

JOB NO. GE15/160 OCTOBER, 2015
AUSSIE HYDROVAC SERVICES
GEOTECHNICAL INVESTIGATION
PROPOSED NEW BRIDGE OVER SPRING CREEK
AND APPROACH EMBANKMENTS
STAGE 1
BEAUDESERT TOWN CENTRE BYPASS (BTCB)
BEAUDESERT



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Job No. GE15/160

Ref: 17129

Author: Not relevant

26th October, 2015

Aussie Hydrovac Services
359 California Creek Road
Cornubia QLD 4130

ATTENTION Not relevant

Email: Not relevant @aussiehydrovac.com.au

Dear Sir

RE: GEOTECHNICAL INVESTIGATION – PROPOSED NEW BRIDGE OVER SPRING CREEK AND APPROACH EMBANKMENTS , STAGE 1, BEAUDESERT TOWN CENTRE BYPASS (BTCB), BEAUDESERT

1.0 INTRODUCTION

This report is a factual report only which presents the results of a geotechnical investigation carried out for the proposed new bridge over Spring Creek and approach embankments as part of the Beaudesert Town Centre Bypass (BTCB), Beaudesert. The geotechnical investigation is proposed to provide sufficient geological and geotechnical information to allow the preliminary design of the road embankments, cutting, pavements, bridge and drainage structures. The work was commissioned by the Client, Not relevant from the Aussie HydroVac Services.

From the information provided, it is understood that as part of the proposed BTCB a new bridge and approach embankments is to be constructed over Spring Creek. The site investigation works consist of two (2) boreholes and ten (10) Cone Penetration Tests (CPT). The purpose of the boreholes is to identify key geological/geotechnical features at the bridge location and confirm bedrock level. The CPT's will be used to assess the strength of the subsurface material at each drainage structure, high fill embankment locations and at the bridge piers.

The geotechnical report includes the detailed results of the field work and laboratory testing, together with factual information which includes the following:-

- Subsurface conditions encountered in the boreholes including strength properties of encountered materials, depths to bedrock as well as the strength, weathering profile, defect spacing and RQD percentage of the encountered bedrock. A schematic cross section of boreholes BH1 and BH2 as well as a geotechnical model of each geological unit has also been provided.
- Groundwater depths.
- Factual report detailing findings from geotechnical investigation and containing borelogs and NATA endorsed test results.

All fieldwork including borehole drilling and sampling as well as all laboratory testing including test type and frequency of testing has been carried out in accordance with the Aurecon brief (Ref: 248297) unless advised otherwise.

2.0 METHODOLOGY

The investigation involved the drilling of two (2) boreholes with borehole BH1 being drilled on the northern side of Spring Creek and borehole BH2 being drilled on the southern side of Spring Creek. The boreholes were drilled using a MobileB40L truck mounted drilling rig. The boreholes were each auger drilled using standard hollow flight 100mm diameter augers fitted with a tungsten carbide (TC) bit to depths of 2.5m with washbore drilling techniques used beyond this depth to the refusal depths into moderately weathered (MW) rock or better. Below this depth, NMLC coring was carried out within the less weathered rock. A minimum of 5.0m of at least moderately weathered rock was recovered from boreholes BH1 and BH2 using NMLC coring techniques. Boreholes BH1 and BH2 were terminated at depths of 24.0m and 24.5m, respectively. At the completion of drilling, each borehole was temporarily left open to measure the groundwater depth. A standpipe piezometer was also installed within Borehole BH2.

It should be noted that the boreholes were drilled as close as practical to the locations requested by the Client. Levels and coordinates of the boreholes were provided by the Client.

Standard Penetration Tests (SPT) were carried out at regular depth intervals within each borehole and undisturbed U50 tube samples of the encountered clay soils were also obtained for laboratory testing. The subsurface conditions encountered in the boreholes were logged by an engineering geologist and geotechnical engineer from our Gold Coast office, who also directed all field testing and sampling as well as boxing and photographing the recovered rock core. SPT and disturbed samples of the encountered soils were obtained for Particle Size Distribution (PSD) tests, Atterberg Limits tests, Moisture Content tests, Lime Demand tests and Aggressivity tests. U50 tube samples of the insitu clay soils were also obtained for Shrink-Swell with Swell Pressure tests, Triaxial Strength Compression testing (UU and CU). Point Load Strength Index tests and Unconfined Compressive Strength (UCS) tests were also carried out on rock core samples recovered from the boreholes. A UCS with modulus was also carried out on one of the rock core samples. The Triaxial Strength Compression tests, UCS with Modulus test, Shrink-Swell with Swell Pressure tests and Lime Demand tests were carried out externally by Trilab. The Aggressivity tests were also carried out externally by ALS Environmental.

Cone Penetration Tests (CPT) were also carried out at ten (10) locations as part of the investigation. These tests comprised CPT01 to CPT10, CPT7a, CPT8a and CPT9a with CPT7a also including a Pore Pressure Dissipation test. The CPT tests were carried out by IGS.

The locations and levels of the boreholes and CPT tests for the proposed new structure over Spring Creek are shown in Table 1 below.

TABLE 1 – Borehole/CPT Locations

Borehole/CPT No.	Easting	Northing	RL (m)	Location Description
BH1	498995.3	6904497	44.459	CH41265 Mount Lindsay Highway
BH2	498977.5	6904459	44.280	CH41300 Mount Lindsay Highway
CPT01	499244.5	6905028	51.796	CH40670 Mount Lindsay Highway
CPT02	499152.5	6904834	42.305	CH40895 Mount Lindsay Highway
CPT03	499112.9	6904748	42.470	CH40985 Mount Lindsay Highway
CPT04	499073.1	6904663	42.968	CH41080 Mount Lindsay Highway
CPT05	499000.2	6904508	44.083	CH41250 Mount Lindsay Highway
CPT06	498984.9	6904474	44.446	CH41280 Mount Lindsay Highway
CPT07/CPT07a	498951.5	6904405	44.045	CH41360 Mount Lindsay Highway
CPT08/CPT08a	498925.2	6904348	43.171	CH41430 Mount Lindsay Highway
CPT09/CPT09a	498865.3	6904220	46.728	CH41570 Mount Lindsay Highway
CPT10	498728.1	6903944	41.063	CH575 Beaudesert-Boonah Road

Note: Coordinates provided by Aussie HydroVac Services

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A site plan showing the locations of the boreholes and CPT tests is attached to this report. The logs of the boreholes, including the SPT results are presented in Appendix A to this report. The CPT test results are contained in Appendix B. An interpreted cross section through the boreholes within the footprint of the bridge is shown in Appendix C. Results of the laboratory tests are presented in Appendix D to this report.

3.0 SITE DESCRIPTION

The site for the proposed new bridge structure which is to span Spring Creek is located within a large flat floodplain area associated with an alluvial/ flood plain environment. Spring Creek typically aligns in an east west lineation and is approximately 20m wide at this location with the water flowing towards the west. Both the northern and southern banks of the creek expose natural soil and have been eroded to form moderate sloping banks ranging between approximately 15° and 30° in surface gradient and up to approximately 2.0m in height. The base of the creek appears to be relatively shallow being typically less than 1.0m in depth.

The creek also support moderate to dense tree vegetation within both the northern and southern banks. The approached to both the northern and southern creek banks support grass.

4.0 SUBSURFACE CONDITIONS

The regional geology, local subsurface conditions and groundwater conditions are presented in Sections 4.1, 4.2 and 4.3 respectively.

4.1 Regional Geology

The regional geology of the area forms flood plain and river terrace deposits formed in the Quaternary Geological Time Period. They comprise mainly mud, silt, sand, clay and gravel. These flood plain and river terrace deposits are underlain at depth by bedrock belonging to the Lamington Group which is thought to have been formed in the Tertiary Geological Time Period. The Laminton Group is a volcanic formation which mainly comprises basalt (Moreton Geology 1:500 000, 1980).

4.2 Local Geology

Based on the results of borehole drilling, the subsurface conditions encountered in boreholes BH1 and BH2 comprise sandy clay topsoil at the surface. This topsoil is underlain by alluvial silty clay soil of high plasticity extending to depths of 12.80m and 14.00m These alluvial soils are underlain by residual silty clay soil of medium and medium to high plasticity extending to depths of 14.70m and 17.65m. This residual soil is underlain by bedrock comprising extremely weathered (XW), very low and low strength basalt and andesite which becomes moderately weathered (MW) and slightly weathered (SW) and medium and high strength with some very high strength layering with depth.

The basalt/andesite bedrock is massive with localised conglomeritic zones. It is also vesicular in areas and is moderately jointed with a typical defect spacing ranging between 30mm and 300mm. There also appears to be significant feldspar veining throughout.

A summary of the subsurface conditions encountered in the boreholes are presented in the following subsections whilst a geotechnical model of the subsurface conditions is presented in Section 5.0 of this report and a cross section through the boreholes at the bridge location presented in Appendix C.

4.2.1 Boreholes BH1 and BH2

<i>Topsoil:</i> (Unit 1)	Comprising moist, very stiff, sandy clay topsoil of high plasticity extending to depths of 0.20m and 0.25m, underlain by;
<i>Alluvial Soil:</i> (Unit 2)	Comprising moist, very stiff and hard, silty clay of high plasticity extending to depths of 12.80m and 14.00m with some stiff and stiff to very stiff layers below a depth of approximately 5.0m, underlain by;
<i>Residual Soil:</i> (Unit 3)	Comprising moist, stiff to very stiff, very stiff to hard and hard, silty clay of medium and medium to high plasticity extending to depths of 14.70m and 17.65m, underlain by;
<i>Bedrock:</i> (Units 4 & 5)	Comprising extremely weathered (XW), very low and low strength basalt and andesite which becomes moderately weathered (MW) and slightly weathered (SW) and medium and high strength with some very high strength layering from depths of 18.60m and 19.10mm extending to to depths ranging in excess of 24.00m and 24.50m.

Boreholes BH1 and BH2 were terminated at depths of 24.00m and 24.50m, respectively, using NMLC Rock Coring techniques.

4.2.1 Geotechnical Summary of Subsurface Conditions

A tabular summary of the subsurface conditions encountered in the boreholes is presented in Table 2 below.

TABLE 2 - Summary of the Subsurface Profile Within Boreholes

Borehole No.	Topsoil (m)	Alluvial Soils (m)	Residual Soils (m)	Volcanic Rock (m)	
	Sandy Clay (CH)	Silty Clay (CH)	Silty Clay (CI/CI-CH)	XW-HW Basalt/ Andesite	MW/SW Basalt/ Andesite
BH1	0.00 - 0.25	0.25 - 12.80	12.80 - 14.70	14.70 - 18.60	18.60 - 24.00*
BH2	0.00 - 0.20	0.20 - 14.00	14.00 - 17.65	17.65 - 19.10	19.10 - 24.50*

*Denotes termination depth.

An interpretive cross section of the subsurface conditions through the boreholes is presented in Appendix C to this report.

4.3 Groundwater Conditions

Groundwater was encountered in all boreholes at the time of drilling. Groundwater depths and levels are presented in Table 3 below.

TABLE 3 – Groundwater Depths and Levels

Borehole	Surface RL(m)	Depth (m)	Level RL(m)
BH1	44.459	7.20	37.259
BH2	44.280	6.80	37.480

5.0 GEOTECHNICAL MODEL

A geotechnical model of the subsurface conditions encountered in boreholes BH1 and BH2 during this investigation and the results of the field testing are presented in Table 4 below.

TABLE 4 – Geotechnical Model

Geotechnical Unit	Description	Approximate Design Level to Base of Geotechnical Unit (m)	Typical Material	Typical Consistency	Typical 'N' Values
1	Topsoil	RL44.08 to RL44.21	Sandy Clay (CH)	Very Stiff	N/A (PP: 240-320kPa)
2	Alluvial Soil	RL30.28 to RL31.66	Silty Clay (CH)	Stiff/Stiff to Very Stiff/ Very Stiff/ Very Stiff to Hard/ Hard	7 to 20 (PP: 150->600kPa)
3	Residual Soil	RL26.63 to RL29.76	Silty Clay (Cl/Cl-CH)	Stiff to Very Stiff/Very Stiff to Hard/ Hard	16 to 24 (PP: 200->600kPa)
4	XW/HW Bedrock	RL25.18 to RL25.86	Basalt/Andesite	VLS/LS/LS to MS	52 to 150
5	MW/SW Bedrock	RL19.78 to RL20.46	Basalt/Andesite/ Conglomerate	MS/HS/VHS	N/A

N/A - Not Applicable

6.0 LABORATORY TEST RESULTS

Laboratory testing was carried out on samples specified by Aurecon in boreholes BH1 and BH2. A description of the laboratory tests carried out for this investigation including the test standards are as follows:-

- Atterberg Limits (Q104D, Q105, Q106)
- Particle Size Distribution by Sieve (Q103A)
- Moisture Content (Q102A)
- Shrink-Swell with Swell Pressure (AS1289 7.1.1)
- Lime Demand (Q133)
- Soil Aggressivity (pH, Electrical Conductivity, Chloride and Sulphate – ALS NATA accredited test method)
- Triaxial UU (Unconsolidated Undrained) Multi Stage (AS1289 6.4.1)
- Triaxial CU (Consolidated Undrained) Multi Stage (AS1289 6.4.2)
- UCS (Unconfined Compressive Strength on Rock Core) (AS4133 4.2.1)
- UCS with Modulus (Unconfined Compressive Strength on Rock Core) (AS4133 4.3.1)
- Point Load Strength Index on Rock Core (AS4133 4.4.1)

The results are presented in the Tables below with the NATA endorsed test certificates presented in Appendix D to this report.

TABLE 5 – Atterberg Limits and Particle Size Distribution Test Results

Borehole/CPT No.	Depth (m)	% Material Type			Linear Shrinkage (%)	Liquid Limit (%)	Plasticity Index (%)	Moisture Content (%)	Material
		Clay /Silt	Sand	Gravel					
BH1	2.50-2.70	N/A	N/A	N/A	18.0	68.2	44.2	26.3	Silty CLAY (CH)
*BH1	4.00-4.45	96	4	-	N/A	N/A	N/A	N/A	Silty CLAY (CH)
BH1	7.00-7.45	N/A	N/A	N/A	19.4	63.8	37.2	21.4	Silty CLAY (CH)
BH2	1.00-1.45	89	11	-	21.8	67.2	38.8	32.2	Silty CLAY (CH)
BH2	4.00-4.45	N/A	N/A	N/A	20.6	63.2	34.6	35.6	Silty CLAY (CH)
BH2	5.50-5.86	N/A	N/A	N/A	16.6	59.8	35.6	32.3	Silty CLAY (CH)
CPT02	0.80-1.40	94	6	-	18.0	76.2	33.0	31.8	Silty CLAY (CH)
CPT04	1.50-2.10	N/A	N/A	N/A	13.6	62.6	29.0	30.3	Silty CLAY (CH)
CPT05	0.80-1.40	99	1	-	18.0	70.0	32.6	41.4	Silty CLAY (CH)

*Denotes not enough sample for Atterberg Limits test N/A - Not Applicable
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TABLE 6 – Shrink/Swell Test with Swell Pressure Results

Borehole No.	Material Type	Depth (m)	Swell Pressure (kPa)	Wet Density (t/m ³)	Moisture Content (%)	Shrink (%)	Swell (%)	Shrink Swell Index Iss (%)
BH2	Silty CLAY (CH)	2.50-2.79	100	1.86	36.1	9.7	1.4	5.8

Note: CPT samples could not be tested for shrink/swell as they are U40 tube samples.

TABLE 7 – Lime Demand Test Results

Borehole	BH1							
Depth	0.80-1.45							
Lime (%)	0	1	2	3	4	5	6	7
pH	8.16	10.76	12.02	12.44	12.62	12.69	12.7	12.72
Type and Source of Hydrated Lime	Hydrated Lime from Cement Australia							
pH of Hydrated Lime	12.7							
Lime Demand for -2.36mm Sample (HCL)	5.0							
Borehole	BH2							
Depth	0.20-1.00							
Lime (%)	0	1	2	3	4	5	6	7
pH	7.91	10.81	12.19	12.48	12.65	12.68	12.73	12.74
Type and Source of Hydrated Lime	Hydrated Lime from Cement Australia							
pH of Hydrated Lime	12.7							
Lime Demand for -2.36mm Sample (HCL)	6.0							

TABLE 8 – Soil Aggressivity Test Results (ALS)

Borehole	Depth (m)	pH	Total Soluble Salts (mg/kg)	Moisture Content (%)	Saturated Resistivity (Ohm cm)	Soluble Sulfate by ICPAES (mg/kg)	Chloride Discrete Analysis (mg/kg)
BH1	10.00-10.45	8.6	178	25.2	1680	<10	70
BH1	14.50-14.95	8.5	116	27.4	1780	<10	50
BH2	1.00-1.45	8.5	266	24.2	1220	<10	100
BH2	14.50-14.95	8.5	109	25.1	3640	<10	40

TABLE 9 - Unconsolidated Undrained Triaxial (3 Stage) Test Results

Borehole	Depth (m)	Confining Pressure (kPa)	Major Principal Stress (kPa) (σ_1)	Minor Principal Stress (kPa) (σ_3)	Maximum Deviator Stress (kPa)	Failure Strain (%)
BH2	5.50-5.86	50	290	50	240	2.87
		100	348	100	248	3.76
		200	459	200	259	6.29
BH2	8.50-8.88	50	214	50	164	2.30
		100	282	100	182	3.55
		200	412	200	212	5.30

TABLE 10 – Consolidated Undrained Triaxial (3 Stage) Test Results

Borehole	Depth (m)	Confining Pressure (kPa)	Major Principal Stress (kPa) (σ_1)	Minor Principal Stress (kPa) (σ_3)	Maximum Deviator Stress (kPa)	Failure Strain (%)	Cohesion (kPa)	Friction Angle ($^\circ$)
BH1	5.5-5.8	548	81	16	65	0.98	5	28
		601	182	53	129	2.69		
		705	344	105	239	8.40		

TABLE 11 – Unconfined Compressive Strength of Rock (UCS) Test Results

Borehole No.	Sample Depth (m)	Density (kg/m ³)	Compressive Strength (MPa)	Corrected UCS (MPa)	Young's Modulus (GPa)	Poisson Ratio	Failure Mode
BH1	21.30-21.48	2.13	5.92	5.92	4.96 (Tangent) 5.16 (Secant)	0.118	Shear
BH1	23.30-23.50	2.32	7.5	7.5	N/A	N/A	Multi shear Plane
BH2	20.65-20.85	2.30	16.0	16.0	N/A	N/A	Mixed Mode/ Tensile Dominated
BH2	22.70-22.87	2.40	25.5	25.5	N/A	N/A	Tensile Dominated

N/A - Not Applicable

TABLE 12 – Point Load Strength Index Test Results

Sample Number	Borehole Number	Depth (m)	Is (MPa)	Is(50) (MPa)	Loading Direction	Descriptive Term
522	BH1	18.85	0.34	0.35	Diametral	M*
523	BH1	19.25	1.35	1.37	Diametral	H
523	BH1	19.25	1.36	1.36	Axial	H
524	BH1	19.55	0.25	0.26	Diametral	L-M*
525	BH1	19.90	0.61	0.61	Diametral	M*
526	BH1	20.25	0.48	0.49	Diametral	M
527	BH1	21.50	0.42	0.43	Diametral	M*
527	BH1	21.50	0.92	0.89	Axial	M
528	BH1	22.35	1.84	1.87	Diametral	H
528	BH1	22.35	1.89	1.72	Axial	H
529	BH1	22.60	0.59	0.60	Diametral	M*
530	BH1	23.50	0.92	0.93	Diametral	M*
531	BH1	23.95	1.23	1.24	Diametral	H
512	BH2	19.95	0.67	0.68	Diametral	M*
513	BH2	20.60	0.93	0.94	Diametral	M-H
514	BH2	21.05	1.59	1.61	Diametral	H
515	BH2	21.70	1.29	1.31	Diametral	H
516	BH2	22.45	2.69	2.73	Diametral	H
517	BH2	22.70	0.67	0.68	Diametral	M*
517	BH2	22.70	3.39	3.34	Axial	VH
518	BH2	22.90	1.75	1.78	Diametral	H
518	BH2	22.90	1.27	1.28	Axial	H
519	BH2	23.40	1.75	1.78	Diametral	H
519	BH2	23.40	1.65	1.55	Axial	H
520	BH2	23.80	0.48	0.49	Diametral	M
520	BH2	23.80	0.39	0.41	Axial	M
521	BH2	24.45	4.08	4.14	Diametral	VH

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

*Denotes failed along defect plane

All tested samples in boreholes BH1 and BH2 are basalt/andesite.

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7.0 LIMITS OF INVESTIGATION

This Report has been prepared by Morrison Geotechnic Pty Ltd, and may include contributions from Morrison Geotechnic's officers and employees, sub-contractors, sub-consultants or agents (**Contributors**).

This Report is for the sole benefit and use of the Client, Aussie HydroVac Services, for the sole purpose of providing geotechnical advice and recommendations in respect of the proposed development at Stage 1 of the Beaudesert Bypass, Beaudesert (**Project**). The Report is only intended to address those issues expressly described in the scope of work in the Proposal Letter and this Report.

This Report should not be used or relied upon for any other purpose without Morrison Geotechnic's prior written consent. Morrison Geotechnic and the Contributors do not accept any responsibility or liability in any way whatsoever for the use or reliance of this Report by anyone other than the Client or by anyone for any purpose other than that for which it has been prepared.

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- (b) used or relied upon by any other party; or
- (c) filed with any Governmental agency or other person or quoted or referred to in any public document.

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The information (including technical information and information obtained through discussions) on which this report is based has been provided by the Client and third parties. Morrison Geotechnic and the Contributors:

- (a) have relied upon and presumed the accuracy of this information;
- (b) have not verified the accuracy or reliability of this information (other than as expressly stated in this Report);
- (c) have not made any independent investigations or enquiries in respect of those matters of which it has no actual knowledge at the time of giving this Report to the Client; and
- (d) make no warranty or guarantee, expressed or implied, as to the accuracy or reliability of this information.

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- (a) cannot predict the ground conditions encountered at any untested location because the ground conditions surrounding a test sampling location (or between any two test sampling locations) may be different from the test samples we have obtained;
- (b) is not an environmental, contamination or hazardous materials assessment; may be invalid, incomplete or inaccurate (including errors in the scope of work, investigation methodology, observations, opinions and advice) where the information provided to Morrison Geotechnic was invalid, incomplete or inaccurate;
- (c) is limited to observations of those parts of the site that were accessible at the time of the field investigation and is not based on observations about areas of the site which were inaccessible to the investigation equipment (including slopes, heavily vegetated areas or service corridors); and

- (d) is not a comprehensive representation of the actual site conditions and may only show a reasonable interpretation of conditions encountered at discrete test locations along with general site observations.

No warranty or guarantee, whether express or implied, is made in respect of the geotechnical data, information, advice, opinions and recommendations present in this Report. In recognition of the limited use to be made by the Client of this Report, the Client agrees that, to the maximum extent permitted by law, Morrison Geotechnic and the Contributors shall not be liable for any losses, claims, costs, expenses, damages (whether in statute, in contract or tort for negligence or otherwise) suffered or incurred by the Client or any third party as a result of or in connection with the information, findings, opinions, estimates, recommendations and conclusions provided in the course of this Report.

If further information becomes available, or additional assumptions need to be made, Morrison Geotechnic reserves its right to amend this Report.

If you have any queries please do not hesitate to contact our Gold Coast office.

Yours faithfully



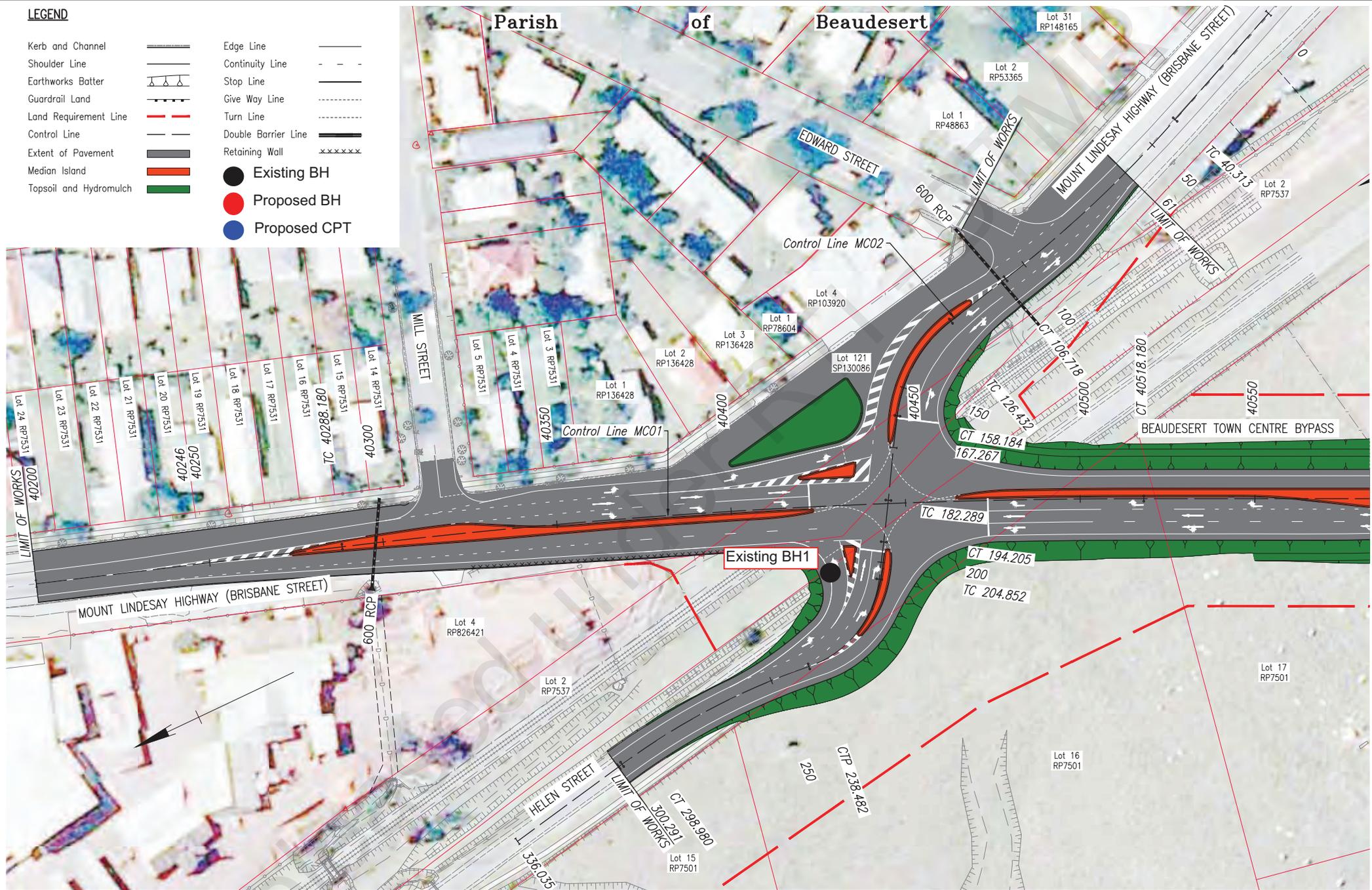
for and on behalf of
MORRISON GEOTECHNIC PTY LIMITED

- Encl Site Plan (Sheet 1 to 6 provided by TMR)
 Appendix A – Borehole Record Sheets (incl Core Photos & Defect Description sheet)
 Appendix B – CPT Test Results
 Appendix C – Cross Section through Borehole at Bridge Location (Section A)
 Appendix D – Laboratory Test Certificates
- Important Information About Your Geotechnical Engineering Report

LEGEND

- Kerb and Channel
- Shoulder Line
- Earthworks Batter
- Guardrail Land
- Land Requirement Line
- Control Line
- Extent of Pavement
- Median Island
- Topsoil and Hydromulch
- Edge Line
- Continuity Line
- Stop Line
- Give Way Line
- Turn Line
- Double Barrier Line
- Retaining Wall
- Existing BH
- Proposed BH
- Proposed CPT

Parish of Beaudesert



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 CAD FILES | P:\20007_SRC_BTCB Staging\Drawings\Final\Rev A\3 General Arrangement.dwg

Joins Drg No. 20007006

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Revisions/Descriptions	Certification	Date	Microfilmed
MR92550			

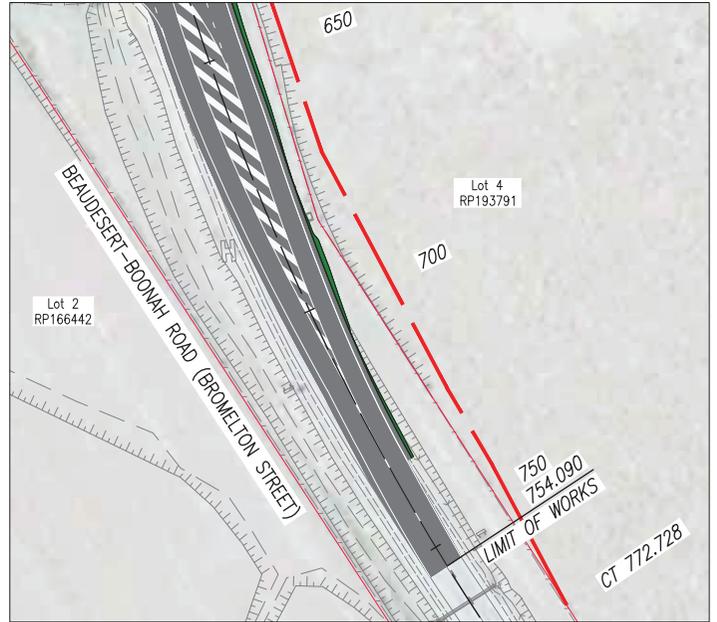
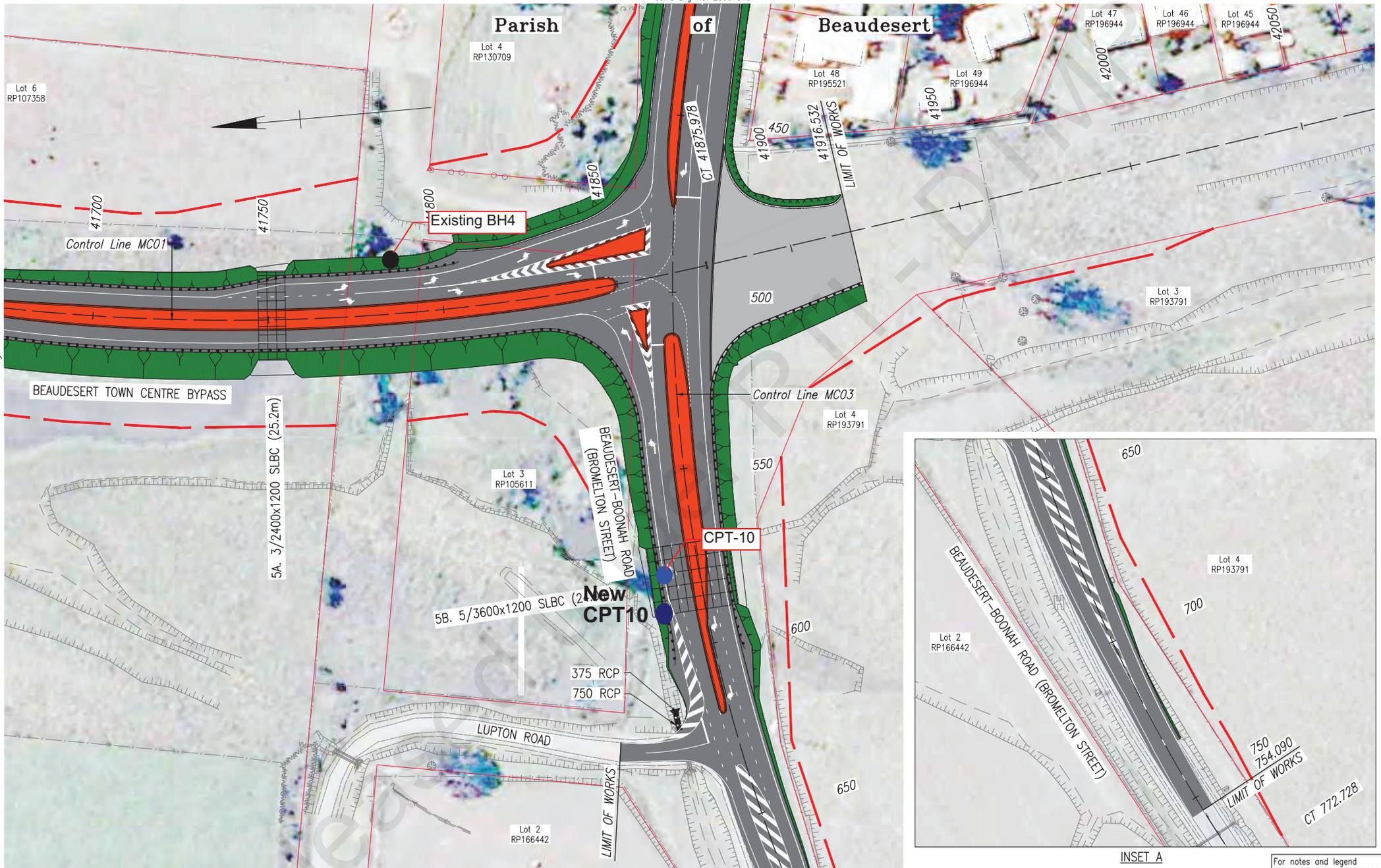
Associated Job Nos	Survey Data	Datum	GDA94
Auxiliary Drg Nos	Horiz. Grid	MGA94	ZONE 56
20007001 to 20007056	Height Origin	AHD DERIVED	
MR92550			

SCENIC RIM REGIONAL COUNCIL	
MOUNT LINDESAY HIGHWAY	
CTL CHGE 40200.000 - 41916.532 (MC01)	
Reference Points	Following RP
RT 13570	
Dist. to start of job (m)	From end to following RP
13570	
Through Chainage from	

BEAUDESERT TOWN CENTRE BYPASS - STAGE 1			
GENERAL ARRANGEMENT PLAN			
SHEET 1 OF 6			
Dr	N/R	ENGINEERING CERTIFICATION (RPEC)	
Designd	N/R	SIGNATURE	
NO.	07382	DATE	30.05.14

Job No.	13/25A/901
Contract No.	
Drawing No.	20007005 A
Series Number	5 of 56

Last Modified: Mon 30, 2014 - 7:44am
 REFS -> X_Design_GEO_ARL (TEE INTERSECTION).dwg ; X_Control.dwg ; X_SURVEY.dwg ; X_REQUIREMENT_LINES_SG_500.dwg ; X_DOSE_COMPLETED.dwg ; X_Cross_Drainage_GEO_ARL.dwg ; X_Match_GEO_ARL (TEE INTERSECTION).dwg ; X_DRWA_SL_SC500.dwg ; X_GENERAL.dwg
 CAD FILES | P:\20007_SRC_BTCB Staging\Drawings\Final\Rev A\3 General Arrangement.dwg



For notes and legend refer to Drg No. 20007005.

Revisions/Descriptions	Certification	Date	Microfilmed
A Original Issue A3			

Associated Job Nos	Survey Data
	Datum GDA94
Auxiliary Drg Nos	Horiz. Grid MGA94 ZONE 56
20007001 to 20007056	Height Origin AHD DERIVED
	Survey Books MR92550

SCENIC RIM REGIONAL COUNCIL	
MOUNT LINDESAY HIGHWAY	
CTL CHGE 40200.000 - 41916.532 (MC01)	
Reference Points	
RT 13870	Following RP
Dist. to start of job (m)	From end to following RP
13870	
Through Chainage from	

Drawn	ENG. AREA	NO.	DATE
N/R	Civil	07382	30.05.14
Designed			
N/R			

Job No.	13/25A/901
Contract No.	
Drawing No.	20007009 A
Series Number	9 of 56

APPENDIX A

BOREHOLE RECORD SHEETS

Released under RTI - DTMR



Solid thinking. Grounded results.



Morrison Geotechnic Pty Ltd

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Engineering Log - Borehole

Borehole No.: BH1

Page: 1 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Eastings: 498995.30 Drilling Rig: Mobile B40L
 Northing: 6904497.00 Driller: Redlands Drilling
 RL: 44.46 Logged By: N/R
 Total Depth: 18.60 Date: 21/09/2015

Drilling Information				Material Description					Test Samples							
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result		
100mm Auger with TC Bit			0.25	Topsoil		CH	Sandy CLAY: Very stiff, high plasticity, dark brown, fine with some medium grained sand, with root matter, moist.		M	VSt		0.1	PP	320 kPa		
			44.0	Alluvial		CH	Silty CLAY: Very stiff, high plasticity, dark brown with a trace of orange brown mottling, with some fine grained sand, moist.		M	VSt		1	SPT	3,5,5, N=10		
		43.0	1.6		CH	Silty CLAY: As above but hard and dark grey brown.		M	H		1.45				PP	350 kPa
Wash Boring with T.C Bit			42.0			CH	Silty CLAY: As above but with a trace of fine grained sand only.		M	H		2.5	U50	PP > 600 kPa		
			41.0	3.5	CH	Silty CLAY: As above but with a trace of fine grained sand only.		M	H		4				SPT	4,5,8, N=13
			40.0	4.0	CH	Silty CLAY: As above but with a trace of fine grained sand only.		M	H							
			40.0			CH	Silty CLAY: As above but stiff to very stiff and grey brown.		M	St-VSt						

Comments:						Authorised by: Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results		
▼ Water level on date shown ► Water inflow ◄ Water outflow	XW Extremely weathered HW Highly weathered MW Moderately weathered SW Slightly weathered FR Fresh	VS Very soft S Soft F Firm St Stiff VSt Very stiff H Hard Moisture D Dry M Moist W Wet	VL Very loose L Loose MD Medium dense D Dense VD Very dense	ELS Extremely low VLS Very low LS Low MS Medium HS High VHS Very high EHS Extremely high	U50 Undisturbed 50mm diam tube. D Disturbed sample. SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm. PP Hand penetrometer estimate of unconfined compressive strength, kPa. S Vane shear value kPa DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section. From AS1289-1993 Methods of Testing Soils for Engineering Purposes		



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Engineering Log - Borehole

Borehole No.: BH1

Page: 2 of 6

Job Number: GE15/160

Client: Aussie Hydro/Vac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498995.30
 Northing: 6904497.00
 RL: 44.46
 Total Depth: 18.60

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 21/09/2015

Drilling Information				Material Description					Test Samples					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
Wash Boring with T.C Bit	SWL	44.46	39.0			CH	Silty CLAY: As above but stiff to very stiff and grey brown.		M	-St VSt		5.5	U50	PP: 210 kPa
			6.0									7	SPT	3,4,5, N=9
			38.0												7.45	PP	200-220 kPa
37.0	8.0	8	CH	Silty CLAY: As above but very stiff	M	VSt	8.5	U50	PP: 220-250 kPa					
36.0	9.0													
35.0	9.2					CH	Silty CLAY: As above but stiff to very stiff		M	-St VSt				
10.0														

Comments:							Authorised by:	
							Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results			
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50	Undisturbed 50mm diam tube.		
▶ Water inflow	HW Highly weathered	S Soft	L Loose	D Disturbed	D	Disturbed sample.		
◀ Water outflow	MW Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.		
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.		
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium high	S	Vane shear value kPa		
		H Hard		HS High	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.		
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes			
		D Dry M Moist W Wet		EHS Extremely high				



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Engineering Log - Borehole

Borehole No.: BH1

Page: 3 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498995.30

Drilling Rig: Mobile B40L

Northing: 6904497.00

Driller: Redlands Drilling

RL: 44.46

Logged By: N/R

Total Depth: 18.60

Date: 21/09/2015

Drilling Information				Material Description					Test Samples					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
Wash Boring with T. C Bit			34.0			CH	Silty CLAY: .As above but stiff to very stiff		M	St-VSt		10.45	SPT	3,3,4, N=7
			11.0			CH	Silty CLAY: .As above but grey mottled orange brown		M	VSt		11.5	SPT	3,4,5, N=9
			33.0			CH	Silty CLAY: As above but with interbedded sandy layers and with a trace of fine sized gravel.		M	VSt		11.9	PP	200-220 kPa
			12.0			CH	Silty CLAY: As above but with interbedded sandy layers and with a trace of fine sized gravel.		M	VSt		13	SPT	5,8,8, N=16
			32.0			CH	Silty CLAY: As above but with interbedded sandy layers and with a trace of fine sized gravel.		M	VSt		13.45	PP	200 kPa
			12.2			CH	Silty CLAY: As above but with interbedded sandy layers and with a trace of fine sized gravel.		M	VSt		14.5	SPT	11,22,30, N=52
		12.8			CI/CH	Sandy CLAY: Stiff to very stiff, medium to high plasticity, orange brown mottled grey, fine to medium grained sand, moist.		M	St-VSt					
		13.0		Residual		CI	Sandy CLAY: As above but hard and medium plasticity.		M	H				
		31.0				CI	Sandy CLAY: As above but hard and medium plasticity.		M	H				
		14.0				CI	Sandy CLAY: As above but hard and medium plasticity.		M	H				
		30.0				BAS	BASALT: Very low strength, extremely weathered, orange brown and brown mottled dark grey.	XW		VLS				
		14.7		Bedrock		BAS	BASALT: Very low strength, extremely weathered, orange brown and brown mottled dark grey.	XW		VLS				
		15.0				BAS	BASALT: Very low strength, extremely weathered, orange brown and brown mottled dark grey.	XW		VLS				

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
▶ Water inflow	HW Highly weathered	S Soft	L Loose	low	D Disturbed sample.
◀ Water outflow	Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S Vane shear value kPa
		H Hard		HS High	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		D Dry M Moist W Wet		EHS Extremely high	



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Engineering Log - Borehole

Borehole No.: BH1

Page: 4 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498995.30
 Northing: 6904497.00
 RL: 44.46
 Total Depth: 18.60

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 21/09/2015

Drilling Information				Material Description					Test Samples							
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result		
Wash Boring with Rock Roller			29.0	Bedrock	[Graphic Log Symbols]	BAS	BASALT: Very low strength, extremely weathered, orange brown and brown mottled dark grey.	XW		VLS						
			15.5			BAS	BASALT: As above but low strength	XW		LS						
			16.0											16	SPT	30/60mm
			28.0													
			17.0													
			27.0													
			18.0			BAS	BASALT: As above but medium strength and highly to moderately weathered	-HW MW		MS						
			26.0													
			18.60m	18.60m: BOREHOLE CONTINUED AS A COREHOLE - ROCK ROLLER REFUSAL												
			19.0													
			25.0													
			20.0													

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Tests & Results
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50 Undisturbed 50mm diam tube.
▶ Water inflow	HW Highly weathered	S Soft	L Loose	low	D Disturbed sample.
◀ Water outflow	Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	Moderately weathered	St Stiff	D Dense	LS Low	PP Hand penetrometer estimate of unconfined compressive strength, kPa.
	SW Slightly weathered	VSt Very stiff	VD Very dense	MS Medium	S Vane shear value kPa
	FR Fresh	H Hard		HS High	DC Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		D Dry M Moist W Wet		EHS Extremely high	



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Engineering Log - Cored Borehole

