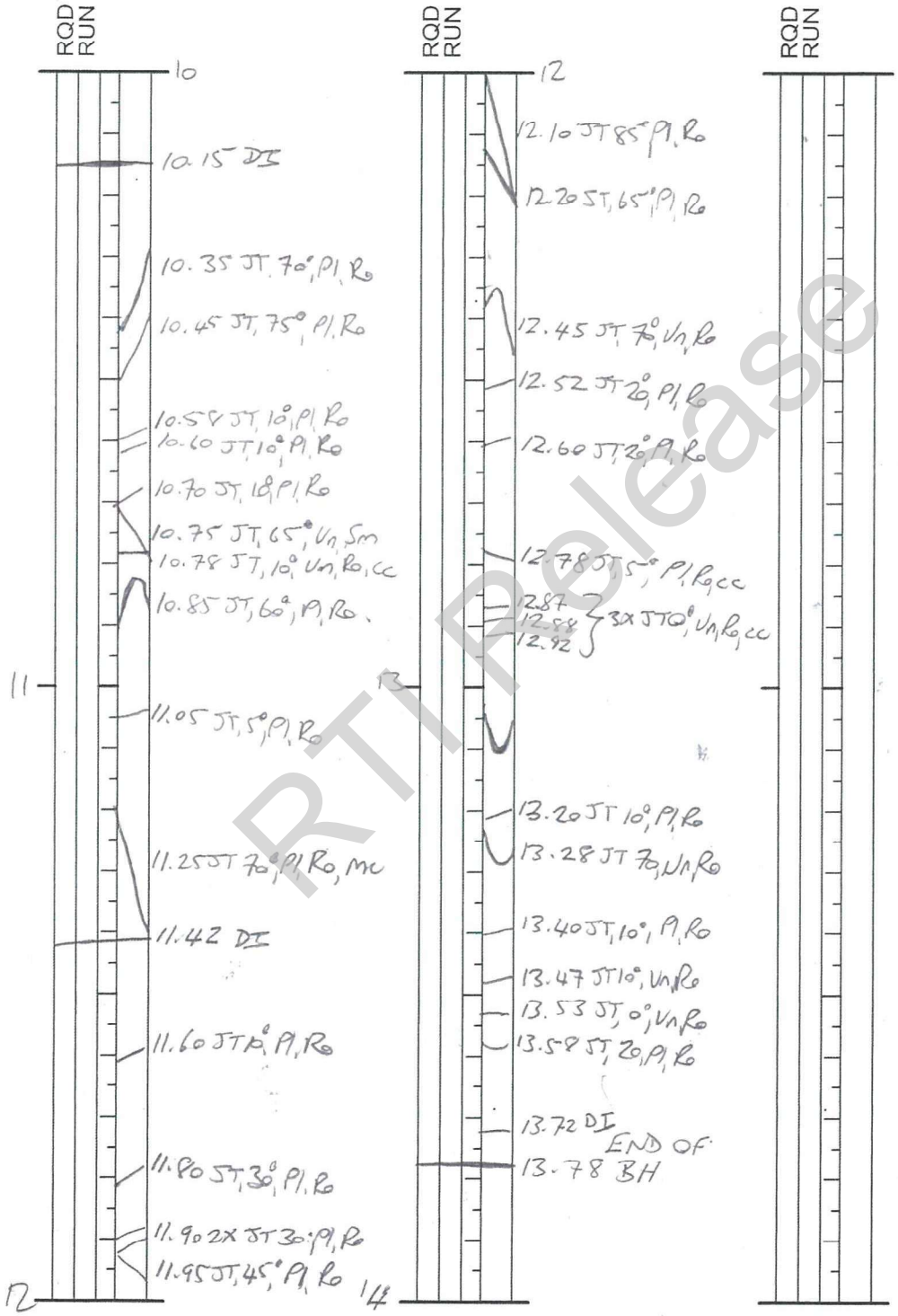
GRAPHIC DEFECT LOG

BH27/17

PROJECT NUMBER: 090013.
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 31/01/18



NMLC

CITY PROJECTS OFFICE

Ground Engineering
505 St Paul's Tce, Fortitude Valley Qld 4006
Phone: (07) 30274774 Fax: (07) 33340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH28/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL
CHECKED BY: BPC

DATE COMMENCED: 11/01/2018
COMPLETED: 11/01/2018
ELEVATION (m): -3.22 **AHD**
TOTAL DEPTH (m): 15.33
EASTING: 47523.74 **BSCG02**
NORTHING: 154815.19
HOLE ANGLE: 90°
BEARING: ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples / Test Results / Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-3.5	0.5		**(CI/CH) SILTY CLAY,** medium to high plasticity, dark grey							0.5	**ALLUVIUM**
			-4.0	1.0								SPT RW	1.0	
			-4.5	1.5									1.5	
			-5.0	2.0									2.0	
			-5.5	2.5									2.5	
			-6.0	3.0		some fine grained sand and medium to coarse gravel bands							3.0	
			-6.5	3.5									3.5	
			-7.0	4.0		**(CI/CH) GRAVELLY CLAY,** medium to high plasticity, dark grey, some fine to medium grained sand, fine to coarse gravel						SPT 1, 0, 0 N=0	4.0	
			-7.5	4.5									4.5	
			-8.0	5.0		some timber and organics							5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

CITY PROJECTS OFFICE

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Phone: (07) 30274774 Fax: (07) 33340220

Dedicated to a better Brisbane

BOREHOLE LOG Geotechnical — BH28/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 11/01/2018	**ELEVATION (m):** -3.22 AHD	**EASTING:** 47523.74	**BSCG02**	**HOLE ANGLE:** 90°
COMPLETED: 11/01/2018	**TOTAL DEPTH (m):** 15.33	**NORTHING:** 154815.19		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-8.5	5.5		some timber and organics *(continued)*						5.5	**ALLUVIUM**
			-9.0	6.0		**PHYLLITE,** very low to low strength, brown and grey bands of quartz of higher strength					SPT 1, 2, 1 N=3	6.0	**EXTREMELY WEATHERED TO DISTINCTLY WEATHERED PHYLLITE**
			-9.5			**RHYOLITE** pale brown and grey, medium to high strength							**DISTINCTLY WEATHERED TO SLIGHTLY WEATHERED RHYOLITE**
			-10.0	6.5		Borehole BH28/17 continued as cored hole						6.5	
			-10.5	7.0								7.0	
			-11.0	7.5								7.5	
			-11.5	8.0								8.0	
			-12.0	8.5								8.5	
			-12.5	9.0								9.0	
			-13.0	9.5								9.5	
				10.0								10.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

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BOREHOLE LOG Geotechnical — BH28/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BPC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 11/01/2018
COMPLETED: 11/01/2018
ELEVATION (m): -3.22 **AHD**
TOTAL DEPTH (m): 15.33
EASTING: 47523.74 **BSCG02**
NORTHING: 154815.19
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES								ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg		Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				-8.5	5.5							5.5								
				-9.0	6.0							6.0								
				-9.5			Continued from non-cored borehole													
NMLC Coring	Mud Circulation	100			6.5		**RHYOLITE**, fine grained, mottled pale brown with orange brown staining to joints	SW		D 3.69 A 2.36		6.5								Refer Attached Graphic Defect Log
				-10.0	7.0							7.0	30							
				-10.5	7.5			DW				7.5								
				-11.0	8.0			SW		A 4.57 D 4.62		8.0								
		100		-11.5	8.5							8.5								
				-12.0				DW												
					9.0		pale brown coloured	SW-Fr				9.0	67							
				-12.5	9.5							9.5								
				-13.0	10.0							10.0								

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
RS - Residual Soil
XW - Extremely Weathered
DW - Distinctly Weathered
SW - Slightly Weathered
Fr - Fresh

Estimated Strength
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Defect Type
PT - Parting JT - Joint
IS - Infill Seam
CS - Crushed Seam
WS - Weathered Seam
SS - Soil Seam
SZ - Sheared Zone
QV - Quartz Vein
FT - Fault

Surface Shape/Characteristics/Coating
Pl - Planar
Cv - Curved
Un - Undulose
St - Stepped
Ir - Irregular
Sm - Smooth
Ro - Rough
Sl - Slickensided
Po - Polished
lc - limonite coated
cc - clay coated
ctc - calcite coated
mc - manganese coated
qc - quartz coated

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505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical — BH28/17

PROJECT No: 090013 FR003A

CLIENT: Road Design	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Indooroopilly Bikeway - Stage 2	**EQUIPMENT:** Fox B40M	**CHECKED BY:** BPC
LOCATION: Radnor Street, Indooroopilly	**NOTES:**	

DATE COMMENCED: 11/01/2018	**ELEVATION (m):** -3.22 AHD	**EASTING:** 47523.74	BSCG02	**HOLE ANGLE:** 90°
COMPLETED: 11/01/2018	**TOTAL DEPTH (m):** 15.33	**NORTHING:** 154815.19		**BEARING:** ---

DRILLING

Methoc	Support	Core Recovery %	Grouncwater
NMLC Coring	Mud Circulation	100	
		100	
		100	
		100	

INFERRED STRATIGRAPHY AND PROPERTIES

Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg
-13.5	10.5		pale brown coloured *(continued)*			D 3.73 A 5.53
-14.0	11.0			Fr		
-14.5	11.5					
-15.0	12.0					
-15.5	12.5					
-16.0	13.0					D 6.71 A 6.59
-16.5	13.5					
-17.0	14.0					
-17.5	14.5					A 6.05
-18.0	15.0					I 2.08

ROCK MASS DEFECTS

Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
10.5	67							Refer Attached Graphic Defect Log
11.0								
11.5	36							
12.0								
12.5								
13.0	27							
13.5								
14.0	14							
14.5	26							
15.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

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- Fr - Fresh

Estimated Strength
- EL - Extremely Low
- VL - Very Low
- L - Low
- M - Medium
- H - High
- VH - Very High
- EH - Extremely High

Defect Type
- PT - Parting JT - Joint
- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
- Pl - Planar
- Cv - Curved
- Un - Undulose
- St - Stepped
- Ir - Irregular
- Sm - Smooth
- Ro - Rough
- Sl - Slickensided
- Po - Polished
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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BOREHOLE LOG Geotechnical — BH28/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL
CHECKED BY: BPC

DATE COMMENCED: 11/01/2018
COMPLETED: 11/01/2018
ELEVATION (m): -3.22 **AHD**
TOTAL DEPTH (m): 15.33
EASTING: 47523.74 **BSCG02**
NORTHING: 154815.19
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS							
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		-18.5			pale brown coloured *(continued)*			D 1.83		26							Refer Attached Graphic Defect Log
					15.5		Bottom of hole at 15.33 m.				15.5								
				-19.0															
					16.0						16.0								
				-19.5															
					16.5						16.5								
				-20.0															
					17.0						17.0								
				-20.5															
					17.5						17.5								
				-21.0															
					18.0						18.0								
				-21.5															
					18.5						18.5								
				-22.0															
					19.0						19.0								
				-22.5															
					19.5						19.5								
				-23.0															
					20.0						20.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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- IS - Infill Seam
- CS - Crushed Seam
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- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

Surface Shape/Characteristics/Coating
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- St - Stepped
- Ir - Irregular
- Sm - Smooth
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- Sl - Slickensided
- Po - Polished
- lc - limonite coated
- cc - clay coated
- ctc - calcite coated
- mc - manganese coated
- qc - quartz coated

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505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH28/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
LOCATION: RADNOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 6.40m

END OF CORE: 15.33m

CITY PROJECTS OFFICE GRAPHIC DEFECT LOG **BH28/17**

PAGE 1 OF 2

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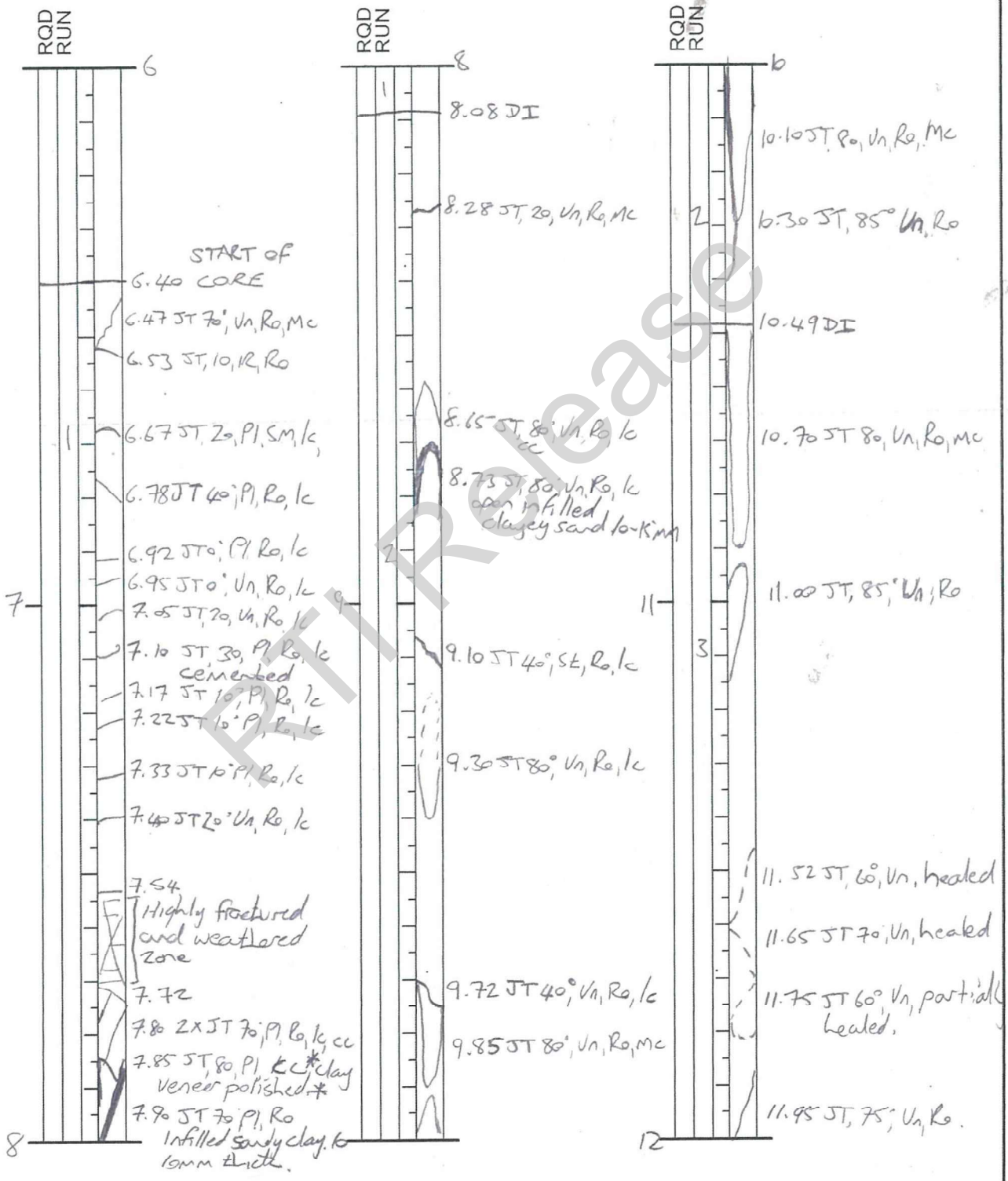
PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 30/01/18