Borehole No.: BH1

Page:5 of 6

Job Number:GE15/160

Client:Aussie HydroVac Services

Project:Proposed Bridge over Spring Creek

Location:Beaudesert Bypass, Beaudesert

Eastings: 498995.30

Drilling Rig:Mobile B40L

Northing: 6904497.00

Driller:Redlands Drilling

RL: 44.46

Logged By N/R

Total Depth: 24.00

Date:21/09/2015

Drilling Information			Material Description					Rock Mass Defects						
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Class. Code	Description	Weathering	Estimated Strength	IS ₍₅₀₎ MPa	RQD %	Defect Spacing (mm)	Defect Description	
								ELS VLS LS MS HS VHS EHS			30 100 300 1000 3000		type, inclination,planarity, roughness, coating, thickness	
NMLC Coring			29.0	15.5										
			28.5	16.0										
			28.0	16.5										
			27.5	17.0										
			27.0	17.5										
			26.5	18.0										
			26.0	18.5										
			18.7	18.7	Bedrock	△	BAS	BASALT:	SW					-BZ 30mm
			25.5	19.0		△	BAS	Very high strength, slightly weathered, dark (grey, vesicular (possible andesite)	MW-SW		0.35			-J10°, Un/Ro,Cn,C
			19.1	19.1		△	BAS	As above but high strength and moderately to slightly weathered, random feldspar veining throughout	MW-SW					-J45°, Un/Ro,Cn,O
		19.24	19.24		△	BAS	As above but with no feldspar veining.	MW-SW		1.36/1.37			-J10°, Un/Ro,Cn,C	
		19.3	19.3		△	BAS	As above but with no feldspar veining.	MW-SW			15%		-VN5°, Feldspar	
		25.0	19.5		△	BAS	As above but feldspar veining throughout.	MW-SW		0.26*			-SZ10°, 10mm	
		19.84	19.84		△	CON	CONGLOMERATE: High strength, moderately weathered, dark grey.	MW		0.61			-J5°, Pl/Sm,Cn,O	
		24.5	20.0		△								-J10°, Un/Ro,Ct,O some VLS	
													-J65°, Un/Ro,Vr,O	
													Random Feldspar veining, 60mm	
													-SZ15° 20mm	
													-BZ 40mm some VLS	
													-BZ 30mm	
													-J20°, Pl/Ro,Cn,O	
													-J40°, Pl/Sm,Cn,O	

Comments:

Authorised by:

Date:

Water	Weathering	Consistency	Density	Rock Strength	Defects
▼ Water level — on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	Refer to Attached Defect Description Sheet
▶ Water inflow	HW Highly weathered	F Firm	L Loose	VLS Very low	
◀ Water outflow	MW Moderately weathered	St Stiff	MD Medium dense	LS Low	
	SW Slightly weathered	VSt Very stiff	D Dense	MS Medium	
	FR Fresh	H Hard	VD Very dense	HS High	
		Moisture		VHS Very high	
		D Dry M Moist W Wet		EHS Extremely high	



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Engineering Log - Cored Borehole

Borehole No.:BH1

Page:6 of 6

Job Number:GE15/160

Client:Aussie HydroVac Services

Project:Proposed Bridge over Spring Creek

Location:Beaudesert Bypass, Beaudesert

Eastings: 498995.30

Drilling Rig:Mobile B40L

Northings: 6904497.00

Driller:Redlands Drilling

RL: 44.46

Logged By N/R

Total Depth: 24.00

Date:21/09/2015

Drilling Information				Material Description				Rock Mass Defects					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Class. Code	Description	Weathering	Estimated Strength	IS ₍₅₀₎ MPa	RQD %	Defect Spacing (mm)	Defect Description
								ELS VLS LS MS HS VHS EHS			30 100 300 1000 3000		type, inclination,planarity, roughness, coating, thickness
NMLC Coring			20.05			BAS	BASALT/ANDESITE: Medium strength, moderately to slightly weathered, dark grey.	MW-SW					CZ 50mm
			20.3			BAS	BASALT/ANDESITE: As above but feldspar veining throughout	MW-SW					BZ 300mm
			20.5			BAS	BASALT/ANDESITE: As above but no feldspar veining, vesicles present and lenses of feldspar.	MW-SW					J5° Un/Ro,Cn,O J15° Un/Ro,Cn,O CZ 20mm SZ40° 20mm J5° Un/Ro,Cn,O J10° Un/Ro,Cn,O J50° Pl/Ro,Cn,O J40° Un/Ro,Cn,O
			21.0			BAS	BASALT/ANDESITE: As above but high strength and slightly weathered.	SW					J5° Pl/Ro,Cn,O
			21.5			BAS	BASALT/ANDESITE: As above but high strength.	SW					J35° Pl/Ro,Ct,C, Cly 7mm J25° Un/Ro,Cn,O BZ 50mm
			21.7			BAS	BASALT/ANDESITE: As above but with feldspar veining throughout.	SW					J15° Un/Ro,Cn,O
		22.0											
		22.5											
		22.0											
		22.5											
		22.55				BAS	BASALT/ANDESITE: As above but with feldspar veining throughout.	SW					J30° Un/Sm,Cn,O J5° Pl/Ro,Cn,O J5° Pl/Ro,Cn,O Random feldspar veining, 260mm J5° Pl/Ro,Cn,O Random feldspar veining, 20mm J5° Pl/Ro,Cn,C J5° Pl/Ro,Cn,C J25° Un/Ro,Cn,C J15° Un/Ro,Cn,O J30° Un/Ro,Cn,O VN5° Feldspar J15° Un/Ro,Cn,C J5° Pl/Ro,Cn,C
		21.5											
		23.0											
		21.0											
		23.5											
		20.5											
		24.0											
		20.0					24.00m: BOREHOLE TERMINATED						
		19.5											
		24.5											
		25.0											

Comments:				Authorised by:			
				Date:			
Water	Weathering	Consistency	Density	Rock Strength	Defects		
▼ Water level — on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	Refer to Attached Defect Description Sheet		
▶ Water inflow	HW Highly weathered	S Soft	L Loose	VLS Very low			
◀ Water outflow	MW Moderately weathered	F Firm	MD Medium	LS Low			
	SW Slightly weathered	St Stiff	D Dense	MS Medium			
	FR Fresh	H Hard	VD Very dense	HS High			
		Moisture		VHS Very high			
		D Dry M Moist W Wet		EHS Extremely high			

Job Number: GE15/160
 Client: Aussie HydroVac Services
 Project: Beaudesert Town Centre Bypass, Stage 1 - Bridge Over Spring Creek
 Location: Lot 1 on RP7503, Helen Street, Beaudesert
 Borehole: BH1
 Depth Range: 18.60m to 24.00m



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Engineers: Not relevant
 Geologists:
 Laboratory: RTI 135/06103 - File 1 - Page 24 of 85

Map Description :	Core Photo - Borehole BH1: 18.60m to 24.00m		
Client :	Aussie HydroVac Services		
Project :	Geotechnical Investigation - Beaudesert Town Centre Bypass, Stage 1, Bridge Over Spring Creek		
Project No :	GE15/160	Date: 24/9/15	Scale : Not to Scale



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Engineering Log - Borehole

Borehole No.: BH2

Page: 1 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498977.50
 Northing: 6904459.00
 RL: 44.28
 Total Depth: 19.10

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 22/09/2015

Drilling Information				Material Description					Test Samples					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
100mm Auger with TC Bit			44.0	Topsoil		CH	Sandy CLAY: Very stiff, high plasticity, dark brown, fine to medium grained sand, with root matter, moist.		M	VSt		0.2	PP	240 kPa
			43.0	Alluvial		CH	Silty CLAY: Very stiff, high plasticity, dark brown, with a trace of fine to medium grained sand, moist.		M	VSt		1.0	D	
Wash Boring with T.C Bit			42.0			CH	Silty CLAY: As above but dark grey brown/black.		M	VSt		1.45	SPT	4,6,7, N=13
			41.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		1.8	PP	310 kPa
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		2.0	PP	240 kPa
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		2.5	U50	PP: 340 kPa
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		3.0		
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		3.5		
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		4.0		
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		4.45	SPT	3,5,6, N=11
			40.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand.		M	VSt		4.45	PP	250-270 kPa

Comments:						Authorised by:
						Date:
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results	
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50	Undisturbed 50mm diam tube.
▶ Water inflow	HW Highly weathered	S Soft	L Loose	low	D	Disturbed sample.
◀ Water outflow	MW Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S	Vane shear value kPa
		H Hard		HS High	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.
		Moisture		VHS Very high		From AS1289-1993 Methods of Testing Soils for Engineering Purposes
		D Dry M Moist W Wet		EHS Extremely high		



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Engineering Log - Borehole

Borehole No.: BH2

Page: 2 of 6

Job Number: GE15/160

Client: Aussie Hydro/Vac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498977.50
 Northing: 6904459.00
 RL: 44.28
 Total Depth: 19.10

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 22/09/2015

Drilling Information				Material Description					Test Samples						
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result	
Wash Boring with T. C Bit	SWL	44.28	39.0			CH	Silty CLAY: As above but dark grey brown with minor orange brown mottling and with some fine grained sand		M	VSt		5.5	U50	290-320 kPa	
			6.0			CH	Silty CLAY: As above but with some fine to medium grained sand.		M	VSt					
			38.0			CH	Silty CLAY: As above but stiff to very stiff.		M	St-VSt		7	SPT	4,4,6, N=10	
			7.0			CH	Silty CLAY: As above but grey brown and stiff.		M	St		7.45	PP	190-240 kPa	
			37.0			CH	Silty CLAY: As above but grey brown and stiff.		M	St		8.5	U50	150-170 kPa	
			8.0												
			36.0												
			8.5												
			9.0												
			35.0												
			10.0												

Comments:						Authorised by:	
						Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results		
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50	Undisturbed 50mm diam tube.	
▶ Water inflow	HW Highly weathered	S Soft	L Loose	D Disturbed	D	Disturbed sample.	
◀ Water outflow	MW Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.	
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.	
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S	Vane shear value kPa	
		H Hard		HS High	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.	
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes		
		D Dry M Moist W Wet		EHS Extremely high			



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Engineering Log - Borehole

Borehole No.: BH2

Page: 3 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498977.50
 Northing: 6904459.00
 RL: 44.28
 Total Depth: 19.10

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 22/09/2015

Drilling Information				Material Description						Test Samples				
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
Wash Boring with T.C Bit			10			CH	Silty CLAY: As above but very stiff.		M	VSt		10	SPT	3,5,6, N=11
			34.0									10.45	PP	210 kPa
			11.0			CH	Sandy CLAY: Very stiff, high plasticity, brown with grey mottling, fine to medium grained sand, with a trace of fine sized gravel, moist.		M	VSt		11.5	SPT	6,7,10, N=17
			33.0									11.9	PP	350 kPa
			12.0			CH	Sandy CLAY: As above but grey mottled brown and orange brown and with minor interbedded layers of fine to coarse sized gravel.		M	VSt		13	SPT	6,10,10, N=20
			32.0									13.45	PP	320 kPa
			12.8			CH	Sandy CLAY: As above but grey mottled brown and orange brown and with minor interbedded layers of fine to coarse sized gravel.		M	VSt		14.5	SPT	10,8,15, N=23
			13.0			CI	Sandy CLAY: Very stiff to hard, medium plasticity, orange brown mottled grey, fine to medium grained sand, with some fine sized gravel, moist.		M	VSt-H				
			14.0	Residual										
			30.0											
			15.0											

Comments:						Authorised by:	
						Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results		
▼ Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50	Undisturbed 50mm diam tube.	
▶ Water inflow	HW Highly weathered	S Soft	L Loose	D Disturbed	D	Disturbed sample.	
◀ Water outflow	MW Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.	
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.	
	FR Fresh	VSt Very stiff	VD Very dense	MS Medium	S	Vane shear value kPa	
		H Hard		HS High	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.	
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes		
		D Dry M Moist W Wet		EHS Extremely high			



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Engineering Log - Borehole

Borehole No.: BH2

Page: 4 of 6

Job Number: GE15/160

Client: Aussie HydroVac Services

Project: Proposed Bridge over Spring Creek

Location: Beaudesert Bypass, Beaudesert

Easting: 498977.50
 Northing: 6904459.00
 RL: 44.28
 Total Depth: 19.10

Drilling Rig: Mobile B40L
 Driller: Redlands Drilling
 Logged By: N/R
 Date: 22/09/2015

Drilling Information				Material Description					Test Samples					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Classification Code	Description	Weathering	Moisture	Consistency - Density - Strength	DC Test Results	Test Depth	Tests	Sample/Result
Wash Boring with Rock Roller			29.0	Residual		CI	Sandy CLAY: Very stiff to hard, medium plasticity, orange brown mottled grey, fine to medium grained sand, with some fine sized gravel, moist.		M	VSt-H				
			15.5			CI	Sandy CLAY: As above but hard and with a trace of fine sized gravel only.		M	H				
			16.0									16	SPT	8,11,13, N=24
			28.0									16.45	PP	380-400 kPa
			17.0											
		27.0												
		17.65		Bedrock		BAS	BASALT: Very low strength, extremely weathered, dark grey mottled orange brown.	XW		VLS		17.5	SPT	19,30/150mm
		18.0												
		26.0												
		18.6				BAS	BASALT: As above but low strength and extremely to highly weathered.	XW-HW		LS				
		19.0				BAS	BASALT: As above but medium strength and highly to moderately weathered.	HW-MW		MS		19	SPT	30/100mm (HB)
		19												
		25.0					19.10m: BOREHOLE CONTINUED AS A COREHOLE							
			20.0											

Comments:						Authorised by:	
						Date:	
Water	Weathering	Consistency	Density	Rock Strength	Tests & Results		
Water level on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	U50	Undisturbed 50mm diam tube.	
Water inflow	HW Highly weathered	S Soft	L Loose	low	D	Disturbed sample.	
Water outflow	MW Moderately weathered	F Firm	MD Medium dense	VLS Very low	SPT	Standard Penetration Test, N = number of blows to drive 50mm sampler 300mm with a 63.6kg hammer falling 762mm.	
	SW Slightly weathered	St Stiff	D Dense	LS Low	PP	Hand penetrometer estimate of unconfined compressive strength, kPa.	
	FR Fresh	VSt Very stiff	VD Verv dense	MS Medium	S	Vane shear value kPa	
		H Hard		HS High	DC	Dynamic Cone test, 9.09kg hammer, fall 508mm, driving 20mm, 30 deg taper cone fitted to rods of smaller section.	
		Moisture		VHS Very high	From AS1289-1993 Methods of Testing Soils for Engineering Purposes		
		D Dry M Moist W Wet		EHS Extremely high			



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Engineering Log - Cored Borehole

Borehole No.: BH2

Page:5 of 6

Job Number:GE15/160

Client:Aussie HydroVac Services

Project:Proposed Bridge over Spring Creek

Location:Beaudesert Bypass, Beaudesert

Eastings: 498977.50

Drilling Rig:Mobile B40L

Northing: 6904459.00

Driller:Redlands Drilling

RL: 44.28

Logged By N/R

Total Depth: 24.50

Date:22/09/2015

Drilling Information				Material Description				Rock Mass Defects					
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Class. Code	Description	Weathering	Estimated Strength	IS ₍₅₀₎ MPa	RQD %	Defect Spacing (mm)	Defect Description
								ELS VLS LS MS HS VHS EHS			30 100 300 1000 3000		type, inclination,planarity, roughness, coating, thickness
			29.0										
			15.5										
			28.5										
			16.0										
			28.0										
			16.5										
			27.5										
			17.0										
			27.0										
			17.5										
			26.5										
			18.0										
			26.0										
			18.5										
			25.5										
			19.0				COMMENCE NMLC CORING @ 19.10m						
NMLC Coring			25.0	Bedrock	▽ ▲	BAS	BASALT: Medium strength, moderately weathered, dark grey, highly fractured to fragmented, vesicular (possible andesite).	MW					HFZ 250mm
			19.5										
			19.55										
			24.5				BASALT: As above but high strength, moderately to slightly weathered, fractured and with minor feldspar veining.	MW-SW			9%		CZ 30mm VN5°, Feldspar CZ 20mm J5°Un/Ro,Cn,O J20°, Un/Ro,Cn,O CZ 20mm J5°, Un/Ro,Cn,O BZ 90mm VN15°, Feldspar J5°Un/Ro,Cn,O
			20.0							0.68			

Comments:				Authorised by:			
				Date:			
Water	Weathering	Consistency	Density	Rock Strength	Defects		
▼ Water level — on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	Refer to Attached Defect Description Sheet		
▶ Water inflow	HW Highly weathered	F Firm	L Loose	VLS Very low			
◀ Water outflow	MW Moderately weathered	St Stiff	MD Medium dense	LS Low			
	SW Slightly weathered	VSt Very stiff	D Dense	MS Medium			
	FR Fresh	H Hard	VD Very dense	HS High			
		Moisture		VHS Very high			
		D Dry M Moist W Wet		EHS Extremely high			



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Engineering Log - Cored Borehole

Borehole No.:BH2

Page:6 of 6

Job Number:GE15/160

Client:Aussie HydroVac Services

Project:Proposed Bridge over Spring Creek

Location:Beaudesert Bypass, Beaudesert

Eastings: 498977.50

Drilling Rig:Mobile B40L

Northing: 6904459.00

Driller:Redlands Drilling

RL: 44.28

Logged By N/R

Total Depth: 24.50

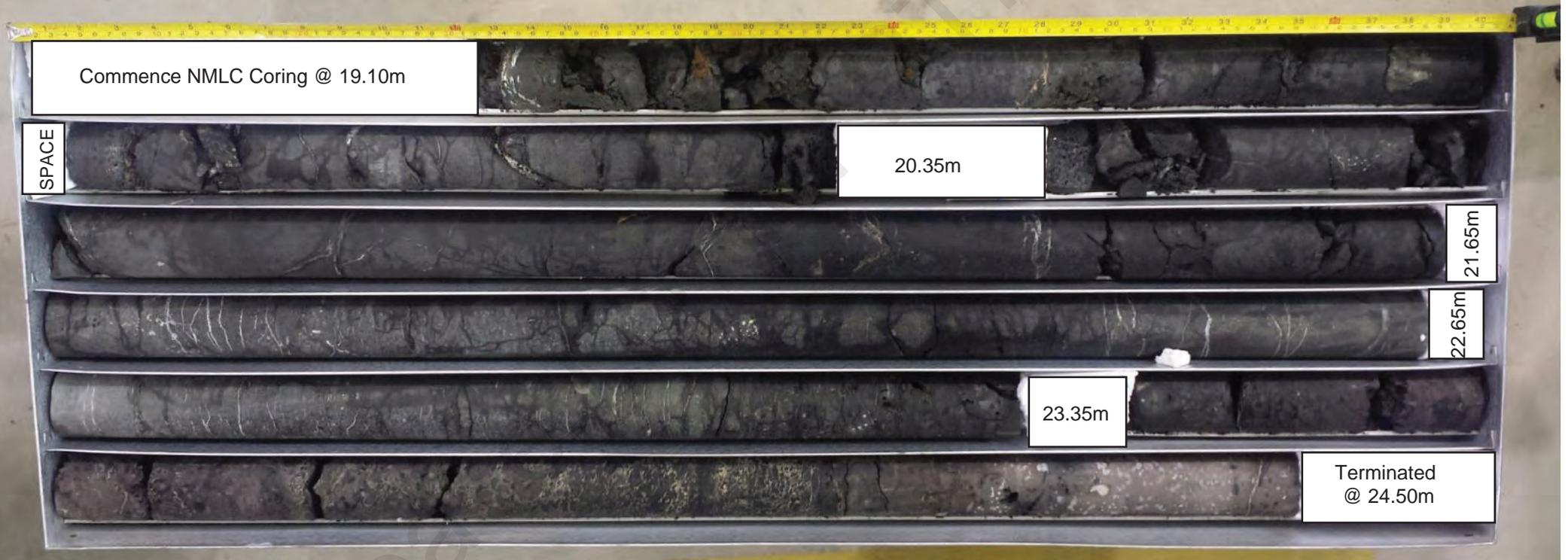
Date:22/09/2015

Drilling Information			Material Description				Rock Mass Defects							
Drill Method	Water	RL	Hole Depth (m)	Soil Origin	Graphic Log	Class. Code	Description	Weathering	Estimated Strength	IS ₍₅₀₎ MPa	RQD %	Defect Spacing (mm)	Defect Description	
NMLC Coring			24.0			BAS	BASALT: As above but high strength, moderately to slightly weathered, fractured and with minor feldspar veining	MW-SW			9%		J10°Un/Ro,Cn,O, VN5°Feldspar, SZ 30mm J5°Un/Ro,Cn,O, J5°Pl/Ro,Cn,C, BZ 190mm	
			20.5 20.5			BAS	BASALT: As above but high strength, slightly weathered, with feldspar veining.	SW			0.94		J5°Pl/Ro,Cn,O, BZ 70mm	
			23.5								1.61		VN35°Feldspar, Random feldspar veining, 30mm J5°Un/Ro,Cn,O, J15°Un/Ro,Cn,O, VN15°Feldspar, CZ 40mm J25°Un/Ro,Cn,O, J35°Un/Ro,Cn,C, VN15°Feldspar, J5°Un/Ro,Cn,O, CZ 50mm	
			21.0								1.31		J10°Pl/Ro,Cn,O, J10°Un/Ro,Cn,O, SZ 20mm J10°Pl/Ro,Cn,O, J5°Pl/Ro,Cn,O, Random feldspar veining, 70mm	
			23.0								2.73		J5°Un/Ro,Cn,O, J25°Un/Ro,Cn,O, HFZ 50mm J10°Pl/Ro,Cn,O, J5°Pl/Ro,Cn,O, HFZ 90mm	
			21.5								0.68*/3.34		Random feldspar veining, 150mm SZ15°20mm, Cly, VN5°Feldspar, J15°Un/Ro,Cn,C, Random feldspar veining, 150mm	
			22.5			BAS	BASALT: As above but with feldspar veining throughout.	SW				1.78*/1.28*		J5°Un/Ro,Cn,O, J5°Un/Ro,Cn,O, Random feldspar veining, 130mm
			22.0			BAS	BASALT: As above but with no feldspar veining.	SW				1.78/1.55		J10°Un/Ro,Cn,C, HFZ 130mm
			22.0			BAS	BASALT: As above but with no feldspar veining.	SW						J5°Pl/Ro,Cn,O, BZ 20mm
			22.4			BAS	BASALT: As above but very high strength and with feldspar veining throughout.	SW				0.49/0.41		J5°Un/Ro,Cn,O, J5°Pl/Ro,Cn,C, J10°Un/Ro,Cn,O, J15°Un/Ro,Cn,O,
			22.5									63%		J10°Un/Ro,Cn,C, J10°Un/Ro,Cn,O,
			23.4									61%		
		23.5			BAS	BASALT/ANDESITE: As above but with vesicles present.	SW							
		23.8			CON	CONGLOMERATE: Medium strength, moderately weathered, dark grey.	MW							
		24.0												
		24.2			BAS	BASALT/ANDESITE: High to very high strength, moderately weathered, grey brown, with vesicles present, with minor feldspar veining.	MW				4.14			
		24.5												
		19.5					24.50m: BOREHOLE TERMINATED							
		25.0												

Comments: _____
 Authorised by: _____
 Date: _____

Water	Weathering	Consistency	Density	Rock Strength	Defects
▼ Water level — on date shown	XW Extremely weathered	VS Very soft	VL Very loose	ELS Extremely low	Refer to Attached Defect Description Sheet
▶ Water inflow	HW Highly weathered	F Firm	L Loose	VLS Very low	
◀ Water outflow	MW Moderately weathered	St Stiff	MD Medium	LS Low	
	SW Slightly weathered	VSt Very stiff	D Dense	MS Medium	
	FR Fresh	H Hard	VD Very dense	HS High	
		Moisture		VHS Very high	
		D Dry M Moist W Wet		EHS Extremely high	

Job Number: GE15/160
 Client: Aussie HydroVac Services
 Project: Beaudesert Town Centre Bypass, Stage 1 - Bridge Over Spring Creek
 Location: Lot 43 on RP7501, Helen Street, Beaudesert
 Borehole: BH2
 Depth Range: 19.10m to 24.50m



MORRISON
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Engineers: Not relevant
 Geologists:
 Laboratory: RTI 135/06103 - File 1 - Page 31 of 85

Map Description :	Core Photo - Borehole BH2: 19.10m to 24.50m		
Client :	Aussie HydroVac Services		
Project :	Geotechnical Investigation - Beaudesert Town Centre Bypass, Stage 1, Bridge Over Spring Creek		
Project No :	GE15/160	Date: 24/9/15	Scale : Not to Scale

Defect Description Sheet

Discontinuity Description: Refer to AS1726-1993, Table A10.

Anisotropic Fabric		Roughness (e.g. Planar, Smooth is abbreviated PI / Sm)			Class	Other		
BED	Bedding	Stepped (Stp)	Rough or irregular (Ro)		I	Cly	Clay	
FOL	Foliation		Smooth (Sm)		II	Fe	Iron	
LIN	Mineral lineation		Slickensided (SI)		II	Co	Coal	
Defect Type		Undulating (Un)	Rough (Ro)		IV	Carb	Carbonaceous	
LM	Lamination Parting		Smooth (Sm)		V	Sinf	Soil Infill Zone	
BP	Bedding Parting		Slickensided (SI)		VI	Qz	Quartz	
CLV	Cleavage / Foliation Parting	Planar (PI)	Rough (Ro)		VII	CA	Calcite	
J, Js	Joint, Joints		Smooth (Sm)		VIII	Chl	Chlorite	
SZ	Sheared Zone		Slickensided (SI)		IX	Py	Pyrite	
CZ	Crushed Zone	Infilling			Aperture		Int	Intersecting
BZ	Broken Zone	Clean	Cn	No visible coating or infill	Closed	C	Inc	Incipient
HFZ	Highly Fractured Zone	Stain	St	Surfaces discoloured by mineral	Open	O	DI	Drilling Induced
AZ	Alteration Zone	Veneer	Vr	Visible mineral or soil infill <1mm	Filled	F	H	Horizontal
VN	Vein	Coating	Ct	Visible mineral or soil infill >1mm	Tight	T	V	Vertical

Note: Describe 'Zones' and 'Coatings' in terms of composition and thickness (mm).

Discontinuity Spacing: On the geotechnical borehole log, a graphical representation of defect spacing Vs depth is shown. This representation takes into account all the natural rock defects occurring within a given depth interval, excluding breaks induced by the drilling / handling of core. Refer to AS1726-1993, BS5930-1999.

Defect Spacing			Bedding Thickness (Sedimentary Rock Stratification)		Defect Spacing in 3D	
Spacing/Width (mm)	Descriptor	Symbol	Descriptor	Spacing/Width (mm)	Term	Description
			Thinly Laminated	< 6	Blocky	Equidimensional
<20	Extremely Close	EC	Thickly Laminated	6 – 20	Tabular	Thickness much less than length or width
20 – 60	Very Close	VC	Very Thinly Bedded	20 – 60	Columnar	Height much greater than cross section
60 – 200	Close	C	Thinly Bedded	60 – 200	Defect Persistence (areal extent) trace length of defect given in metres	
200 – 600	Medium	M	Medium Bedded	200 – 600		
600 – 2000	Wide	W	Thickly Bedded	600 – 2000		
2000 – 6000	Very Wide	VW	Very Thickly Bedded	> 2000		
>6000	Extremely Wide	EW				

Symbols: The list below provides an explanation of terms and symbols used on the geotechnical borehole, test pit and penetrometer logs.

Test Results				Test Symbols	
PI	Plasticity Index	c'	Effective Cohesion	DCP	Dynamic Cone Penetrometer
LL	Liquid Limit	c_u	Undrained Cohesion	SPT	Standard Penetration Test
LI	Liquidity Index	c'_R	Residual Cohesion	CPTu	Cone Penetrometer (Piezocone) Test
DD	Dry Density	ϕ'	Effective Angle of Internal Friction	PANDA	Variable Energy DCP
WD	Wet Density	ϕ_u	Undrained Angle of Internal Friction	PP	Pocket Penetrometer Test
LS	Linear Shrinkage	ϕ'_R	Residual Angle of Internal Friction	U50	Undisturbed Sample 50 mm diameter
MC	Moisture Content	c_v	Coefficient of Consolidation	U100	Undisturbed Sample 100mm diameter
OC	Organic Content	m_v	Coefficient of Volume Compressibility	UCS	Uniaxial Compressive Strength
WPI	Weighted Plasticity Index	$c_{\alpha e}$	Coefficient of Secondary Compression	Pm	Pressuremeter
WLS	Weighted Linear Shrinkage	e	Voids Ratio	FSV	Field Shear Vane
DoS	Degree of Saturation	ϕ'_{cv}	Constant Volume Friction Angle	DST	Direct Shear Test
APD	Apparent Particle Density	q_t / q_c	Piezocone Resistance (Tip / Sleeve)	PR	Penetration Rate
s_u	Undrained Shear Strength	q_d	PANDA Cone Resistance	A	Point Load Test (axial)
q_u	Unconfined Compressive Strength	$I_{s(50)}$	Point Load Strength Index	D	Point Load Test (diametral)
R	Total Core Recovery	RQD	Rock Quality Designation	L	Point Load Test (irregular lump)

Groundwater Symbols:

 28/11/13	Groundwater level on the date shown		Water Inflow		Water Outflow
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APPENDIX B

CPT TEST RESULTS

Released under RTI - DTMR

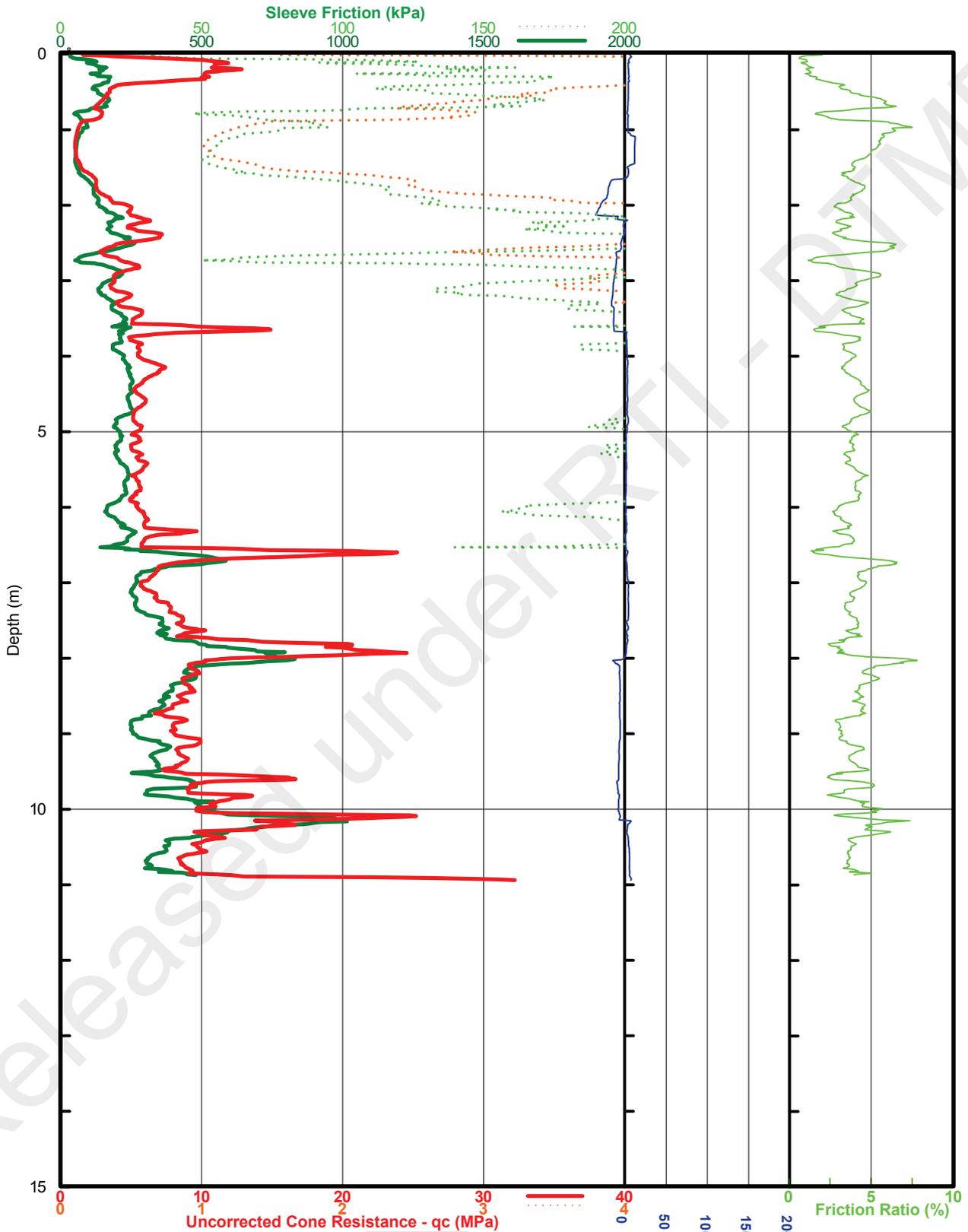


Solid thinking. Grounded results.

CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-01



J N C15-09-07
T s 24/09/2015
CP P si 56 J 0499246, 6905029
CP F WR -84
i Es
N 15 F P. 11105
P di 0.00
issi i T ss @ N/A
T i d T Eq i is

T s dB N/R
T s
c dB N/R

Pore Pressure (kPa)

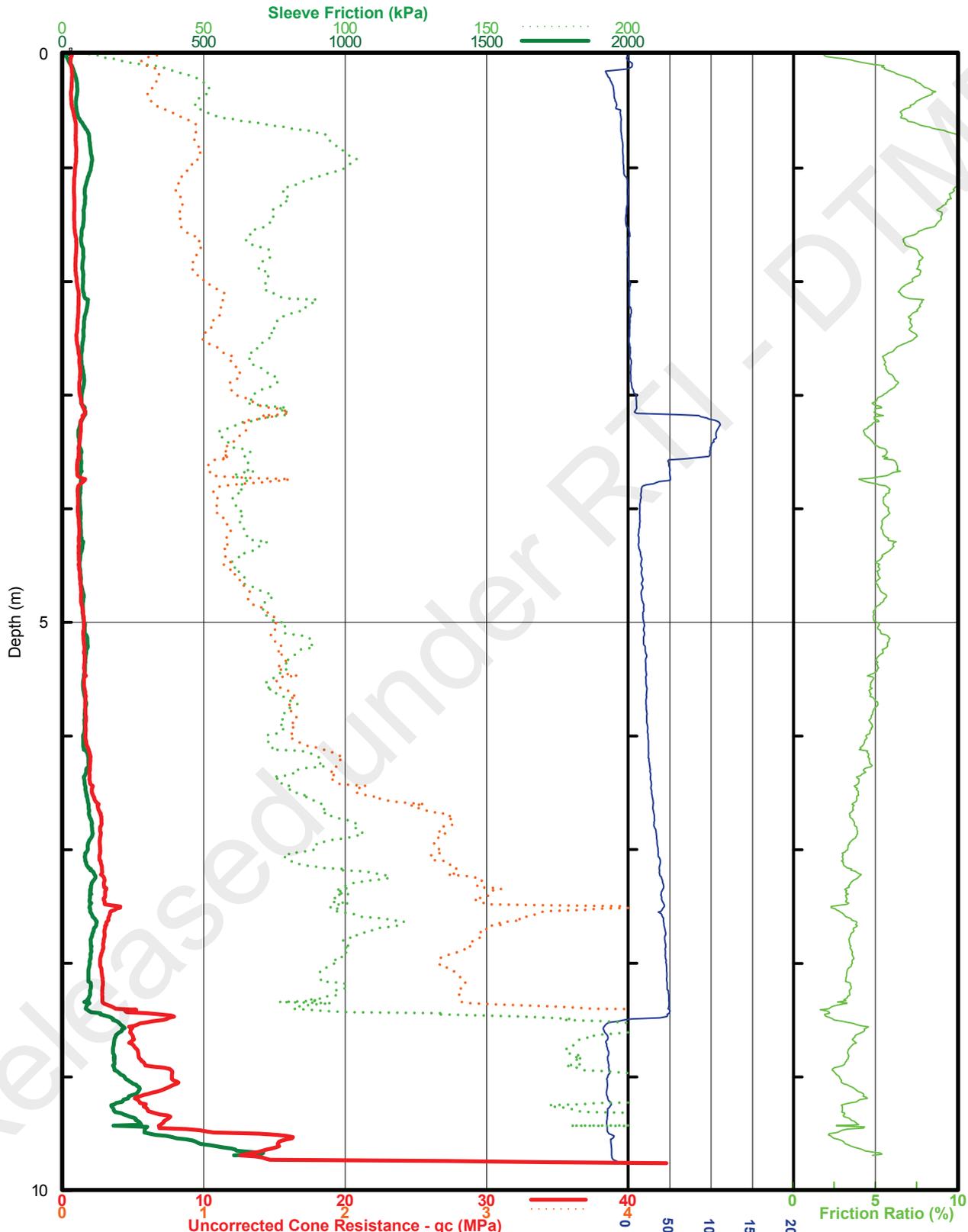
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Pty Ltd



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-02



J N C15-09-07
T s 25/09/2015
CP P si 56 J 0499153, 6904836
CP F WR -84
i Es
N 15 F P. 11105
P di 0.00
issi i T s s @ N/A
T i d T Eq i is

T s dB N/R
T s c dB N/R

Pore Pressure (kPa)

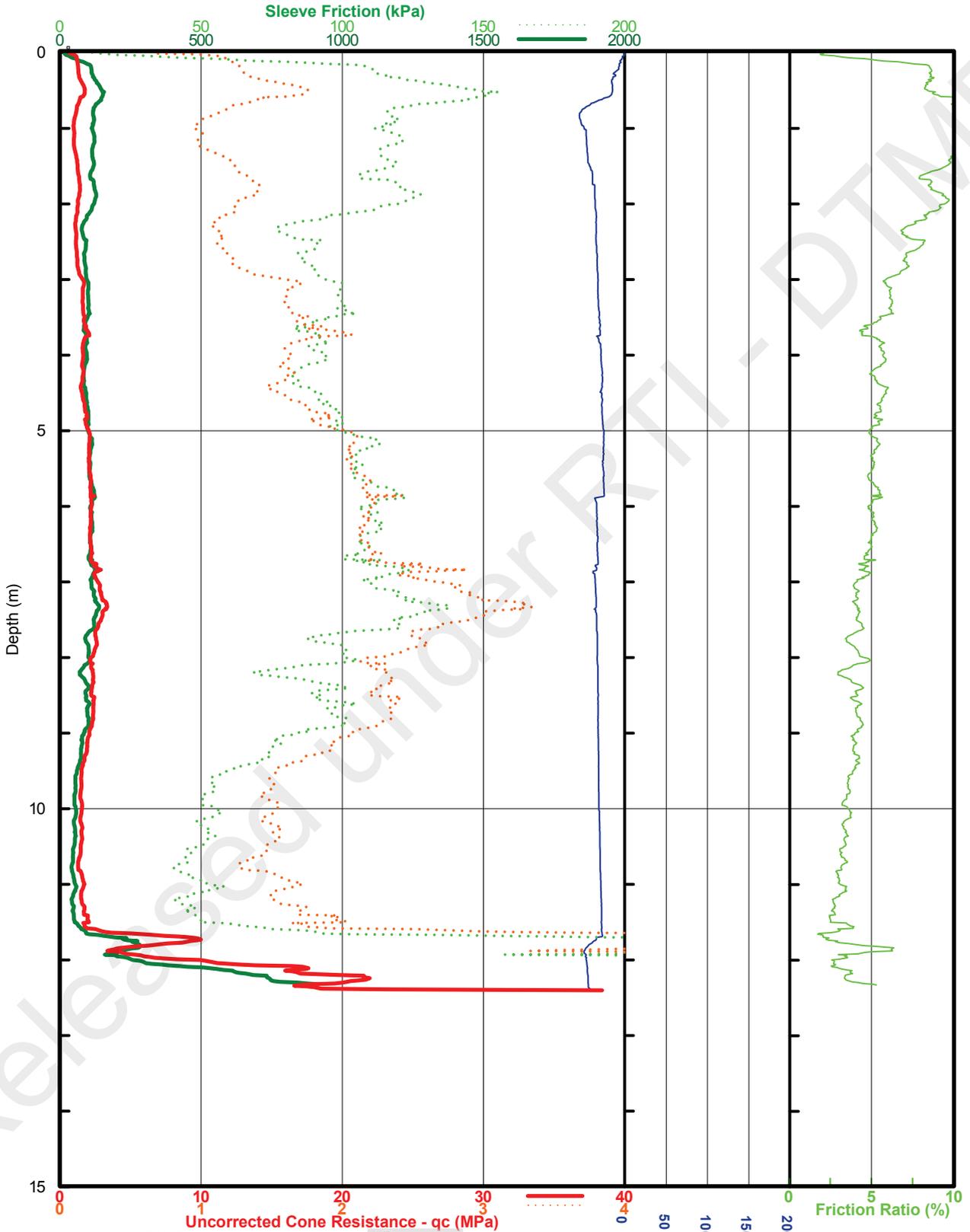
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Pty Ltd



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-03



J N C15-09-07
T s 25/09/2015
CP P si 56 J 0499114, 6904750
CP F WR -84
i Es
N 15 F P. 11105
P di 0.00
issi i T s s@ N/A
T i d T Eq i is

T s dB N/R
T s
c dB N/R

Pore Pressure (kPa)

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Geotech
Services
Pty Ltd

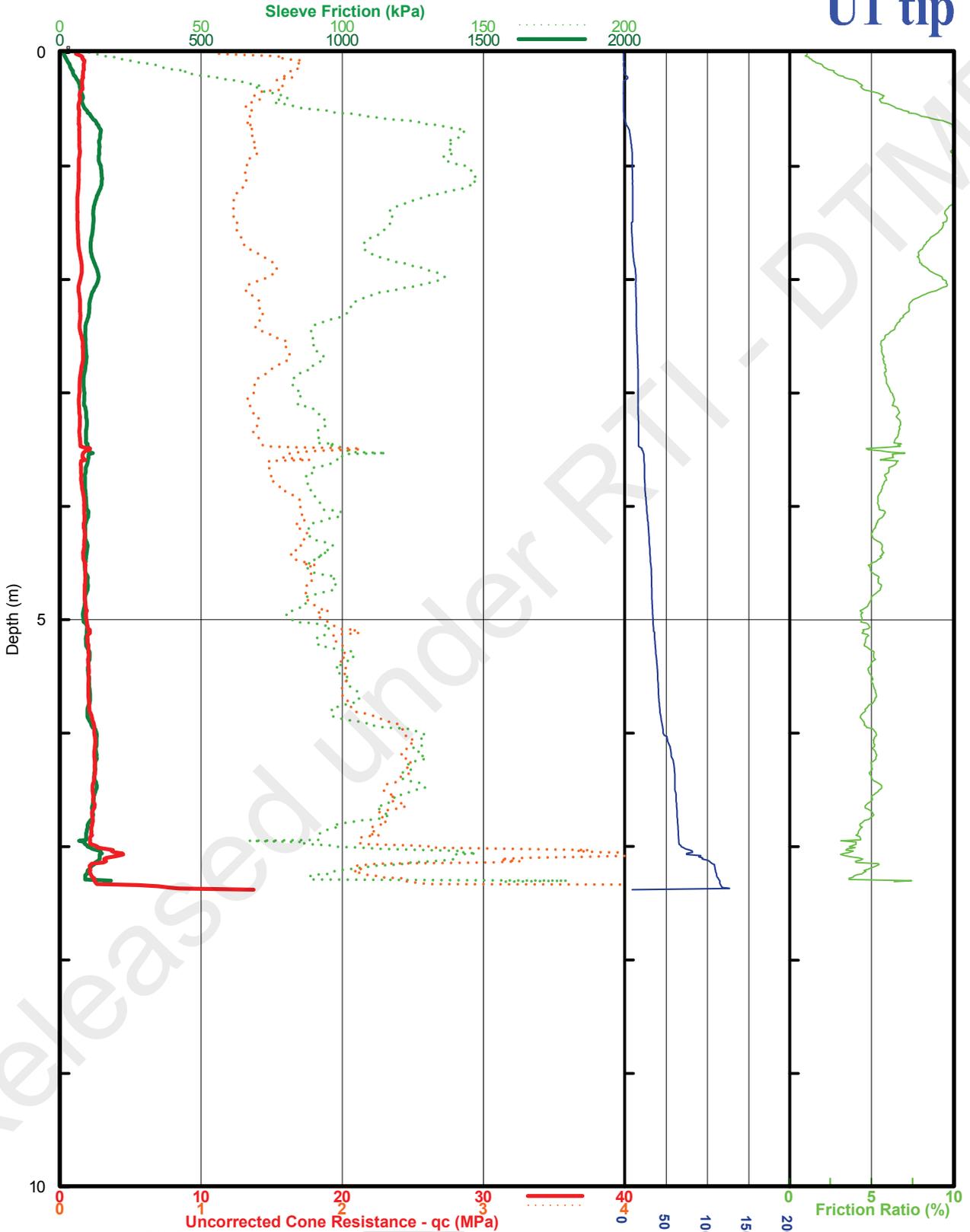


CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-04

U1 tip



J N C15-09-07
T s 25/09/2015
CP P si 56 J 0499073, 6904664
CP F WR -84
i Es
N 15 F P. 11105
P di 0.00
issi i T s s @ N/A
T i d T A T i

T s dB N/R
T s c dB N/R

Pore Pressure (kPa)

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Geotech
Services
Pty Ltd

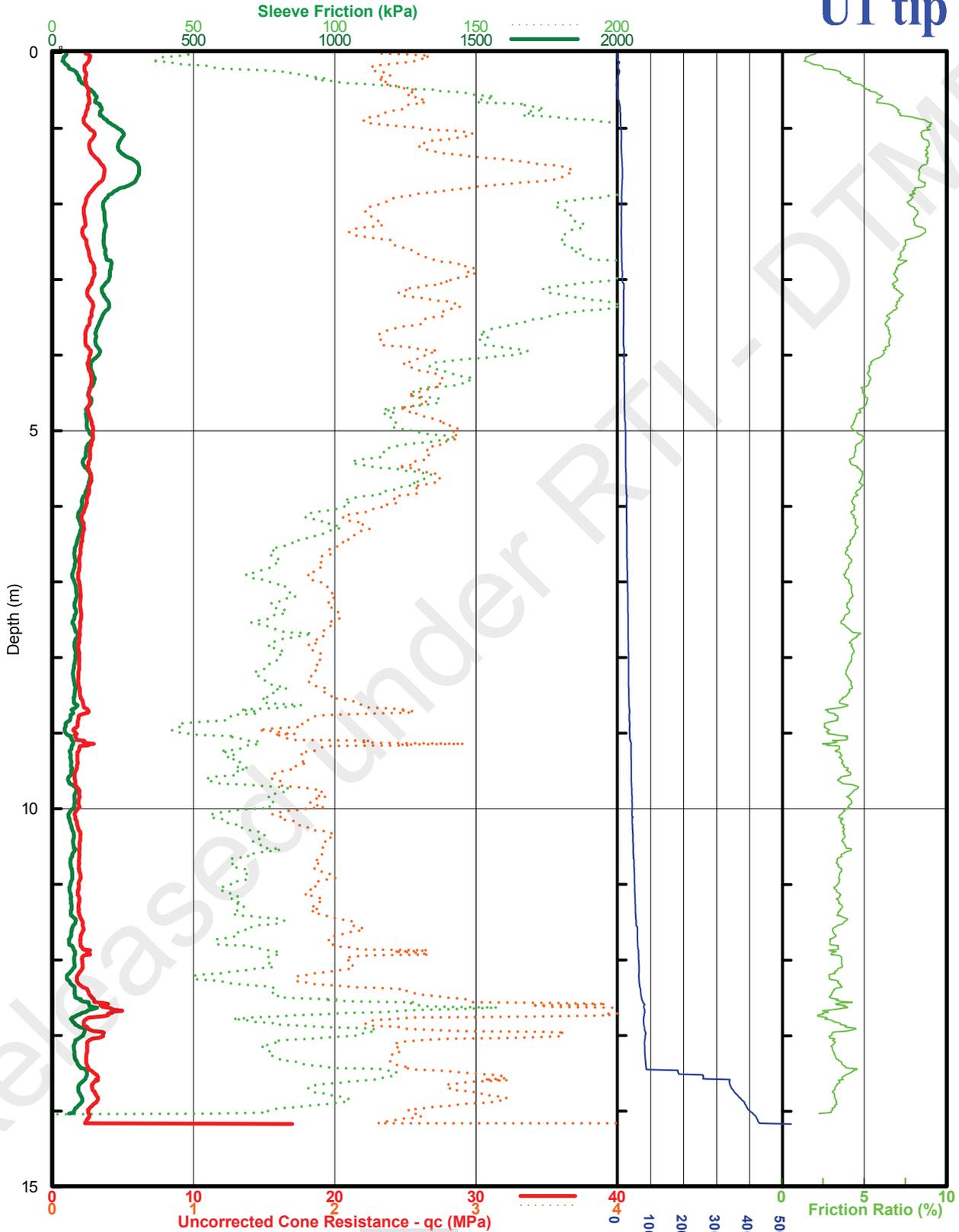


CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-05

U1 tip



J N C15-09-07
T s 26/09/2015
CP P si 56 J 0499001, 6904506
CP F WR -84
i Es
N 10 F P. 14011
P di 0.00
issi i T s s @ N/A
T i d T Eq i is

T s dB N/R
T s c dB N/R

Pore Pressure (kPa)

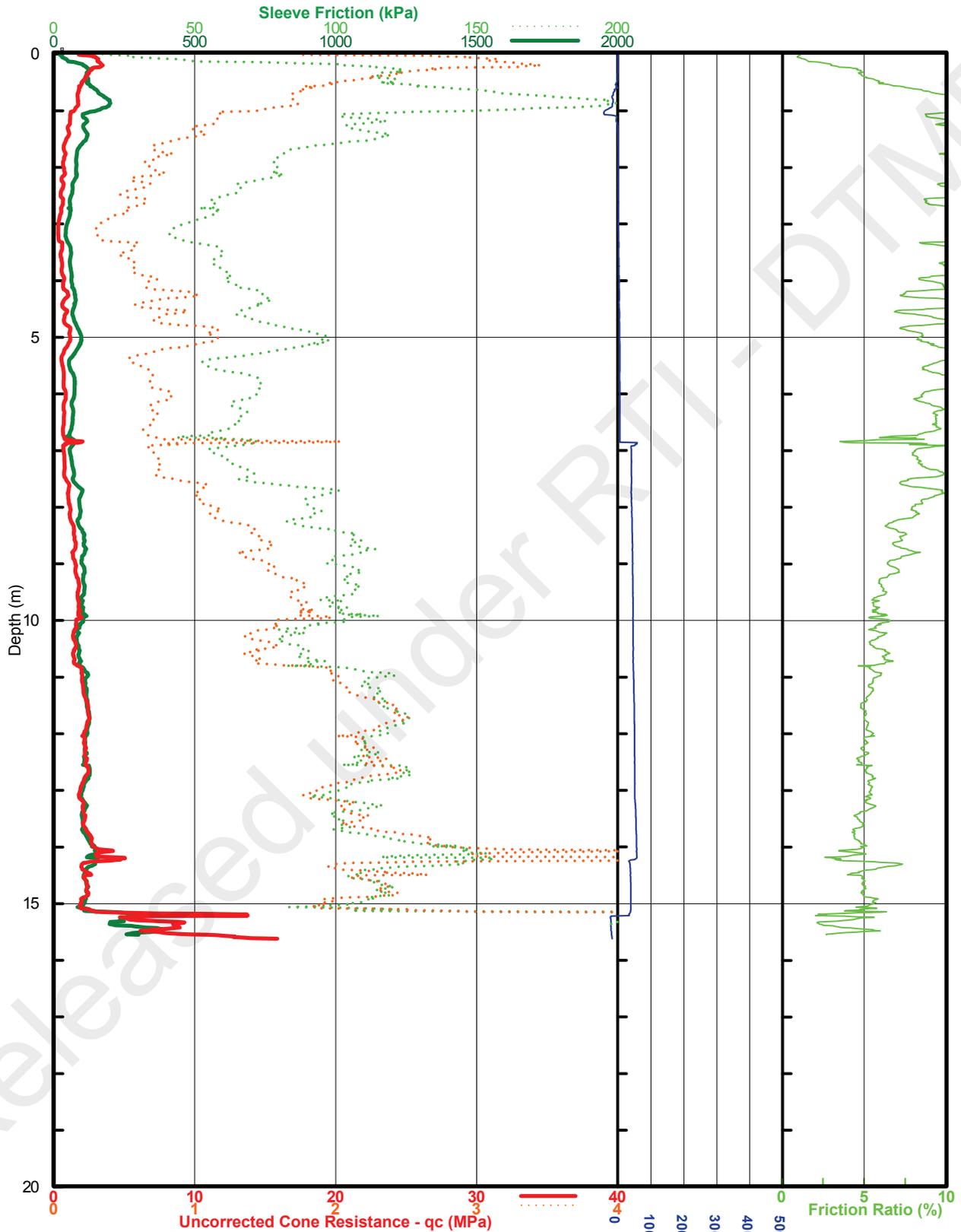
Insitu
Geotech
Services
Pty Ltd



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-06



J N C15-09-07
T s 06/10/2015
CP P si 56 J 0498987, 6904475
CP F W 84
i E
N 15 F P. 11104
P di 0.00
issi i T s s @ N/A
T i d T Lif d i

T s dB N/R
T s c dB N/R

Pore Pressure (kPa)
0 100 200 300 400 500

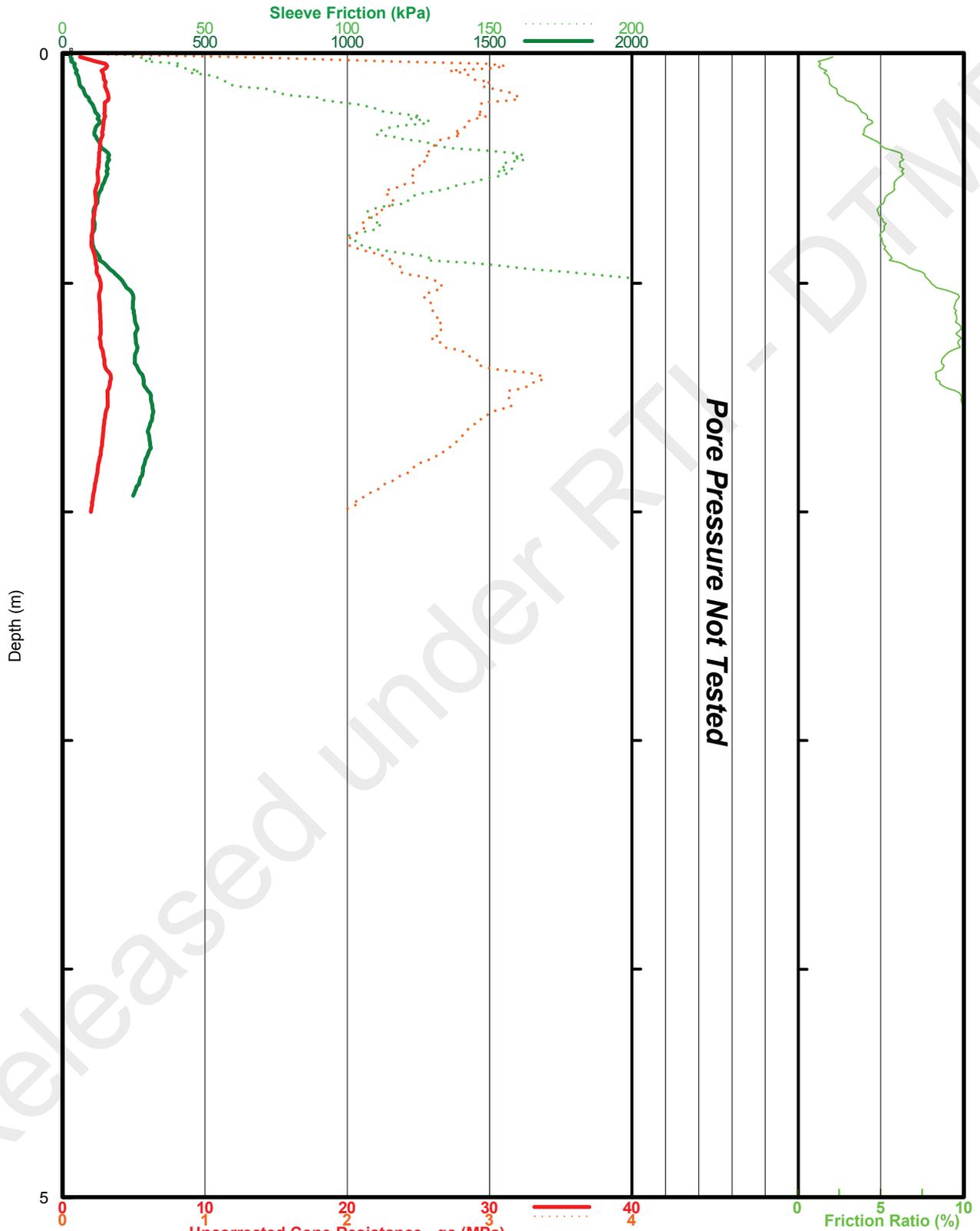
Insitu
Geotech
Services
Pty Ltd

IGS

CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-07



J N C15-09-07
T s 27/09/2015
GP P s i 56 J 0498953, 6904405
GP F W/R -84
i Es
N 15 F P. 87
P di 0.00
issi i T s s @ N/A
T i d T q i d c d

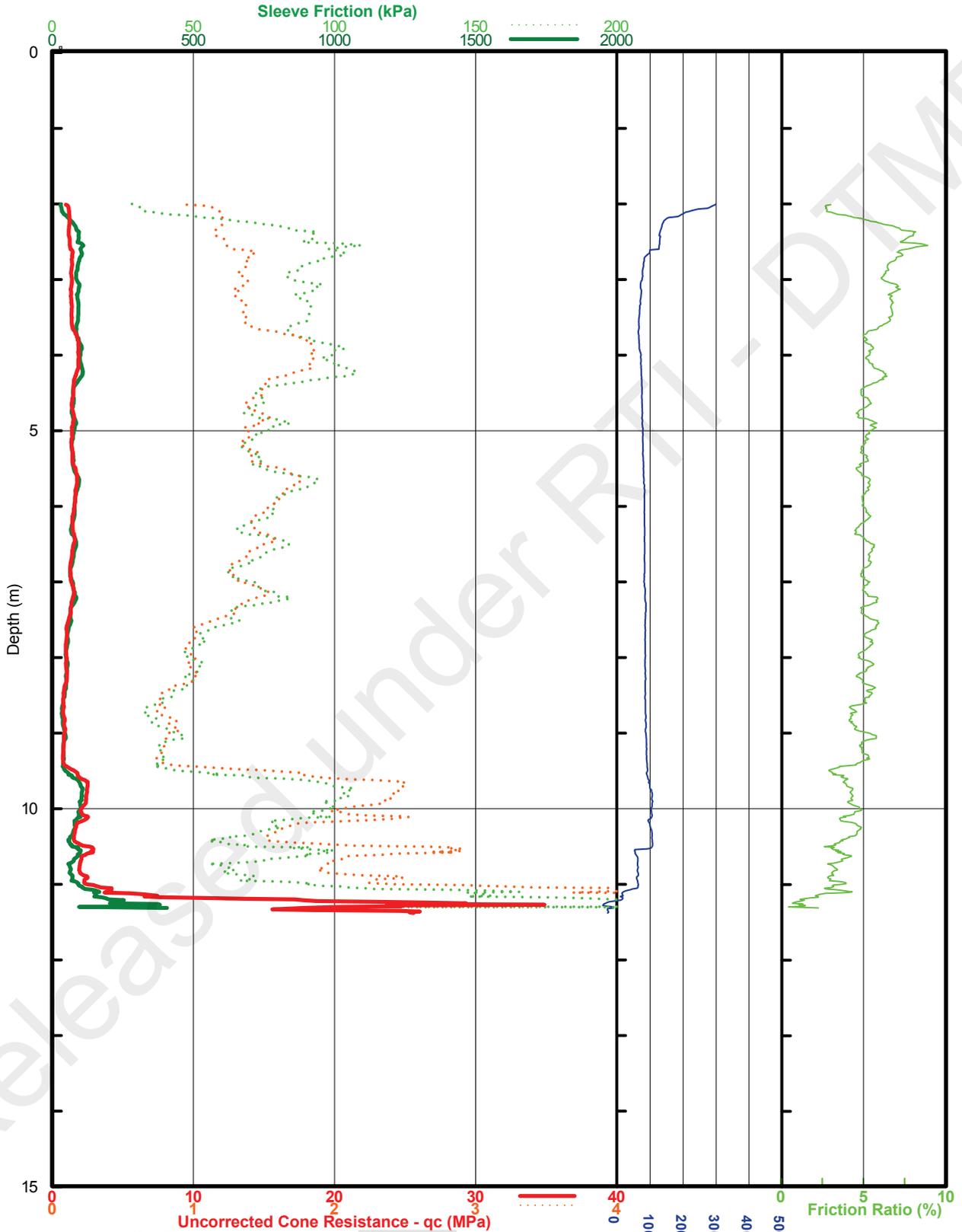
T s dB N/R
T s
c dB N/R



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
 Beaudesert Bypass
 Beaudesert QLD

CPT-07a



J N C15-09-07
 T s 27/09/2015
 GP P si 56 J 0498953, 6904405
 GP F WR -84
 i Es
 N 15 F P. 11105
 P di 2.00
 issi i T s s @ -2.6
 T i d T Eq i is

T s dB N/R
 T s
 c dB N/R

Pore Pressure (kPa)

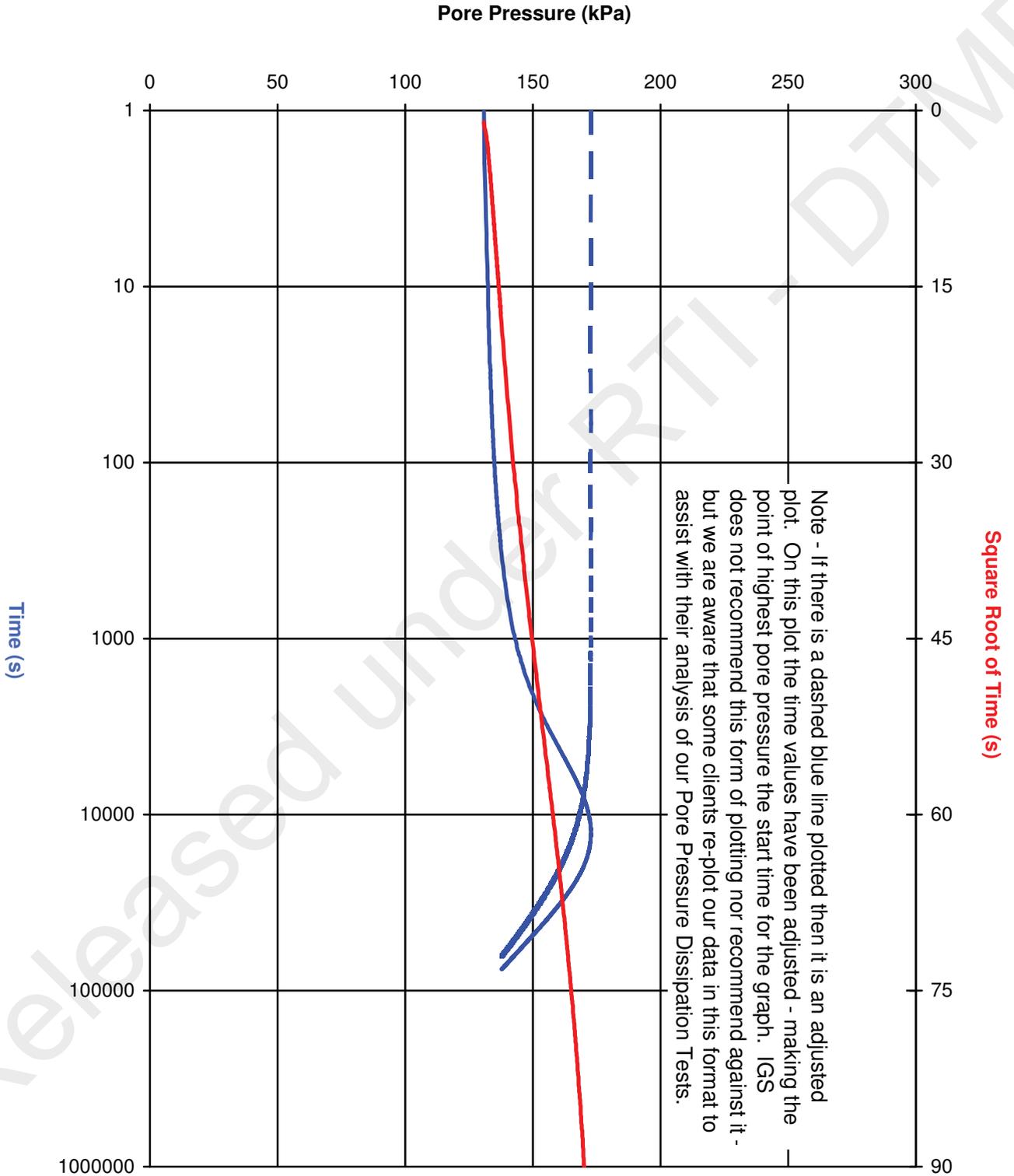
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 Pty Ltd



PORE PRESSURE DISSIPATION TEST RESULT

Aussie Hydrovac
 Beaudesert Bypass
 Beaudesert QLD

CPT-07a
 Depth: -2.6m



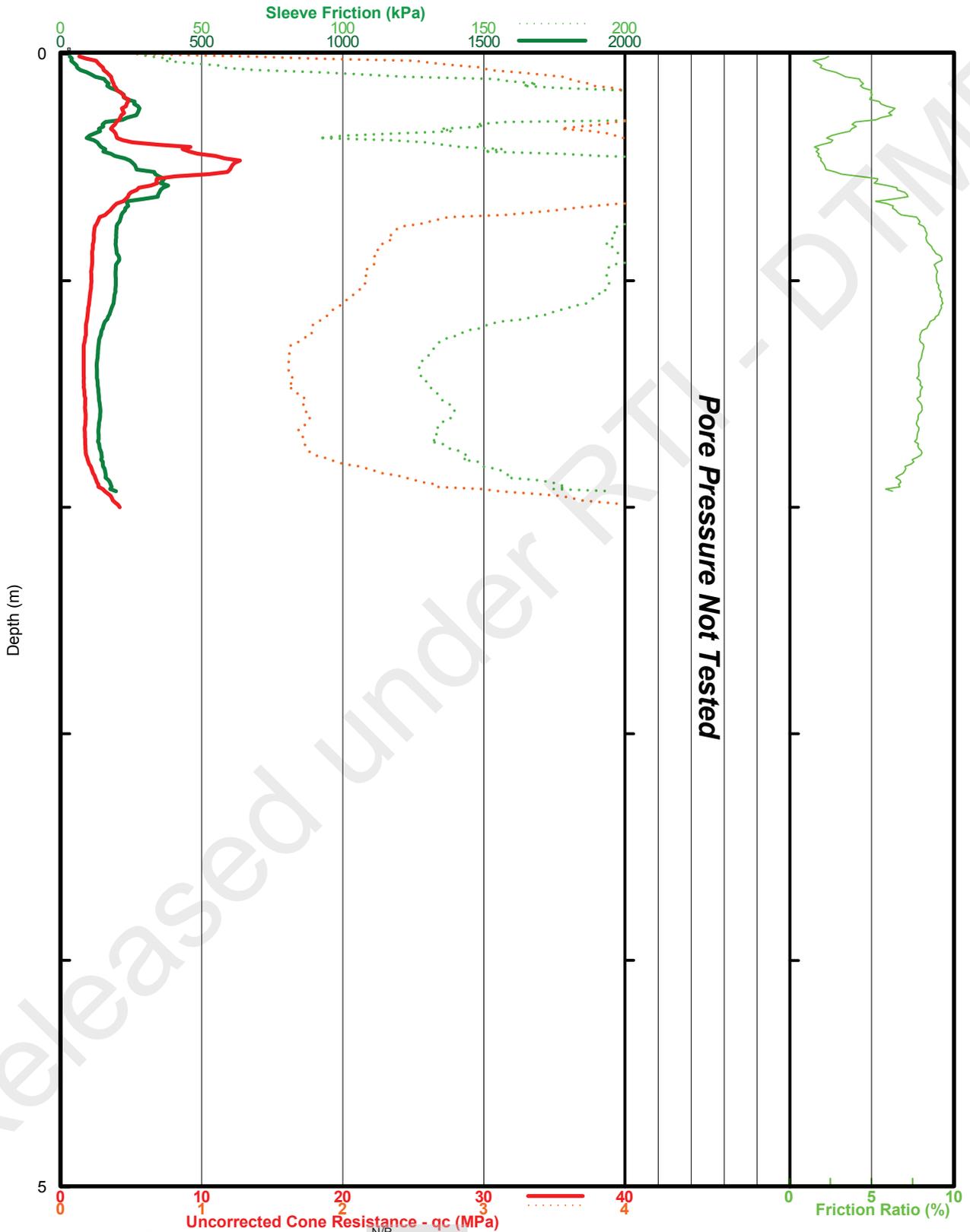
Tested By: N/R
 Test Duration: 21 Hours, 2 Minutes
 Test Date: 27/09/2015
 Job No: G15-09-07
 Cone: S15CFIIP.S11105



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
 Beaudesert Bypass
 Beaudesert QLD

CPT-08



J N C15-09-07
 T s 27/09/2015
 GP P s i 56 J 0498927, 6904348
 GP F W/R -84
 i Es
 N 15 F P. 87
 P di 0.00
 issi i T s s @ N/A
 T i d T q i d c d

T s dB N/R
 T s
 c dB N/R

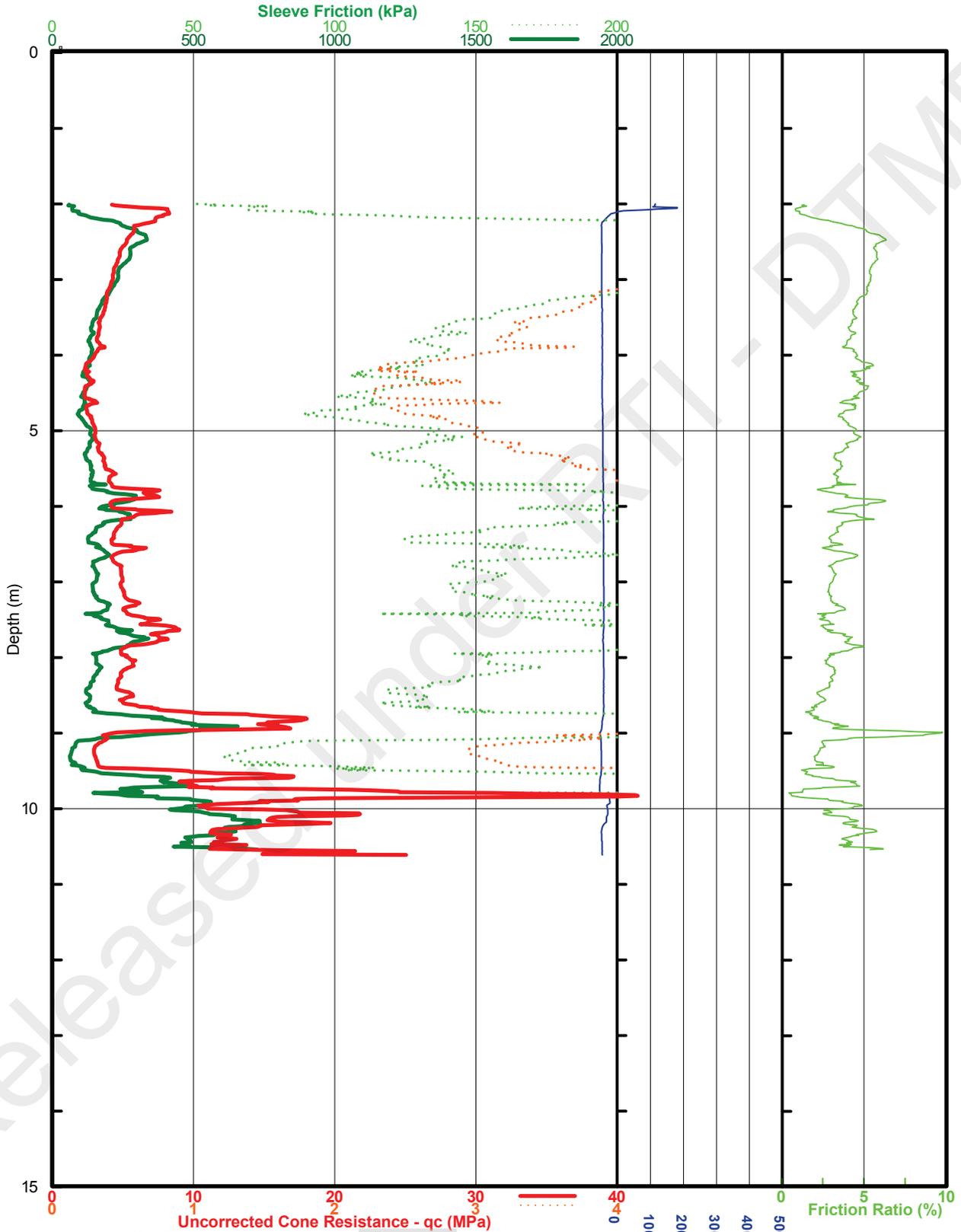
Insitu
 Geotech
 Services
 Pty Ltd

IGS

CONE PENETROMETER TEST RESULT

Aussie Hydrovac
 Beaudesert Bypass
 Beaudesert QLD

CPT-08a



J N C15-09-07
 T s 27/09/2015
 GP P si 56 J 0498927, 6904348
 GP F WR -84
 i Es
 N 15 F P. 11105
 P di 200
 issi i T s s @ N/A
 T i d T Eq i is

T s dB N/R
 T s
 c dB N/R

Pore Pressure (kPa)

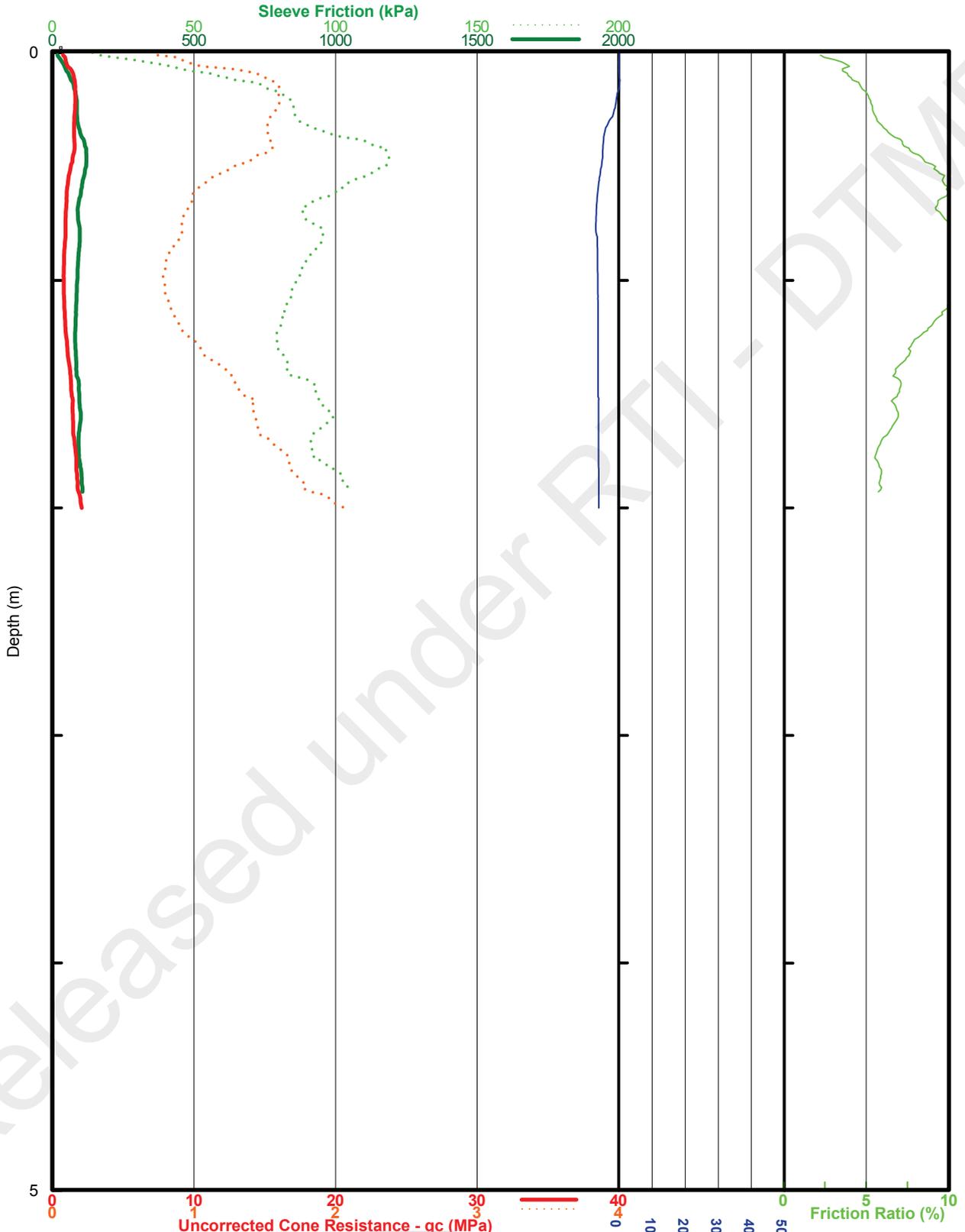
Insitu
 Geotech
 Services
 Pty Ltd



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-09



J N C15-09-07 T s dB N/R
 T s 26/09/2015
 GP P s i 56 J 0498866, 6904222 T s -
 GP F W/R -84 c dB N/R
 i Es
 N 15 F P. 11105
 P di 0.00
 issi i T s s @ N/A
 T i d T N i ss di s. PT-09 s sf 20
 wi -s dc . RTI 135/06103 - File 1 - Page 45 of 85

Pore Pressure (kPa)

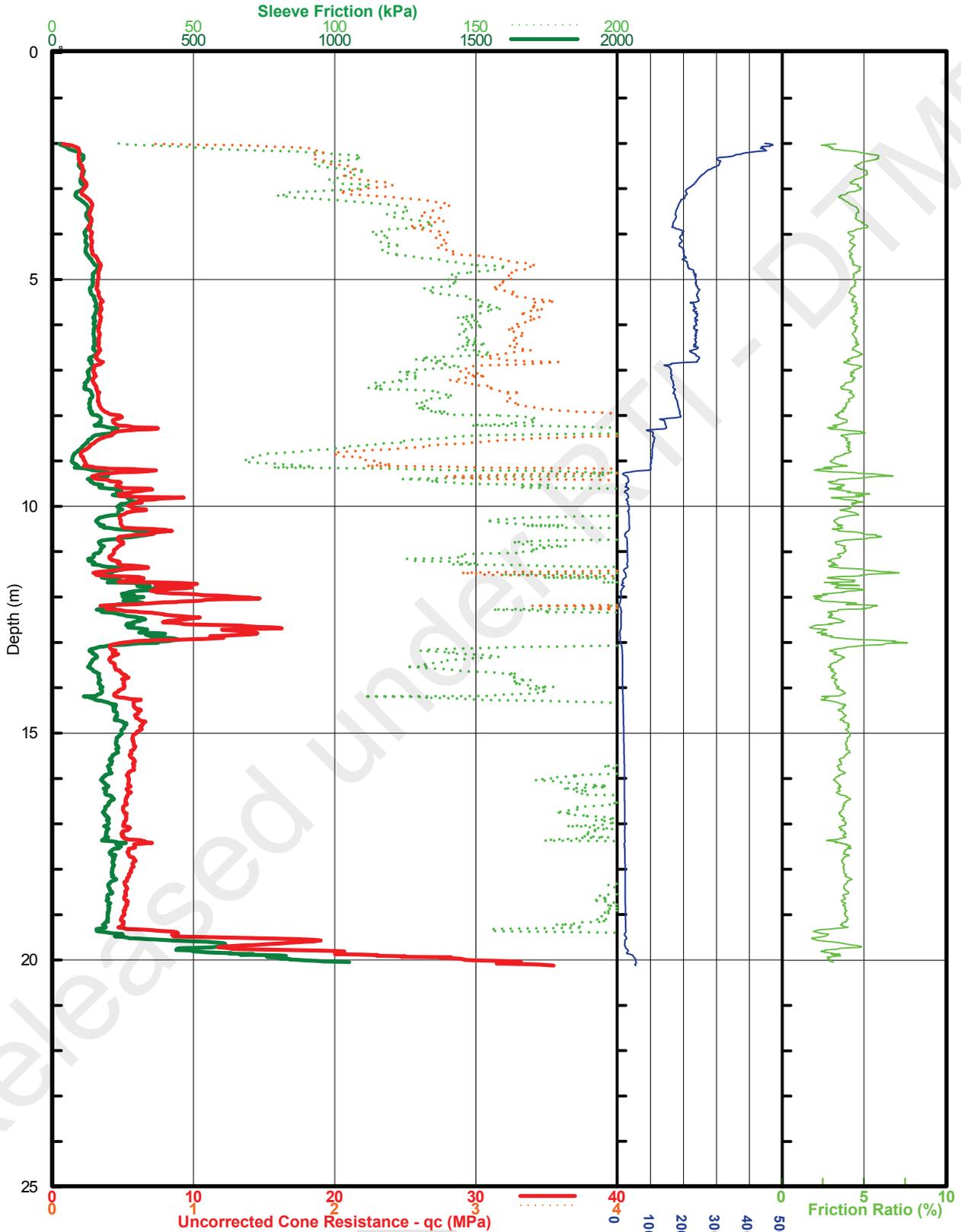
Insitu
Geotech
Services
Pty Ltd



CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-09a



J N C:15-09-07
T s 26/09/2015
GP P si 56 J 0498866, 6904222
GP F WR -84
i Es
N 15 F P. 11105
P di 2.00
issi i T ss @ N/A
T i d T Lif d i

T s dB N/R
T s -
c dB N/R
N d f f i s 2 . i s i PT-09

Pore Pressure (kPa)

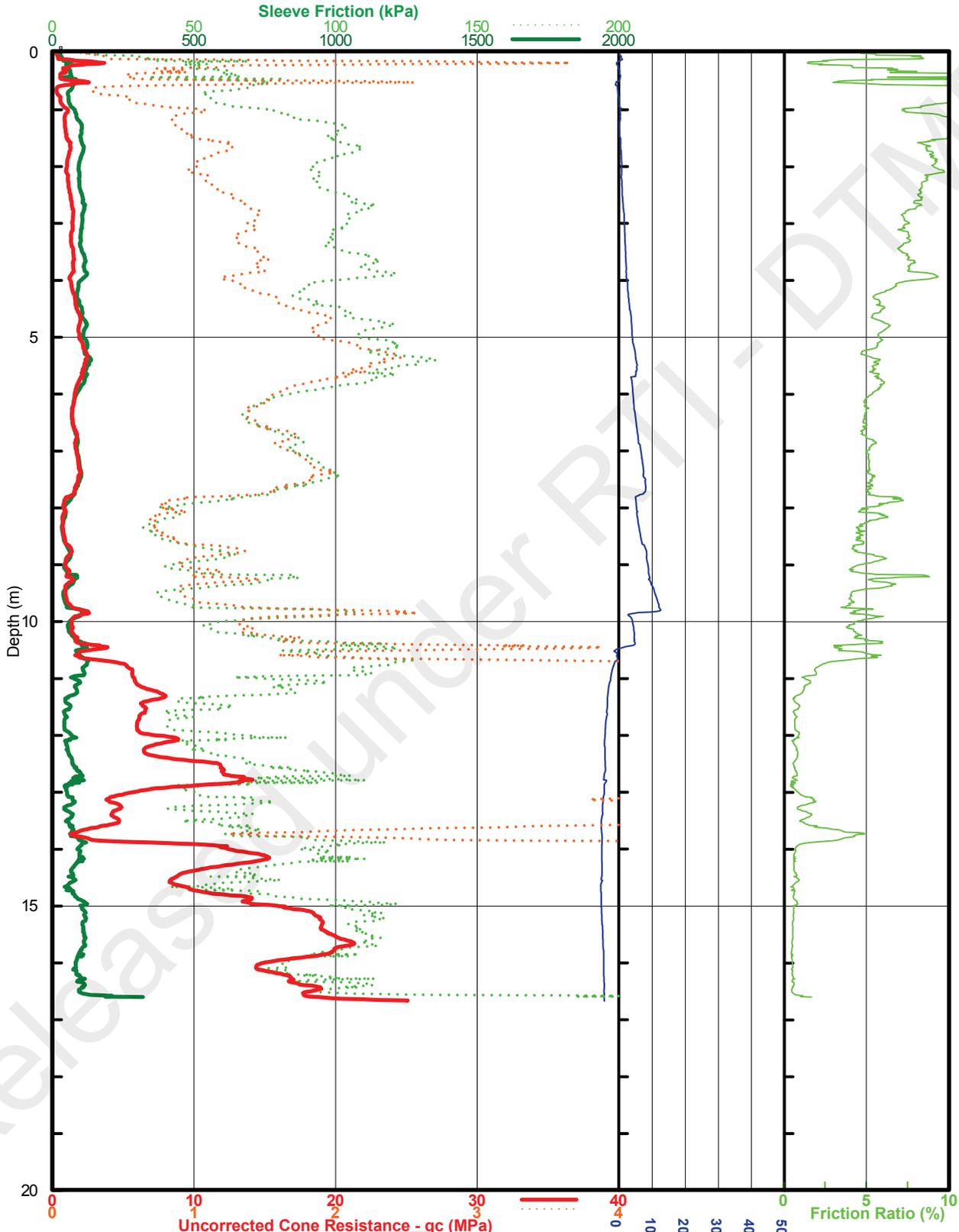
Insitu
Geotech
Services
Pty Ltd

IGS

CONE PENETROMETER TEST RESULT

Aussie Hydrovac
Beaudesert Bypass
Beaudesert QLD

CPT-10



J N C15-09-07
T s 07/10/2015
CP P si 56 J 0498727, 6903944
CP F W 84
i E
N 15 F P. 11104
P di 0.00
issi i T s s @ N/A
T i d T Eq i is

T s dB N/R
T s c dB N/R

Pore Pressure (kPa)

Insitu
Geotech
Services
Pty Ltd



APPENDIX C

CROSS SECTION A

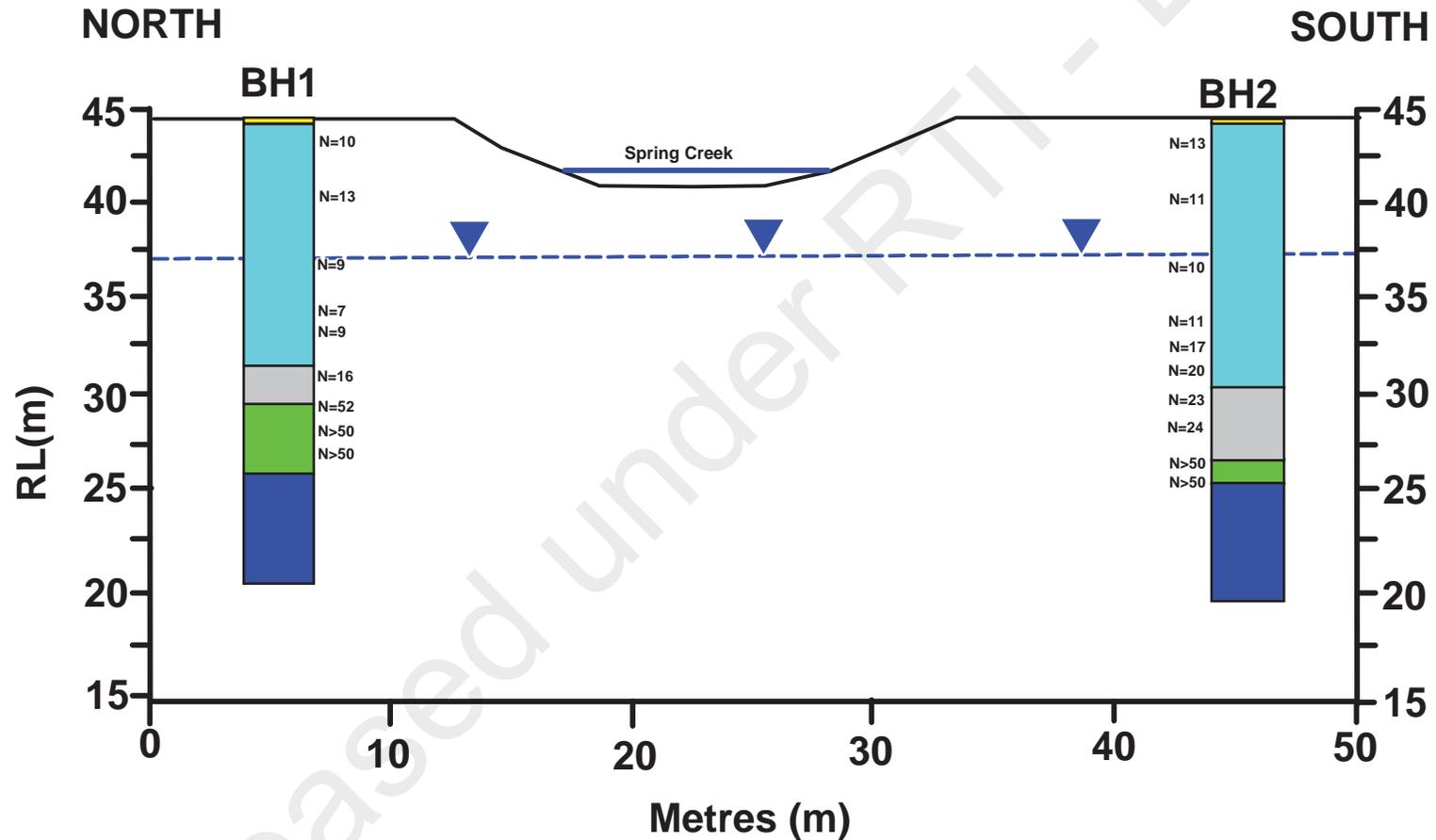
Released under RTI - DTMR



Solid thinking. Grounded results.