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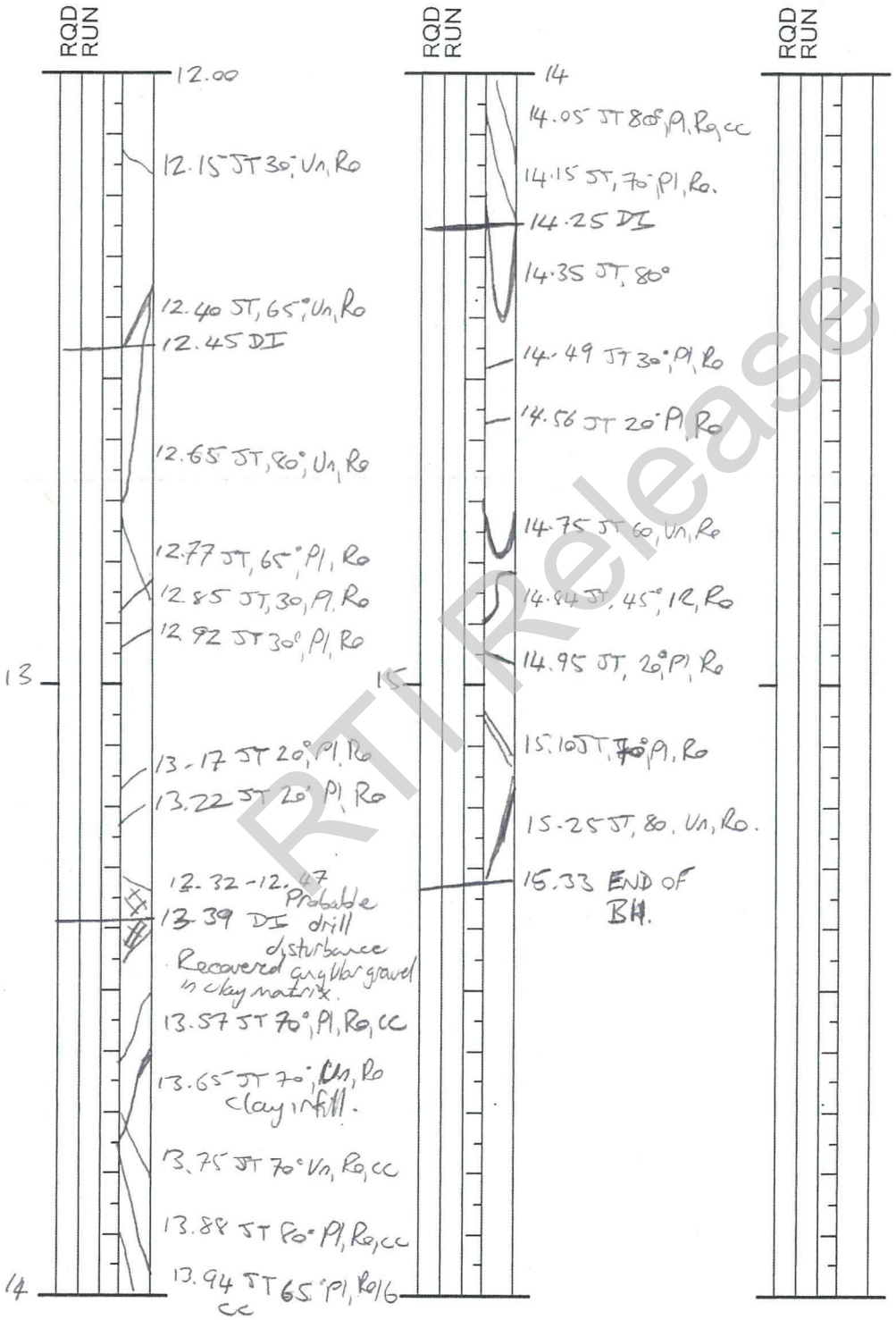
GRAPHIC DEFECT LOG

BH 28/17

PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 30/01/18



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BOREHOLE LOG Geotechnical — BH29/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BAC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 22/01/2018
COMPLETED: 22/01/2018
ELEVATION (m): -4.93 **AHD**
TOTAL DEPTH (m): 8.65
EASTING: 47467.4 **BSCG02**
NORTHING: 154820.97
HOLE ANGLE: 90°
BEARING: ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES								SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)		Recovery	Samples Test Results Remarks	Depth (m)	
Washbore - Roller Bit	HW Casing		-5.0	0.5		**COBBLES/BOULDERS (PHYLLITE),** grey and brown, medium strength in very low density matrix							0.5	**COLLUVIUM**
	Mud Circulation		-5.5	1.0		**PHYLLITE,** grey and brown, low to medium strength							1.0	**EXTREMELY WEATHERED TO DISTINCTLY WEATHERED PHYLLITE**
			-6.0	1.5		Borehole BH29/17 continued as cored hole							1.5	
			-6.5	2.0									2.0	
			-7.0	2.5									2.5	
			-7.5	3.0									3.0	
			-8.0	3.5									3.5	
			-8.5	4.0									4.0	
			-9.0	4.5									4.5	
			-9.5	5.0									5.0	

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LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

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BOREHOLE LOG Geotechnical — BH29/17

PROJECT No: 090013 FR003A

CLIENT: Road Design
PROJECT: Indooroopilly Bikeway - Stage 2
LOCATION: Radnor Street, Indooroopilly

CONTRACTOR: Schneider Drilling
EQUIPMENT: Fox B40M
NOTES:

LOGGED BY: OL/BAC
CHECKED BY: BAC

DATE COMMENCED: 22/01/2018
COMPLETED: 22/01/2018
ELEVATION (m): -4.93 **AHD**
TOTAL DEPTH (m): 8.65
EASTING: 47467.4 **BSCG02**
NORTHING: 154820.97
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) (30 100 300 1000 3000)	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
				-5.0	0.5		Continued from non-cored borehole				0.5								
				-5.5															
				-6.0	1.0						1.0								
NMLC Coring	Mud Circulation	100		-6.5	1.5		**SILICEOUS PHYLLITE,** foliated, grey with frequent quartz veining varying from <3mm to 350mm thick	SW-Fr		D 2.88 A 3.62	1.5	22							Refer Attached Graphic Defect Log
				-7.0	2.0			DW-SW			2.0								
				-7.5	2.5			SW			2.5								
				-8.0	3.0			SW			3.0								
		100		-8.5	3.5			DW-SW			3.5								
				-9.0	4.0			SW			4.0	52							
				-9.5	4.5			Fr		D 0.50 A 1.42	4.5								
					5.0					D 0.30	5.0								

CORE LOG - GEOTECHNICAL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 4/5/18

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

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- IS - Infill Seam
- CS - Crushed Seam
- WS - Weathered Seam
- SS - Soil Seam
- SZ - Sheared Zone
- QV - Quartz Vein
- FT - Fault

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- Un - Undulose
- St - Stepped
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PROJECT No: 090013 FR003A

CLIENT: Road Design
CONTRACTOR: Schneider Drilling
LOGGED BY: OL/BAC
PROJECT: Indooroopilly Bikeway - Stage 2
EQUIPMENT: Fox B40M
CHECKED BY: BAC
LOCATION: Radnor Street, Indooroopilly
NOTES:

DATE COMMENCED: 22/01/2018
COMPLETED: 22/01/2018
ELEVATION (m): -4.93 **AHD**
TOTAL DEPTH (m): 8.65
EASTING: 47467.4 **BSCG02**
NORTHING: 154820.97
HOLE ANGLE: 90°
BEARING: ---

DRILLING				INFERRED STRATIGRAPHY AND PROPERTIES							ROCK MASS DEFECTS								
Method	Support	Core Recovery %	Groundwater	Elevation	Depth (m)	Graphic Log	Rock Description	Weathering	Estimated Strength (VL L M H VH EH)	Is_{50} MPa D - diam A - axial I - irreg	Depth (m)	RQD (%)	Defect Spacing (mm) 30 100 300 1000 3000	Defect Description: Type	Angle	Shape	Surface	Infill	General Notes
NMLC Coring	Mud Circulation	100		10.0	5.5		**SILICEOUS PHYLLITE,** foliated, grey with frequent quartz veining varying from <3mm to 350mm thick *(continued)*			A 2.32	5.5	52							Refer Attached Graphic Defect Log
		100		10.5	6.0						6.0								
				11.0	6.5					D 0.80 A 2.57	6.5								
				11.5	7.0						7.0	80							
				12.0	7.5						7.5								
				12.5	8.0					D 4.01 A 2.89	8.0								
				13.0	8.5						8.5								
				13.5			Bottom of hole at 8.65 m.												
				14.0	9.0						9.0								
				14.5	9.5						9.5								
					10.0						10.0								

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Weathering
RS - Residual Soil
XW - Extremely Weathered
DW - Distinctly Weathered
SW - Slightly Weathered
Fr - Fresh

Estimated Strength
EL - Extremely Low
VL - Very Low
L - Low
M - Medium
H - High
VH - Very High
EH - Extremely High

Defect Type
PT - Parting JT - Joint
IS - Infill Seam
CS - Crushed Seam
WS - Weathered Seam
SS - Soil Seam
SZ - Sheared Zone
QV - Quartz Vein
FT - Fault

Surface Shape/Characteristics/Coating
Pl - Planar
Cv - Curved
Un - Undulose
St - Stepped
Ir - Irregular
lc - limonite coated
cc - clay coated
ctc - calcite coated
Sm - Smooth
Ro - Rough
Sl - Slickensided
Po - Polished
mc - manganese coated
qc - quartz coated

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Ground Engineering
505 St Pauls Tce,
Fortitude Valley QLD 4006
Phone (07) 30274774 Fax (07) 33340220

CORE PHOTOGRAPH
Geotechnical

BH29/17

PROJECT No: 090013

CLIENT: ROAD DESIGN
PROJECT: INDOOROOPILLY PROPOSED BIKEWAY-STAGE 2
LOCATION: RADNOR STREET, INDOOROOPILLY

LOGGED BY: BAC
CHECKED BY: BPC

START OF CORE: 1.10m

END OF CORE: 8.65m

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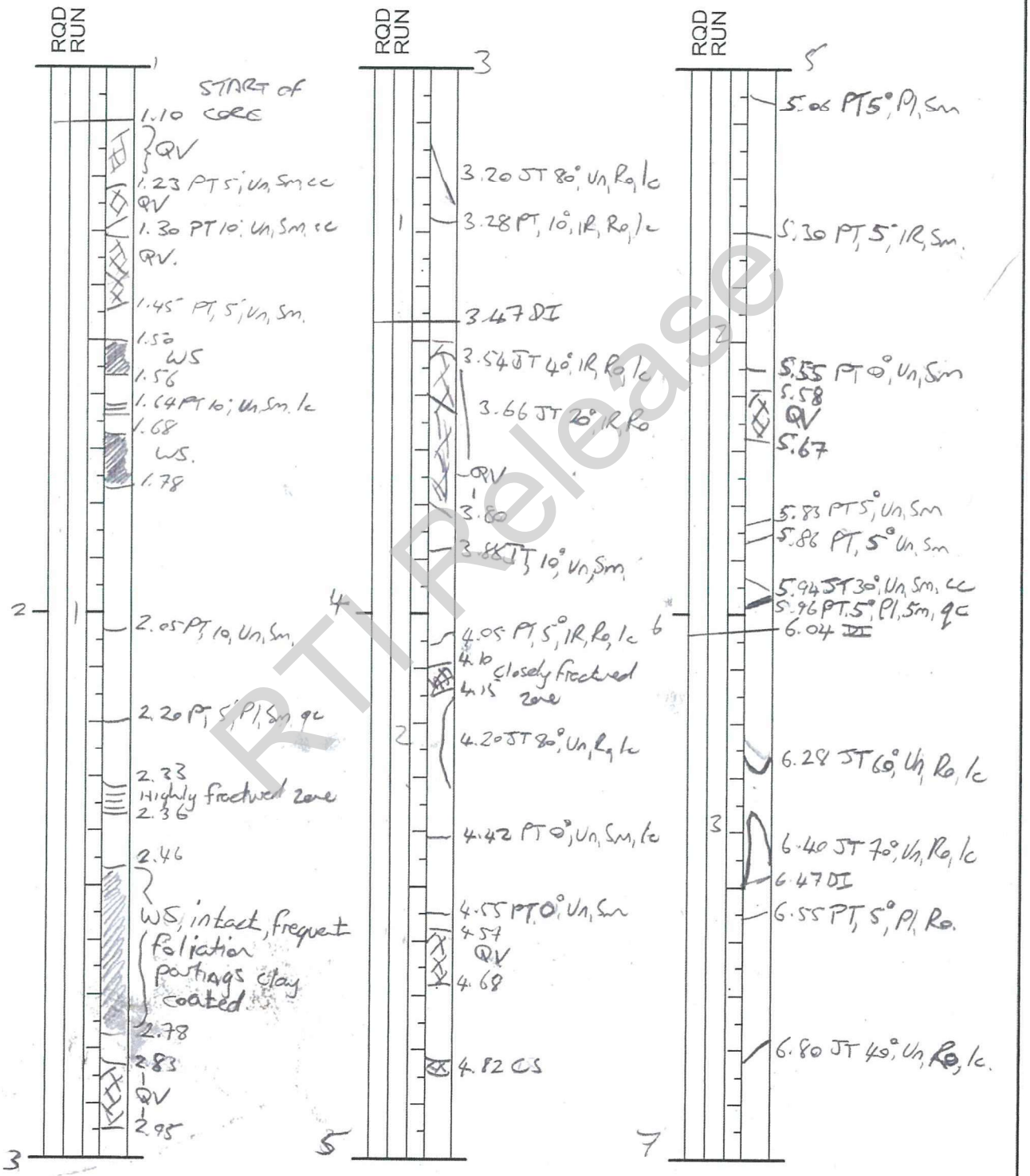
GRAPHIC DEFECT LOG