INFERRED CROSS SECTION A

SPRING CREEK BRIDGE
BEAUDESERT BYPASS, BEAUDESERT



- Unit 1 - Topsoil
- Unit 3 - Residual Soil
- Unit 5 - Basalt/Andesite (MW/SW)
- Unit 2 - Alluvial Soil
- Unit 4 - Basalt/Andesite (XW/HW)

APPENDIX D

LABORATORY TEST CERTIFICATES

Released under RTI - DTMR



Solid thinking. Grounded results.

Atterberg Limits Report

Client : AUSSIE HYDROVAC SERVICES	Report Number: GE15-160.3/1
Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130	Report Date : 07/10/2015
Project Name : BEAUDESERT BYPASS - STAGE 1	Order Number :
Project Number : GE15/160	Test Method : Q104D
Location: BEAUDESERT	Page 1 of 1

Sample Number :	211699			
Test Number :				
Date Sampled :	21/09/2015			
Date Tested :	02/10/2015			
Sampled By :	N/R			
Sampling Method :	-			
Material Source :				
Material Type :				
Sample Location :	BH 1 7.0 - 7.45m D (SPT)			
Lot Number :				
Moisture Method :	Q102A			
Sample History :				
Sample Preparation :	Dry			
Notes :	cracking and curling			
Mould Length (mm) :	150.0			
Liquid Limit (%) :	63.8			
Plastic Limit (%) :	26.6			
Plasticity Index (%) :	37.2			
Linear Shrinkage (%) :	19.4			

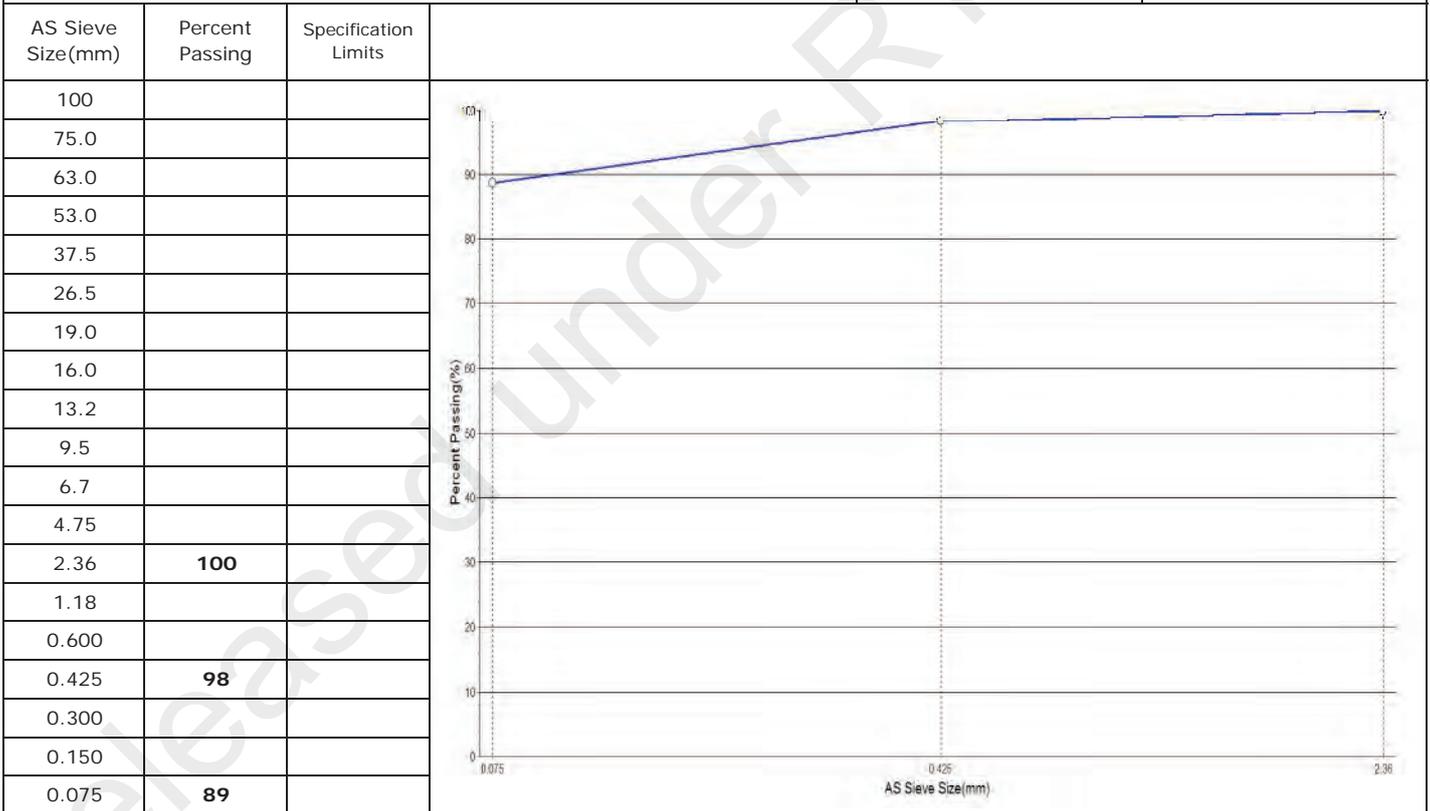
SPECIFICATION DETAILS				
Specification Number :				
Liquid Limit - Max :				
Plasticity Index - Max :				
Linear Shrinkage - Max :				
Remarks :	-			

 <p style="text-align: center;">Accredited for compliance with ISO/IEC 17025.</p>	<p>APPROVED SIGNATORY</p> <div style="background-color: black; color: white; padding: 2px; display: inline-block;">Not relevant</div> <div style="background-color: black; color: white; padding: 2px; display: inline-block;">Not relevant</div> (Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number : 1169
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Quality of Materials Report

Client : AUSSIE HYDROVAC SERVICES	Report Number: GE15-160.5/1
Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130	Report Date : 14/10/2015
Project Name : BEAUDESERT BYPASS - STAGE 1	Order Number :
Project Number : GE15/160	Test Method : Q103A
Location: BEAUDESERT	Page 1 of 1

Sample Number : 211945	SAMPLE LOCATION
Sampling Method : -	BH 2
Sampled By : N/R	1.0 - 1.45m
Date Sampled : 22/09/2015	D
Date Tested : 12/10/2015	Test Number :
Material Type : DISTURBED	Lot Number :
Material Source : INSITU	Specification Number :
Remarks :	



	Test Method	Results	Results	Specification
Liquid Limit (%) :	Q104D	67.2	Weighted PI :	3802
Plastic Limit (%) :	Q105	28.4	LS x % Passing 0.425mm	2136
Plasticity Index (%) :	Q105	38.8	Ratio of % Passing (0.075 / 0.425)	0.91
Linear Shrinkage (%) :	Q106	21.8		

 <p>Accredited for compliance with ISO/IEC 17025.</p>	<p>APPROVED SIGNATORY</p> <p>Not relevant</p> <p>Not relevant</p> <p>(Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number 1169</p>
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Atterberg Limits Report

Client : AUSSIE HYDROVAC SERVICES Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130 Project Name : BEAUDESERT BYPASS - STAGE 1 Project Number : GE15/160 Location: BEAUDESERT	Report Number: GE15-160.6/1 Report Date : 14/10/2015 Order Number : Test Method : Q104D <p style="text-align: right;">Page 1 of 1</p>
---	---

Sample Number :	211946		
Test Number :			
Date Sampled :	22/09/2015		
Date Tested :	08/10/2015		
Sampled By :	N/R		
Sampling Method :	-		
Material Source :	INSITU		
Material Type :	DISTURBED		
Sample Location :	BH 2 4.0 - 4.45m D		
Lot Number :			
Moisture Method :	Q102A		
Sample History :			
Sample Preparation :	Dry		
Notes :	curling		
Mould Length (mm) :	150.0		
Liquid Limit (%) :	63.2		
Plastic Limit (%) :	28.6		
Plasticity Index (%) :	34.6		
Linear Shrinkage (%) :	20.6		

SPECIFICATION DETAILS			
Specification Number :			
Liquid Limit - Max :			
Plasticity Index - Max :			
Linear Shrinkage - Max :			
Remarks :	-		

 <p style="text-align: center;">Accredited for compliance with ISO/IEC 17025.</p>	<p style="text-align: center;">APPROVED SIGNATORY</p> <div style="text-align: center;">  Not relevant (Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number : 1169 </div>
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ATTERBERG LIMITS TEST REPORT

Test Method: QMRD Q102A, Q104A, Q104D, Q105, Q106

Client	Morrison Geotechnic Pty Ltd	Report No.	15100186-AL
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	14/10/15-26/10/15
		Report Date	27/10/2015

Sample No.	15100186	15100188	-	-	-	-
Client ID	BH 1	BH 2	-	-	-	-
Depth (m)	2.50-2.70	5.50-5.86	-	-	-	-
Liquid Limit (%)	68.2	59.8	-	-	-	-
Plastic Limit (%)	24.0	24.2	-	-	-	-
Plasticity Index (%)	44.2	35.6	-	-	-	-
Linear Shrinkage (%)	18.0	16.6	-	-	-	-
Moisture Content (%)	26.3	32.3	-	-	-	-

Sample No.	-	-	-	-	-	-
Client ID	-	-	-	-	-	-
Depth (m)	-	-	-	-	-	-
Liquid Limit (%)	-	-	-	-	-	-
Plastic Limit (%)	-	-	-	-	-	-
Plasticity Index (%)	-	-	-	-	-	-
Linear Shrinkage (%)	-	-	-	-	-	-
Moisture Content (%)	-	-	-	-	-	-

NOTES/REMARKS: The samples were tested oven dried, dry sieved and in a 125-250mm mould.

Sample/s supplied by the client * Crumbling occurred + Curling occurred Page 1 of 1 REP04702

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

Not relevant



Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

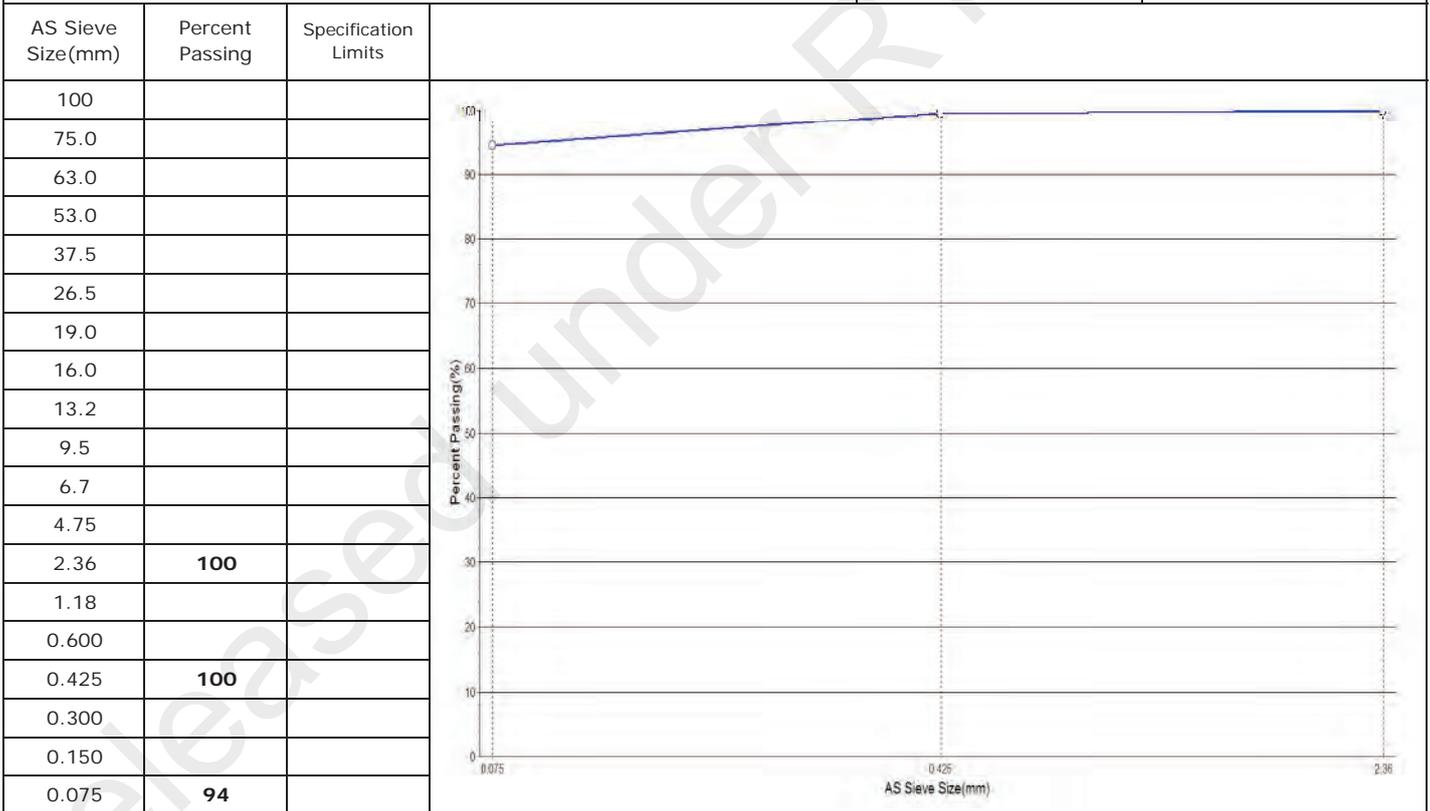
RTI 135/06103 - File 1 - Page 55 of 85

ACCURATE QUALITY RESULTS FOR TOMORROW'S ENGINEERING

Quality of Materials Report

Client : AUSSIE HYDROVAC SERVICES	Report Number: GE15-160.8/1
Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130	Report Date : 30/10/2015
Project Name : BEAUDESERT BYPASS - STAGE 1	Order Number :
Project Number : GE15/160	Test Method : Q103A
Location: BEAUDESERT	Page 1 of 1

Sample Number : 212612	SAMPLE LOCATION
Sampling Method : -	CPT 02
Sampled By : N/R	0.8 - 1.4m
Date Sampled : 12/09/2015	U40
Date Tested : 30/10/2015	Test Number :
Material Type : U40	Lot Number :
Material Source : INSITU	Specification Number :
Remarks :	



	Test Method	Results		Results	Specification
Liquid Limit (%) :	Q104D	76.2	Weighted PI :	3300	
Plastic Limit (%) :	Q105	43.2	LS x % Passing 0.425mm	1800	
Plasticity Index (%) :	Q105	33.0	Ratio of % Passing (0.075 / 0.425)	0.94	
Linear Shrinkage (%) :	Q106	18.0			

 <p>Accredited for compliance with ISO/IEC 17025.</p>	<p>APPROVED SIGNATORY</p> <p>Not relevant</p> <p>Not relevant</p> <p>(Gold Coast) - GOLD COAST MANAGER</p> <p>NATA Accreditation Number 1169</p>
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Atterberg Limits Report

Client : AUSSIE HYDROVAC SERVICES	Report Number: GE15-160.10/1
Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130	Report Date : 30/10/2015
Project Name : BEAUDESERT BYPASS - STAGE 1	Order Number :
Project Number : GE15/160	Test Method : Q104D
Location: BEAUDESERT	Page 1 of 1

Sample Number :	212613		
Test Number :			
Date Sampled :	12/09/2015		
Date Tested :	30/10/2015		
Sampled By :	N/R		
Sampling Method :	-		
Material Source :	INSITU		
Material Type :	U40		
Sample Location :	CPT 04 1.5 - 2.1m U40		
Lot Number :			
Moisture Method :	Q102A		
Sample History :			
Sample Preparation :	Dry		
Notes :	cracking and curling		
Mould Length (mm) :	150.0		
Liquid Limit (%) :	62.6		
Plastic Limit (%) :	33.6		
Plasticity Index (%) :	29		
Linear Shrinkage (%) :	13.6		

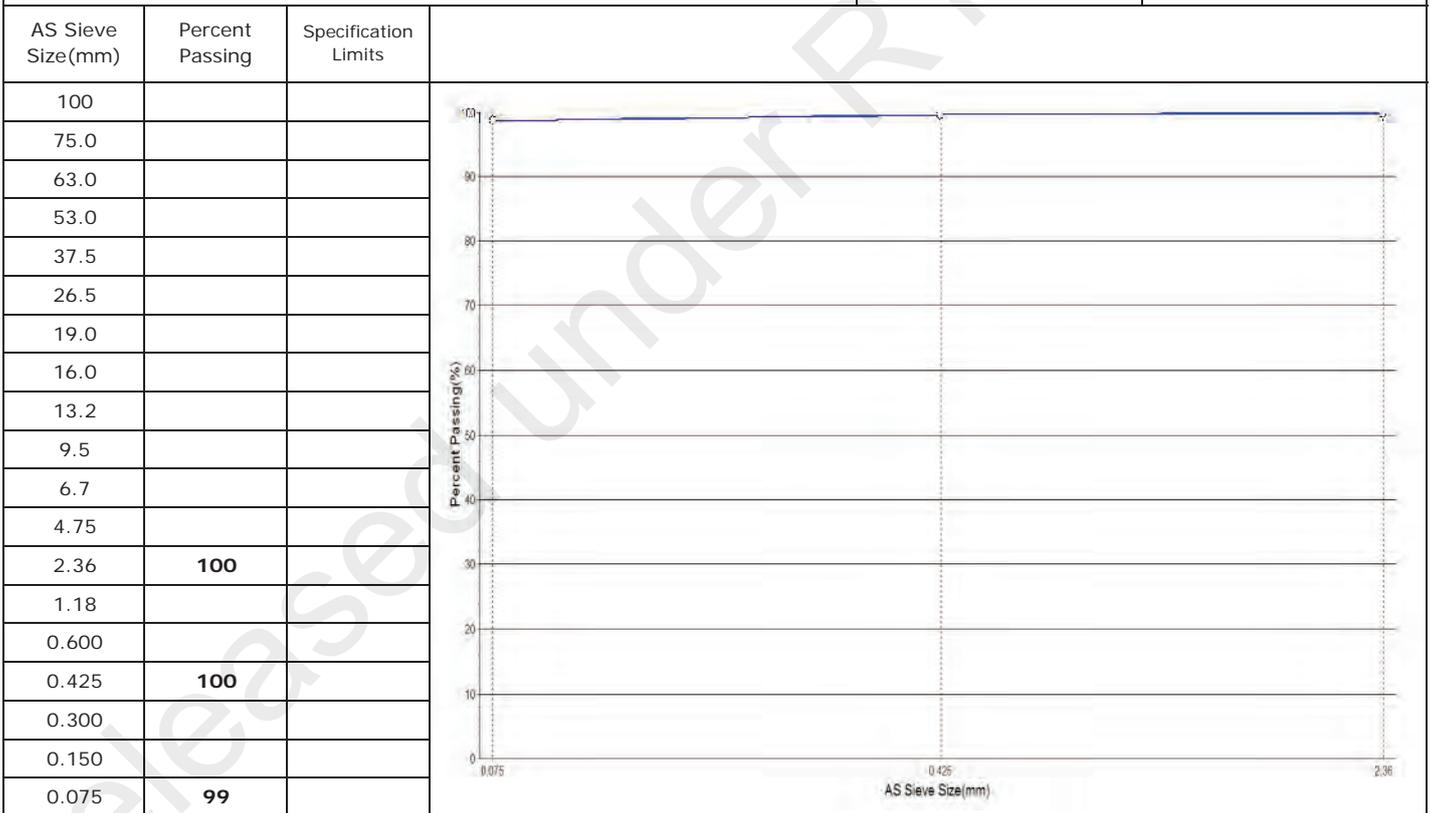
SPECIFICATION DETAILS			
Specification Number :			
Liquid Limit - Max :			
Plasticity Index - Max :			
Linear Shrinkage - Max :			
Remarks :	-		

 <p style="text-align: center;">Accredited for compliance with ISO/IEC 17025.</p>	<p style="text-align: center;">APPROVED SIGNATORY</p> <div style="text-align: center;"> <p>Not relevant</p>  </div> <p>Not relevant (Gold Coast) - GOLD COAST MANAGER</p> <p>NATA Accreditation Number : 1169</p>
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Quality of Materials Report

Client : AUSSIE HYDROVAC SERVICES	Report Number: GE15-160.9/1
Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130	Report Date : 30/10/2015
Project Name : BEAUDESERT BYPASS - STAGE 1	Order Number :
Project Number : GE15/160	Test Method : Q103A
Location: BEAUDESERT	Page 1 of 1

Sample Number : 212614	SAMPLE LOCATION
Sampling Method : -	CPT 05
Sampled By : N/R	0.8 - 1.4m
Date Sampled : 12/09/2015	U40
Date Tested : 30/10/2015	Test Number :
Material Type : U40	Lot Number :
Material Source : INSITU	Specification Number :
Remarks :	



	Test Method	Results		Results	Specification
Liquid Limit (%) :	Q104D	70.0	Weighted PI :	3260	
Plastic Limit (%) :	Q105	37.4	LS x % Passing 0.425mm	1800	
Plasticity Index (%) :	Q105	32.6	Ratio of % Passing (0.075 / 0.425)	0.99	
Linear Shrinkage (%) :	Q106	18.0			

 <p>Accredited for compliance with ISO/IEC 17025.</p>	<p>APPROVED SIGNATORY</p> <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Not relevant (Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number 1169 </div>
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Moisture Content Report

Client : AUSSIE HYDROVAC SERVICES Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130 Project Name : BEAUDESERT BYPASS - STAGE 1 Project Number : GE15/160 Location: BEAUDESERT	Report Number: GE15-160.2/1 Report Date : 07/10/2015 Order Number : Test Method : Q102A <p style="text-align: right;">Page 1 of 1</p>
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Sample Number :	211699			
Test Number :				
Sampling Method :	-			
Date Sampled :	21/09/2015			
Date Tested :	30/09/2015			
Material Type :				
Material Source :				
Lot Number :				
Sample Location :	BH 1 7.0 - 745m D (SPT)			
Oven Temperature (°C) :				
Soil Description :				
Moisture Content (%) :	21.4			
Remarks :				

Released Under RTI - DRAFT

 <p style="text-align: center;">Accredited for compliance with ISO/IEC 17025.</p>	<p style="text-align: center;">APPROVED SIGNATORY</p> <div style="text-align: center;"> <div style="background-color: black; color: white; padding: 2px;">Not relevant</div> <div style="background-color: black; color: white; padding: 2px;">Not relevant</div> </div> <div style="text-align: center;"> <div style="background-color: black; color: white; padding: 2px;">Not relevant</div> <p>Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number 1169</p> </div>
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Moisture Content Report

Client : AUSSIE HYDROVAC SERVICES Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130 Project Name : BEAUDESERT BYPASS - STAGE 1 Project Number : GE15/160 Location: BEAUDESERT	Report Number: GE15-160.4/1 Report Date : 14/10/2015 Order Number : Test Method : Q102A <p style="text-align: right;">Page 1 of 1</p>
---	---

Sample Number :	211945	211946		
Test Number :				
Sampling Method :	-	-		
Date Sampled :	22/09/2015	22/09/2015		
Date Tested :	08/10/2015	08/10/2015		
Material Type :	DISTURBED	DISTURBED		
Material Source :	INSITU	INSITU		
Lot Number :				
Sample Location :	BH 2 1.0 - 1.45m D	BH 2 4.0 - 4.45m D		
Oven Temperature (°C) :				
Soil Description :				
Moisture Content (%) :	32.2	35.6		
Remarks :				

Released Under RTI - DRAFT

 <p style="text-align: center;">Accredited for compliance with ISO/IEC 17025.</p>	<p style="text-align: center;">APPROVED SIGNATORY</p> <div style="text-align: center;">  N/R (Gold Coast) - GOLD COAST MANAGER NATA Accreditation Number 1169 </div>
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Moisture Content Report

Client : AUSSIE HYDROVAC SERVICES Address : 359 CALIFORNIA CREEK ROAD, CORNUBIA, QLD, 4130 Project Name : BEAUDESERT BYPASS - STAGE 1 Project Number : GE15/160 Location: BEAUDESERT	Report Number: GE15-160.7/1 Report Date : 30/10/2015 Order Number : Test Method : Q102A <p style="text-align: right;">Page 1 of 1</p>
---	---

Sample Number :	212612	212613	212614	
Test Number :				
Sampling Method :	-	-	-	
Date Sampled :	12/09/2015	12/09/2015	12/09/2015	
Date Tested :	30/10/2015	30/10/2015	30/10/2015	
Material Type :	U40	U40	U40	
Material Source :	INSITU	INSITU	INSITU	
Lot Number :				
Sample Location :	CPT 02 0.8 - 1.4m U40	CPT 04 1.5 - 2.1m U40	CPT 05 0.8 - 1.4m U40	
Oven Temperature (°C) :				
Soil Description :				
Moisture Content (%) :	31.8	30.3	41.4	
Remarks :				



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APPROVED SIGNATORY

Not relevant

Not relevant

Gold Coast) - GOLD COAST MANAGER

NATA Accreditation Number

1169

SHRINK SWELL INDEX TEST REPORT

Test Method AS 1289 7.1.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100185-ISS
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	14/10/2015
		Report Date	26/10/2015
Description	SILTY CLAY-dark brown		
Sample No.	15100185		
Client ID	BH 2		
Depth (m)	2.50-2.79		
RESULTS OF TESTING			
SWELL SPECIMEN			
Swell Pressure (kPa)	100		
Wet Density (t/m³)	1.86		
Initial Moisture Content (%)	36.2		
Final Moisture Content (%)	39.0		
Swell (%)	1.4		
SHRINKAGE SPECIMEN			
Extent of Crumbling	Nil		
Extent of Cracking	High		
Moisture (%)	36.1		
Shrinkage (%)	9.7		
SHRINK SWELL INDEX (Iss) (%)	5.8		
Notes/Remarks: Shrinkage measured using steel pins inserted into the side of the specimen. Inert inclusions as estimated in the visual description.			
Sample/s supplied by client		Tested as received	

Page: 1 of 1 REPO2303

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Tested at Trilab Brisbane Laboratory

Authorised Signatory
Not relevant



Laboratory No. 9926

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Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

Trilab Pty Ltd ABN 25 065 630 506

pH LIME DEMAND TEST REPORT

Test method : Department of Transport & Main Roads - Q133 : Lime Demand of Soil

Client	Morrison Geotechnic Pty Ltd	Report No.	15100183-LD
Project	Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	23/10/2015
		Report Date	26/10/2015

Sample No.	15100183								
Client ID	BH 1								
Depth (m)	0.80-1.45								
Lime (%)	0	1	2	3	4	5	6	7	
pH	8.16	10.76	12.02	12.44	12.62	12.69	12.70	12.72	
Type and Source of Hydrated Lime	Hydrated Lime from Cement Australia.								
pH of Hydrated Lime	12.7								
Lime Demand for -2.36mm Sample (HLC)	5.0								

Sample No.	15100184								
Client ID	BH 2								
Depth (m)	0.20-1.00								
Lime (%)	0	1	2	3	4	5	6	7	
pH	7.91	10.81	12.19	12.48	12.65	12.68	12.73	12.74	
Type and Source of Hydrated Lime	Hydrated Lime from Cement Australia.								
pH of Hydrated Lime	12.7								
Lime Demand for -2.36mm Sample (HLC)	6.0								

Sample No.	-								
Client ID	-								
Depth (m)	-								
Lime (%)	0	1	2	3	4	5	6	7	
pH	-	-	-	-	-	-	-	-	
Type and Source of Hydrated Lime	-								
pH of Hydrated Lime	-								
Lime Demand for -2.36mm Sample (HLC)	-								

NOTES/REMARKS: Tested with distilled water at 22°C at 5:1 Water/Soil Ratio using Hydrated Lime

Sample/s supplied by the client

Page 1 of 1 REP16101

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Authorised Signatory

Not relevant



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CERTIFICATE OF ANALYSIS

Work Order	: EB1531174	&!(%) * Ä,Ä
123%4/) MORRISON GEOTECHNIC PTY LIMITED	-.+#!/+#0) 5463#+47%4/'2Ä836393+4Ä:#39.'4%
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Signatories
 "J39Ä B+;\$7%4/Ä J'9Ä .%#4Ä%2%;/#+43;'220Ä(4%BÄ0Ä /J%Ä\$/J+#3%BÄ93(4'/+#3%9Ä4B3;!'%BÄ%2+[Ä 52%;/#+43;Ä3(434(ÄJ'9Ä .%#4
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Signatories	Position	Accreditation Category
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General Comments

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Analytical Results

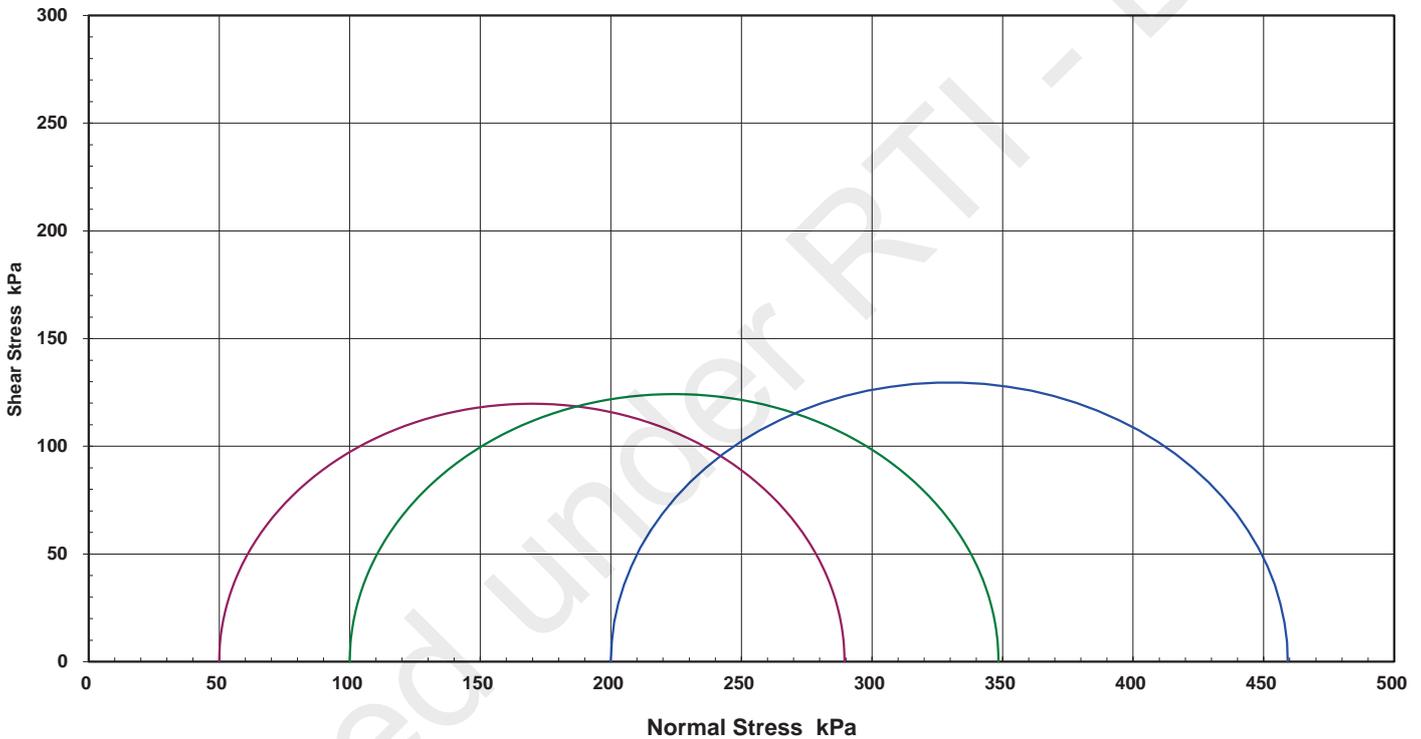
?\$.M</#3b: SOIL		Client sample ID		BH1: 10.00-10.45m	BH1: 14.50-14.95m	BH2: 1.00-1.45m	BH2: 14.50-14.95m	----
</#3b: SOIL		Client sampling date / time		ISM@:/MÄ!*KÄ!U)!!	ISM@:/MÄ!*KÄ!U)!!	ISM@:/MÄ!*KÄ!U)!!	ISM@:/MÄ!*KÄ!U)!!	MMMM
Compound	CAS Number	LOR	Unit	EB1531174-001	EB1531174-002	EB1531174-003	EB1531174-004	-----
				=%9\$2/	=%9\$2/	=%9\$2/	=%9\$2/	=%9\$2/
EA002 : pH (Soils)								
pH Value		MMMM! *	O_ÄG43/	8.6	8.5	8.5	8.5	----
EA014 Total Soluble Salts								
fÄ Total Soluble Salts		MMMM K	7(JW(	178	116	266	109	----
EA055: Moisture Content								
fÄ Moisture Content (dried @ 103°C)		MMMM *	g	25.2	27.4	24.2	25.1	----
EA084: Saturated Resistivity								
fÄ Resistivity at 25°C		MMMM *!	+J7Ä;7	1680	1780	1220	3640	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	*IU!UMRSMU	*!	7(JW(	a!	a!	a!	a!	----
ED045G: Chloride by Discrete Analyser								
Chloride	*QUURM!MQ	*!	7(JW(	70	50	100	40	----

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100188- UU
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	14/10/2015
		Report Date	19/10/2015
Client ID	BH 2	Depth (m)	5.50-5.86
Description	SILTY CLAY-dark brown/grey	Sample Type	Single Individual Undisturbed Specimen

Mohr Circle Diagram



Interpretation between stages	1 to 2	2 to 3	1 to 3
Cohesion C (kPa)	106.2	112.9	110.2
Angle of Shear Resistance Φ ($^{\circ}$)	4.7	2.9	3.5

MOISTURE CONTENTS	Initial 32.3 %	Final 32.3 %	Failure Criteria	Peak Shear Stress		
SAMPLE & TEST DETAILS			FAILURE DETAILS			
Sample Details		Confining Pressure	Principal Stresses		Deviator Stress	Strain
Initial Height	103.1 mm		σ_1	σ_3		
Initial Diameter	46.9 mm	50 kPa	290 kPa	50 kPa	240 kPa	2.87 %
Wet Density	1.96 t/m ³	100 kPa	348 kPa	100 kPa	248 kPa	3.76 %
Dry Density	1.48 t/m ³	200 kPa	459 kPa	200 kPa	259 kPa	6.29 %
Rate of Strain	0.970 % / min					

Notes/Remarks:

Graph not to scale

Tested as received

Page 1 of 3 REP2601

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Not relevant



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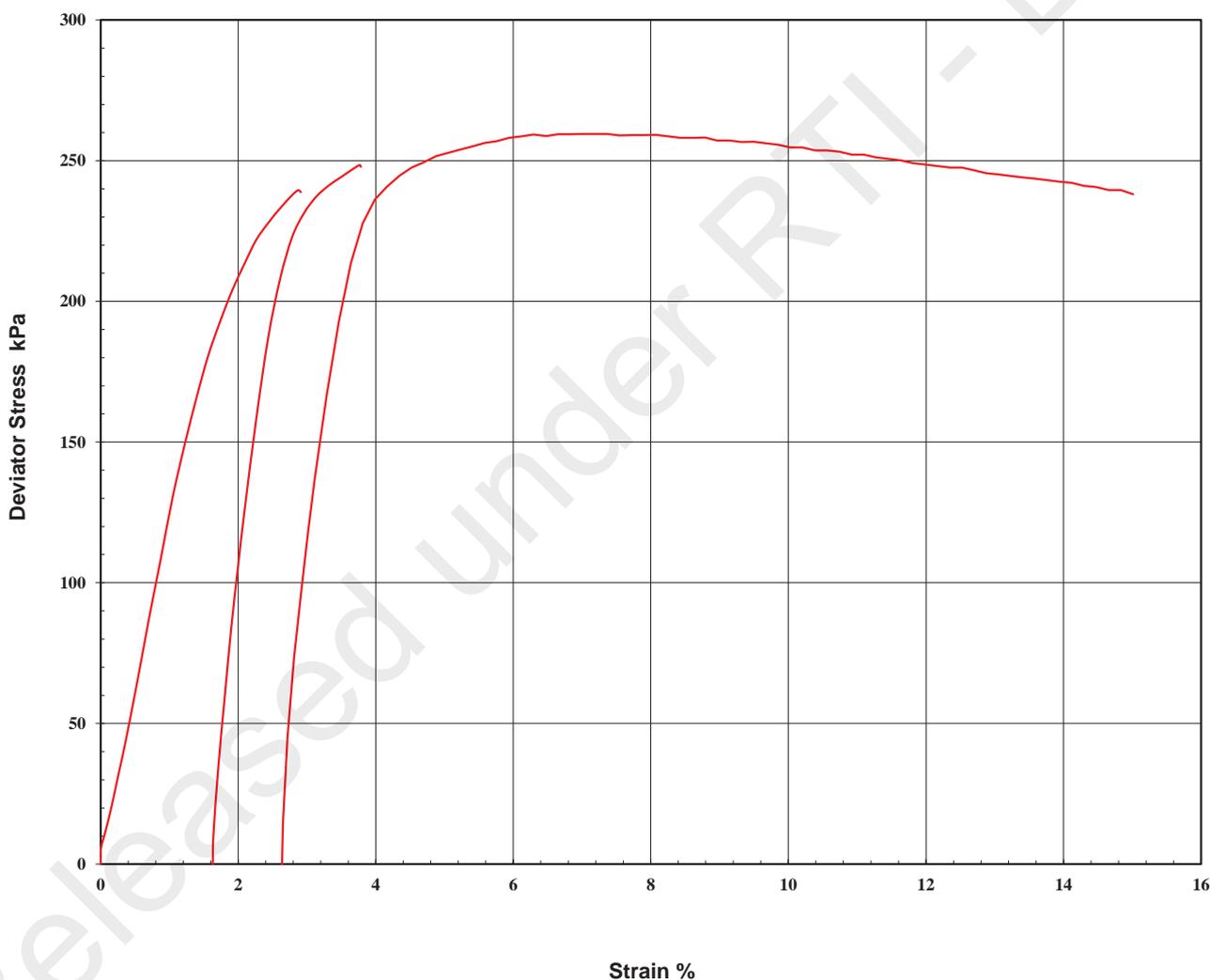
RT113576113 - File No. 15-06-00185

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client Morrison Geotechnic Pty Ltd	Report No. 15100188- UU
Project GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date 14/10/2015 Report Date 19/10/2015
Client ID BH 2	Depth (m) 5.50-5.86
Description SILTY CLAY-dark brown/grey	Sample Type Single Individual Undisturbed Specimen

Stress/Strain Diagram



Notes/Remarks:

Graph not to scale

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RTI13506103 - File No. 15100188

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100188- UU
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	14/10/2015
		Report Date	19/10/2015
Client ID	BH 2	Depth (m)	5.50-5.86
Description	SILTY CLAY-dark brown/grey	Sample Type	Single Individual Undisturbed Specimen

CLIENT:	Morrison Geotechnic Pty Ltd	AFTER TEST
PROJECT:	GE15/160 - Geotech Investigation - Bridge.	
LAB SAMPLE No.	15100188	
BOREHOLE:	BH 2	
		DATE: 14/10/15
		DEPTH: 5.50-5.86



Notes/Remarks:
Graph not to scale

Photo not to scale
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Page 3 of 3 REP2601

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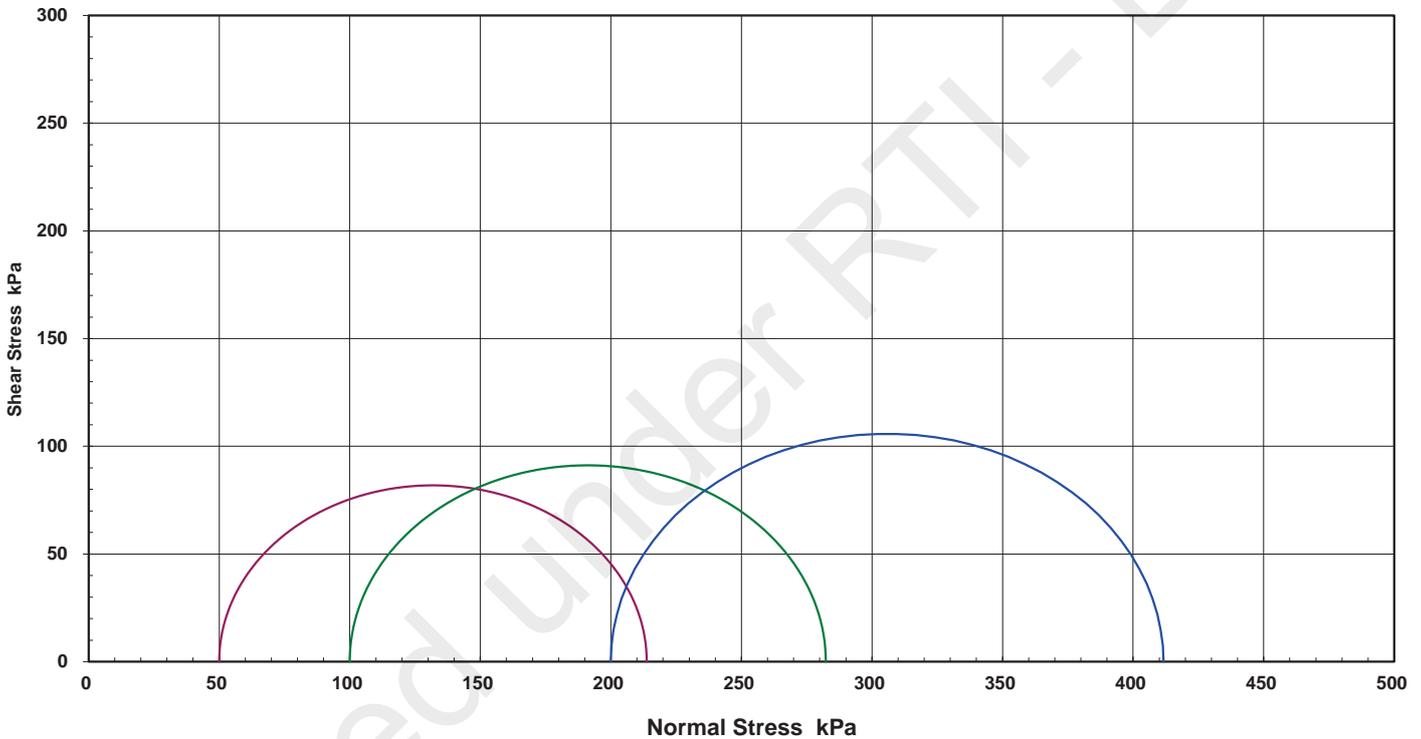
RT1135706103 - File No. 15265 680185

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100189- UU
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	16/10/2015
		Report Date	19/10/2015
Client ID	BH 2	Depth (m)	8.50-8.88
Description	CLAYEY SILTY SAND-brown/grey	Sample Type	Single Individual Undisturbed Specimen

Mohr Circle Diagram



Interpretation between stages	1 to 2	2 to 3	1 to 3
Cohesion C (kPa)	62.0	67.3	65.0
Angle of Shear Resistance Φ ($^{\circ}$)	9.0	7.3	7.8

MOISTURE CONTENTS	Initial 31.9 %	Final 31.9 %	Failure Criteria	Peak Shear Stress		
SAMPLE & TEST DETAILS			FAILURE DETAILS			
Sample Details		Confining Pressure	Principal Stresses		Deviator Stress	Strain
Initial Height	97.9 mm		σ_1	σ_3		
Initial Diameter	47.5 mm	50 kPa	214 kPa	50 kPa	164 kPa	2.30 %
Wet Density	1.92 t/m ³	100 kPa	282 kPa	100 kPa	182 kPa	3.55 %
Dry Density	1.45 t/m ³	200 kPa	412 kPa	200 kPa	212 kPa	5.30 %
Rate of Strain	1.021 % / min					

Notes/Remarks:

Graph not to scale

Tested as received

Page 1 of 3 REP2601

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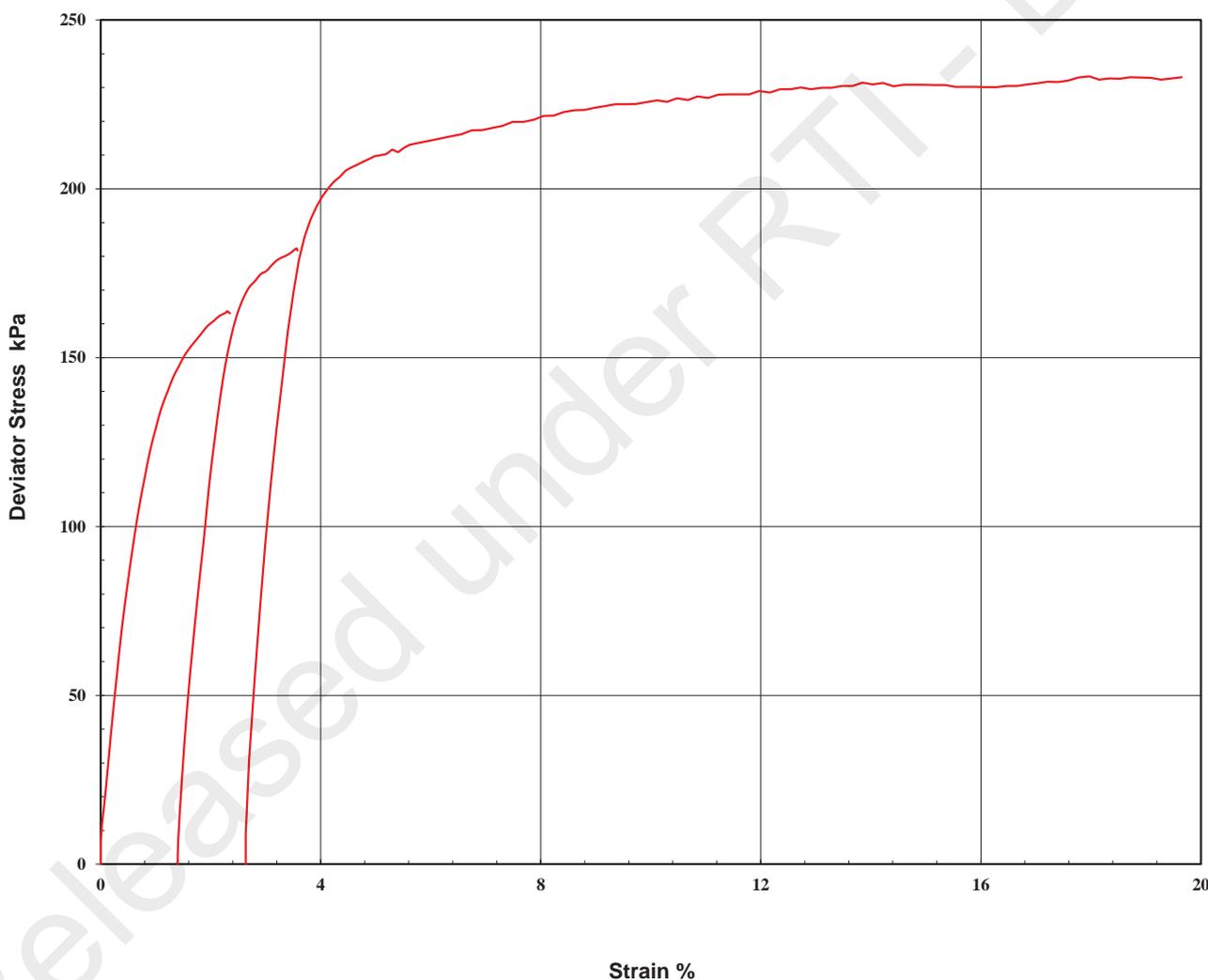
RT1135706103 - File No. 15-06-000185

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client Morrison Geotechnic Pty Ltd	Report No. 15100189- UU
Project GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date 16/10/2015 Report Date 19/10/2015
Client ID BH 2	Depth (m) 8.50-8.88
Description CLAYEY SILTY SAND-brown/grey	Sample Type Single Individual Undisturbed Specimen

Stress/Strain Diagram



Notes/Remarks:

Graph not to scale

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RT1135/06103 - File No. 15100189

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100189- UU
Project	GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date	16/10/2015
Client ID	BH 2	Report Date	19/10/2015
Description	CLAYEY SILTY SAND-brown/grey	Depth (m)	8.50-8.88
		Sample Type	Single Individual Undisturbed Specimen

CLIENT:	Morrison Geotechnic Pty Ltd	
PROJECT:	GE15/160 - Geotech Investigation - Bridge,	AFTER TEST
LAB SAMPLE No.	15100189	DATE: 16/10/15
BOREHOLE:	BH 2	DEPTH: 8.50-8.88



Notes/Remarks:
Graph not to scale

Photo not to scale
Tested as received

Page 3 of 3 REP2601

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RT113506103 - File No. 15100189

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

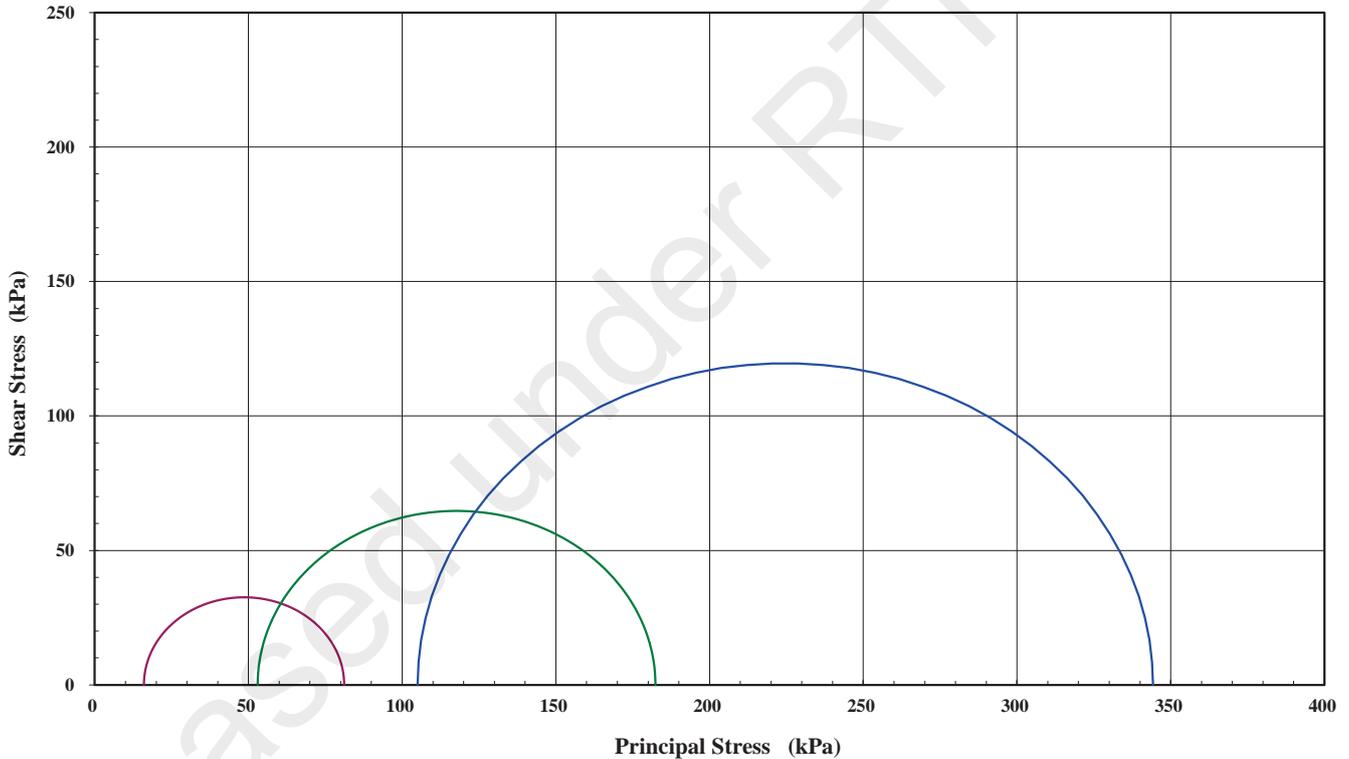
Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80

Description: SANDY CLAYEY SILT-dark brown

SAMPLE & TEST DETAILS

Initial Height: 104.1 mm	Initial Moisture Content: 37.1 %	Rate of Strain: 0.006 %/min
Initial Diameter: 47.0 mm	Final Moisture Content: 36.6 %	B Response: 97 %
L/D Ratio: 2.2 : 1	Wet Density: 1.78 t/m ³	
	Dry Density: 1.30 t/m ³	

Mohr Circle Diagram



Interpretation between stages :	1 to 2	2 to 3	1 to 3
Cohesion C' (kPa) :	11.3	4.9	8.8
Angle of Shear Resistance Φ' (Degrees) :	27.7	30.9	29.7
Failure Criteria:	Peak Principal Stress Ratio		

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 1
REP03001

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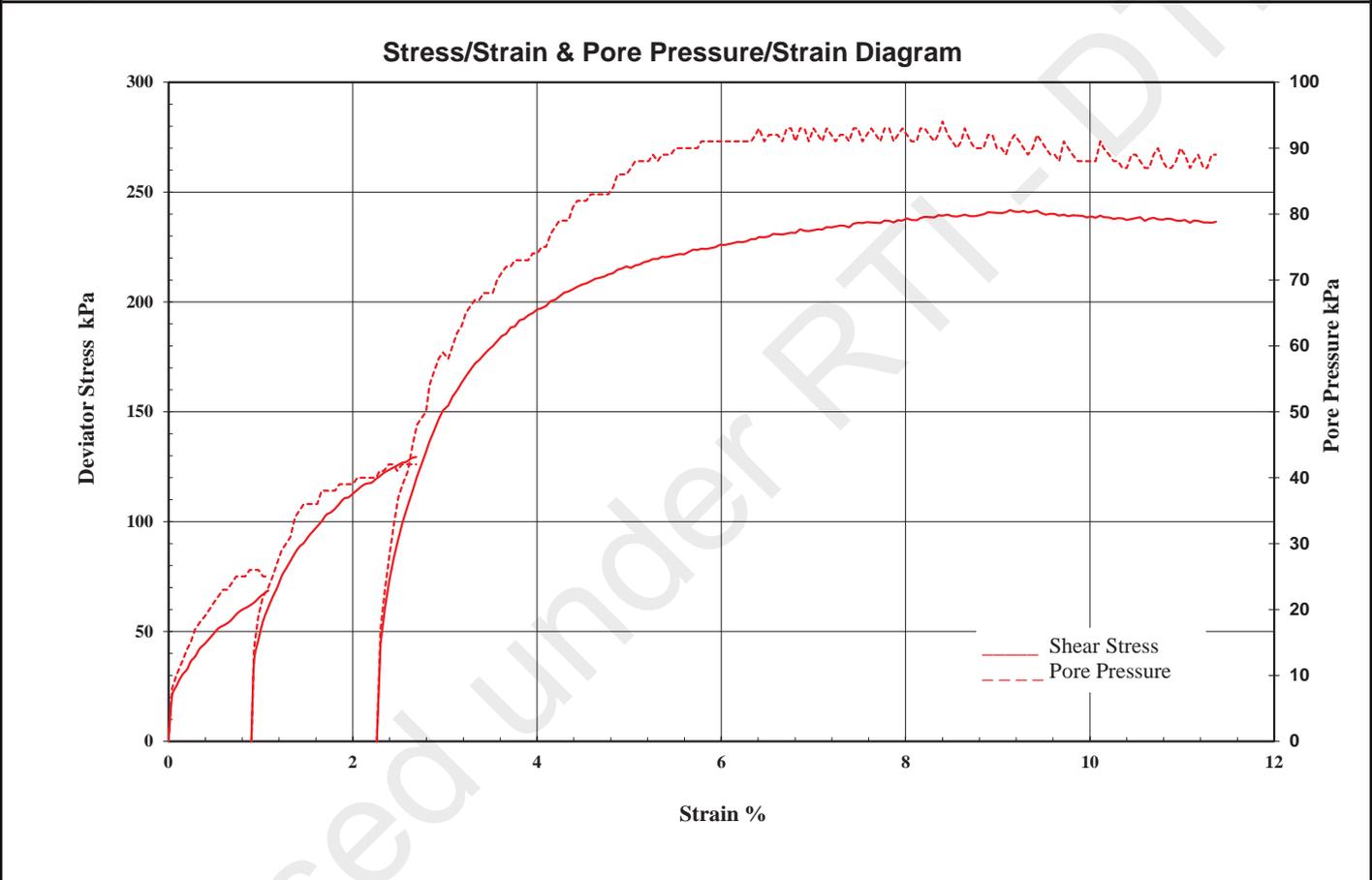
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80

Description: SANDY CLAYEY SILT-dark brown



FAILURE DETAILS

Effective Pressure	Confining Pressure	Back Pressure	Initial Pore	Failure Pore	Principal Effective Stresses			Deviator Stress	Strain
					σ'_1	σ'_3	σ'_1 / σ'_3		
42 kPa	548 kPa	506 kPa	506 kPa	532 kPa	81 kPa	16 kPa	5.071	65 kPa	0.98 %
95 kPa	601 kPa	506 kPa	506 kPa	548 kPa	182 kPa	53 kPa	3.441	129 kPa	2.69 %
199 kPa	705 kPa	506 kPa	506 kPa	600 kPa	344 kPa	105 kPa	3.279	239 kPa	8.40 %

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 2
REP03001

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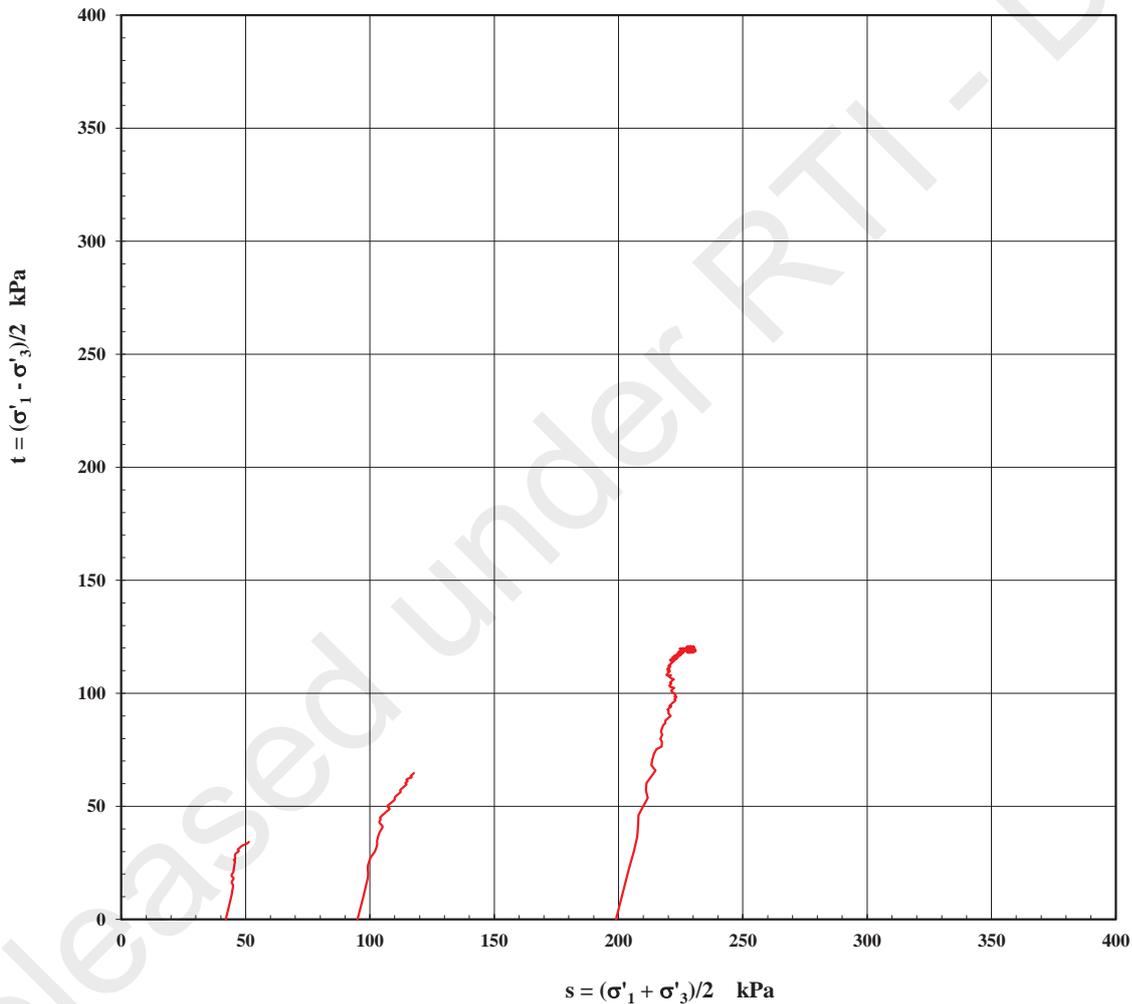
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80
Description: SANDY CLAYEY SILT-dark brown	

MIT Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 3

REP03001

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Laboratory Number
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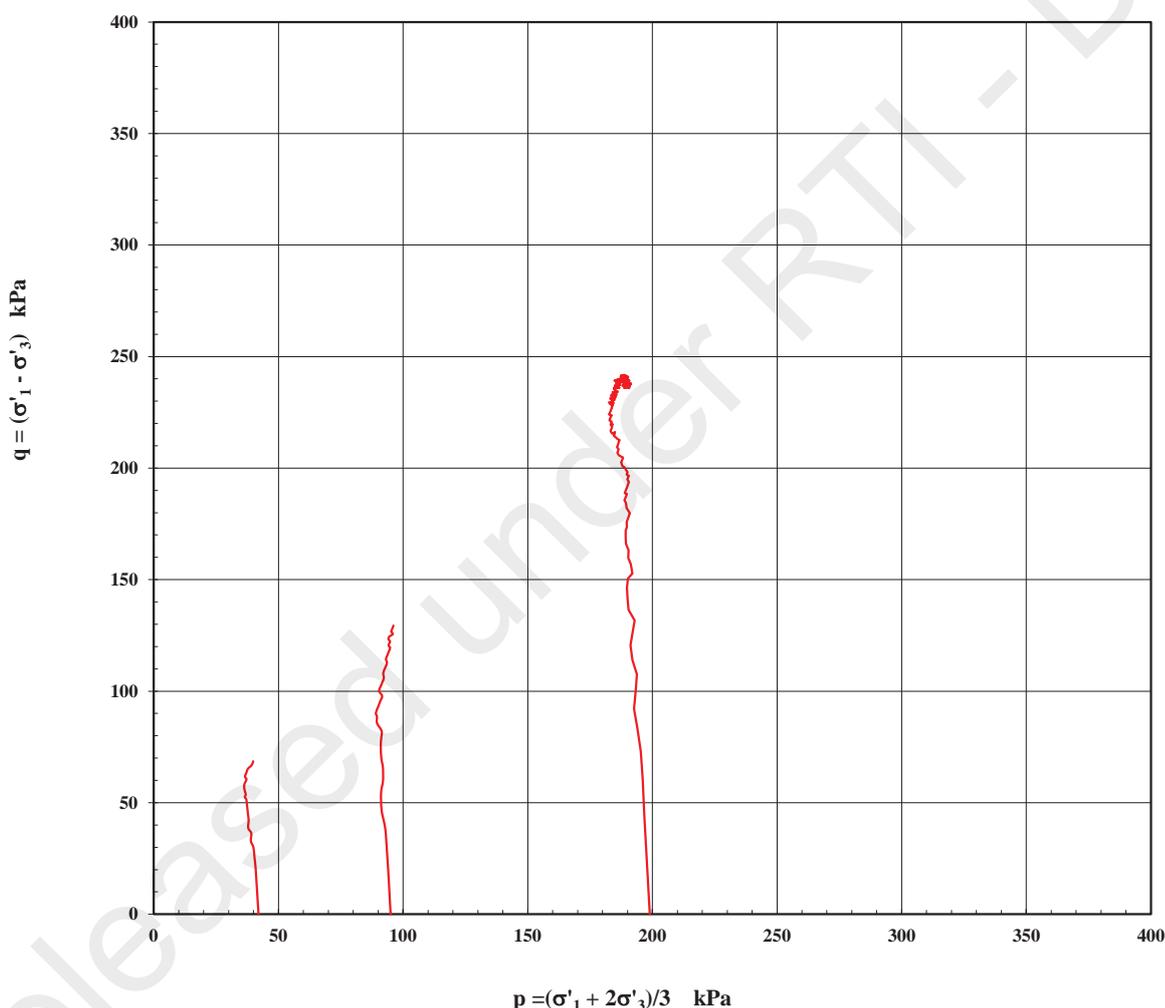
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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80
Description: SANDY CLAYEY SILT-dark brown	

Cambridge Method - Effective Stress Path



Note: Graph not to scale.

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 4

REP03001

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TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80
Description: SANDY CLAYEY SILT-dark brown	



Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 5

REP03001

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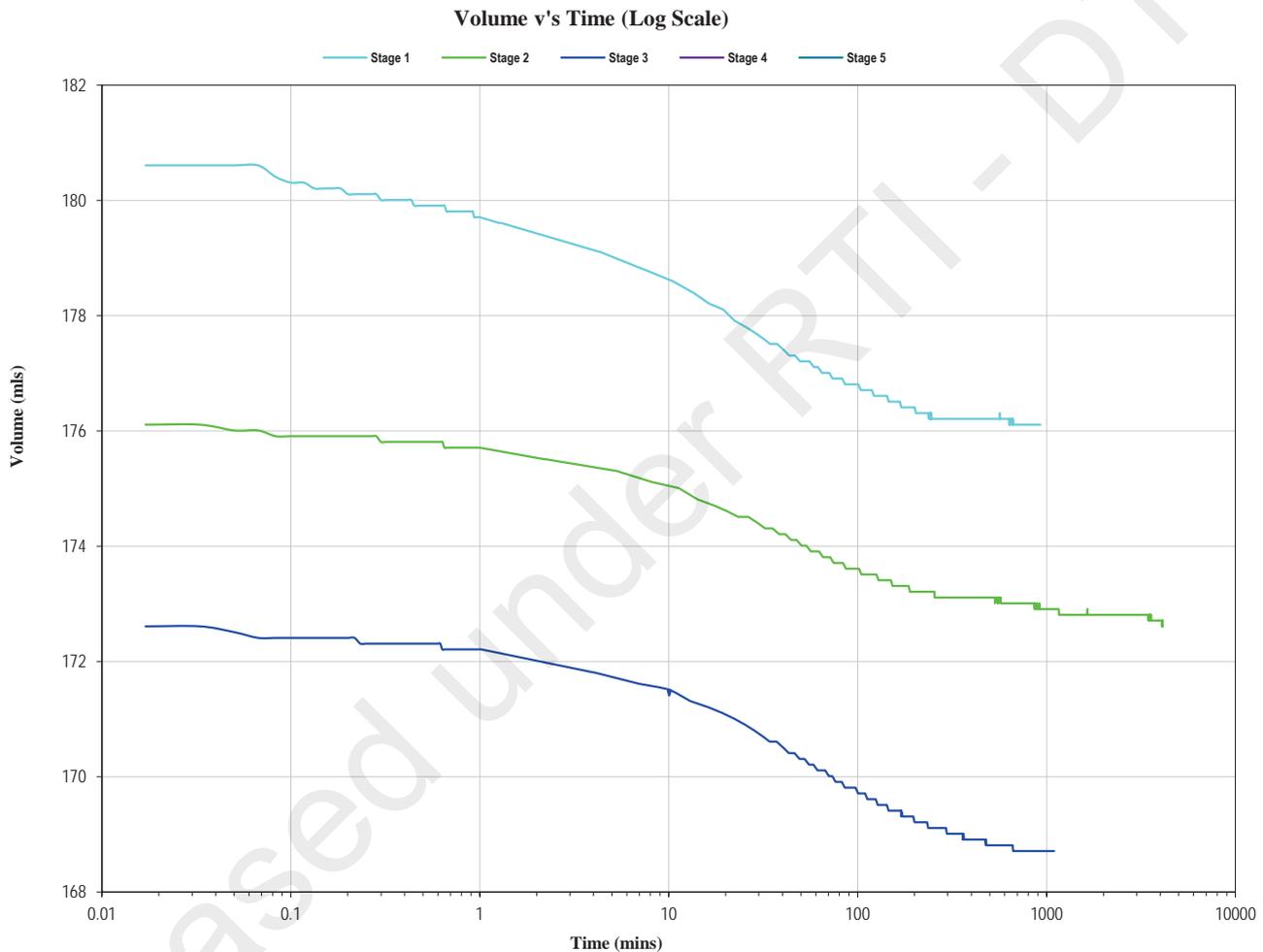
Laboratory Number
9926

TRIAXIAL TEST REPORT

Test Method: AS1289.6.4.2

Client: Morrison Geotechnic Pty Ltd	Report No.: 15100187 - CU
Project: GE15/160 - Geotech Investigation - Bridge, Beaudesert Bypass	Test Date: 14/10/2015 Report Date: 26/10/2015
Client Id.: BH 1	Depth (m): 5.50-5.80

Description: SANDY CLAYEY SILT-dark brown



	Stage 1	Stage 2	Stage 3
Cv (m ² /year) :	0.23	0.47	0.34
Mv (m ² /MN) :	0.580	0.431	0.321
k (m/s) :	4.10E-11	6.24E-11	3.42E-11

Sample Type: Single Individual Undisturbed Specimen	Remarks: Tested as Received
Sample/s supplied by the client	Note: Graph not to scale

Page 6

REP03001

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory
Authorised Signatory
Not relevant



Laboratory Number
9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated.

Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.

UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100276-MOD
Project	GE15/160 - Geotechnical Investigation for New Bridge	Test Date	23/10/2015
		Report Date	26/10/2015
Client ID	BH1 - 508	Depth (m)	21.30-21.48
Description	Insitu		
Sample Type	Single Individual Rock Core Specimen		

Uniaxial Compressive Strength 5.92 MPa

Young's Modulus

Tangent 4.97 GPa

Secant 5.16 GPa

Poisson Ratio

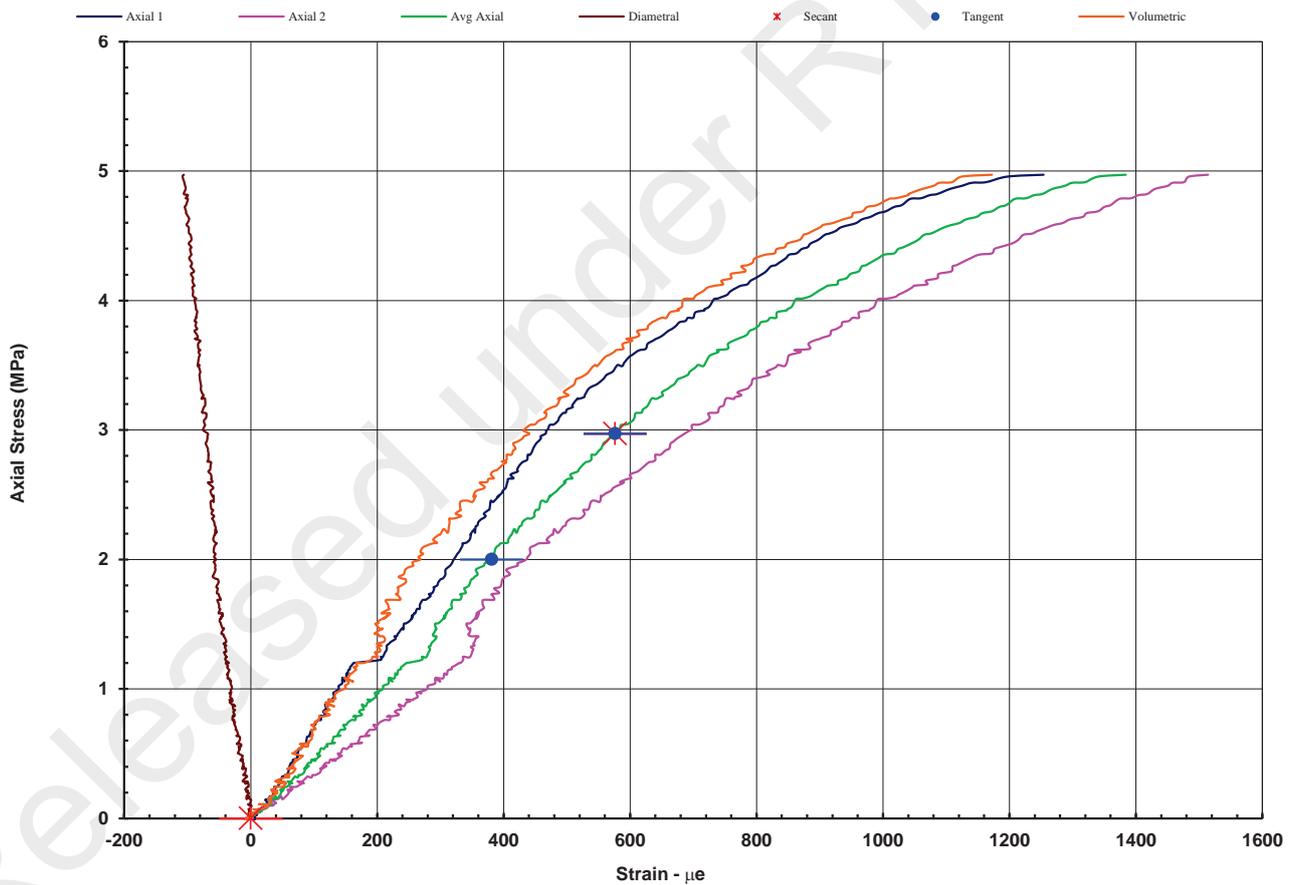
0.118

from 34 % to 50 % of Max UCS

0.118

from 0 % to 50 % of Max UCS

Axial Stress vs Strain Plots



Notes/Remarks:

Sample/s supplied by client Graph not to scale Tested as received. Page 1 of 2 REP03603

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory
Not relevant



Laboratory No. 9926

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UNIAXIAL COMPRESSIVE STRENGTH & DEFORMATION TEST REPORT

Test Method: AS 4133.4.3.1

Client	Morrison Geotechnic Pty Ltd	Report No.	15100276-MOD
Project	GE15/160 - Geotechnical Investigation for New Bridge	Test Date	23/10/2015
		Report Date	26/10/2015
Client ID	BH1 - 508	Depth (m)	21.30-21.48
Description	Insitu		
Sample Type	Single Individual Rock Core Specimen		
Uniaxial Compressive Strength		5.92 MPa	
Average Sample Diameter (mm)	51.6	Moisture Content (%)	17.7
Sample Height (mm)	141.3	Wet Density (t/m ³)	2.17
Duration of Test (min)	4.20	Dry Density (t/m ³)	1.84
Rate of Loading (MPa/min)	1.41	Bedding (°)	Nil
Mode of Failure	Shear	Test Apparatus	Kelba 1000kN Load Cell

CLIENT:	Morrison Geotechnic Pty Ltd	
PROJECT:	GE15/160 - Geotechnical Investigation for New Bridge	AFTER TEST
LAB SAMPLE No.	15100276	DATE: 23/10/15
BOREHOLE:	BH1 - 508	DEPTH: 21.30-21.48



Notes/Remarks:

Sample/s supplied by client Graph not to scale Tested as received. Page 2 of 2 REP03603

Accredited for compliance with ISO/IEC 17025.
The results of the tests, calibrations, and/or measurements included in this document are traceable to Australian/National Standards.

Tested at Trilab Brisbane Laboratory.

Authorised Signatory

Not relevant



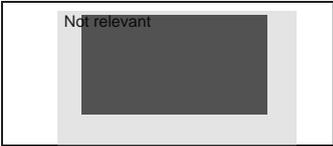
Laboratory No. 9926

The results of calibrations and tests performed apply only to the specific instrument or sample at the time of test unless otherwise clearly stated. Reference should be made to Trilab's "Standard Terms and Conditions of Business" for further details.



UNIAXIAL COMPRESSION REPORT - Rock Core

Client	Aussie Hydrovac Services	Report No:	GE15 - 160 - 7
Job No.	GE15 - 160	Report Date:	22/10/2015
Project:	INVESTIGATION		
Location	BEAUDESERT BYPASS BRIDGE - BEAUDESERT		
Laboratory ID No.	509		
Borehole No:	BH 1		
Depth Of Specimen(m):	23.30 - 23.50		
Date of Compression:	21/10/2015		
Date of Coring:	22/09/2015		
Test Duration: (min:sec)	9:46		
Failure Type:	Multi Shear Plane		
Rock Classification:	DW-SW Bassalt		
Height & Diameter of Specimen (mm):	156.0 x 51.7		
Height to Diameter Ratio: (x:1)	3.02		
Rate of Displacement:	0.05mm/min		
Correction Factor	NA		
Density (t/m ³):	2.320		
COMPRESSIVE STRENGTH (MPa)	7.5		
CORRECTED MPa	7.5		
Remarks:	Rate of Displacement was 0.05mm/min to 5minutes, rate then increased to 0.09mm/min to failure.		





UNIAXIAL COMPRESSION REPORT - Rock Core

Client	Aussie Hydrovac Services	Report No:	GE15 - 160 - 8
Job No.	GE15 - 160	Report Date:	22/10/2015
Project:	INVESTIGATION		
Location	BEAUDESERT BYPASS BRIDGE - BEAUDESERT		
Laboratory ID No.	510		
Borehole No:	BH 2		
Depth Of Specimen(m):	20.65 - 20.85		
Date of Compression:	21/10/2015		
Date of Coring:	22/09/2015		
Test Duration: (min:sec)	10:40		
Failure Type:	Mixed Mode/ Tensile dominated		
Rock Classification:	DW-SW Bassalt		
Height & Diameter of Specimen (mm):	103.4 x 51.7		
Height to Diameter Ratio: (x:1)	2.00		
Rate of Displacement:	0.05mm/min		
Correction Factor	NA		
Density (t/m ³):	2.300		
COMPRESSIVE STRENGTH (MPa)	16.0		
CORRECTED MPa	16.0		
Remarks:	Rate of Displacement was 0.05mm/min to 5minutes, rate then increased to 0.09mm/min to failure.		





UNIAXIAL COMPRESSION REPORT - Rock Core

Client	Aussie Hydrovac Services	Report No:	GE15 - 160 - 9
Job No.	GE15 - 160	Report Date:	22/10/2015
Project:	INVESTIGATION		
Location	BEAUDESERT BYPASS BRIDGE - BEAUDESERT		
Laboratory ID No.	511		
Borehole No:	BH 2		
Depth Of Specimen(m):	22.70 - 22.87		
Date of Compression:	21/10/2015		
Date of Coring:	22/09/2015		
Test Duration: (min:sec)	13:28		
Failure Type:	Tensile Dominated		
Rock Classification:	DW-SW Bassalt		
Height & Diameter of Specimen (mm):	143.0 x 51.8		
Height to Diameter Ratio: (x:1)	2.76		
Rate of Displacement:	0.05mm/min		
Correction Factor	NA		
Density (t/m ³):	2.400		
COMPRESSIVE STRENGTH (MPa)	25.5		
CORRECTED MPa	25.5		
Remarks:	Rate of Displacement was 0.05mm/min to 5minutes, rate then increased to 0.09mm/min to failure.		



POINT LOAD TEST - AS4133 4.1						
Client: Aussie Hydrovac Services				Job Number: GE15/160		
Project: Geotechnical Investigation for Bridge				Lab Sample Number: 512 to 531		
Location: Spring Creek, Beaudesert Bypass, Beaudesert				Date: 21/10/2015		
Sample Number	Borehole Number	Depth (m)	Is (MPa)	Is(50) (MPa)	Loading Direction	Descriptive Term
522	BH1	18.85	0.34	0.35	Diametral	M*
523	BH1	19.25	1.35	1.37	Diametral	H
523	BH1	19.25	1.36	1.36	Axial	H
524	BH1	19.55	0.25	0.26	Diametral	L-M*
525	BH1	19.90	0.61	0.61	Diametral	M*
526	BH1	20.25	0.48	0.49	Diametral	M
527	BH1	21.50	0.42	0.43	Diametral	M*
527	BH1	21.50	0.92	0.89	Axial	M
528	BH1	22.35	1.84	1.87	Diametral	H
528	BH1	22.35	1.89	1.72	Axial	H
529	BH1	22.60	0.59	0.60	Diametral	M*
530	BH1	23.50	0.92	0.93	Diametral	M*
531	BH1	23.95	1.23	1.24	Diametral	H
512	BH2	19.95	0.67	0.68	Diametral	M*
513	BH2	20.60	0.93	0.94	Diametral	M-H
514	BH2	21.05	1.59	1.61	Diametral	H
515	BH2	21.70	1.29	1.31	Diametral	H
516	BH2	22.45	2.69	2.73	Diametral	H
517	BH2	22.70	0.67	0.68	Diametral	M*
517	BH2	22.70	3.39	3.34	Axial	VH
518	BH2	22.90	1.75	1.78	Diametral	H
518	BH2	22.90	1.27	1.28	Axial	H
519	BH2	23.40	1.75	1.78	Diametral	H
519	BH2	23.40	1.65	1.55	Axial	H
520	BH2	23.80	0.48	0.49	Diametral	M
520	BH2	23.80	0.39	0.41	Axial	M
521	BH2	24.45	4.08	4.14	Diametral	VH

Remarks:
 All tested samples comprised Argillite which is typically Moderately Weathered (MW) and Slightly Weathered (SW)
 *Denotes failed along defect plane.

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

Authorised Signatory

Not relevant

Important Information about Your Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared *solely* for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report* whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. *Always* contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are *Not* Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time* to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

Rely on Your ASFE-Member Geotechnical Engineer for Additional Assistance

Membership in ASFE/THE BEST PEOPLE ON EARTH exposes geotechnical engineers to a wide array of risk management techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your ASFE-member geotechnical engineer for more information.



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IIGER06085.0MRP



Conformance Report

J518-1; Beaudesert Town Centre Bypass

Lot: EM006

Lot: EM006

Work Type: EM

Area:

Description: Road Embankment
Zone 1 (North)
MC20 CH 170-371
MC10 CH 40480-40530
Helen St to Cut/Fill Line

Other Details:

Raised By:

Not relevant

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 08 Feb 2017 **Closed:** 28 Feb 2017

Work St: 08 Feb 2017 **Work End:** 28 Feb 2017

Guaranteed: **Conformed:** 15 Mar 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3301.02	Road embankment (Class B) (MRS04 Oct 14)	3,132.8	3,132.8 m3

QVCs:

Embankment, General Fill Road Embankment
Zone 1 (North)
MC20 CH 170-371
MC10 CH 40480-40530
Helen St to Cut/Fill Line

NCRs:

ATPs:

Related Lots:

Variations:

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Not relevant

Approved by (signature): _____

Not relevant

Print Name: _____ **Date:** 15/03/17



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EM006

Lot: EM006

Work Type: EM

Area:

Description: Road Embankment Zone 1 (North) MC20 CH 30-371 MC10 CH 40480-40530 Helen St to Cut/Fill Line

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3301.02: Road embankment (Class B) (MRS04 Oct 14) (m3)	3,132.8	3,132.8	Feb EOM <i>previous claim</i>
3301.02: Road embankment (Class B) (MRS04 Oct 14) (m3)	422.1	422.1	MAR EOM Yes <i>This claim</i>

Approved By:

Signature:

Not relevant

(March claim)

Print Name:

Not relevant

Date: *5.4.17*

Brisbane St MC20 (opposite caltex)



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EM006

Lot: EM006

Work Type: EM

Area:

Description: Road Embankment Zone 1 (North) MC20 CH 170-371 MC10 CH 40480-40530 Helen St to Cut/Fill Line

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3301.02: Road embankment (Class B) (MRS04 Oct 14) (m3)	3,132.8	0	

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date:

1/3/17

*Embankment fill maybe
outside limit of works.
To be reconciled in March.



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0405Embankment, General Fill

Lot: EM006 Road Embankment
 Zone 1 (North)
 MC20 CH 170-371
 MC10 CH 40480-40530
 Helen St to Cut/Fill Line

Date Open: 08 Feb 2017 **Date Work Starts:** 08 Feb 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 2000m ³ .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	Embankment Material MRTS04 Clause 14.2.1 Responsibility: Project Engineer General fill material used for the construction of road embankments shall be sourced from general excavations on site or from borrow. The material shall comply with the requirements stated in Table 14.2.2 & additional requirements in MRTS04.1 Clause 10.1 TEST - Material Properties Particle Size Distribution, CBR, Atterberg Limits Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10% Test Frequency - All testing at 1 per 2000m ³ .	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Check Item	Construction MRTS04 Clause 14.3.1 Responsibility: Works Supervisor Embankments shall be constructed to the shapes, zones and other requirements shown on the drawings or otherwise as specified.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Check Item	Compacted Layer Method of Construction MRTS04 Clause 15.3 Responsibility: Works Supervisor / Project Engineer Embankment compacted to required density (by characteristic Value) Refer to Table 15.3-B MRTS04 for more information. Fill material placed uniformly in layers. Uncompacted layer thicknesses; - General fill material in road embankment 150 to 300 - Subgrade 100 to 200 TEST - Sand Replacement Required Standard - 95% RDD Test Frequency - 1 per 500m ³ , Min 4 per Lot	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3133 m³ Lot Size

*All tests pass.
 Test frequency as per attached spreadsheet.
 i.e. 1 per 1915m³*

*All tests pass
 10 x Results
 3133m³ Lot Size
 2 test per 313m³*



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0405Embankment, General Fill

Lot: EM006 Road Embankment
Zone 1 (North)
MC20 CH 170-371
MC10 CH 40480-40530
Helen St to Cut/Fill Line

Date Open: 08 Feb 2017 Date Work Starts: 08 Feb 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
6 Check Item	Moisture Content MRTS04 Clause 15.3 Responsibility: Works Supervisor The embankment material shall be placed and compacted at a moisture content within ranges specified in table 15.3C	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Some moisture content > 8.5% Compaction Achieved			
7 Check Item	Geometric Tolerances MRTS04 Clause 6.3 Responsibility: Works Supervisor / Surveyor Where embankment construction is near subgrade zone, ensure embankment is within tolerances specified in table 6.3.1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Layer Layer Thickness Did not exceed 300mm			

Item No.	Description	Qty

Comments

Responsible Officer

Verifying Authority

Signature:

Not relevant

Print Name:

Not relevant

Date: 15/03/17

Date: _____

EMBANKMENT FILL MATERIAL PROPERTY TESTING SUMMARY					
Lot Number	Test Request No.	Date Sampled	CBR	PI	% Passing 0.075
EM001	TR8	2/02/2017	12	15.2	18
EM004	TR17	8/02/2017	19	23.8	23
EM005	TR20	9/02/2007	11	21.8	29
EM006	TR30	13/02/2017	11	21.8	25
EM002	TR35	14/02/2017	14	16	18
EM004	TR48	16/02/2017	12	23	20
EM005	TR41	16/02/2017	14.1	23.2	23
EM003	TR62	18/02/2017	12	22.8	25
EM003	TR14	20/02/2017	18	12	29
EM003	TR81	23/02/2017	10	21.8	26
EM003	TR97	25/02/2017	20	26.2	24
EM007	TR111	28/02/2017	17	22.2	15
Total Volume of Lots EM001-EM007					
24892.1m ³					
Total Number of Material Property Tests Performed					
13					
Test Frequency					
1 per 1915m ³					



ASCT Brisbane South
 PO Box 1232 Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
Telephone:
E-Mail:
Mobile:
A.B.N.