BH 29/17

PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 06/02/18



NMLC

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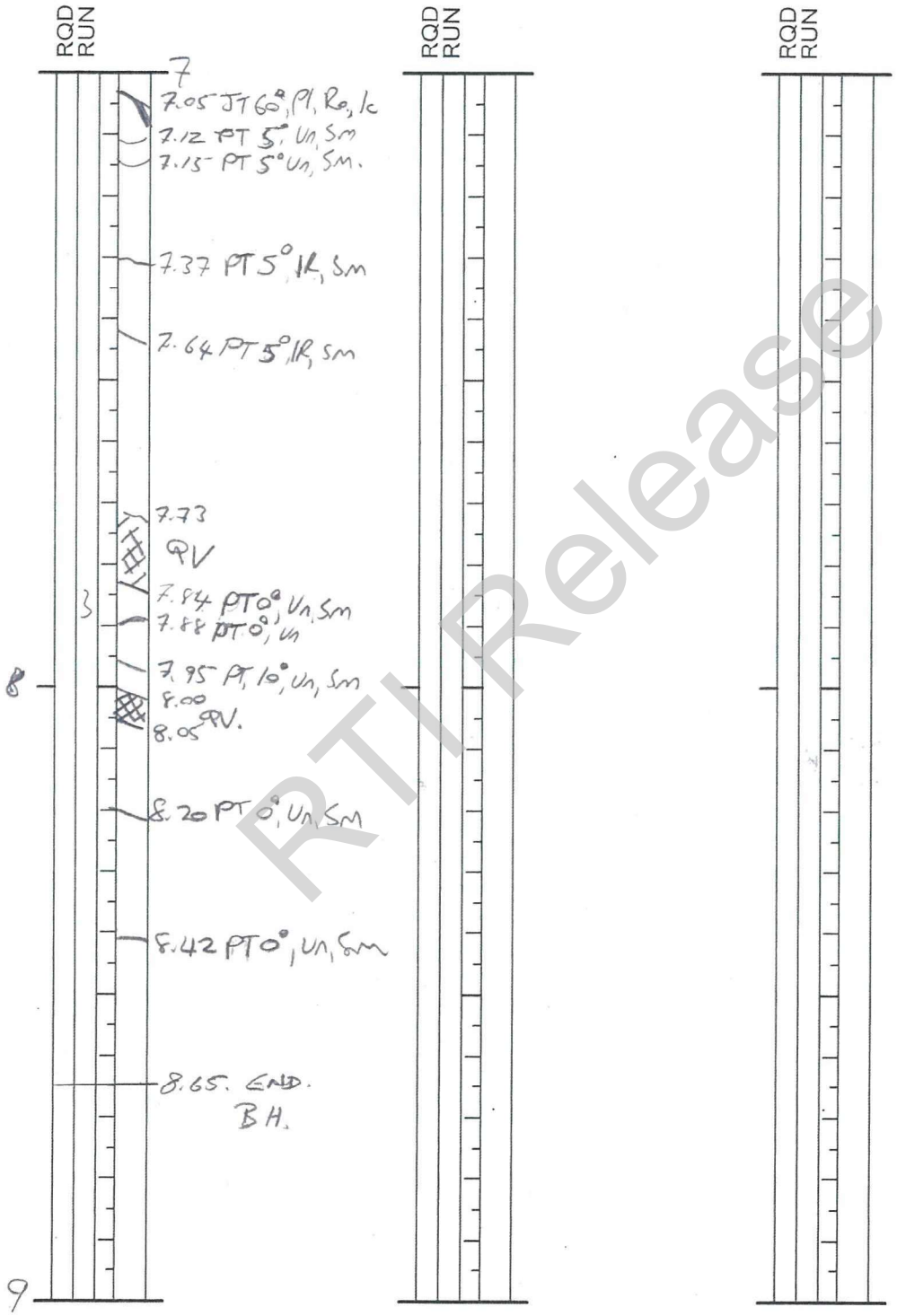
GRAPHIC DEFECT LOG

BH 29 / 17
PAGE 2 OF 2

PROJECT NUMBER: 090013
PROJECT: INDOOROOPILLY BIKEWAY

LOGGED BY: BAC
DATE: 09/02/18



NMLC

160896
Witton Barracks Playground (2018)

LOCALITY PLAN:
NTS

10 0 10 20 30 40 50 METRES

SCALE 1 : 500 (BEFORE REDUCTION)

LEGEND:

BOREHOLE LOCATION - CURRENT INVESTIGATION 2018

DRAWN	B. Magee	June 2018
CHECKED	B. Collins	June 2018
SCALE	As Shown	A3

LANDSCAPE ARCHITECTURE
PLAYGROUND
WITTON BARRACKS, INDOOROOPILLY
GEOTECHNICAL INVESTIGATION
BOREHOLE LOCATIONS

ACKNOWLEDGEMENT
The Consultant agrees to acknowledge the source of the Licensed Data by including on any map and/or report the following words:
"Information supplied by Bimap, Brisbane City Council, under copyright".

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CITY PROJECTS OFFICE
The Engineering Group - Ground Engineering

Report Reference No.	Rev.	Fig.
GE/160896FR/PR001A	1	1

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BOREHOLE LOG Geotechnical — BH01/18

PROJECT No: 160896 PR/FR001A

CLIENT: Landscape Architecture	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Playground	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** BPC
LOCATION: Witton Barracks, Indooroopilly	**NOTES:**	
DATE COMMENCED: 8/06/2018	**ELEVATION (m):** **AHD** **EASTING:** **MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/06/2018	**TOTAL DEPTH (m):** 2.63 **NORTHING:**	**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS S F St VSt H)	Relative Density (VL L MD D VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	Not Encountered		0.5		**FILL (SM) SILTY SAND,** fine to medium grained, dark brown	M					0.5	**FILL**
						FILL (Cl) GRAVELLY CLAY, medium plasticity, red brown, fine to medium gravel							
						(Cl) CLAY, medium plasticity, red brown, trace fine gravel							**RESIDUAL SOIL**
				1.0		**(Cl) SILTY CLAY,** medium plasticity, grey and orange brown, tarce fine gravel						1.0	
				1.5		mottled pale brown and grey, some fine to medium gravel, some apparent rock structure					SPT 4, 15, 22 N=37	1.5	
				2.0								2.0	
				2.5		**PHYLLITE,** pale grey, grey and pale brown, very low strength					SPT 30/125mm	2.5	**DISTINCTLY WEATHERED PHYLLITE**
						Bottom of hole at 2.63 m.							
				3.0								3.0	
				3.5								3.5	
				4.0								4.0	
				4.5								4.5	
				5.0								5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

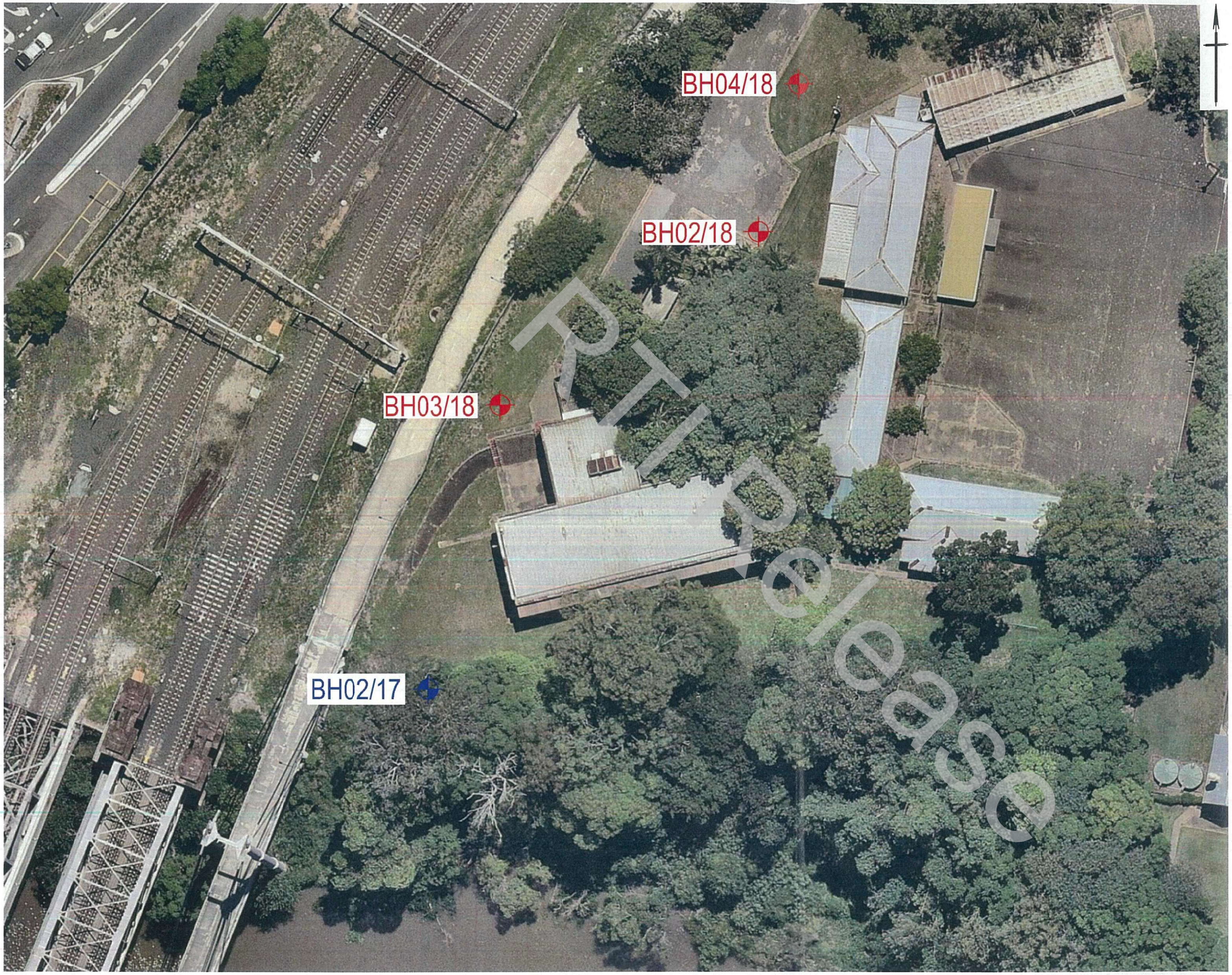
Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

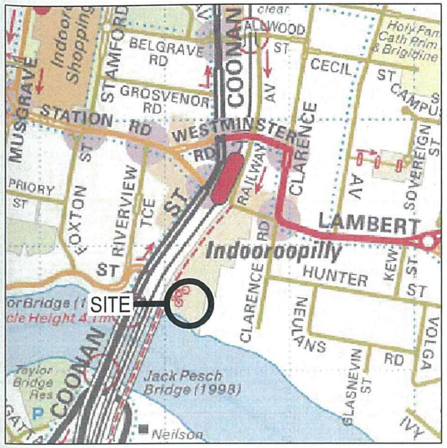
Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL SOIL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 6/9/18

160896
Witton Barracks Precinct (2018)





LOCALITY PLAN:
NTS

10 0 10 20 30 40 50 METRES

SCALE 1 : 500 (BEFORE REDUCTION)

LEGEND:
BOREHOLE LOCATION - CURRENT INVESTIGATION 2018

DRAWN	B. Magee	June 2018
CHECKED	B. Collins	June 2018
SCALE	As Shown	A3

LANDSCAPE ARCHITECTURE
PLAYGROUND
WITTON BARRACKS, INDOOROOPILLY
GEOTECHNICAL INVESTIGATION
BOREHOLE LOCATIONS

BRISBANE CITY COUNCIL
CITY PROJECTS OFFICE
The Engineering Group - Ground Engineering

Report Reference No.	Rev.	Fig.
GE/160896FR/PR002A	1	1

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505 St Paul's Tce, Fortitude Valley Qld 4006
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BOREHOLE LOG Geotechnical — BH02/18

PROJECT No: 160896 PR/FR002A

CLIENT: Landscape Architecture	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Playground	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** BPC
LOCATION: Witton Barracks, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/06/2018	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/06/2018	**TOTAL DEPTH (m):** 4.36		**NORTHING:**		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency VS S F St VSt H	Relative Density VL L MD D VD	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	Not Encountered		0.5		**ASPHALT AND ROADBASE**	M					0.5	**PAVEMENT**
						FILL (CI) GRAVELLY CLAY, medium plasticity, dark brown, fine to medium gravel, some fine to medium grained sand trace bricks (possible)							**FILL**
				1.0		**(CI) CLAY,** medium plasticity, mottled dark brown and brown						1.0	**ALLUVIUM**
				1.5		**(CI) SANDY CLAY,** medium plasticity, mottled grey brown and orange brown, fine to medium grained sand					SPT 3, 6, 13 N=19	1.5	**ALLUVIUM/ COLLUVIUM**
				2.0								2.0	
				2.5							SPT 4, 6, 11 N=17	2.5	
				3.0								3.0	
				3.5								3.5	
				4.0							SPT 7, 10, 30/60mm	4.0	
				4.5		**RHYOLITE,** white and pale grey, low to medium strength Bottom of hole at 4.36 m.						4.5	**DISTINCTLY WEATHERED RHYOLITE**
				5.0								5.0	

SOIL LOG - GEOTECHNICAL SOIL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 10/7/18

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

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BOREHOLE LOG Geotechnical

BH03/18

PROJECT No: 160896 PR/FR002A

CLIENT: Landscape Architecture	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Playground	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** BPC
LOCATION: Witton Barracks, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/06/2018	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/06/2018	**TOTAL DEPTH (m):** 2.95		**NORTHING:**		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency VS S F St VSt H	Relative Density VL L MD D VD	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	Not Encountered		0.5		**FILL (SM) SILTY SAND,** fine to medium grained, dark brown	M					0.5	FILL
						FILL (GW) SANDY GRAVEL, fine to medium, grey, fine to medium grained sand							
						FILL (Cl) GRAVELLY CLAY, medium plasticity, brown, fine to medium gravel, trace fine to medium grained sand							
				1.0		**FILL (Cl) SANDY CLAY,** medium palsticity, brown and pale brown, medium to coarse grained sand, some fine gravel						1.0	
				1.5		**(Cl) SANDY CLAY,** medium plasticity, mottled brown and orange brown, fine to medium grained sand, trace organics/roots					SPT 3, 6, 10 N=16	1.5	ALLUVIUM/COLLUVIUM
				2.0		**(Cl) SANDY CLAY,** medium plasticity, mottled brown and yellow brown, fine to medium grained sand, some fine to medium gravel (quartz and gravel)						2.0	RESIDUAL SOIL
				2.5							SPT 13, 18, 26 N=44	2.5	
				3.0		Bottom of hole at 2.95 m.						3.0	
				3.5								3.5	
				4.0								4.0	
				4.5								4.5	
				5.0								5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL SOIL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 10/7/18

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BOREHOLE LOG Geotechnical — BH04/18

PROJECT No: 160896 PR/FR002A

CLIENT: Landscape Architecture	**CONTRACTOR:** Schneider Drilling	**LOGGED BY:** OL
PROJECT: Playground	**EQUIPMENT:** Hydrapower Scout	**CHECKED BY:** BPC
LOCATION: Witton Barracks, Indooroopilly	**NOTES:**	

DATE COMMENCED: 8/06/2018	**ELEVATION (m):**	**AHD**	**EASTING:**	**MGA**	**HOLE ANGLE:** 90°
COMPLETED: 8/06/2018	**TOTAL DEPTH (m):** 2.95		**NORTHING:**		**BEARING:** ---