Not relevant
 brisbane.south@asct.com.au
 Not relevant
 73 193 500 470

CALIFORNIA BEARING RATIO REPORT

Client:	See Civil Pty Ltd	Report No:	88
Client Address:	24A Ozone Street, Tweed Heads, NSW, 2486	Report Date:	21/02/2017
Project:	Beaudesert Town Centre Bypass Project	Project No:	115
Component:	MC20	Test Request:	TR-030

Sample Information

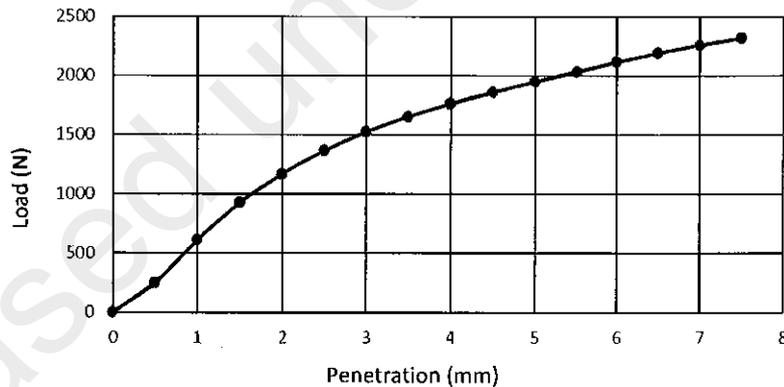
Sample Number:	4266	Lot Number:	EM-006
Sample Date:	13/02/2017	Penetration Date:	20/02/2017
Chainage/RL:	273	Material Type:	Cryna Quarry
Offset/RL:	2.0m R	Soil Description:	Gravelly Clay, Brown
Control Line:	MC20	Sampling Method:	Q061
Layer/Depth:	Layer 3	ITP/PCP Number:	N/A

Test Data

Density		Moisture	
Maximum Dry Density:	1.900 t/m ³	Optimum Moisture Content:	12.8 %
Dry Density Before Soak:	1.902 t/m ³	Moisture Content Before Soak:	12.8 %
Specified Density Ratio:	100.0 %	Field Moisture Content:	- %
Laboratory Density Ratio:	100.1 %	Moisture Ratio Required:	100.0 %
Compactive Effort	Standard	Laboratory Moisture Ratio:	100.0 %
Retained on 19mm Sieve:	8.9 %	Days in Soak:	4
Retained on 37.5mm Sieve:	0.0 %	Swell after Soak:	0.8 %
Mass of Surcharges:	4.5 kg	Top 30mm Moisture (After Soak):	16.1 %
		Whole Sample Moisture (After Soak):	15.2 %

California Bearing Ratio Results

CBR @ 2.5mm = 11 CBR @ 5.0mm = 10.0
 CBR (Soaked) = **11** % at 2.5mm



Procedures Used

- Q113C Determination of the California Bearing Ratio of a Soil - Single Point Standard Laboratory Method for a Remoulded Specimen.
- Q142A Dry Density / Moisture Content Relationship of a Soil. (Standard Compaction)
- Q102A Determination of the Moisture Content of a Soil - Oven Drying Method (Standard Method)

Test Notes: Material retained on the 19mm sieve has been excluded from the test.



Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Approved By:

Not relevant

Approved Signatory

Lab Site Number: 19902
 Laboratory Name: ASCT Brisbane South



ASCT - Brisbane South
 PO Box 1232, Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
 Telephone Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N: 73 193 500 470

MATERIAL QUALITY REPORT

Client: See Civil Pty Ltd
 Address: 24A Ozone Street, Tweed Heads, NSW, 2486

Job No.: 115
 Report No: 89
 Report Date: 21/02/2017

Project: Beaudesert Town Centre Bypass Project

Location: MC20
 Description: -
 Material Source: Cryna Quarry
 Material Type: General Fill
 Grading Envelope: Class A (MRTS04)
 Client Reference: TR-030

Sample No: 4266
 Sampled By: N/R
 Date Sampled: 13/02/2017
 Tested By: N/R
 Date Tested: 20/02/2017
 Reported By: N/R

Road: MC20
 Chainage: 273
 Offset: 2

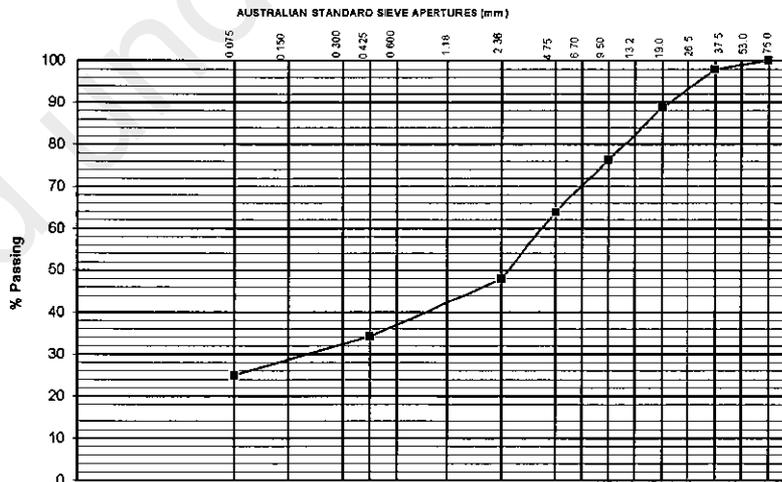
Test Level: Layer 3
 Depth: -

PLASTICITY & LINEAR SHRINKAGE

Test Results	Specification MRTS05	
	Min	Max
Liquid Limit: 38.2 ✓ %	-	-
Plastic Limit: 21.8 ✓ %	-	-
Plasticity Index (PI): 16.4 %	7	-
Linear Shrinkage: 9.5 %	-	-
PI x % passing 0.425mm (WPI): 560 ✓	-	1200
% passing 0.075mm: 25 ✓	15	30

PARTICLE SIZE DISTRIBUTION

Sieve Size (mm)	% Passing (by mass)
75.00	100
37.5	98
19.00	89
9.50	76
4.750	64
2.360	48
0.425	34
0.075	25.0



Test Methods: Q101, Q103A, Q102A, Q104A, Q105, Q106

Sampling Methods: Q061

Remarks:

NR: NOT REQUIRED
 ND: NOT DETERMINED

Not relevant

Approved Signatory Not relevant

Accreditation Number: 19902
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 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **79**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **10/02/2017**
 Component: **MC20** Tested By: **N/R**
 Lot No: **EM-006** Test Date: **9/02/2017**
 Test Request No: **TR-024**

Sample No.:	4208				
Material Source:	Cryna Quarry	-	-	-	-
Material Type:	General Fill	-	-	-	-
Client Reference:	TR-024	-	-	-	-
Control Line / Road:	MC20	-	-	-	-
Chainage:	252	-	-	-	-
Offset:	11	-	-	-	-
Test Level:	Layer 1	-	-	-	-
Test Depth:	200	-	-	-	-
Compactive Effort:	Standard	-	-	-	-
Oversize Sieve Size (mm):	37.5	-	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	2.024	-	-	-	-
Field Moisture Content (%)	6.9	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	2.032	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	9.4	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	74	-	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	99.6	-	-	-	-
Density Ratio Required % :	95.0	-	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	-				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,

Page 1 of 1



Nata Accreditation No: 19902
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Not relevant

Not relevant

Approved Signatory
 ASCT Doc No. Q63 Rev:1, 21/09/2016



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 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **82**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **14/02/2017**
 Component: **MC20** Tested By: **N/R**
 Lot No: **EM-006** Test Date: **10/02/2017**
 Test Request No: **TR-027**

Sample No.:	4244	4245			
Material Source:	Cryna Quarry	Cryna Quarry	-	-	-
Material Type:	Embankment Fill	Embankment Fill	-	-	-
Client Reference:	TR-027	TR-027	-	-	-
Control Line / Road:	MC20	MC20	-	-	-
Chainage:	213	297	-	-	-
Offset:	9	5	-	-	-
Test Level:	Layer 2	Layer 2	-	-	-
Test Depth:	200	200	-	-	-
Compactive Effort:	Standard	Standard	-	-	-
Oversize Sieve Size (mm):	37.5	37.5	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.934	1.931	-	-	-
Field Moisture Content (%)	9.5	10.0	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.980	1.967	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	12.2	12.7	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	78	79	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	97.7	98.2	-	-	-
Density Ratio Required % :	95.0	95.0	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	97.7 ✓				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,



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Not relevant

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Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **85**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **15/02/2017**
 Component: **MC20** Tested By: **N/R**
 Lot No: **EM-006** Test Date: **13/02/2017**
 Test Request No: **TR-030**

Sample No.:	4262	4263	4264	4265	4266
Material Source:	Cryna Quarry	Cryna Quarry	Cryna Quarry	Cryna Quarry	Cryna Quarry
Material Type:	General Fill	General Fill	General Fill	General Fill	General Fill
Client Reference:	TR-030	TR-030	TR-030	TR-030	TR-030
Control Line / Road:	MC20	MC20	MC20	MC20	MC20
Chainage:	193	217	228	261	273
Offset:	29	9	5	6	2
Test Level:	Layer 4	Layer 5	Layer 6	Layer 3	Layer 3
Test Depth:	200	200	200	200	200
Compactive Effort:	Standard	Standard	Standard	Standard	Standard
Oversize Sieve Size (mm):	37.5	37.5	37.5	37.5	37.5
Percentage of Oversize Dry (%):	4	9	2	6	6
Density of Oversize (t/m3)	2.668	2.690	2.710	2.649	2.667
Field Dry Density (t/m3)	2.003	2.017	1.979	1.987	2.010
Field Moisture Content (%)	8.2	8.0	8.4	8.3	8.3
Assigned Value Report No:	AV25				
Assigned Value Report Date:	15/02/2017				
Maximum Dry Density (t/m3)	2.000	2.000	2.000	2.000	2.000
Adjusted Maximum Dry Density (t/m3)	2.022	2.046	2.011	2.030	2.031
Optimum Moisture Content (%)	10.9	10.4	11.2	10.7	10.7
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	72	70	74	73	73
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	99.1	98.6	98.4	97.9	99.0
Density Ratio Required % :	95.0	95.0	95.0	95.0	95.0
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	98.2				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,

Page 1 of 1



Nata Accreditation No: 19902
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Not relevant

Not relevant

Approved Signatory
 ASCT Doc No. Q63 Rev:1, 21/09/2016



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 4/31 Tradelink Road Hillcrest Q 4118
 Email: brisbane.south@asct.com.au

Telephone: Not relevant
 Mobile: Not relevant
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REPORT OF FIELD DENSITY

CLIENT: See Civil Pty Ltd
 ADDRESS: 24A Ozone Street, Tweed Heads, NSW, 2486
 PROJECT: Beaudesert Town Centre Bypass Project
 JOB No.: 115
 LOCATION: MC20

REPORT NO: 268
 LOT NO: EM-006
 REQUEST NO: TR-155
 MATERIAL: General Fill
 MATERIAL SOURCE: Cryna Quarry

TESTED BY: N/R
 DATE TESTED: 10/03/2017

REPORTED BY: N/R
 DATE REPORTED: 14/03/17

SAMPLE No.	4969	4970	-	-	-	-	-	-
LOCATION/CHAINAGE (m)	179	231	-	-	-	-	-	-
CONTROL LINE	MC20	MC20	-	-	-	-	-	-
OFFSET (m)	2.1	8.9	-	-	-	-	-	-
LEVEL OF TEST (m)(RL)	Layer 7	Layer 7	-	-	-	-	-	-
TEST DEPTH (mm)	200	200	-	-	-	-	-	-
OVERSIZE /EVE SIZE (mm)	37.5	37.5	-	-	-	-	-	-
% OVERSIZE	11	13	-	-	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.685	2.698	-	-	-	-	-	-
MOISTURE RATIO (%)	85	79	-	-	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.061	2.131	-	-	-	-	-	-
FIELD MOISTURE CONTENT (%)	10.1	8.8	-	-	-	-	-	-
COMPACTION SAMPLE No.	4969	4970	-	-	-	-	-	-
DATED MDD AND OMC TESTED	13/03/2017	13/03/2017	-	-	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	1.982	1.994	-	-	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	2.039	2.063	-	-	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	13.4	12.8	-	-	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	12.0	11.2	-	-	-	-	-	-
DENSITY RATIO: (%)	102.1	103.3	-	-	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	102.0	103.3	-	-	-	-	-	-

TEST PROCEDURES: TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A
 CALIBRATION DETAILS: C4-2-Cryna
 DATE Q144A ASSIGNED: N/A
 LAYER DEPTH (mm): 200

Not relevant
 Authorised Signatory _____



NATA Accreditation Number: 19902
 Laboratory Name: ASCT Brisbane South

ASCT QLD Doc No. Q59 Rev No. 0 02-09-16



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX004

Lot: EX004

Work Type: EX

Area:

Description: Road Excavation
Zone 1 (Brisbane Street)
MC10 CH 40191-40400
Stage 1 (RHS)

Other Details:

Raised By:

Not relevant

Conformed By:

Testing Level:

Normal

Reduced

Key Dates:

Opened: 23 Feb 2017

Closed: 21 Apr 2017

Work St: 23 Feb 2017

Work End: 21 Apr 2017

Guaranteed:

Conformed: 21 Apr 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
2515.03	Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16)	542.3	542.3 m2
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	186.5	186.5 m3
3201.01	Road excavation, all materials (MRS04 Oct 14)	895.7	895.7 m3
VO005	Omitted Item Class A & B Unsuitable Replacement	186.5	186.5 m ³
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	119.3	119.3 m3
2515.03	Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16)	356.2	356.2 m2
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	141.7	141.7 m3
3201.01	Road excavation, all materials (MRS04 Oct 14)	114.6	114.6 m3
2106.01	Removal or demolition of concrete kerb and channel including kerb crossings (MRS03 Apr 16)	96.88	96.88 m
2108.01	Removal or demolition of gullies (MRS03 Apr 16)	3.0	3.0 each

QVCs:

Road Excavation
Zone 1 (Brisbane Street)
MC10 CH 40191-40400
Stage 1 (RHS)

NCRs:

NCR: 6

Description:

Pavement excavation works on Brisbane Street have not been carried out as per the design. There is an area of asphalt overlay (Pavement Type C) which has been profiled to a depth of 300mm, rather than 50mm (as shown on the design detail).

ATPs:

Related Lots:

Variations:



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX004

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Not relevant

Approved by (signature): _____

Not relevant

Print Name: _____ **Date:** 21/4/17

Released under RTI - DRAFT



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX004

Lot: EX004

Work Type: EX

Area:

Description: Road Excavation Zone 1 (Brisbane Street) MC10 CH 40191-40400 Stage 1 (RHS)

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
2515.03: Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16) (m2)	542.3	0	<input checked="" type="checkbox"/>
3109.01P: Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14) (m3)	186.5	0	<input checked="" type="checkbox"/>
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	895.7	0	<input checked="" type="checkbox"/>
VO005: Omitted Item Class A & B Unsuitable Replacement (m ³)	186.5	0	<input checked="" type="checkbox"/>
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	119.3	0	<input checked="" type="checkbox"/>

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date: 7/4/17

Rev 2 - due to increased claim of subgrade treatment as unsuitable.



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX004

Lot: EX004

Work Type: EX

Area:

Description: Road Excavation Zone 1 (Brisbane Street) MC10 CH 40191-40400 Stage 1 (RHS)

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
2515.03: Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16) (m2)	542.3	0	Mar EOM
3109.01P: Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14) (m3)	186.5	0	Mar EOM
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	895.7	0	Mar EOM
VO005: Omitted Item Class A & B Unsuitable Replacement (m³)	186.5	0	Mar EOM
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	119.3	0	Mar EOM
2515.03: Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16) (m2)	356.2	0	Yes April
106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	141.7	0	Yes*
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	114.6	0	Yes

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date: 28.4.17

* previous qty's processed as unsuitable are to be corrected to be GST special where applicable

**Lot Quantity Report**

J518-1: Beaudesert Town Centre Bypass

Lot: EX004

Lot: EX004

Work Type: EX

Area:

Description: Road Excavation Zone 1 (Brisbane Street) MC10 CH 40191-40400 Stage 1 (RHS)

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
2515.03: Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16) (m2)	542.3	0	N/A
3109.01P: Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14) (m3)	186.5	0	N/A
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	895.7	0	N/A
VO005: Omitted Item Class A & B Unsuitable Replacement (m ³)	186.5	0	N/A
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	119.3	0	N/A
2515.03: Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16) (m2)	356.2	0	N/A
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	141.7	0	N/A
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	114.6	0	N/A
2106.01: Removal or demolition of concrete kerb and channel including kerb crossings (MRS03 Apr 16) (m)	96.88	0	Yes
2108.01: Removal or demolition of gullies (MRS03 Apr 16) (each)	3	0	Yes



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX004 Road Excavation
Zone 1 (Brisbane Street)
MC10 CH 40191-40400
Stage 1 (RHS)

Date Open: 23 Feb 2017 **Date Work Starts:** 23 Feb 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	<p>Safety Management Responsibility: Works Supervisor / Project Engineer</p> <p>Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2 Check Item	<p>Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer</p> <p>The maximum lot size shall not exceed 500 lineal meters.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3 Check Item	<p>Construction MRTS04 Clause 13.3.1 Responsibility: Works Supervisor</p> <p>Excavations shall be constructed to the shapes, lines, dimensions and other requirements shown on the drawings. Material within the lines of cuttings which is identified as unsuitable shall not be used in the construction of embankments.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		06
4 Hold Point	<p>Bottom of Excavation HOLD POINT 5 MRTS04 Clause 13.3.2.1 Responsibility: Administrator / Works Supervisor / Project Engineer</p> <p>When the level of excavation has reached subgrade level plus 100mm, the Contractor shall notify the Administrator and cease excavation until the subgrade treatment type has been determined.</p>	<input type="checkbox"/>	<input type="checkbox"/>	N/R	9/03/17
5 Check Item	<p>Unsuitable Material Below the Lines of Cuttings MRTS04 Clause 13.3.2.2 Responsibility: Works Supervisor</p> <p>Material below the finished lines and levels of cuttings, which is Unsuitable Material in accordance with Clause 9.2, shall be removed and disposed in accordance with Clause 9.3</p> <p>Where unsuitable material has been removed, the excavation shall be backfilled to the finished surface level with appropriate fill material.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
6 Check Item	<p>Disposal of Surplus and Unsuitable Material MRTS04 Clause 11.3 Responsibility: Works Supervisor</p> <p>All material excess to project requirements and Unsuitable Materials shall be disposed of off site, unless approved otherwise. All disposed material shall be in accordance with all relevant Statutory Requirements.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Refer to Attached NCR06 for over excavation of pavement type.

REFER TO SKETCHED UP PHOTO/S.

Refer to Lot EX001



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX004 Road Excavation
Zone 1 (Brisbane Street)
MC10 CH 40191-40400
Stage 1 (RHS)

Date Open: 23 Feb 2017 **Date Work Starts:** 23 Feb 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
7 Check Item	<p>Backfill to Unsuitable Excavations MRTS04 Clause 19.3.1 Responsibility: Works Supervisor / Project Engineer</p> <p>The excavation shall be backfilled with general fill material Class A or B and placed in layers with a maximum loose layer thickness of 300mm to achieve a minimum RDD of 95%.</p> <p>TEST - Compaction Required Standard - 95% RDD Frequency: Lot Size < 500m³ - 1 per 50m³ Lot Size 500m³ to 2000m³ - 1 per 150m³ Lot Size > 2000m³ - 1 per 250m³</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="text"/>	<input type="text"/>
Refer to Subgrade Lot SG004					
8 Check Item	<p>Finishing Batters MRTS04 Clause 16 Responsibility: Works Supervisor</p> <p>Batters shall be free of loose material and shall be trimmed neatly to the shapes specified. No portion of a batter shall project beyond the shape specified by more than 300mm or one-third of the height of the batter, whichever is the lesser.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
9 Check Item	<p>Survey MRTS04 Clause 6.3.1 Responsibility: Works Supervisor / Surveyor</p> <p>The top of the insitu material below subgrade in cuttings shall be neatly trimmed and surveyed. The specified tolerance is +/- 25mm. Excavation quantity shall also be captured by survey.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
Refer to Subgrade Lot SG004					

Item No.	Description	Qty

Comments

--

<p>Responsible Officer Signature: _____ Print Name: _____ Date: <u>15/03/17</u></p>	<p>Verifying Authority Signature: _____ Date: _____</p>
--	--



NCR Report

J518-1: Beaudesert Town Centre Bypass

NCR: 6

NCR No. 6 **Raised By** Not relevant **Date Raised** Sat, 22 Apr 2017

Lot: EX004 **Description:** Road ExcavationZone 1 (Brisbane Street)MC10 CH 40191-40400Stage 1 (RHS)

Location Brisbane Street (MC10 CH 40191-40256).

Severity Incidental Minor Major **Related Parties:**

Action:

<input type="checkbox"/> Retest	<input type="checkbox"/> Replace/Reconstruct	<input type="checkbox"/> Use as is
<input checked="" type="checkbox"/> Repair/Rectify	<input type="checkbox"/> Reject	<input type="checkbox"/> Other (refer to disposition)

3rd Party Approval Req'd?

<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
-----------------------------	---

Description of Non Conformance

Pavement excavation works on Brisbane Street have not been carried out as per the design. There is an area of asphalt overlay (Pavement Type C) which has been profiled to a depth of 300mm, rather than 50mm (as shown on the design detail).

Corrective Action: (What immediate action will be taken to correct the work)

Corrective action as per proposal provided in RFI-028 and subsequent response provided in SI017.

Preventative Action: (What action will be taken to prevent it from reoccurring)

All relevent personell are aware of Pavement Type C locations and will not over excavate in future works.

Raised By - Signature **Internally Approved (sign.)** Not relevant

N/R _____ **Print Name:** Not relevant **Date:** 22/04/17

Approval Comments:

its also noted one section was excavated to depth of 300mm.

NCR Approved **Approval Signature:** Not relevant

NCR Not Approved _____ **Print Name:** Not relevant **Date:** 2-5-17

Closeout Comments:

Closeout Signature: _____

Print Name: _____ **Date:** _____

270

300

330

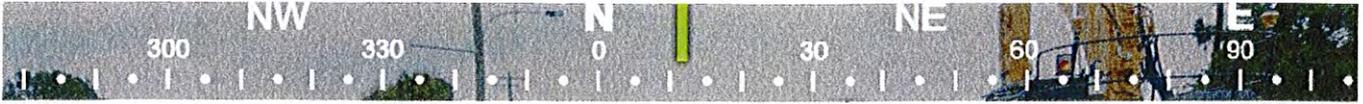
0

30

60

☀ 358°N (T) ● 27°58'39"S, 152°59'36"E ±5m ▲ 59m





☀ 24°NE (T) 📍 27°58'38"S, 152°59'36"E ±5m ▲ 58m



08 Mar 2017, 16:51



☀ 23°NE (T) 📍 27°58'38"S, 152°59'36"E ±5m ▲ 61m



08 Mar 2017, 16:51



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX005

Lot: EX005

Work Type: EX

Area:

Description: Road Excavation
Zone 1 (Brisbane Street)
MC20 CH 31-120
Stage 1 (LHS)

Other Details:

Raised By:

Not relevant

Conformed By:

Testing Level:

Normal

Reduced

Key Dates:

Opened: 23 Feb 2017

Closed: 15 Mar 2017

Work St: 23 Feb 2017

Work End: 15 Mar 2017

Guaranteed:

Conformed: 15 Mar 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	113.5	113.5 m3
3201.01	Road excavation, all materials (MRS04 Oct 14)	639.4	639.4 m3
2108.01	Removal or demolition of gullies (MRS03 Apr 16)	2.0	2.0 each

QVCs:

Road Excavation
Zone 1 (Brisbane Street)
MC20 CH 31-120
Stage 1 (LHS)

NCRs:

ATPs:

Related Lots:

Variations:

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____

Date: _____

Approved by (signature): _____

Print Name: _____

Date: 15/03/17



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX005

Lot: EX005

Work Type: EX

Area:

Description: Road Excavation Zone 1 (Brisbane Street) MC20 CH 31-120 Stage 1 (LHS)

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	113.5	0	<input checked="" type="checkbox"/>
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	639.4	0	<input checked="" type="checkbox"/>

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date: 7/4/17

Rev 2 - due to incorrect claim of subgrade treatment as unsuitable.



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX005

Lot: EX005

Work Type: EX

Area:

Description: Road Excavation Zone 1 (Brisbane Street) MC20 CH 31-120 Stage 1 (LHS)

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3106.01: Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14) (m3)	113.5	0	N/A
3201.01: Road excavation, all materials (MRS04 Oct 14) (m3)	639.4	0	N/A
2108.01: Removal or demolition of gullies (MRS03 Apr 16) (each)	2	0	Yes

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date: 2.5.17

Released under RTI - DTPMR



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX005 Road Excavation
 Zone 1 (Brisbane Street)
 MC20 CH 31-120
 Stage 1 (LHS)

Date Open: 23 Feb 2017 **Date Work Starts:** 23 Feb 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	<p>Safety Management Responsibility: Works Supervisor / Project Engineer</p> <p>Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2 Check Item	<p>Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer</p> <p>The maximum lot size shall not exceed 500 lineal meters.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3 Check Item	<p>Construction MRTS04 Clause 13.3.1 Responsibility: Works Supervisor</p> <p>Excavations shall be constructed to the shapes, lines, dimensions and other requirements shown on the drawings. Material within the lines of cuttings which is identified as unsuitable shall not be used in the construction of embankments.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4 Hold Point	<p>Bottom of Excavation HOLD POINT 5 MRTS04 Clause 13.3.2.1 Responsibility: Administrator / Works Supervisor / Project Engineer</p> <p>When the level of excavation has reached subgrade level plus 100mm, the Contractor shall notify the Administrator and cease excavation until the subgrade treatment type has been determined.</p>	<input type="checkbox"/>	<input type="checkbox"/>	N/R	9/03/17
5 Check Item	<p>Unsuitable Material Below the Lines of Cuttings MRTS04 Clause 13.3.2.2 Responsibility: Works Supervisor</p> <p>Material below the finished lines and levels of cuttings, which is Unsuitable Material in accordance with Clause 9.2, shall be removed and disposed in accordance with Clause 9.3</p> <p>Where unsuitable material has been removed, the excavation shall be backfilled to the finished surface level with appropriate fill material.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
6 Check Item	<p>Disposal of Surplus and Unsuitable Material MRTS04 Clause 11.3 Responsibility: Works Supervisor</p> <p>All material excess to project requirements and Unsuitable Materials shall be disposed of off site, unless approved otherwise. All disposed material shall be in accordance with all relevant Statutory Requirements.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

89m

See attached marked up plans and photos.
 09/03/17

Refer to Lot Ex001



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX005 Road Excavation
 Zone 1 (Brisbane Street)
 MC20 CH 31-120
 Stage 1 (LHS)

Date Open: 23 Feb 2017 **Date Work Starts:** 23 Feb 2017 **Date Compl:**

Check Type: Description:

Check Verify Appr. NCR

7 Check Item **Backfill to Unsuitable Excavations**

MRTS04 Clause 19.3.1
 Responsibility: Works Supervisor / Project Engineer

The excavation shall be backfilled with general fill material Class A or B and placed in layers with a maximum loose layer thickness of 300mm to achieve a minimum RDD of 95%.

Refer to Subgrade Lot SG005

TEST - Compaction
 Required Standard - 95% RDD
 Frequency:
 Lot Size < 500m³ - 1 per 50m³
 Lot Size 500m³ to 2000m³ - 1 per 150m³
 Lot Size > 2000m³ - 1 per 250m³

8 Check Item **Finishing Batters**

MRTS04 Clause 16
 Responsibility: Works Supervisor

Batters shall be free of loose material and shall be trimmed neatly to the shapes specified.
 No portion of a batter shall project beyond the shape specified by more than 300mm or one-third of the height of the batter, whichever is the lesser.

9 Check Item **Survey**

MRTS04 Clause 6.3.1
 Responsibility: Works Supervisor / Surveyor

The top of the insitu material below subgrade in cuttings shall be neatly trimmed and surveyed. The specified tolerance is +/- 25mm.
 Excavation quantity shall also be captured by survey.

Refer to Subgrade Lot SG005

Item No.	Description	Qty

Comments

Responsible Officer

Verifying Authority

Signature:

(Signature)
 Not relevant

Print Name:

Not relevant

Date: 15/03/17

Date: _____



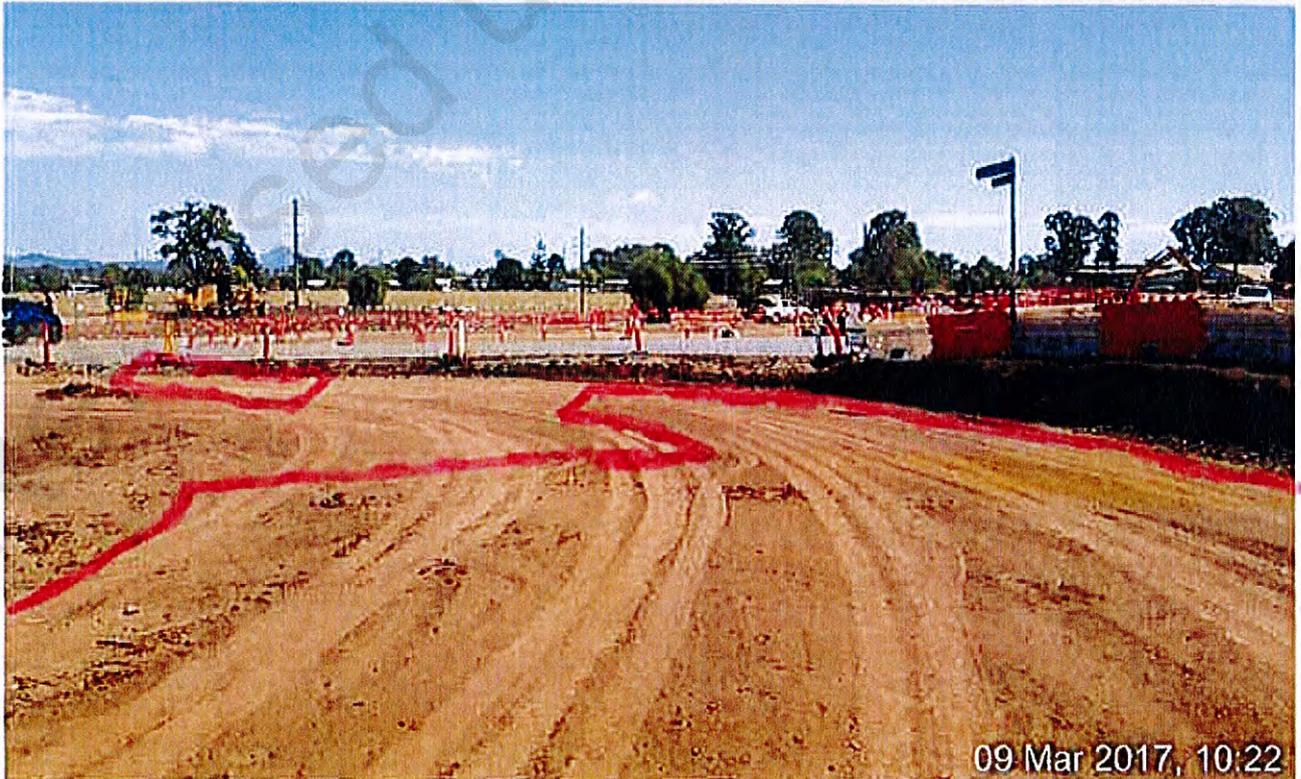
⊗ 168°S (T) ● 27°58'41"S, 152°59'36"E ±5m ▲ 49m



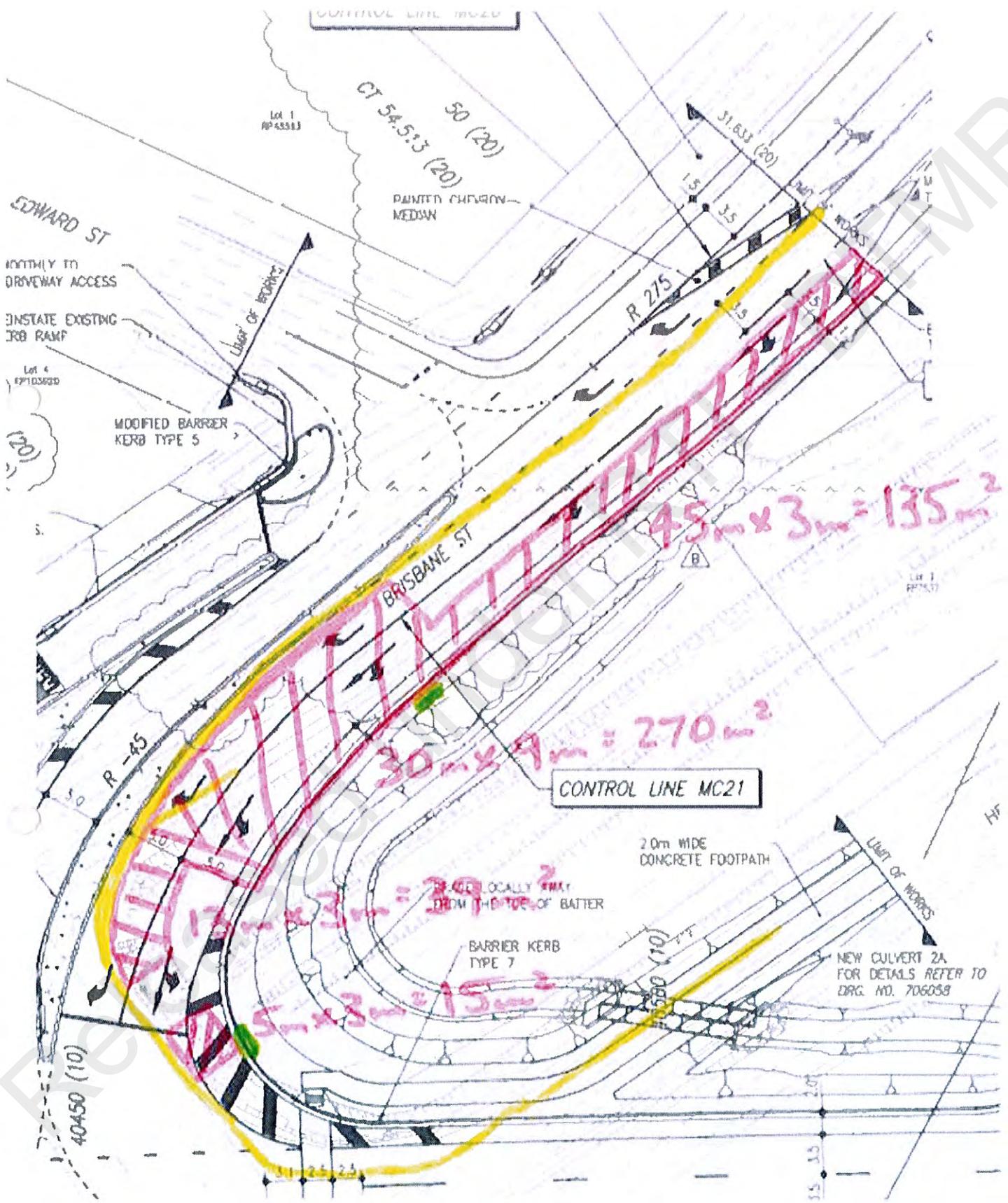
09 Mar 2017, 10:21



⊗ 336°NW (T) ● 27°58'41"S, 152°59'36"E ±5m ▲ 52m



09 Mar 2017, 10:22



= $450\text{m}^2 \times 0.3\text{m DEEP} = 150\text{m}^3$

**Conformance Report**

J518-1: Beaudesert Town Centre Bypass

Lot: EX010

Lot: EX010

Work Type: EX

Area:

Description: Road Excavation
Brisbane Street (Stage 2A)
MC10 CH 40191-40450 (LHS)

Other Details:

Raised By: Not relevant

Conformed By:

Testing Level: Normal Reduced**Key Dates:**

Opened: 25 May 2017 Closed: 05 Oct 2017

Work St: 25 May 2017 Work End: 30 Jun 2017

Guaranteed: Conformed: 05 Oct 2017

Geometry: No geometry defined.**Quantities:**

		Meas. Qty	Eff. Qty
3201.01	Road excavation, all materials (MRS04 Oct 14)	2,411.3	2,411.3 m3
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	367.5	367.5 m3
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	96.8	96.8 m3
VO005	Omitted Item Class A & B Unsuitable Replacement	96.8	96.8 m ³
2106.01	Removal or demolition of concrete kerb and channel including kerb crossings (MRS03 Apr 16)	214.2	214.2 m
2108.01	Removal or demolition of gullies (MRS03 Apr 16)	3	3 each
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	24.2	24.2 m3
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	62.3	62.3 m3
VO005	Omitted Item Class A & B Unsuitable Replacement	62.3	62.3 m ³
2101.01	Removal or demolition of culverts, complete (MRS03 Apr 16)	0.1	0.1 lump sum
2106.01	Removal or demolition of concrete kerb and channel including kerb crossings (MRS03 Apr 16)	47	47 m
2108.01	Removal or demolition of gullies (MRS03 Apr 16)	2	2 each
9207.01P	Filling of abandoned culvert, pipe, or conduit with flowable fill [various locations] (Provisional Quantity if ordered) (Refer to Supplementary Specification: SCRSS04)	4	4 m3
2107.01	Removal or demolition of concrete slabs (MRS03 Apr 16)	510.69	510.69 m2

Checklists:

Road Excavation

Road Excavation Brisbane Street (Stage 2A) MC10 CH 40191-40450 (LHS)

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been actioned in accordance with the contract requirements

Signed: _____

Print Name: _____

Date: _____



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX010

Approved by (signature):

Not relevant

Print Name:

Not relevant

Date: 05/10/17

Released under RTI - DTMR



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX010 Road Excavation
 Brisbane Street (Stage 2A)
 MC10 CH 40191-40450 (LHS)

Date Open: 25 May 2017 **Date Work Starts:** 25 May 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
1	Check Item Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Check Item Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 500 lineal meters.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Check Item Construction MRTS04 Clause 13.3.1 Responsibility: Works Supervisor Excavations shall be constructed to the shapes, lines, dimensions and other requirements shown on the drawings. Material within the lines of cuttings which is identified as unsuitable sh all not be used in the construction of embankments.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Hold Point Bottom of Excavation HOLD POINT 5 MRTS04 Clause 13.3.2.1 Responsibility: Administrator / Works Supervisor / Project Engineer When the level of excavation has reached subgrade level plus 100mm, the Contractor shall notify the Administrator and cease excavation until the subgrade treatment type has been determined.	<input type="checkbox"/>	<input type="checkbox"/>	N/R	<input type="checkbox"/>
5	Check Item Unsuitable Material Below the Lines of Cuttings MRTS04 Clause 13.3.2.2 Responsibility: Works Supervisor Material below the finished lines and levels of cuttings, which is Unsuitable Material in accordance with Clause 9.2, shall be removed and disposed in accordance with Clause 9.3 Where unsuitable material has been removed, the excavation shall be backfilled to the finished surface level with appropriate fill material.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Check Item Disposal of Surplus and Unsuitable Material MRTS04 Clause 11.3 Responsibility: Works Supervisor All material excess to project requirements and Unsuitable Materials shall be disposed of off site, unless approved otherwise. All disposed material shall be in accordance with all relevant Statutory Requirements.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0407 Road Excavation

Lot: EX010 Road Excavation
Brisbane Street (Stage 2A)
MC10 CH 40191-40450 (LHS)

Date Open: 25 May 2017 **Date Work Starts:** 25 May 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
7 Check Item	<p>Backfill to Unsuitable Excavations MRTS04 Clause 19.3.1 Responsibility: Works Supervisor / Project Engineer</p> <p>The excavation shall be backfilled with general fill material Class A or B and placed in layers with a maximum loose layer thickness of 300mm to achieve a minimum RDD of 95%.</p> <p>TEST - Compaction Required Standard - 95% RDD Frequency: Lot Size < 500m³ - 1 per 50m³ Lot Size 500m³ to 2000m³ - 1 per 150m³ Lot Size > 2000m³ - 1 per 250m³</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Refer to Lot SG014					
8 Check Item	<p>Finishing Batters MRTS04 Clause 16 Responsibility: Works Supervisor</p> <p>Batters shall be free of loose material and shall be trimmed neatly to the shapes specified. No portion of a batter shall project beyond the shape specified by more than 300mm or one-third of the height of the batter, whichever is the lesser.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9 Check Item	<p>Survey MRTS04 Clause 6.3.1 Responsibility: Works Supervisor / Surveyor</p> <p>The top of the insitu material below subgrade in cuttings shall be neatly trimmed and surveyed. The specified tolerance is +/- 25mm. Excavation quantity shall also be captured by survey.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Item No.	Description	Qty

Comments

Responsible Officer

Verifying Authority

Signature: _____

Print Name: _____ Date: _____

_____ Date: _____

Not relevant

From: Not relevant <[redacted]@tmr.qld.gov.au>
Sent: Tuesday, 30 May 2017 3:28 PM
To: Not relevant
Cc:
Subject: FW: Site Instruction - Brisbane St LHS (Unsuitable south of Mill St) (1)
Attachments: Brisbane St LHS - Unsuitable South of Mill St (1).pdf

N/R

Please see the attached site instruction for your information.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant <[redacted]@tmr.qld.gov.au>
W: www.tmr.qld.gov.au

From: Not relevant
Sent: Tuesday, 30 May 2017 2:33 PM
To: Not relevant <[redacted]@tmr.qld.gov.au>
Cc: Not relevant <[redacted]@tmr.qld.gov.au>
Subject: Site Instruction - Brisbane St LHS (Unsuitable south of Mill St) (1)

Not relevant

Please see the attached photo/sketch (this is for the first section removed only. I will send through subsequent sections as they are removed).

I carried out a pre-GST Proof Roll on Brisbane St LHS, south of Mill St this morning. Soft material with ground water running out of it was identified, typically for approximately 7m from the existing kerb & channel in towards the centreline.

I instructed SEE Civil to remove the unsuitable material to a maximum depth of 500mm below subgrade, and replace with general fill. The need for geofabric under the general fill backfill will be assessed case by case as each section is removed.