DRILLING			INFERRED STRATIGRAPHY AND PROPERTIES							SAMPLING/TESTING			ADDITIONAL COMMENTS/ INTERPRETED GEOLOGY
Method	Support	Groundwater	Elevation	Depth (m)	Graphic Log	Soil / Rock Description	Moisture Content	Consistency (VS, S, F, St, VSt, H)	Relative Density (VL, L, MD, D, VD)	Recovery	Samples Test Results Remarks	Depth (m)	
Solid Auger - TC Bit	No Support	Not Encountered		0.5		**FILL (SM) SILTY SAND,** fine to medium grained, dark brown	M					0.5	FILL
						FILL (GW) SANDY GRAVEL, fine to medium, gray, fine to medium grained sand							
						FILL (SP) SAND, fine to medium grained, grey and brown							
				1.0		**(CI) SANDY CLAY,** medium plasticity, mottled brown, orange brown and grey, fine to medium grained sand						1.0	COLLUVIUM
						trace fine gravel					SPT 5, 11, 14 N=25		
				1.5								1.5	
				2.0								2.0	
				2.5							SPT 8, 10, 11 N=21	2.5	
				3.0		Bottom of hole at 2.95 m.						3.0	
				3.5								3.5	
				4.0								4.0	
				4.5								4.5	
				5.0								5.0	

NOTE:
LOG TO BE READ IN CONJUNCTION WITH REPORT TEXT AND EXPLANATION SHEETS

Soil Description and Classification Symbols based on AS 1726

Water Symbols
- Water Level (date)
- Inflow
- Partial Loss
- Complete Loss

Moisture Content
- D - Dry
- M - Moist
- W - Wet
- W_p - Plastic Limit
- W_l - Liquid Limit

Consistency (cohesive soils)
- VS - Very Soft
- S - Soft
- F - Firm
- St - Stiff
- VSt - Very Stiff
- H - Hard

Relative Density (cohesionless soils)
- VL - Very Loose
- L - Loose
- MD - Medium Dense
- D - Dense
- VD - Very Dense

Sampling/Testing
- BDS - Bulk Disturbed Sample
- DS - Disturbed Sample
- SPT - Standard Penetration Test
- N - SPT 'N' Value
- PP - Pocket Penetrometer (kPa)
- VS - Vane Shear (kPa)
- U_{50} - Undisturbed Sample/Diameter

SOIL LOG - GEOTECHNICAL SOIL LOGS.GPJ CITY DESIGN DATA TEMPLATE.GDT 10/7/18

Appendix B

Safety in Design Assessment

PROJECT INFORMATION			
Project Name	**Indooroopilly Bridge Duplication**	**Project Number**	**210639**
Project Location	**Brisbane River, Indooroopilly**	**BCC Contact**	**Brett Collins**
Project Description/Scope	**Duplication of North-South alignment over river**		
Intended Use of Structure	**Major arterial**		
Report No.	**210639FR001Atw**		

DOCUMENT CONTROL		
	Prepared by (Designer)	**Authorised for Issue by (RPEQ)**
Design	Brett Collins	Brett Collins

IDENTIFY		INHERENT RISK ASSESSMENT			CONTROL	RESIDUAL RISK ASSESSMENT					EXTERNAL CONSIDERATIONS		
Hazard	Risk (insert all foreseeable risks)	Consequences	Likelihood	Risk Rating and Score	Treatment Plan Elimination Measure, Design Initiative or Control by existing solutions and/or recognised Standards	Consequences	Likelihood	Risk Rating and Score	Risk eliminated or reasonably reduced	Designer Status (closed / pending)	Further Control Suggestions	Relevant to Project?	Responsibility
INVESTIGATION FOR DEVELOPMENT													
Level of Geotechnical Investigation Undertaken	Investigation undertaken meets current design level, however may not meet future design stages or changes	Min-Mod	L	Med	Identification in report that advice is for preliminary design only. Recommendation for internal designer to seek further geotechnical advice should changes occur through design life.	Min	UL	Neg	Yes	Pending	Nil	Yes	-
Misunderstanding of Design	Investigation undertaken inappropriate for proposed structures or omits critical structure	Mod	Pos	Med	Any uncertainty over design to be discussed with designer. Report to include clear description of understanding of design.	Min	UL	Neg	Yes	Closed	Nil	Yes	-
Quality of Geotechnical Investigation Data	Data recovered from field is either inaccurate or include significant gaps	Mod-Maj	Pos	Med	Provision of appropriate training to field staff. Regular monitoring of field operations. Review of logs and samples (if required) to confirm descriptions and ground model adopted. Discussion with field staff if any queries. Reinvestigation undertaken if required.	Min	UL	Low	Yes	Closed	Nil	Yes	-
Quality of Subcontractors Information	Data recovered from field or laboratory is inaccurate or in error	Mod-Maj	Pos	Med	Only use supplier from approved suppliers list. Review of data provided from external groups with field logs prepared by GE, comparison with experience in the region (if available), query to external group over results. Consider exclusion of results if considered anomalous, or possibly retesting.	Min	UL	Low	Yes	Pending	Nil	Yes	-
DESIGN OF BUILDING/STRUCTURE													

IDENTIFY		INHERENT RISK ASSESSMENT			CONTROL	RESIDUAL RISK ASSESSMENT					EXTERNAL CONSIDERATIONS		
Hazard	**Risk (insert all foreseeable risks)**	**Consequences**	**Likelihood**	**Risk Rating and Score**	**Treatment Plan Elimination Measure, Design Initiative or Control by existing solutions and/or recognised Standards**	**Consequences**	**Likelihood**	**Risk Rating and Score**	**Risk eliminated or reasonably reduced**	**Designer Status (closed / pending)**	**Further Control Suggestions**	**Relevant to Project?**	**Responsibility**
Consistency of advice provided with level of design	Risk that design progresses from concept (at time of investigation) to detailed phase without additional geotechnical input	Mod-Maj	Pos	Med	Statement in interpretive and factual reports regarding the level of investigation undertaken and advice provided in relation to level of design at that time (i.e. for preliminary design purposes only). Also include statement that further geotechnical input would be recommended as the design develops to ensure no additional/different hazards or risks are associated with design changes.	Min	UL	Low	Yes	Closed	Nil	Yes	Owner
Regulatory Compliance	Risk of design not complying with relevant Codes of Practice – Safe Design of Structures; Excavation Works	Mod-Maj	UL	Low-Med	Interpretive reports (prepared for internal BCC use only) to include discussion regarding geotechnical risks to H&S for permanent and temporary works	Min	UL	Low	Yes	Pending	Internal review of report by appropriately experienced member of the GE team	Yes	Owner
Standards Compliance	Risk of design not complying with relevant standards, including (where relevant) AS1726, AS1289, AS3798, AS2159, AS4678, AS2870, AS5100	Mod-Maj	UL	Low-Med	Interpretive reports (prepared for internal BCC use only) to include discussion regarding material descriptions, potential earthworks, piled foundations, retaining walls, high-level footings, bridge design	Min	UL	Low	Yes	Pending	Communication with project designers post interpretive report publishing to ensure critical aspects of the project have been addressed and to ensure changes to the design that may impact of geotechnical advice are relayed to the geotechnical designer	Yes	Owner
Specification Compliance	Risk of design not complying with relevant project specific specifications	Mod-Maj	UL	Low-Med	Interpretive reports (prepared for internal BCC use only) to include discussion regarding additional limitations that may apply to the project	Min	UL	Low	Yes	Pending	Communication with project designers post interpretive report publishing to ensure critical aspects of the	Yes	Owner