Kind regards,

Not relevant

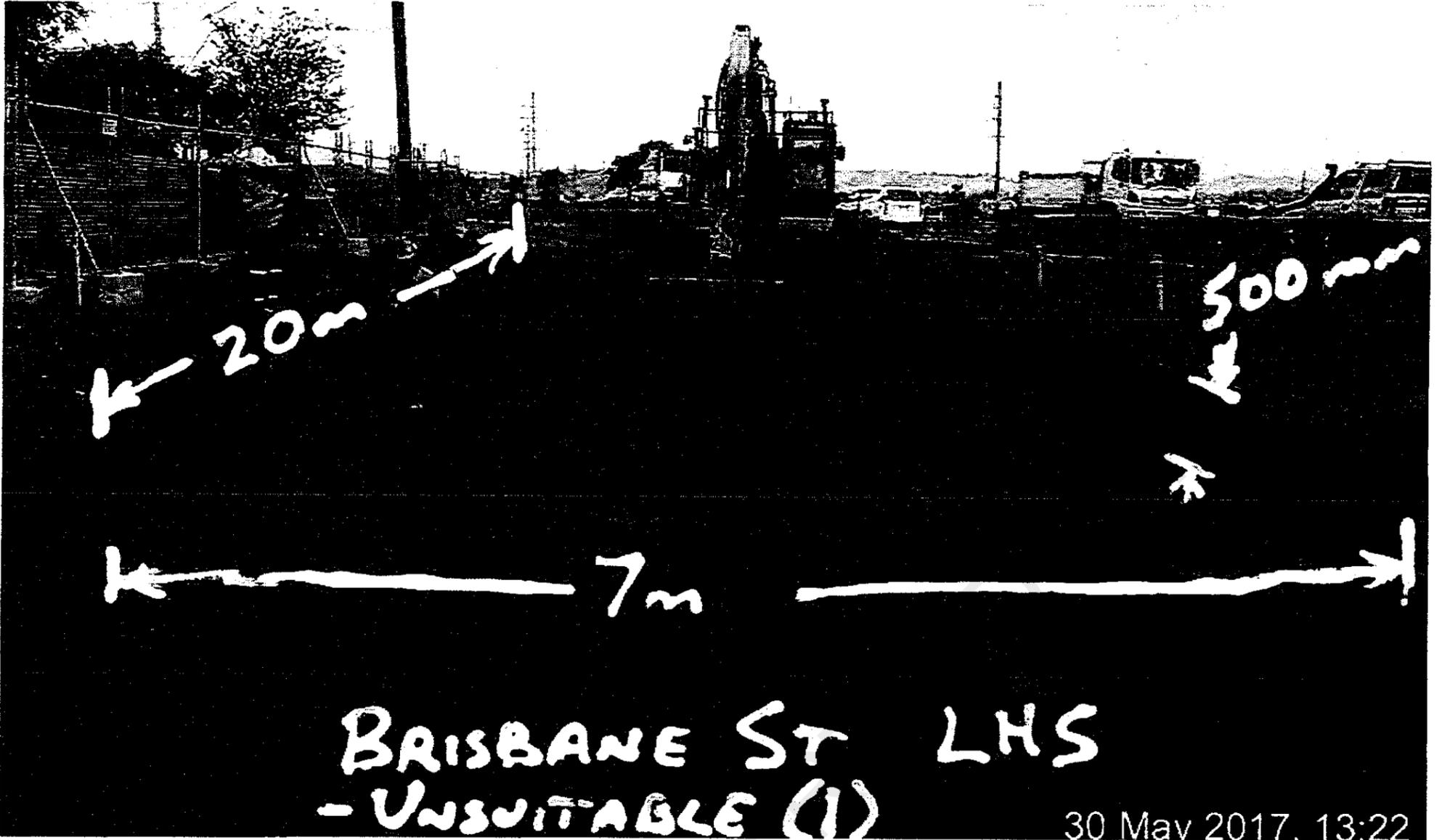
Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant <[redacted]@tmr.qld.gov.au>
W: www.tmr.qld.gov.au

North East Elevation

⊙ 206°SW (T) ⊙ 27°58'37"S, 152°59'37"E ±5m ▲ 47m



Released under

Not relevant

From: Not relevant @tmr.qld.gov.au>
Sent: Thursday, 1 June 2017 8:30 AM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction - Brisbane St LHS Subgrade Treatment/Unsuitable (Section 2)
Attachments: Brisbane St LHS - Subgrade Treatment & Unsuitable South of Mill St (2).pdf

N/R

FYI Below and Attached.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant @tmr.qld.gov.au
W: www.tmr.qld.gov.au

From: Not relevant
Sent: Wednesday, 31 May 2017 4:03 PM
To: Not relevant @tmr.qld.gov.au>
Cc: Not relevant @tmr.qld.gov.au>
Subject: Site Instruction - Brisbane St LHS Subgrade Treatment/Unsuitable (Section 2)

Not relevant

Please see the attached photo/sketch.

This is the second section from yesterday's GST proof roll. It is noted that this area (and yesterday's area) falls within the area that provides for the special subgrade treatment, up to 1.0m below finished level.

As I have instructed for additional removal and replacement of existing to 500mm below subgrade, the upper 200mm will be "subgrade treatment" and the lower 300mm will be "unsuitable".

Kind regards,

Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant @tmr.qld.gov.au
W: www.tmr.qld.gov.au

WARNING: This email (including any attachments) may contain legally privileged, confidential or private information and may be protected by

South Elevation

☉ 21°N (T) ☉ 27°58'38"S, 152°59'38"E ±10m ▲ 49m



Not relevant

From: Not relevant @tmr.qld.gov.au>
Sent: Wednesday, 12 July 2017 2:19 PM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction (Unsuitable Subgrade north of Brisbane St / Mill St Intersection)
Attachments: Brisbane St LHS - Unsuitable north of Mill St.pdf

N/R

Please see the Site Instruction below and attached.

This shall be treated as GST (Geotechnical Treatment) for the top 200mm and unsuitable for the remaining 300mm.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211

PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant @tmr.qld.gov.au

W: www.tmr.qld.gov.au

From: Not relevant
Sent: Wednesday, 12 July 2017 11:50 AM
To: Not relevant @tmr.qld.gov.au>
Cc: Not relevant @tmr.qld.gov.au>
Subject: Site Instruction (Unsuitable Subgrade north of Brisbane St / Mill St Intersection)

Not relevant

Please see the attached photo/sketch.

Unsuitable subgrade was identified just north of the Brisbane St/Mill St intersection.

I instructed SEE Civil to remove and replace with general fill to a depth of 500mm below subgrade.

An inspection of the floor of the box identified that geofabric was not required prior to backfilling.

Kind regards,

Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211

PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant @tmr.qld.gov.au

W: www.tmr.qld.gov.au

270

RAISONNE ST. NORTH OF MILL ST

330

60

90

9°N (T) 27°58'36" S, 152°59'38" E ±32.8ft ▲ 143ft

Handwritten notes:
 - Unsurvived (see Brown Surveying)
 - 5/26/17 = 27 m³



10 Jul 2017, 12:41

Not relevant

From: Not relevant <[redacted]@tmr.qld.gov.au>
Sent: Thursday, 13 July 2017 1:36 PM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction (Brisbane St LHS northern end - Subgrade Treatment)
Attachments: Brisbane St LHS - Subgrade Treatment North of Mill St.pdf

N/R

Please see the site instruction below and attached.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant <[redacted]@tmr.qld.gov.au>

W: www.tmr.qld.gov.au

From: Not relevant
Sent: Thursday, 13 July 2017 7:27 AM
To: Not relevant <[redacted]@tmr.qld.gov.au>
Cc: Not relevant <[redacted]@tmr.qld.gov.au>
Subject: Site Instruction (Brisbane St LHS northern end - Subgrade Treatment)

Not relevant

Please see the attached photo/sketch.

A proof roll on the subgrade north of Mill St identified an area (approx. 37m x 2m Av) of unsuitable (Subgrade Treatment).

I instructed SEE Civil to remove 300mm and replace with General Fill. (Approx 23m3)

Geofabric was not required.

Kind regards,

Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant <[redacted]@tmr.qld.gov.au>

W: www.tmr.qld.gov.au

WARNING: This email (including any attachments) may contain legally

120

150

180

210

240

270

☉ 198°S (T) ● 27°58'32"S, 152°59'38"E ±98.4ft ▲ 148ft



Not relevant

From: Not relevant @tmr.qld.gov.au>
Sent: Friday, 14 July 2017 2:03 PM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction (Subgrade Treatment - Brisbane St north of Mill St)
Attachments: Brisbane St LHS - Subgrade Treatment North of Mill St (2).pdf

N/R

Please see the Site instruction below and attached for your information.

Please note that the change in backfill from general fill to unbound type 2.3 was requested for the convenience of SEE Civil.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211

PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant @tmr.qld.gov.au

W: www.tmr.qld.gov.au

From: Not relevant
Sent: Friday, 14 July 2017 12:41 PM
To: Not relevant @tmr.qld.gov.au>
Cc: Not relevant @tmr.qld.gov.au>
Subject: Site Instruction (Subgrade Treatment - Brisbane St north of Mill St)

Not relevant

Please see the attached photo / sketch.

A subgrade proof roll this morning identified another area of unsuitable (approx. 59m2).

I instructed SEE Civil to remove and replace with general fill to a depth of 300mm (approx.. 18m3).

SEE Civil requested changing the backfill material from general fill to unbound 2.3. I indicated to SEE Civil that I was OK with this.

No geofabric was required on the floor prior to backfilling.

Kind regards,

Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211

PO Box 442 | Nerang Qld 4211

M: Not relevant

E: ken.w.cowan@tmr.qld.gov.au

W: www.tmr.qld.gov.au



⊗ 197°S (T) ⊙ 27°58'34"S, 152°59'37"E ±32.8ft ▲ 155ft



14 Jul 2017, 11:13



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: EX013

Lot: EX013

Work Type: EX

Area:

Description: Road Excavation
Brisbane Street (Stage 2B)
MC20 CH 30-110 (RHS)

Other Details:

Raised By: Not relevant

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 06 Jul 2017 **Closed:** 05 Oct 2017

Work St: 06 Jul 2017 **Work End:** 28 Jul 2017

Guaranteed: **Conformed:** 05 Oct 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
2515.03	Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16)	430.4	430.4 m2
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	12.8	12.8 m3
3502.01	Backfill with select backfill material to [to unsuitable material locations using rock fill material in accordance with MRTS04 > 10 m3 (Item 3109.01)] (MRS04 Oct 14)	12.8	12.8 m3
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	113.7	113.7 m3
3201.01	Road excavation, all materials (MRS04 Oct 14)	-204.2	-204.2 m3

Checklists:

Road Excavation Road Excavation Brisbane Street (Stage 2B) MC20 CH 30-110 (RHS)

NCRs:

29 During the excavation to subgrade activity at the Brisbane Street / Edward Street intersection, excavation past the limit of pavement works was exceeded on Edward Street.

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been actioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Approved by (signature): Not relevant

Print Name: _____ **Date:** 05/10/17



**Checklist: EX013: Road Excavation
Brisbane Street (Stage 2B)
MC20 CH 30-110 (RHS)**

Date Open: 6 Jul 2017

Date Work Started: 6 Jul 2017

Date Work Complete:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	<p>Safety Management Responsibility: Works Supervisor / Project Engineer</p> <p>Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	<p>Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer</p> <p>The maximum lot size shall not exceed 500 lineal meters.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	<p>Construction MRTS04 Clause 13.3.1 Responsibility: Works Supervisor</p> <p>Excavations shall be constructed to the shapes, lines, dimensions and other requirements shown on the drawings. Material within the lines of cuttings which is identified as unsuitable shall not be used in the construction of embankments.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 Hold Point	<p>Bottom of Excavation HOLD POINT 5 MRTS04 Clause 13.3.2.1 Responsibility: Administrator / Works Supervisor / Project Engineer</p> <p>When the level of excavation has reached subgrade level plus 100mm, the Contractor shall notify the Administrator and cease excavation until the subgrade treatment type has been determined.</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5 Check Item	<p>Unsuitable Material Below the Lines of Cuttings MRTS04 Clause 13.3.2.2 Responsibility: Works Supervisor</p> <p>Material below the finished lines and levels of cuttings, which is Unsuitable Material in accordance with Clause 9.2, shall be removed and disposed in accordance with Clause 9.3</p> <p>Where unsuitable material has been removed, the excavation shall be backfilled to the finished surface level with appropriate fill material.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Check Item	<p>Disposal of Surplus and Unsuitable Material MRTS04 Clause 11.3 Responsibility: Works Supervisor</p> <p>All material excess to project requirements and Unsuitable Materials shall be disposed of off site, unless approved otherwise. All disposed material shall be in accordance with all relevant Statutory Requirements.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



Checklist

J518-1: Beaudesert Town Centre Bypass

Checklist: ITP 0407: Road Excavation

Checklist

Town Centre Bypass

07: Road Excavation

**Checklist: EX013: Road Excavation
Brisbane Street (Stage 2B)
MC20 CH 30-110 (RHS)**

Date Open: 6 Jul 2017 Date Work Started: 6 Jul 2017 Date Work Complete:

7 Check Item **Backfill to Unsuitable Excavations**

MRTS04 Clause 19.3.1
Responsibility: Works Supervisor / Project Engineer

The excavation shall be backfilled with general fill material Class A or B and placed in layers with a maximum loose layer thickness of 300mm to achieve a minimum RDD of 95%.

Refer to Lot S4022

TEST - Compaction
Required Standard - 95% RDD
Frequency:
Lot Size < 500m³ - 1 per 50m³
Lot Size 500m³ to 2000m³ - 1 per 150m³
Lot Size > 2000m³ - 1 per 250m³

8 Check Item **Finishing Batters**

MRTS04 Clause 16
Responsibility: Works Supervisor

Batters shall be free of loose material and shall be trimmed neatly to the shapes specified.
No portion of a batter shall project beyond the shape specified by more than 300mm or one-third of the height of the batter, whichever is the lesser.

N/A - Pavement Box

9 Check Item **Survey**

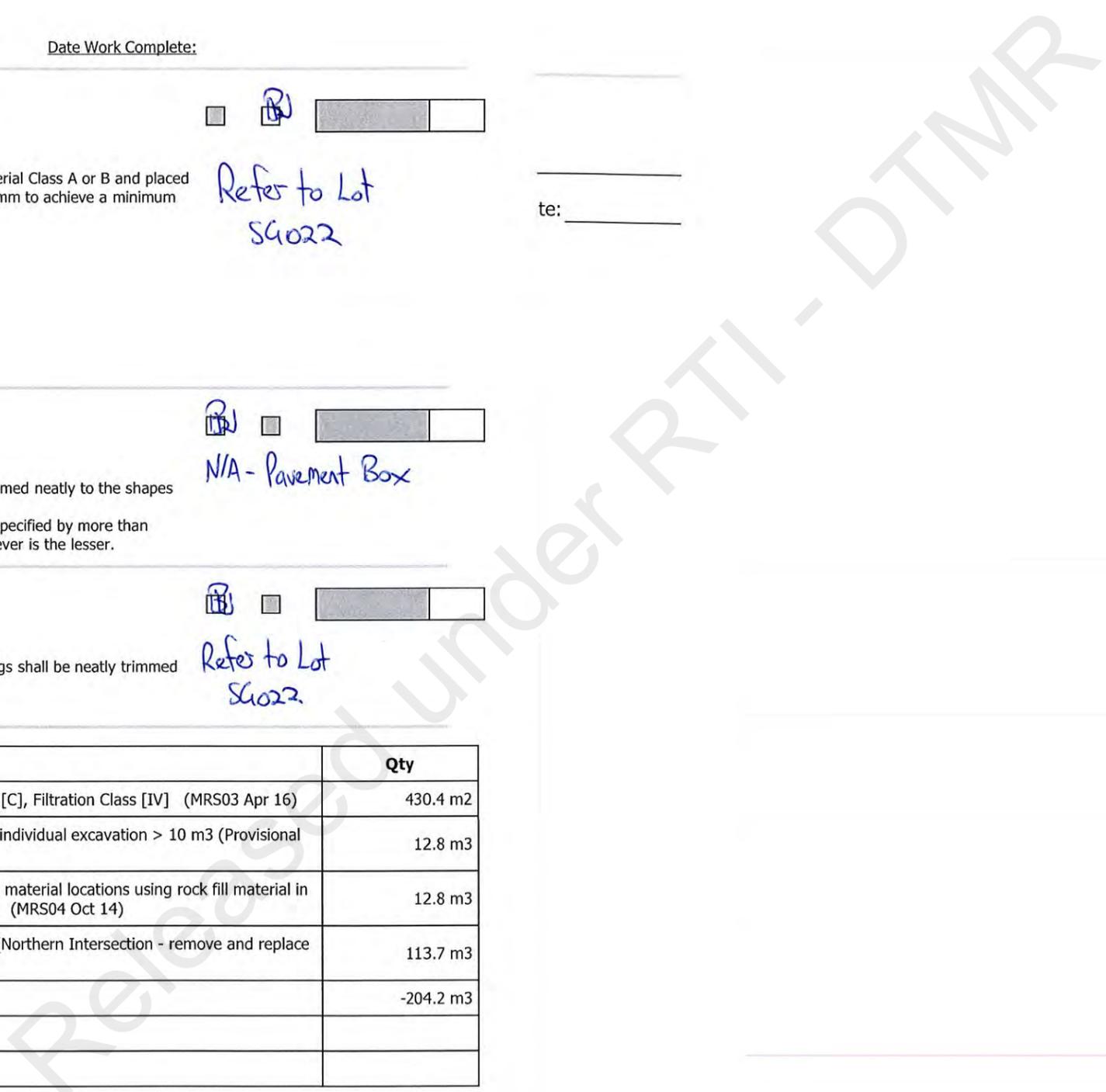
MRTS04 Clause 6.3.1
Responsibility: Works Supervisor / Surveyor

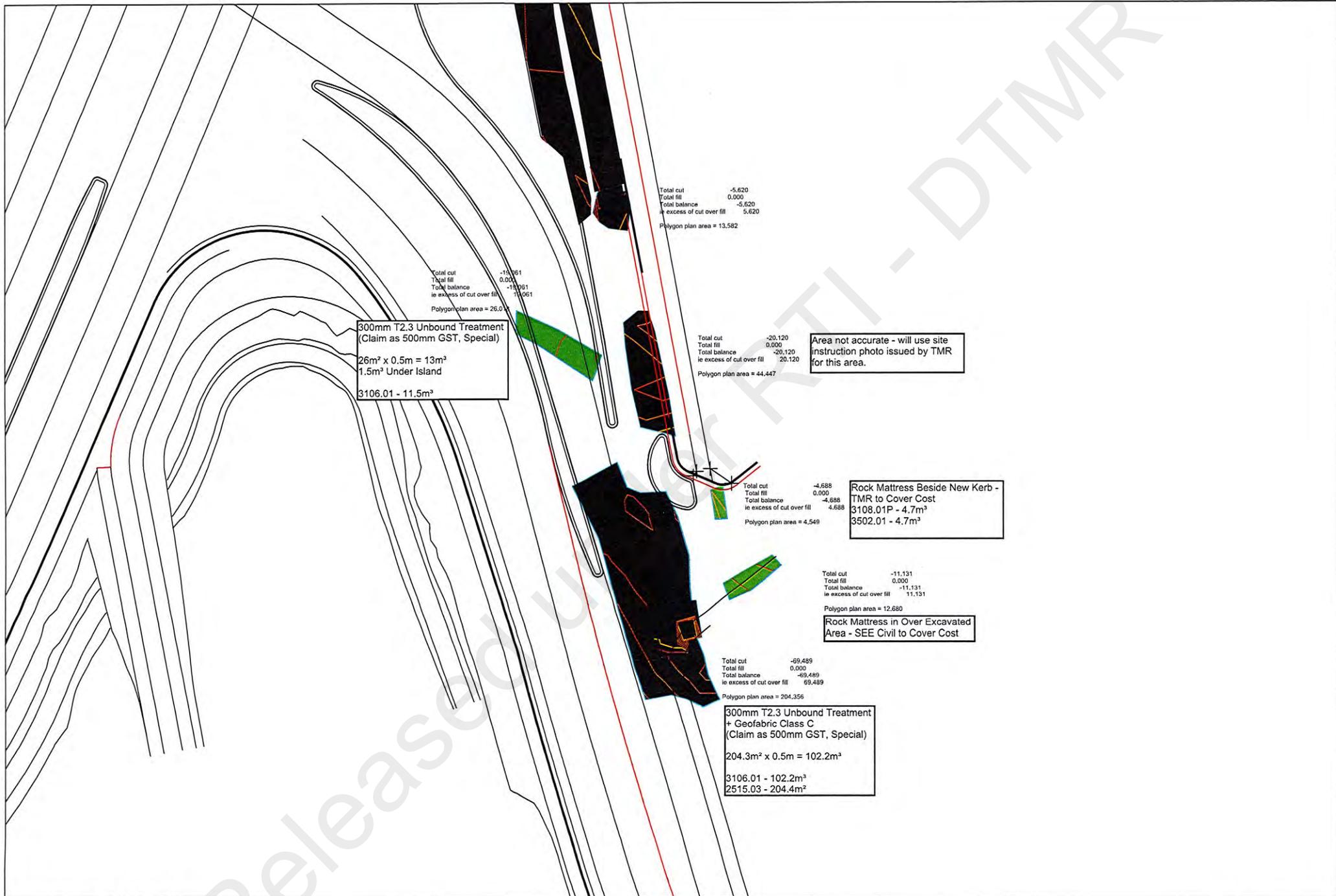
The top of the insitu material below subgrade in cuttings shall be neatly trimmed and surveyed. The specified tolerance is +/- 25mm.
Excavation quantity shall also be captured by survey.

Refer to Lot S4022

Item No.	Description	Qty
2515.03	Supply and installation of geotextile, Strength Class [C], Filtration Class [IV] (MRS03 Apr 16)	430.4 m2
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	12.8 m3
3502.01	Backfill with select backfill material to [to unsuitable material locations using rock fill material in accordance with MRTS04 > 10 m3 (Item 3109.01)] (MRS04 Oct 14)	12.8 m3
3106.01	Ground surface treatment, special (cubic metres) (Northern Intersection - remove and replace with Class B material) (MRS04 Oct 14)	113.7 m3
3201.01	Road excavation, all materials (MRS04 Oct 14)	-204.2 m3

Comments





Not relevant

From: Not relevant @tmr.qld.gov.au>
Sent: Wednesday, 12 July 2017 2:21 PM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction (Subgrade Treatment at Brisbane St / Edward St Intersection)
Attachments: Brisbane St LHS - Subgrade Treatment at Edward St Intersection.pdf

N/R

Please see the site instruction below and attached.

As this instruction falls inside and outside of the geotechnical treatment, claimed qtys shall be broken down accordingly to represent the scope of work which is geotechnical treatment, and the remainder being unsuitable.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant

E Not relevant @tmr.qld.gov.au

W: www.tmr.qld.gov.au

From: Not relevant
Sent: Wednesday, 12 July 2017 11:46 AM
To: Not relevant @tmr.qld.gov.au>
Cc: Not relevant @tmr.qld.gov.au>
Subject: Site Instruction (Subgrade Treatment at Brisbane St / Edward St Intersection)

Not relevant

Please see the attached photo/sketch.

Unsuitable Subgrade was identified adjacent to the Brisbane St/Edward St Intersection.

I instructed SEE Civil to remove and replace to 500mm below subgrade (as Subgrade Treatment). An inspection of the floor of the box identified that Geofabric - Class C was required prior to backfilling (approx. 180m2).

Kind regards,

Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant

E: Not relevant @tmr.qld.gov.au

W: www.tmr.qld.gov.au

240

270

300

330

0

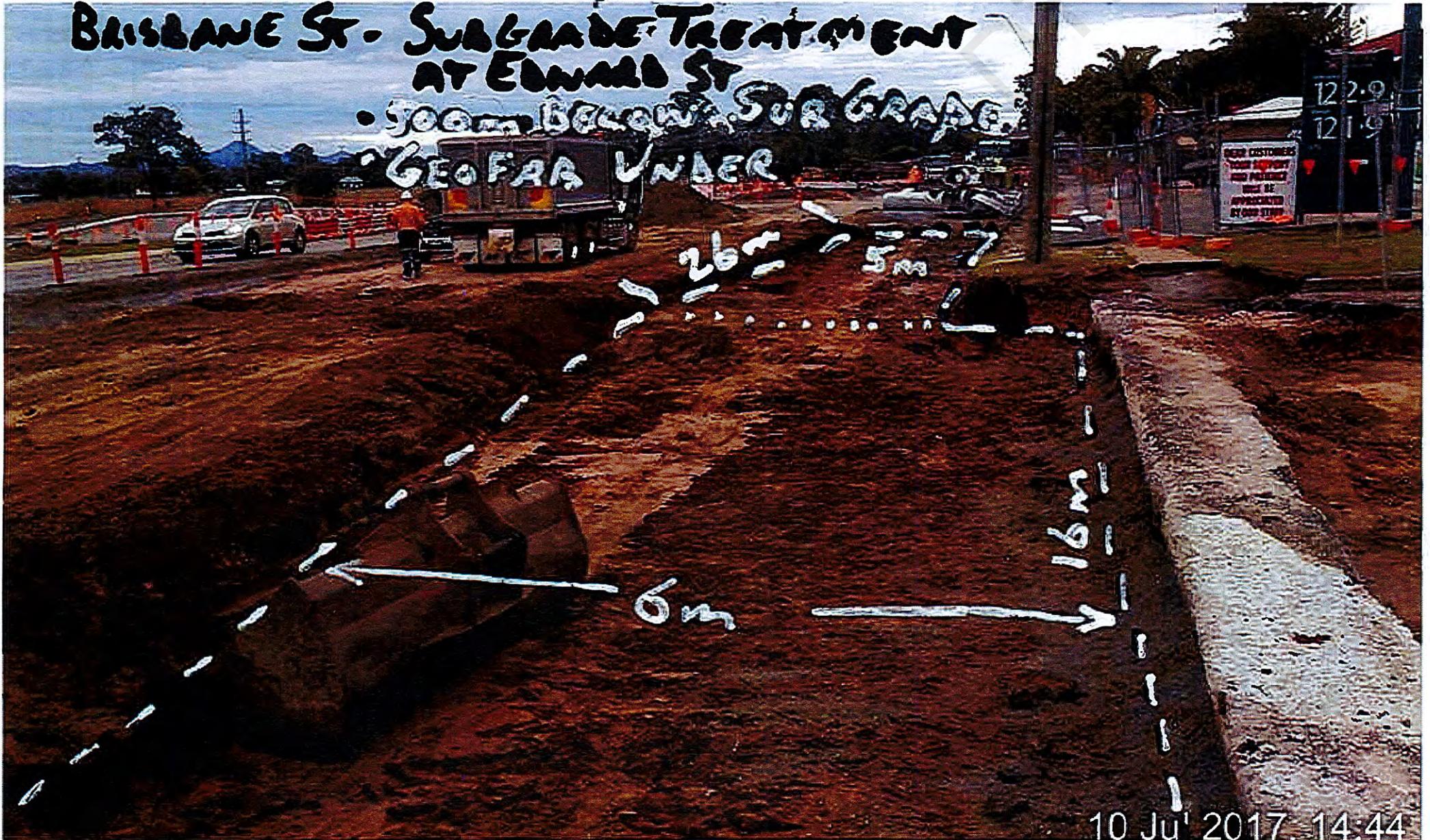
30

60

⊙ 339°N (T) ⊙ 27°58'42"S, 152°59'37"E ±16.4ft ▲ 131ft

BRISBANE ST - SUBGRADE TREATMENT
AT EDWARD ST

• 900mm BELOW SUB GRADE
• GEOFAB UNDER



10 Jul 2017 14:44

Not relevant

From: Not relevant @tmr.qld.gov.au>
Sent: Thursday, 13 July 2017 1:38 PM
To: Not relevant
Cc: Not relevant
Subject: FW: Site Instruction (Brisbane St LHS - Rock Blanket in front of Caltex)
Attachments: Brisbane St LHS - 300mm Rock Blanket in from of Caltex.pdf

N/R

Please see the site instruction below and attached.

Kind regards,

Not relevant

Project Engineer | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant @tmr.qld.gov.au
W: www.tmr.qld.gov.au

From: Not relevant
Sent: Thursday, 13 July 2017 7:23 AM
To: Not relevant @tmr.qld.gov.au>
Cc: Not relevant @tmr.qld.gov.au>
Subject: Site Instruction (Brisbane St LHS - Rock Blanket in front of Caltex)

Not relevant

Please see the attached photo/sketch.

Ground water was identified in from of the Caltex service station (possibly from the water main).

I instructed SEE Civil to install at 300mm thick Rock Blanket (approx. 9m x 1m) to be drained into Manhole 4/3 via a 100mm perforated pipe.

Kind regards,

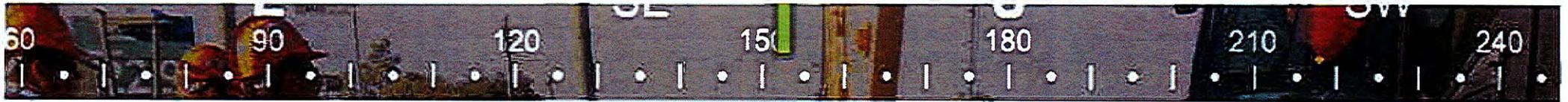
Not relevant

Inspector (Contract) | Beaudesert Town Centre Bypass Project Team
Program Delivery and Operations | Department of Transport and Main Roads

36-38 Cotton St | Nerang Qld 4211
PO Box 442 | Nerang Qld 4211

M: Not relevant
E: Not relevant @tmr.qld.gov.au
W: www.tmr.qld.gov.au

WARNING: This email (including any attachments) may contain legally privileged, confidential or private information and may be protected by copyright. You may only use it if you are the person(s) it was



☉ 165°S (T) ● 27°58'41"S, 152°59'38"E ±32.8ft ▲ 145ft



12 Jul 2017, 08:17



NCR Report

J518-1: Beaudesert Town Centre Bypass

NCR: 29

NCR No. 29 **Raised By** N/R **Date Raised** Wed, 12 Jul 2017

Lot: EX013 **Description:** Road Excavation Brisbane Street (Stage 2B) MC20 CH 30-110 (RHS)

Location: Edward Street - Road Excavation.

Severity: Incidental Minor Major **Related Parties:**

Action:
 Retest Replace/Reconstruct Use as is
 Repair/Rectify Reject Other (refer to disposition)

3rd Party Approval Req'd?
 No Yes

Description of Non Conformance

During the excavation to subgrade activity at the Brisbane Street / Edward Street intersection, excavation past the limit of pavement works was exceeded on Edward Street.

Corrective Action: (What immediate action will be taken to correct the work)

After investigating, it was identified that to an extent, some additional road excavation works were required to construct the new kerb and channel and gully pit on the northern side of Edward Street. The limit of works in this instance have been increased longitudinally to the Caltex driveway and laterally to an existing pavement joint in the middle of the northern lane.

The remainder of the over excavation shall be squared up with Edward Street.

The over excavated area shall be constructed as per Pavement Detail M.

Preventative Action: (What action will be taken to prevent it from reoccurring)

It was identified that the cause of this over excavation was due to an error in the design model where the limit of road excavation works was shown differently to both the drawing limit of works (i.e. the kerb and channel tie-in to Edward Street) and limit of pavement works.

In future, when commencing activities in new areas, the limit of works must be checked with the drawings to ensure there are no issues with conflicting information.

Raised By - Signature _____ **Internally Approved (sign.)** N/R
Print Name: _____ **Date:** 12/07/17

Approval Comments:

Cost of rectification do be borne by SEE Civil.

NCR Approved
 NCR Not Approved

Approval Signature: N/R
Print Name: Not relevant **Date:** 8/8/17

Closeout Comments:

Closeout Signature: _____
Print Name: _____ **Date:** _____



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: GT004

Lot: GT004

Work Type: GT

Area:

Description: Ground Surface Treatment Zone 1
MC20 CH 170-371 (LHS)
MC20 CH 140-220 (RHS)
MC10 CH 40460-40540

Other Details:

Raised By:

Not relevant

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 02 Feb 2017 Closed: 15 Feb 2017

Work St: 02 Feb 2017 Work End: 15 Feb 2017

Guaranteed: Conformed: 27 Feb 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
2515.02	Supply and installation of geotextile, Strength Class [D], Filtration Class [IV] (MRS03 Apr 16)	1,748.5	1,748.5 m2
3104.01	Ground surface treatment under embankment, standard (MRS04 Oct 14)	9,805.3	9,805.3 m2
3109.01P	Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14)	681.4	681.4 m3
VO005	Omitted Item Class A & B Unsuitable Replacement	681.4	681.4 m3

QVCs:

Ground Surface Treatment, Standard
Ground Surface Treatment Zone 1
MC20 CH 170-371 (LHS)
MC20 CH 140-220 (RHS)
MC10 CH 40460-40540

NCRs:

ATPs:

Related Lots:

Variations:

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____

Date: _____

Approved by (signature): _____

Print Name: _____

Date: 27/02/17



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0403 Ground Surface Treatment, Standard

Lot: GT004 Ground Surface Treatment
 Zone 1
 MC20 CH 170-371 (LHS)
 MC20 CH 140-220 (RHS)
 MC10 CH 40460-40540

Date Open: 02 Feb 2017 Date Work Starts: 02 Feb 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2 Check Item	Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 10,000m ² .	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3 Check Item	Areas to be Treated MRTS04 Clause 12.2.1.1 Responsibility: Works Supervisor Ground Surface Treatment shall apply to any area beneath embankment or pavement, excluding areas of excavation.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4 Check Item	Filling Holes & Localised Depressions MRTS04 Clause 12.2.1.2 Responsibility: Works Supervisor Any holes or local depressions following clearing and grubbing and stripping shall be filled to level with ground with material comparable to the surrounding ground.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
5 Check Item	Compaction of Insitu Material Below Embankments MRTS04 Clause 12.2.1.3 Responsibility: Works Supervisor / Project Engineer The exposed ground surface on which an embankment is to be placed, shall be scarified and re-compacted to a depth of at least 150mm. Test - Compaction Required Standard 95% RDD Frequency - 1 per 2000m ² , Min 2 per Lot	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
6 Check Item	Embankment Foundations MRTS04.1 Clause 4 Responsibility: Works Supervisor / Project Engineer Foundations for embankments must have a minimum CBR of 2% and Bearing Pressure of 100kPa. Material which does not meet this requirement is classified as unsuitable.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
7 Hold Point	Treatment of Unsuitable HOLD POINT 3 MRTS04 Clause 9.3 Responsibility: Administrator / Works Supervisor / Project Engineer Where unsuitable or potentially unsuitable material is encountered on site, the contractor shall, before proceeding to remove or cover such material, notify the Administrator. The Administrator will advise the treatment type, if any, and the extent of such treatment.	<input type="checkbox"/>	<input type="checkbox"/>	see below	

All ok - see attached reports.

Proof Roll - Helen St LHS, Unsuitable Encountered (Service Trench): N/R - 3/02/17
 Proof Roll - Helen St RHS, Unsuitable Encountered Under Rail Tracks: N/R - 6/02/17
 Proof Roll Helen St to Cut / Fill Line: N/R - 8/02/17



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: GT004

Lot: GT004

Work Type: GT

Area:

Description: Ground Surface Treatment Zone 1 MC20 CH 170-371 (LHS) MC20 CH 140-220 (RHS) MC10 CH 40460-40540

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
2515.02: Supply and installation of geotextile, Strength Class [D], Filtration Class [IV] (MRS03 Apr 16) (m2)	1,748.5	1,748.5	
3104.01: Ground surface treatment under embankment, standard (MRS04 Oct 14) (m2)	9,805.3	9,805.3	
3109.01P: Excavation and disposal of Unsuitable Material with individual excavation > 10 m3 (Provisional Quantity as directed) (MRS04 Oct 14) (m3)	681.4	681.4	
VO005: Omitted Item Class A & B Unsuitable Replacement (m3)	681.4	681.4	

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date:

6/3/17

Released Under RTI - DTPMR



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **65**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **8/02/2017**
 Tested By: **N/R**
 Component: **MC20** Test Date: **6/02/2017**
 Lot No: **GT-004** Test Request No: **TR-015**

Sample No.:	4109	4110	-	-	-
Material Source:	Existing	Existing	-	-	-
Material Type:	Foundation	Foundation	-	-	-
Client Reference:	TR-015	TR-015	-	-	-
Control Line / Road:	MC20	MC20	-	-	-
Chainage:	173	277	-	-	-
Offset:	+22.0m	+14.0m	-	-	-
Test Level:	GST	GST	-	-	-
Test Depth:	150	150	-	-	-
Compactive Effort:	Standard	Standard	-	-	-
Oversize Sieve Size (mm):	19.0	19.0	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.821	1.814	-	-	-
Field Moisture Content (%)	10.9	11.2	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.895	1.896	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	13.0	13.1	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	84	86	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	96.1	95.7	-	-	-
Density Ratio Required % :	95.0	95.0	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	95.7 ✓				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,



Nata Accreditation No: 19902

Laboratory: Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

N/R

Approved Signatory

ASCT Doc No. Q63 Rev:1, 21/09/2016



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **69**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **9/02/2017**
 Tested By: **N/R**
 Component: **MC20** Test Date: **7/02/2017**
 Lot No: **GT-004** Test Request No: **TR-018**

Sample No.:	4124	-	-	-	-
Material Source:	Existing	-	-	-	-
Material Type:	GST	-	-	-	-
Client Reference:	TR-018	-	-	-	-
Control Line / Road:	MC10	-	-	-	-
Chainage:	40504	-	-	-	-
Offset:	+2.0m	-	-	-	-
Test Level:	GST	-	-	-	-
Test Depth:	150				
Compactive Effort:	Standard				
Oversize Sieve Size (mm):	19.0				
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.580	-	-	-	-
Field Moisture Content (%)	22.2	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.585	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	19.4	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	115	-	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	99.7	-	-	-	-
Density Ratio Required % :	95.0	-	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	99.7				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,



Nata Accreditation No: 19902

Laboratory: Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

N/R

Approved Signatory

ASCT Doc No. Q63 Rev:1, 21/09/2016



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **104**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **18/02/2017**
 Component: **MC10** Tested By: **N/R**
 Lot No: **GT-004** Test Date: **15/02/2017**
 Test Request No: **TR-044**

Sample No.:	4356				
Material Source:	Existing	-	-	-	-
Material Type:	GST	-	-	-	-
Client Reference:	TR-044	-	-	-	-
Control Line / Road:	MC10	-	-	-	-
Chainage:	40450	-	-	-	-
Offset:	3.0	-	-	-	-
Test Level:	GST	-	-	-	-
Test Depth:	150	-	-	-	-
Compactive Effort:	Standard	-	-	-	-
Oversize Sieve Size (mm):	19.0	-	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.793	-	-	-	-
Field Moisture Content (%)	9.0	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.862	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	14.3	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	63	-	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	96.3 ✓	-	-	-	-
Density Ratio Required % :	95.0				
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	-				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A



Nata Accreditation No: 19902
 Laboratory: Brisbane South
Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

N/R

Approved Signatory
 ASCT Doc No. Q63 Rev:1, 21/09/2016



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **78**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **10/02/2017**
 Component: **MC20** Tested By: **N/R**
 Lot No: **GT-004** Test Date: **9/02/2017**
 Test Request No: **TR-023**

Unsuitable Replacement - Helen St LHS Trench

Sample No.:	4207				
Material Source:	Cryna Quarry	-	-	-	-
Material Type:	General Fill	-	-	-	-
Client Reference:	TR-023	-	-	-	-
Control Line / Road:	MC20	-	-	-	-
Chainage:	318	-	-	-	-
Offset:	2	-	-	-	-
Test Level:	GST	-	-	-	-
Test Depth:	200	-	-	-	-
Compactive Effort:	Standard	-	-	-	-
Oversize Sieve Size (mm):	19.0	-	-	-	-
Percentage of Oversize Dry (%):	16	-	-	-	-
Density of Oversize (t/m3)	2.702	-	-	-	-
Field Dry Density (t/m3)	2.050	-	-	-	-
Field Moisture Content (%)	7.8	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	2.002	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	2.091	-	-	-	-
Optimum Moisture Content (%)	10.4	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	75	-	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	98.1 ✓	-	-	-	-
Density Ratio Required % :	95.0	-	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	-				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,



Nata Accreditation No: 19902
 Laboratory: Brisbane South
 Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant
 [Redacted Signature Area]

N/R
 Approved Signatory
 ASCT Doc No. Q63 Rev:1, 21/09/2016



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486**
 Project: **Beaudesert Town Centre Bypass Project**

Job No: **115**
 Report No: **83**
 Report Date: **14/02/2017**
 Tested By: **N/R**
 Test Date: **10/02/2017**
 Test Request No: **TR-028**

Component: **MC20**
 Lot No: **GT-004**

Unsuitable Replacement - Helen St LHS Trench

Sample No.:	4246	4247			
Material Source:	Cryna Quarry	Cryna Quarry	-	-	-
Material Type:	GST	GST	-	-	-
Client Reference:	TR-028	TR-028	-	-	-
Control Line / Road:	MC20	MC20	-	-	-
Chainage:	181	202	-	-	-
Offset:	2	1	-	-	-
Test Level:	GST	GST	-	-	-
Test Depth:	200	200	-	-	-
Compactive Effort:	Standard	Standard	-	-	-
Oversize Sieve Size (mm):	37.5	37.5	-	-	-
Percentage of Oversize Dry (%):	-	12	-	-	-
Density of Oversize (t/m3)	-	2.637	-	-	-
Field Dry Density (t/m3)	1.976	1.985	-	-	-
Field Moisture Content (%)	8.8	8.4	-	-	-
Assigned Value Report No:	AV25				
Assigned Value Report Date:	14/02/2017				
Maximum Dry Density (t/m3)	2.001	2.001	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	2.060	-	-	-
Optimum Moisture Content (%)	11.4	11.4	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	77	74	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	98.7	96.4	-	-	-
Density Ratio Required % :	95.0	95.0	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	96.2 ✓				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q144A, Q143,



Nata Accreditation No: 19902

Laboratory: Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

N/R

Approved Signatory

ASCT Doc No. Q63 Rev:1, 21/09/2016



ASCT Brisbane South Pty Ltd

PO Box 1232 Park Ridge QLD 4125

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Email: brisbane.south@asct.com.au

Telephone: Not relevant

Mobile: Not relevant

A.B.N: 73 193 500 470

REPORT OF FIELD DENSITY

CLIENT:	See Civil Pty Ltd	REPORT NO:	110
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	LOT NO:	GT-004
PROJECT:	Beaudesert Town Centre Bypass Project	REQUEST NO:	TR-044
JOB No.:	115	MATERIAL:	GST
LOCATION:	MC10	MATERIAL SOURCE:	Cryna Quarry
TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	15/02/2017	DATE REPORTED:	17/02/2017

Unsuitable Replacement (Under Old Rail Track)

SAMPLE No.	4357	4358	-	-	-	-	-	-
LOCATION/CHAINAGE (m)	40421	40433	-	-	-	-	-	-
CONTROL LINE	MC10	MC10	-	-	-	-	-	-
OFFSET (m)	-4	-11	-	-	-	-	-	-
LEVEL OF TEST (m)(RL)	GST	GST	-	-	-	-	-	-
TEST DEPTH (mm)	200	200	-	-	-	-	-	-
OVERSIZE IEVE SIZE (mm)	37.5	37.5	-	-	-	-	-	-
% OVERSIZE	8	7	-	-	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.636	2.653	-	-	-	-	-	-
MOISTURE RATIO (%)	101	94	-	-	-	-	-	-
FIELD DRY DENSITY (t/m ³)	1.994	1.954	-	-	-	-	-	-
FIELD MOISTURE CONTENT (%)	11.7	11.1	-	-	-	-	-	-
COMPACTION SAMPLE No.	4357	4358	-	-	-	-	-	-
DATED MDD AND OMC TESTED	16/02/2017	16/02/2017	-	-	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	1.953	1.937	-	-	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	1.996	1.972	-	-	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	12.7	12.7	-	-	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	11.6	11.9	-	-	-	-	-	-
DENSITY RATIO: (%)	99.9	99.1	-	-	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	99.0							

TEST PROCEDURES: TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A
 CALIBRATION DETAILS: C4-2-Cryna
 DATE Q144A ASSIGNED: N/A
 LAYER DEPTH (mm): 200

Not relevant

Authorised Signatory _____



NATA Accreditation Number: 19902

Laboratory Name: ASCT Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

ASCT QLD Doc No. Q59 Rev No. 0 02-09-16



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG004

Lot: SG004

Work Type: SG

Area:

Description: Subgrade
Brisbane Street
MC10 CH 40191-40380

Other Details:

Raised By: N/R

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 07 Mar 2017 **Closed:** 19 Apr 2017

Work St: 07 Mar 2017 **Work End:** 19 Apr 2017

Guaranteed: **Conformed:** 21 Apr 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3402.01P	Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14)	1,169.1	1,169.1 m2
3402.01P	Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14)	11.9	11.9 m2

QVCs:

Subgrade Subgrade
Brisbane Street
MC10 CH 40191-40380

NCRs:

ATPs:

Related Lots:

Variations:

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Not relevant

Approved by (signature): _____

Not relevant

Print Name: _____ **Date:** 21/04/17



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG004

Lot: SG004

Work Type: SG

Area:

Description: Subgrade Brisbane Street MC10 CH 40191-40380

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3402.01P: Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14) (m2)	1,169.1	0	Mar EOM
3402.01P: Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14) (m2)	11.9	0	Yes

Approved By:

Signature:

Not relevant

Print Name:

Not relevant

Date: 28.4.17



Lot Quantity Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG004

Lot: SG004

Work Type: SG

Area:

Description: SubgradeBrisbane StreetMC10 CH 40191-40380

Geometry:

Schedule Item	Actual Qty	Eff. Qty	Approved?
3402.01P: Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14) (m2)	1,169.1	0	Yes

Approved By:

Signature: Not relevant

Print Name: Not relevant Date: 5-4-17



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP0408Subgrade

Lot: SG004 Subgrade
Brisbane Street
MC10 CH 40191-40380

Date Open: 07 Mar 2017 **Date Work Starts:** 07 Mar 2017 **Date Compl:**

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	<p>Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	<p>Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 5000m².</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	<p>Subgrade Fill Material MRTS04 Clause 14.2 Responsibility: Works Supervisor / Project Engineer Subgrade fill material shall be General Fill Class A or Class B.</p> <p>Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10%</p> <p>Required Standard (Class B Fill): WPI - 1200-2200 Single Point Soaked CBR - 10%</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Hold Point	<p>Construct Subgrade in Cuttings MRTS04 Clause 18.3.3.1 & MRTS04.1 Clause 13.5 Responsibility: Works Supervisor If a subgrade treatment was directed by the Administrator (refer to Road Excavation Lot - HOLD POINT 5), Subgrade Treatments Type A or B shall be applied as directed.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Check Item	<p>Testing of Subgrade in Cuttings MRTS04 Clause 18.3.3.2 & MRTS04.1 Clause 13.6 Responsibility: Works Supervisor / Project Engineer Testing of the insitu material in cuttings (other than rock) shall be performed.</p> <p>TEST - Material Properties Grading, Atterberg Limits, Single Point Soaked CBR.</p> <p>Frequency - 1 per material type.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Check Item	<p>Earthworks Transition from Cut to Fill MRTS04 Clause 18.3.4.1 & 18.3.4.2 Responsibility: Works Supervisor Embankment subgrade shall continue longitudinally up to the line where the subgrade level intercepts the prepared ground surface.</p> <p>Construction as a near-grade embankment shall continue for a distance of 10m into the cuttings. Additional foundation testing and preparation at near-grade embankments is required.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1200m²

Subgrade in Cutting - All Unsuitable
Replaced with Neilsens Gyra General Fill (see attached reports)

Refer to EX004 HPS

Unsuitable Replacement



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG004 Subgrade
Brisbane Street
MC10 CH 40191-40380

Date Open: 07 Mar 2017 Date Work Starts: 07 Mar 2017 Date Compl:

Check Type: Description:

Check Verify

Appr.