IDENTIFY		INHERENT RISK ASSESSMENT			CONTROL	RESIDUAL RISK ASSESSMENT					EXTERNAL CONSIDERATIONS		
Hazard	Risk (insert all foreseeable risks)	Consequences	Likelihood	Risk Rating and Score	Treatment Plan Elimination Measure, Design Initiative or Control by existing solutions and/or recognised Standards	Consequences	Likelihood	Risk Rating and Score	Risk eliminated or reasonably reduced	Designer Status (closed / pending)	Further Control Suggestions	Relevant to Project?	Responsibility
											project have been addressed and to ensure changes to the design that may impact of geotechnical advice are relayed to the geotechnical designer		
Effect of Project Works on Site Stability	Risk of temporary excavations or construction work impacting site personnel or equipment	Maj	UL	Med	Interpretive report to include consideration of proposed earthworks or retaining works on site personnel or equipment.	Min	UL	Low	Yes	Closed	Nil	No	Owner
Effect of Project Works on Neighbouring Properties	Risk of temporary excavations or construction work impacting adjoining structures, infrastructure or safety of personnel.	Maj	UL	Med	Interpretive report to include consideration of proposed earthworks or retaining works of adjust structures and/or properties. Advice to include options (i.e. soil/rock batters, various retaining systems) and performance considerations for expected site conditions (i.e. temporary or permanent batter angles, depth of embedment of retention systems, possible lateral movements associated with various retention options). Advice to also include possible site works that should be avoided due to potential for detrimental effects on adjacent structures.	Min	UL	Low	Yes	Closed	Nil	No	Owner/ Geotech Designer
Long term effects of Project Works	Risk of permanent works resulting in instability or poor performance of structure and surrounds	Maj	UL	Med	Interpretive report to include consideration of proposed surcharging/unloading/change to subsurface ground conditions on long term stability, settlement and/or functionality of proposed development.	Min	UL	Low	Yes	Closed	Nil	No	Geotech Designer

IDENTIFY		INHERENT RISK ASSESSMENT			CONTROL	RESIDUAL RISK ASSESSMENT					EXTERNAL CONSIDERATIONS		
Hazard	**Risk (insert all foreseeable risks)**	**Consequences**	**Likelihood**	**Risk Rating and Score**	**Treatment Plan Elimination Measure, Design Initiative or Control by existing solutions and/or recognised Standards**	**Consequences**	**Likelihood**	**Risk Rating and Score**	**Risk eliminated or reasonably reduced**	**Designer Status (closed / pending)**	**Further Control Suggestions**	**Relevant to Project?**	**Responsibility**
					Advice to include options (i.e. soil/rock batters, various retaining systems) and performance considerations for expected site conditions (i.e. permanent batter angles, possible lateral movements associated with various retention options, potential total and differential settlements under changed surcharging conditions).								
Requirements for Construction Inspections	Construction works do not reflect design recommendations	Mod-Maj	UL-Pos	Low-Med	Ensure report includes clear recommendations for inspection (by suitably experienced geotechnical engineering personnel) of critical milestones/Hold Points of project	Min	UL	Low	Yes	Closed	Nil	No	Owner
CONSTRUCTION OF BUILDING/STRUCTURE													
Construction Inspections of critical phases of works	Construction works or temporary works are not undertaken with due care and consideration of geotechnical risks	Mod-Maj	Pos	Med	Undertake geotechnical inspections (by suitably experienced geotechnical engineering personnel) at critical phases of works (identified by milestones/Hold Points).	Min	UL	Low	Yes	Pending	Inspector to provide written advice as soon as practically possible to site personnel to ensure any ground anomalies or poor practices are corrected	No	Owner
Adjustments to Design/Redesign	Unforeseen ground conditions are encountered which require redesign are overlooked/not brought to the attention of the geotechnical designer	Mod-Maj	Pos	Med	Undertake site inspection to assess changed conditions and identify the magnitude of adjustments or redesign required.	Min	UL	Low	Yes	Pending	Geotechnical designer to provide written advice as soon as practically possible to project designer to ensure newly identified geotechnical conditions are addressed	No	Owner

IDENTIFY		INHERENT RISK ASSESSMENT			CONTROL	RESIDUAL RISK ASSESSMENT					EXTERNAL CONSIDERATIONS		
Hazard	Risk (insert all foreseeable risks)	Consequences	Likelihood	Risk Rating and Score	Treatment Plan Elimination Measure, Design Initiative or Control by existing solutions and/or recognised Standards	Consequences	Likelihood	Risk Rating and Score	Risk eliminated or reasonably reduced	Designer Status (closed / pending)	Further Control Suggestions	Relevant to Project?	Responsibility
Project Specific Issues (not identified prior)													

Risk Matrix and Risk Rating

CONDUCTING A RISK ASSESSMENT
1. Identify Tasks/Activities requiring a Risk Assessment. High-risk tasks/activities are of priority over lesser risk tasks/activities.
2. Break the task/activity into sequence of events and sub-activities.
3. Identify the risks associated with each step in the sequence of events comprising the task/activity.
4. Consider transient hazards and points in the process where the task/activity intersects or influences other tasks/activities.
5. Consider type(s) of injuries possible.
6. Consider exposure levels and exposed populations.
7. Consider situations and combinations of situations.
8. Consider work organisation and management of the task/activity.
9. Implement Controls.
10. Review & Monitor. Controls must be effective in reducing the risk to an acceptable level. Normally medium or lower is acceptable.
11. Risk Assessments must be reviewed with employees annually, when work process changes or for New projects.

Consider the following **"Hierarchy of Controls"**

(A) Eliminate Hazard (B) Substitution

(C) Engineering e.g. Soundproofing, Bunding or barrier, remove loose rocks, improve maintenance, ventilation system, trench shoring etc.

(D) Administrative Controls e.g. Training, Site induction, competency assessment, work instructions, job rotation etc.

(E) PPE Personal protective Equipment is the last control when there are no other satisfactory control options.

RATING	Section 1 - MEASURES OF LIKELIHOOD - Value
Almost Certain (A)	The event is expected to occur in most circumstances
Likely (B)	The event will probably occur in most circumstances
Possible (C)	The event might occur at some time
Unlikely (D)	The event could occur at some time
Rare (E)	The event may only occur in exceptional circumstances
IMPACT LEVEL	
Section 2 - MEASURES OF CONSEQUENCE	
CATASTROPHIC (5)	Event causes fatality or multiple fatalities within BCC operating environment.
MAJOR (4)	Event causes extensive injury / injuries resulting in hospitalisation of person/s within BCC operating environments or had the potential to cause extensive injury or death (eg dangerous event).
MODERATE (3)	Any injury / injuries resulting in medical treatment of person / persons within BCC operating environment or had the potential to cause a medical treatment injury (eg near miss).
MINOR (2)	Any injury / injuries resulting in first aid treatment of persons or persons within BCC operating environment or had the potential to cause a medical treatment injury (eg near miss).
INSIGNIFICANT (1)	Event causes no injury / injuries to person or persons within BCC operating environment.

Section 3 - LEVEL OF RISK MATRIX TABLE					
LIKELIHOOD	CONSEQUENCES				
	Insignificant (1)	Minor (2)	Moderate (3)	Major (4)	Catastrophic (5)
Almost Certain (A)	Low + 4	Medium + 16	High 32	Very High 64	Extreme 128
Likely (B)	Low – 2	Medium – 8	Medium + 16	High 32	Very High 64
Possible (C)	Negligible 1	Low + 4	Medium – 8	Medium + 16	High 32
Unlikely (D)	Negligible 0.5	Low – 2	Low + 4	Medium – 8	Medium + 16
Rare (E)	Negligible	Negligible 1	Negligible 1	Low + 4	Low + 4