NCR

7 Check Item **Compaction**
MRTS04 Table 15.3B - Density Requirements
Responsibility: Works Supervisor / Project Engineer

TEST - Sand Replacement
Criteria - 97% RDD
Frequency - 1 per 500m², Min 4 per Lot.

--	--

4 Tests - All Pass
(see attached)

8 Check Item **Moisture Content**
MRTS04 Table 15.3C - Moisture Content
Responsibility: Works Supervisor
Class A 50 - 80 of OMC
- 90 of OMC

--	--

Class B 60

Ranges 79-108%

X

9 Witness Point **Proof Roll**
Witness Point MRTS04 Clause 18.3.1 & MRTS04.1 Clause 13.4
Responsibility: Administrator / Works Supervisor / Project Engineer
The material at subgrade level shall provide a stable, dense surface which displays no visible vertical movement under the rear axle of a fully loaded water truck with a gross mass of not less than 15 tonnes with a single rear axle, or similar vehicle approved by the Administrator.

N/R	
-----	--

10 Check Item **Geometrics**
MRTS04 Clause 6.2
Responsibility: Works Supervisor / Surveyor
Horizontal Tolerances
- Edges not adjacent to a structure +250/-50mm
- Edges adjacent to a structure +/-50mm

MRTS04 Clause 6.3
Vertical Tolerances
+/- 25mm

--	--

All ok.
Survey Attached.

X

11 Hold Point **Placement of Pavement**
HOLD POINT 9 MRTS04 Clause 18.3.1
Responsibility: Administrator / Works Supervisor / Project Engineer
The subgrade shall be constructed and tested to subgrade level in accordance with all standard requirements prior to placement of the pavement.

N/R	
-----	--

Item No.	Description	Qty



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408 Subgrade

Lot: SG004 Subgrade
Brisbane Street
MC10 CH 40191-40380

Date Open: 07 Mar 2017 Date Work Starts: 07 Mar 2017 Date Compl:

Comments

Empty comment box

Responsible Officer

Verifying Authority

Signature:

Not relevant

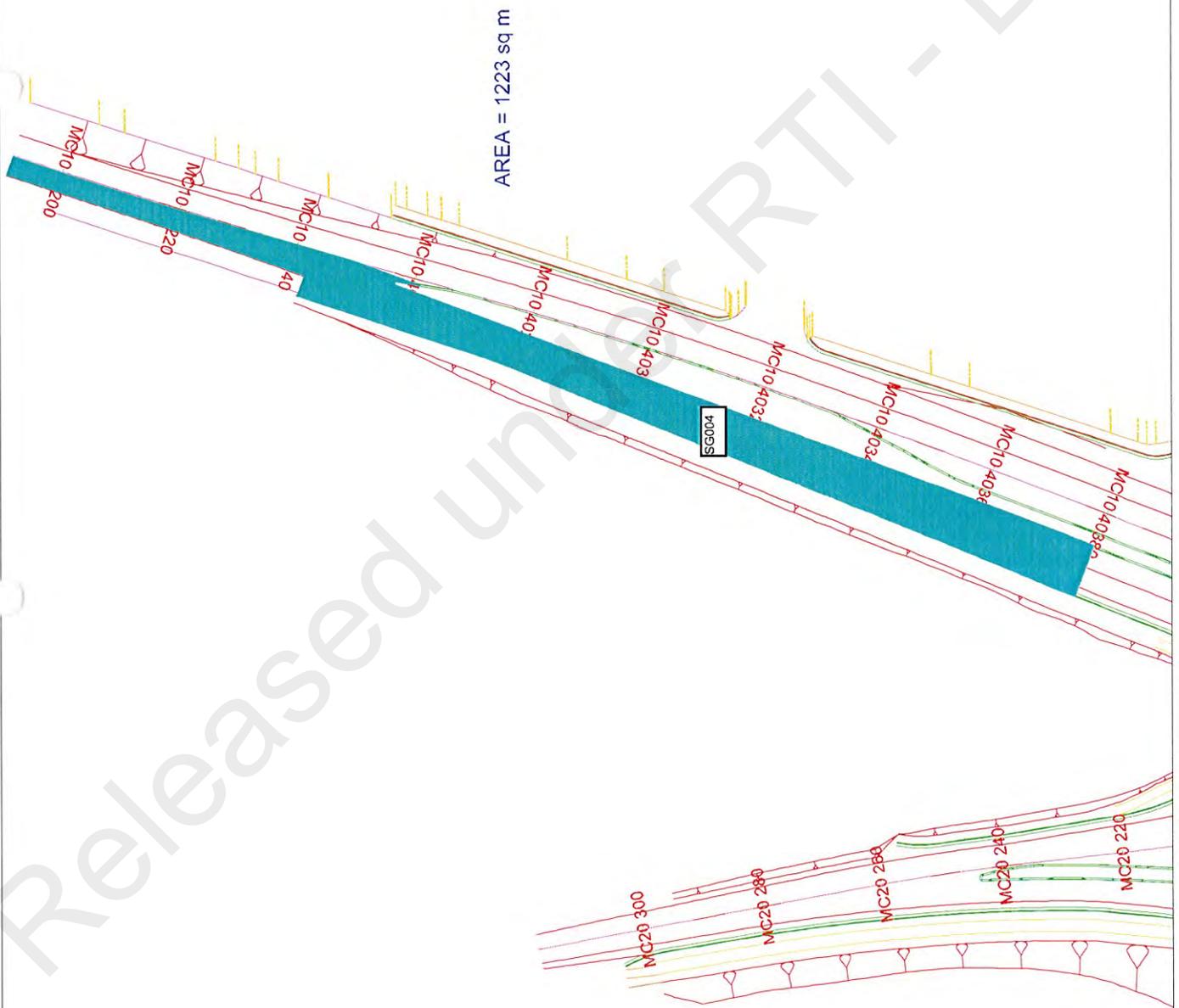
Print Name:

Not relevant

Date: 21/04/17

Date:

Released under RTI - DTMR



Released under RTI - DTMR



ASCT Brisbane South
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 brisbane.south@asct.com.au
 Not relevant
 73 193 500 470

CALIFORNIA BEARING RATIO REPORT

Client:	See Civil Pty Ltd	Report No:	262
Client Address:	24A Ozone Street, Tweed Heads, NSW, 2486	Report Date:	15/03/2017
Project:	Beaudesert Town Centre Bypass Project	Project No:	115
Component:	MC10	Test Request:	TR-154

Sample Information

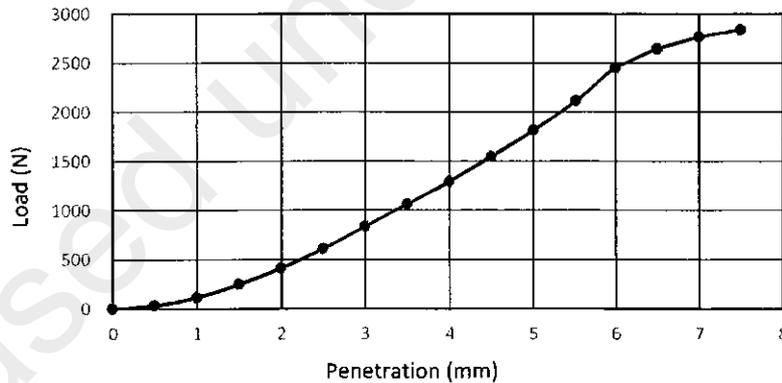
Sample Number:	4951	Lot Number:	EM-008
Sample Date:	9/03/2017	Penetration Date:	14/03/2017
Chainage/RL:	40753	Material Type:	Cryna Quarry
Offset/RL:	6.8	Soil Description:	Silty Clay, Brown
Control Line:		Sampling Method:	Q061
Layer/Depth:	Layer 1	ITP/PCP Number:	N/A

Test Data

Density		Moisture	
Maximum Dry Density:	1.930 t/m ³	Optimum Moisture Content:	14.1 %
Dry Density Before Soak:	1.833 t/m ³	Moisture Content Before Soak:	14.2 %
Specified Density Ratio:	95.0 %	Field Moisture Content:	- %
Laboratory Density Ratio:	95.2 %	Moisture Ratio Required:	100.0 %
Compactive Effort	Standard	Laboratory Moisture Ratio:	100.7 %
Retained on 19mm Sieve:	16.0 %	Days in Soak:	4
Retained on 37.5mm Sieve:	0.0 %	Swell after Soak:	0.2 %
Mass of Surcharges:	4.5 kg	Top 30mm Moisture (After Soak):	15.7 %
		Whole Sample Moisture (After Soak):	15.9 %

California Bearing Ratio Results

CBR @ 2.5mm = 6.0 CBR @ 5.0mm = 10.7
Material CBR Value (Soaked) = 10.7 % at 5mm



Procedures Used

- Q113C Determination of the California Bearing Ratio of a Soil - Single Point Standard Laboratory Method for a Remoulded Specimen.
- Q142A Dry Density / Moisture Content Relationship of a Soil. (Standard Compaction)
- Q102A Determination of the Moisture Content of a Soil - Oven Drying Method (Standard Method)

Test Notes: Material retained on the 19mm sieve has been excluded from the test.



Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant Page 1 of 1

Approved By:

Not relevant

Approved Signatory

Lab Site Number: 19902
 Laboratory Name: ASCT Brisbane South

Form: Q53 Rev: 1 31/01/2017



ASCT - Brisbane South
 PO Box 1232, Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
 Telephone: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N: 73 193 500 470

MATERIAL QUALITY REPORT

Client: See Civil Pty Ltd
 Address: 24A Ozone Street, Tweed Heads, NSW, 2486

Job No.: 115
 Report No: 263
 Report Date: 15/03/2017

Project: Beaudesert Town Centre Bypass Project

Location: MC10
 Description: -
 Material Source: Cryna Quarry
 Material Type: General Fill
 Grading Envelope: Class A (MRTS04)
 Client Reference: TR-154

Sample No: 4951
 Sampled By: C.O'Brien
 Date Sampled: 9/03/2017
 Tested By: N/R
 Date Tested: 14/03/2017
 Reported By: N/R

Road: MC10
 Chainage: 40753
 Offset: 6.8

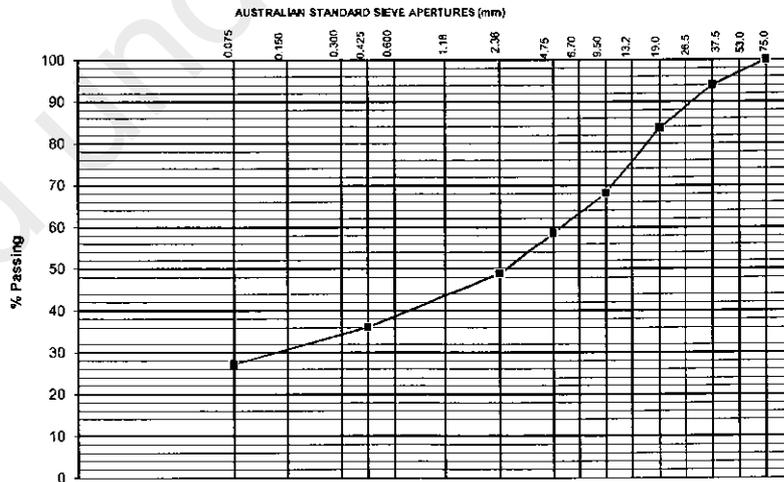
Test Level: Layer 1
 Depth: -

PLASTICITY & LINEAR SHRINKAGE

Test Results	Specification MRTS04	
	Min	Max
Liquid Limit: 37.4 %	-	-
Plastic Limit: 21.4 %	-	-
Plasticity Index (PI): 16.0 %	7	-
Linear Shrinkage: 9.3 %	-	-
PI x % passing 0.425mm (WPI): 577	-	1200
% passing 0.075mm: 27	15	30

PARTICLE SIZE DISTRIBUTION

Sieve Size (mm)	% Passing (by mass)
75.00	100
37.5	94
19.00	84
9.50	68
4.750	58
2.360	49
0.425	36
0.075	27



Test Methods: Q101, Q103A, Q102A, Q104A, Q105, Q106

Sampling Methods: Q061

Remarks:

NR: NOT REQUIRED
 ND: NOT DETERMINED

Not relevant

Approved Signatory: N/R

Accreditation Number: 19902
 Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.





Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486**
 Project: **Beaudesert Town Centre Bypass Project**

Job No: **115**
 Report No: **359**
 Report Date: **21/04/2017**
 Tested By: **N/R**
 Test Date: **19/04/2017**
 Test Request No: **TR-206**

Component: -
 Lot No: **SG-004**

Sample No.:	5442				
Material Source:	Existing	-	-	-	-
Material Type:	Subgrade	-	-	-	-
Client Reference:	TR-206	-	-	-	-
Control Line / Road:	MC10	-	-	-	-
Chainage:	40199	-	-	-	-
Offset:	-2	-	-	-	-
Test Level:	Subgrade	-	-	-	-
Test Depth:	150	-	-	-	-
Compactive Effort:	Standard	-	-	-	-
Oversize Sieve Size (mm):	19.0	-	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.795	-	-	-	-
Field Moisture Content (%)	18.4	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.825	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	17.0	-	-	-	-
Adjusted Optimum Moisture Content (%)	-	-	-	-	-
M.D.D. Date Tested:	20/04/2017	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	108	-	-	-	-
Moisture Ratio Specification (if any):	-	-	-	-	-
Density Ratio %	98.4	-	-	-	-
Density Ratio Required % :	97.0				
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	-				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,

Page 1 of 1



Nata Accreditation No: 19902

Laboratory: Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

N/R

Approved Signatory

ASCT Doc No. Q63 Rev.1, 21/09/2016



ASCT Brisbane South Pty Ltd

PO Box 1232 Park Ridge QLD 4125

4/31 Tradelink Road Hillcrest Q 4118

Email: brisbane.south@asct.com.au

Telephone: Not relevant

Mobile: Not relevant

A.B.N: 73 193 500 470

REPORT OF FIELD DENSITY

CLIENT:	See Civil Pty Ltd	REPORT NO:	358
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	LOT NO:	SG-004
PROJECT:	Beaudesert Town Centre Bypass Project	REQUEST NO:	TR-206
JOB No.:	115	MATERIAL:	Subgrade
LOCATION:	-	MATERIAL SOURCE:	Cryna Quarry
TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	19/04/2017	DATE REPORTED:	21/04/2017

SAMPLE No.	5443	5444	5445	-	-	-	-	-
LOCATION/CHAINAGE (m)	40222	40309	40362	-	-	-	-	-
CONTROL LINE	MC10	MC10	MC10	-	-	-	-	-
OFFSET (m)	-3.5	-2.7	-4.6	-	-	-	-	-
LEVEL OF TEST (m)(RL)	Subgrade	Subgrade	Subgrade	-	-	-	-	-
TEST DEPTH (mm)	200	200	200	-	-	-	-	-
OVERSIZE IEVE SIZE (mm)	37.5	37.5	37.5	-	-	-	-	-
% OVERSIZE	7	7	7	-	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.621	2.620	2.634	-	-	-	-	-
MOISTURE RATIO (%)	92	80	79	-	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.102	2.011	2.033	-	-	-	-	-
FIELD MOISTURE CONTENT (%)	9.8	9.2	8.6	-	-	-	-	-
COMPACTION SAMPLE No.	5443	5444	5445	-	-	-	-	-
DATE MDD AND OMC TESTED	20.4.17	20.4.17	20.4.17	-	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	2.015	1.941	1.956	-	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	2.046	1.379	1.991	-	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	11.5	12.4	11.6	-	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	10.7	11.5	10.8	-	-	-	-	-
DENSITY RATIO: (%)	102.7	101.6	102.1	-	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	101.7			-	-	-	-	-

TEST PROCEDURES:

CALIBRATION DETAILS:

DATE Q144A ASSIGNED:

LAYER DEPTH (mm)

TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A

C4-2-Cryna

N/A

200



Authorised Signatory

Not relevant

NATA Accreditation Number: 19902

Laboratory Name: ASCT Brisbane South

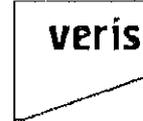
Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

ASCT QLD Doc No. Q59 Rev No. 0 02-09-16

SUBGRADE LEVEL REPORT - 812 Below FSL

Project: Beaudesert Town Centre Bypass

Surveyed: Not relevant
 Surveyor:
 Date: 21/04/17
 QA File/s: 170421 ASB SG.FLD



1. Out-of-tolerance results are highlighted Red/Blue and Bold for ΔRL ($\pm 25mm$) as per MRTS04 Clause 6.3.1

2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

Pavement Type: N 812 below FSL
Material Type: Bare Earth
Control Line: MC10

ΔRL
 Upper Tolerance : 0.025
 Lower Tolerance : -0.025

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
65	40200	40200	499417.908	6905471.663	57.579	57.587	-0.009		
64	40200	40200	499414.782	6905472.744	57.474	57.455	0.019		
62	40210	40210	499414.747	6905462.225	57.389	57.393	-0.004		
63	40210	40210	499411.595	6905463.185	57.259	57.248	0.011		
61	40220	40220	499411.799	6905452.645	57.206	57.204	0.002		
60	40220	40220	499408.349	6905453.752	57.038	57.038	0.000		
57	40230	40230	499408.883	6905443.161	57.014	57.014	0.000		
58	40230	40230	499408.312	6905443.345	57.002	56.996	0.006		
59	40230	40230	499405.069	6905444.266	56.854	56.839	0.014		
56	40240	40240	499406.038	6905433.458	56.840	56.826	0.014		
55	40240	40240	499404.985	6905433.795	56.804	56.799	0.005		
54	40240	40240	499401.672	6905434.778	56.670	56.658	0.012		
50	40250	40250	499403.202	6905423.904	56.672	56.657	0.014		
51	40250	40250	499401.454	6905424.418	56.612	56.609	0.003		
52	40250	40250	499398.140	6905425.343	56.478	56.501	-0.023		
53	40250	40250	499395.738	6905426.084	56.284	56.301	-0.018		
49	40260	40260	499399.654	6905414.383	56.486	56.510	-0.024		
48	40260	40260	499397.908	6905415.010	56.434	56.417	0.016		
47	40260	40260	499394.624	6905415.882	56.318	56.310	0.008		
46	40260	40260	499392.466	6905416.593	56.188	56.172	0.016		
42	40270	40270	499394.331	6905405.700	56.250	56.237	0.013		
43	40270	40270	499391.066	6905406.577	56.141	56.130	0.011		
44	40270	40270	499390.833	6905406.673	56.132	56.122	0.010		
45	40270	40270	499389.323	6905407.090	56.076	56.073	0.002		
41	40280	40280	499390.738	6905396.296	56.077	56.077	0.000		
40	40280	40280	499387.438	6905397.305	55.970	55.970	0.001		
39	40280	40280	499386.939	6905397.425	55.968	55.954	0.014		
38	40280	40280	499385.949	6905397.757	55.940	55.952	-0.013		
34	40290	40290	499387.229	6905386.981	55.957	55.943	0.014		
35	40290	40290	499383.977	6905388.014	55.845	55.838	0.007		
36	40290	40290	499383.102	6905388.283	55.816	55.810	0.006		
37	40290	40290	499382.133	6905388.637	55.757	55.779	-0.022		
33	40300	40300	499383.715	6905377.634	55.817	55.829	-0.013		
32	40300	40300	499380.388	6905378.744	55.712	55.722	-0.011		
31	40300	40300	499379.349	6905379.050	55.678	55.689	-0.011		
30	40300	40300	499378.286	6905379.323	55.671	55.655	0.016		
26	40310	40310	499380.188	6905368.305	55.719	55.720	-0.001		
27	40310	40310	499376.955	6905369.426	55.621	55.617	0.004		
28	40310	40310	499375.567	6905369.893	55.566	55.572	-0.006		
29	40310	40310	499374.564	6905370.182	55.537	55.540	-0.003		
25	40320	40320	499376.738	6905358.979	55.622	55.616	0.006		
24	40320	40320	499373.494	6905360.127	55.524	55.513	0.012		
23	40320	40320	499371.815	6905360.646	55.471	55.459	0.012		
22	40320	40320	499370.825	6905360.962	55.440	55.428	0.013		
18	40330	40330	499373.323	6905349.662	55.511	55.517	-0.006		
19	40330	40330	499370.102	6905350.853	55.410	55.414	-0.004		
20	40330	40330	499368.103	6905351.496	55.344	55.350	-0.006		
21	40330	40330	499367.166	6905351.887	55.321	55.320	0.001		
17	40340	40340	499369.918	6905340.369	55.414	55.421	-0.006		
16	40340	40340	499366.656	6905341.528	55.324	55.316	0.007		
15	40340	40340	499364.438	6905342.313	55.255	55.245	0.010		
14	40340	40340	499363.492	6905342.690	55.228	55.215	0.012		
10	40350	40350	499366.378	6905331.013	55.313	55.322	-0.009		
11	40350	40350	499363.333	6905332.174	55.222	55.225	-0.003		
12	40350	40350	499360.712	6905333.156	55.137	55.141	-0.004		
13	40350	40350	499359.820	6905333.538	55.106	55.112	-0.006		
8	40360	40360	499362.875	6905321.720	55.222	55.226	-0.004		
7	40360	40360	499359.792	6905322.852	55.138	55.127	0.011		
6	40360	40360	499356.980	6905323.957	55.037	55.037	0.001		
5	40360	40360	499355.970	6905324.216	55.007	55.005	0.003		

SUBGRADE LEVEL REPORT - 812 Below FSL

Project: **Beaudesert Town Centre Bypass**

Surveyed: **Not relevant**
 Surveyor:
 Date: **21/04/17**
 QA File/s: **170421 ASB SG.FLD**



1. Out-of-tolerance results are highlighted Red/Blue and Bold for ΔRL (+/-25mm) as per MRT504 Clause 6.3.1
2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

Pavement Type: **N 812 below FSL**
 Material Type: **Bare Earth**
 Control Line: **MC10**

ΔRL
 Upper Tolerance : 0.025
 Lower Tolerance : -0.025

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
2	40370	40370	499359.286	6905312.325	55.142	55.128	0.014		
3	40370	40370	499356.255	6905313.514	55.019	55.031	-0.012		
4	40370	40370	499352.233	6905315.132	54.884	54.902	-0.018		

Points Tested : **63**
 Within Tolerance : **63** **100.0%**
 Too High : **0** **0.0%**
 Too Low : **0** **0.0%**
 Maximum Conformance: **0.019**
 Minimum Conformance: **-0.024**
 Average Conformance: **0.002**
 Standard Deviation : **0.011**

Released under RTI - DDMR



STRAIGHT EDGE CONFORMANCE SHEET

Test Frequency: 1 Per 50m (LHS & RHS)

Conformance: Max 25mm

Lot No: SG004 (Brisbane Street MC10 CH 40191-40380)

	LHS (Turn)	LHS	RHS	RHS (Turn)
MC10				
40200	/	/	12	/
40250	/	/	4	/
40300	/	/	7	/
40350	/	/	3	/

Signed: 

Date: 20/04/17

Released under RTI/OTMR



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG005

Lot: SG005

Work Type: SG

Area:

Description: Subgrade
Brisbane Street
Pavement Type A
MC10 CH 40380-40450 (RHS)
MC20 CH 31-190 (LHS)

Other Details:

Raised By: N/R

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 06 Mar 2017 **Closed:** 28 Apr 2017

Work St: 06 Mar 2017 **Work End:** 28 Apr 2017

Guaranteed: **Conformed:** 28 May 2017

Geometry: No geometry defined.

Quantities:

QVCs:

Subgrade Subgrade
Brisbane Street
Pavement Type A
MC10 CH 40380-40450 (RHS)
MC20 CH 31-120 (LHS)

NCRs:

ATPs:

Related Lots:

Variations:

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been dispositioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Not relevant

Approved by (signature): _____

Not relevant

Print Name: _____ **Date:** 28/05/17

Released under RTI - DMMR



Lot: SG005 Subgrade
 Brisbane Street
 Pavement Type A
 MC10 CH 40380-40450 (RHS)
 MC20 CH 31-100 (LHS)

Date Open: 06 Mar 2017 Date Work Starts: 06 Mar 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
2 Check Item	Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 5000m ² .	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
3 Check Item	Subgrade Fill Material MRTS04 Clause 14.2 Responsibility: Works Supervisor / Project Engineer Subgrade fill material shall be General Fill Class A or Class B. Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10% Required Standard (Class B Fill): WPI - 1200-2200 Single Point Soaked CBR - 10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
4 Hold Point	Construct Subgrade in Cuttings MRTS04 Clause 18.3.3.1 & MRTS04.1 Clause 13.5 Responsibility: Works Supervisor If a subgrade treatment was directed by the Administrator (refer to Road Excavation Lot - HOLD POINT 5), Subgrade Treatments Type A or B shall be applied as directed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
5 Check Item	Testing of Subgrade in Cuttings MRTS04 Clause 18.3.3.2 & MRTS04.1 Clause 13.6 Responsibility: Works Supervisor / Project Engineer Testing of the insitu material in cuttings (other than rock) shall be performed. TEST - Material Properties Grading, Atterberg Limits, Single Point Soaked CBR. Frequency - 1 per material type.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

2500m² (Aprox)

Subgrade Fill MC10
 CH 40380-40450
 Refer to Lot EM006

Refer to Lot EX005

Site instruction directed for unsuitable treatment



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG005 Subgrade
 Brisbane Street
 Pavement Type A
 MC10 CH 40380-40450 (RHS)
 MC20 CH 31-120 (LHS)

Date Open: 06 Mar 2017 Date Work Starts: 06 Mar 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
6 Check Item	Earthworks Transition from Cut to Fill MRTS04 Clause 18.3.4.1 & 18.3.4.2 Responsibility: Works Supervisor Embankment subgrade shall continue longitudinally up to the line where the subgrade level intercepts the prepared ground surface. Construction as a near-grade embankment shall continue for a distance of 10m into the cuttings. Additional foundation testing and preparation at near-grade embankments is required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
7 Check Item	Compaction MRTS04 Table 15.3B - Density Requirements Responsibility: Works Supervisor / Project Engineer TEST - Sand Replacement Criteria - 97% RDD Frequency - 1 per 500m ² , Min 4 per Lot.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		<i>5 Tests All pass</i>			
8 Check Item	Moisture Content MRTS04 Table 15.3C - Moisture Content Responsibility: Works Supervisor Class A 50 - 80 of OMC - 90 of OMC	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
		<i>Varies depending on how long each area had been left to bake, prior to testing.</i>			
		<i>Class B 60 MC20 Ranges 35-50% MC10 Ranges 94-107%</i>			
X 9 Witness Point	Proof Roll Witness Point MRTS04 Clause 18.3.1 & MRTS04.1 Clause 13.4 Responsibility: Administrator / Works Supervisor / Project Engineer The material at subgrade level shall provide a stable, dense surface which displays no visible vertical movement under the rear axle of a fully loaded water truck with a gross mass of not less than 15 tonnes with a single rear axle, or similar vehicle approved by the Administrator.	<input type="checkbox"/>	<input type="checkbox"/>	N/R	
10 Check Item	Geometrics MRTS04 Clause 6.2 Responsibility: Works Supervisor / Surveyor Horizontal Tolerances - Edges not adjacent to a structure +250/-50mm - Edges adjacent to a structure +/-50mm MRTS04 Clause 6.3 Vertical Tolerances +/- 25mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
		<i>MC20 Area CH40-50 is low (up to 25mm outside of tolerance). Low areas to be made up in T2.3 CMB.</i>			
X 11 Hold Point	Placement of Pavement HOLD POINT 9 MRTS04 Clause 18.3.1 Responsibility: Administrator / Works Supervisor / Project Engineer The subgrade shall be constructed and tested to subgrade level in accordance with all standard requirements prior to placement of the pavement.	<input type="checkbox"/>	<input type="checkbox"/>	N/R	



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG005 Subgrade
Brisbane Street
Pavement Type A
MC10 CH 40380-40450 (RHS)
MC20 CH 31-120 (LHS)

Date Open: 06 Mar 2017 **Date Work Starts:** 06 Mar 2017 **Date Compl:**

Item No.	Description	Qty

Comments

Responsible Officer

Verifying Authority

Signature: _____

Print Name: _____ Date: _____

_____ Date: _____

SUBGRADE LEVEL REPORT - 457 Below FSL

Project: Beaudesert Town Centre Bypass

Surveyed: Not relevant

Surveyor:

Date: 27/04/17

QA File/s: 170427 ASB SG.FLD



1. Out-of-tolerance results are highlighted Red/Blue and Bold
for ΔRL (+/-25mm) as per MRTS04 Clause 6.3.1

2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth
Control Line: MC10

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
30	40380	0.46	499361.075	6905300.955	55.562	55.569	-0.007		
29	40380	2.21	499359.447	6905301.591	55.533	55.552	-0.018		
28	40380	3.37	499358.362	6905302.003	55.519	55.540	-0.021		
31	40380	6.17	499355.748	6905303.012	55.371	55.388	-0.017		
32	40380	7.96	499354.080	6905303.670	55.321	55.335	-0.013		
33	40380	9.59	499352.558	6905304.254	55.271	55.286	-0.014		
34	40380	12.98	499349.386	6905305.435	55.170	55.184	-0.014		
35	40380	13.97	499348.432	6905305.728	55.132	55.153	-0.021		
25	40390	-1.74	499359.481	6905290.777	55.514	55.529	-0.015		
26	40390	-0.06	499357.946	6905291.468	55.481	55.479	0.002		
27	40390	3.42	499354.692	6905292.698	55.381	55.386	-0.005		
39	40390	6.12	499352.189	6905293.705	55.289	55.294	-0.005		
38	40390	9.52	499349.015	6905294.920	55.193	55.192	0.002		
37	40390	12.96	499345.810	6905296.184	55.085	55.088	-0.004		
36	40390	13.89	499344.972	6905296.599	55.061	55.061	-0.001		
24	40400	-5.19	499359.062	6905280.265	55.535	55.537	-0.002		
23	40400	-3.54	499357.526	6905280.859	55.488	55.488	0.000		
22	40400	0.03	499354.235	6905282.269	55.366	55.381	-0.015		
21	40400	3.34	499351.124	6905283.391	55.267	55.281	-0.014		
40	40400	6.09	499348.565	6905284.404	55.185	55.199	-0.013		
41	40400	9.49	499345.421	6905285.694	55.097	55.097	-0.001		
42	40400	13.02	499342.140	6905286.992	54.992	54.991	0.001		
43	40400	14.13	499341.095	6905287.379	54.962	54.957	0.005		
16	40410	-9.01	499358.919	6905269.559	55.547	55.559	-0.012		
17	40410	-6.95	499356.982	6905270.257	55.491	55.494	-0.002		
18	40410	-3.56	499353.858	6905271.589	55.398	55.392	0.005		
19	40410	0.08	499350.463	6905272.904	55.279	55.283	-0.004		
20	40410	3.37	499347.412	6905274.133	55.197	55.184	0.013		
47	40410	6.17	499344.829	6905275.220	55.094	55.101	-0.007		
46	40410	9.47	499341.751	6905276.413	54.990	55.001	-0.012		
45	40410	13.00	499338.499	6905277.768	54.891	54.896	-0.005		
44	40410	16.78	499334.940	6905279.059	54.790	54.785	0.004		
15	40420	-13.80	499359.679	6905258.607	55.636	55.649	-0.013		
14	40420	-10.50	499356.551	6905259.681	55.507	55.505	0.002		
13	40420	-8.90	499355.058	6905260.261	55.459	55.456	0.003		
12	40420	-7.05	499353.360	6905261.004	55.401	55.401	0.000		
11	40420	-3.48	499350.042	6905262.313	55.294	55.294	0.001		
10	40420	0.04	499346.783	6905263.643	55.203	55.188	0.015		
9	40420	3.40	499343.639	6905264.821	55.095	55.087	0.008		
48	40420	6.08	499341.185	6905265.918	55.015	55.007	0.007		
49	40420	9.57	499337.943	6905267.202	54.914	54.902	0.012		
50	40420	12.94	499334.813	6905268.447	54.782	54.801	-0.019		
2	40430	-18.38	499359.961	6905247.153	55.793	55.804	-0.010		
3	40430	-12.63	499354.727	6905249.538	55.483	55.476	0.007		
4	40430	-8.85	499351.256	6905251.042	55.346	55.359	-0.014		
5	40430	-7.02	499349.552	6905251.704	55.296	55.304	-0.008		
6	40430	-3.46	499346.254	6905253.051	55.183	55.197	-0.014		
7	40430	0.01	499343.008	6905254.280	55.094	55.092	0.002		
8	40430	3.33	499339.947	6905255.572	54.969	54.993	-0.024		
55	40430	4.98	499338.415	6905256.185	54.924	54.945	-0.021		
54	40430	5.97	499337.515	6905256.586	54.912	54.914	-0.002		

SUBGRADE LEVEL REPORT - 457 Below FSL

Project: Beaudesert Town Centre Bypass

Surveyed: Not relevant

Surveyor:

Date: 27/04/17

QA File/s: 170427 ASB SG.FLD



1. Out-of-tolerance results are highlighted Red/Blue and Bold for ΔRL (± 25 mm) as per MRTSD4 Clause 6.3.1
2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth
Control Line: MC10

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
53	40430	9.49	499334.294	6905258.003	54.809	54.810	-0.001		
52	40430	13.04	499330.963	6905259.234	54.683	54.702	-0.019		
51	40430	14.42	499329.660	6905259.716	54.636	54.660	-0.024		
61	40440	-7.13	499345.823	6905242.360	55.227	55.211	0.016		
60	40440	-3.50	499342.463	6905243.726	55.126	55.102	0.024		
59	40440	0.00	499339.216	6905245.034	55.004	54.997	0.007		
58	40440	5.97	499333.730	6905247.391	54.831	54.819	0.012		
57	40440	9.49	499330.494	6905248.760	54.735	54.721	0.014		
56	40440	13.00	499327.218	6905250.032	54.622	54.607	0.014		

Points Tested :	60	
Within Tolerance :	60	100.0%
Too High :	0	0.0%
Too Low :	0	0.0%
Maximum Conformance:	0.024	
Minimum Conformance:	-0.024	
Average Conformance:	-0.004	
Standard Deviation :	0.011	

Released under RTI - DMR

SUBGRADE LEVEL REPORT - 457 Below FSL

Project: Baudesert Town Centre Bypass

Surveyed: Not relevant

Surveyor:

Date: 27/04/17

QA File/s: 170427 ASB SG.FLD



1. Out-of-tolerance results are highlighted Red/Blue and Bold for $\pm 5L$ ($\pm 7.25mm$) as per MRT504 Clause 6.3.1
2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth

Control Line: MC20

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
96	32	-11.20	499382.720	6905138.717	56.808	56.821	-0.013		
97	32	-9.56	499384.292	6905139.181	56.825	56.887	-0.061	LOW	
98	33	-6.06	499387.248	6905141.516	56.911	56.903	0.007		
99	33	-2.58	499390.526	6905142.706	56.849	56.872	-0.023		
100	33	-1.32	499391.765	6905142.950	56.839	56.832	0.006		
91	40	-10.82	499380.680	6905146.906	56.646	56.685	-0.039	LOW	
92	40	-9.84	499381.618	6905147.196	56.688	56.715	-0.027	LOW	
93	40	-6.35	499384.977	6905148.130	56.774	56.820	-0.046	LOW	
94	40	-2.80	499388.371	6905149.189	56.792	56.840	-0.048	LOW	
95	40	-1.00	499390.100	6905149.687	56.761	56.786	-0.025		
86	50	-10.96	499377.694	6905156.482	56.537	56.566	-0.029	LOW	
87	50	-10.01	499378.600	6905156.763	56.564	56.595	-0.031	LOW	
88	50	-6.55	499381.946	6905157.657	56.663	56.700	-0.037	LOW	
89	50	-2.94	499385.400	6905158.711	56.767	56.795	-0.028	LOW	
90	50	-1.09	499387.149	6905159.289	56.721	56.739	-0.019		
82	60	-10.94	499374.870	6905166.050	56.463	56.474	-0.011		
83	60	-9.90	499375.877	6905166.331	56.486	56.505	-0.020		
85	60	-2.86	499382.603	6905168.385	56.702	56.711	-0.009		
84	60	-1.41	499384.017	6905168.743	56.658	56.681	-0.023		
78	70	-10.84	499372.138	6905175.622	56.376	56.380	-0.005		
77	70	-9.78	499373.164	6905175.866	56.395	56.412	-0.017		
79	70	-6.11	499376.647	6905177.050	56.477	56.520	-0.043	LOW	
80	70	-2.57	499380.056	6905178.003	56.602	56.624	-0.022		
81	70	-1.36	499381.224	6905178.305	56.582	56.601	-0.019		
73	80	-10.96	499369.168	6905185.181	56.203	56.244	-0.041	LOW	
74	80	-9.97	499370.134	6905185.433	56.257	56.274	-0.018		
75	80	-5.77	499374.138	6905186.690	56.377	56.397	-0.020		
76	80	-2.08	499377.667	6905187.762	56.496	56.505	-0.010		
70	90	-11.23	499366.068	6905194.675	56.015	56.037	-0.022		
69	90	-10.00	499367.221	6905195.132	56.051	56.072	-0.022		
71	90	-5.52	499371.544	6905196.309	56.192	56.212	-0.019		
72	90	-1.94	499374.977	6905197.311	56.308	56.329	-0.020		
65	100	-12.64	499361.882	6905203.821	55.708	55.730	-0.022		
66	100	-11.68	499362.835	6905203.975	55.754	55.775	-0.021		
67	100	-6.62	499367.673	6905205.455	55.942	55.968	-0.027	LOW	
68	100	-2.11	499371.962	6905206.860	56.125	56.133	-0.009		
61	110	-13.76	499358.045	6905209.812	55.446	55.470	-0.025		
62	110	-12.77	499358.881	6905210.352	55.485	55.508	-0.022		
63	110	-7.73	499363.299	6905212.777	55.707	55.727	-0.019		
64	110	-3.18	499367.256	6905215.022	55.907	55.924	-0.017		
101	180	11.45	499374.903	6905267.652	54.012	54.021	-0.009		
102	180	17.88	499329.880	6905271.719	54.469	54.470	-0.001		
103	190	21.60	499330.819	6905277.256	54.591	54.593	-0.002		

Points Tested : 43
 Within Tolerance : 31 72.1%
 Too High : 0 0.0%
 Too Low : 12 27.9%
 Maximum Conformance: 0.007
 Minimum Conformance: -0.061
 Average Conformance: -0.022
 Standard Deviation : 0.014



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486**
 Project: **Beaudesert Town Centre Bypass Project**

Job No: **115**
 Report No: **272**
 Report Date: **15/03/2017**
 Tested By: **N/R**
 Test Date: **13/03/2017**
 Test Request No: **TR-158**

Component: **MC20**
 Lot No: **SG-005**

Sample No.:	5009	5010			
Material Source:	Existing	Existing	-	-	-
Material Type:	Subgrade	Subgrade	-	-	-
Client Reference:	TR-158	TR-158	-	-	-
Control Line / Road:	MC20	MC20	-	-	-
Chainage:	74	118	-	-	-
Offset:	5	10	-	-	-
Test Level:	Subgrade	Subgrade	-	-	-
Test Depth:	150	150	-	-	-
Compactive Effort:	Standard	Standard	-	-	-
Oversize Sieve Size (mm):	19.0	19.0	-	-	-
Percentage of Oversize Dry (%):	12	11	-	-	-
Density of Oversize (t/m3)	2.721	2.676	-	-	-
Field Dry Density (t/m3)	2.090	2.099	-	-	-
Field Moisture Content (%)	3.6	5.2	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	2.025	2.038	-	-	-
Adjusted Maximum Dry Density (t/m3)	2.091	2.095	-	-	-
Optimum Moisture Content (%)	11.5	11.9	-	-	-
Adjusted Optimum Moisture Content (%)	10.1	10.5	-	-	-
M.D.D. Date Tested:	14/03/2017	14/03/2017	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	35	50	-	-	-
Moisture Ratio Specification (if any):	-	-	-	-	-
Density Ratio % :	99.9	100.2	-	-	-
Density Ratio Required % :	97.0	97.0	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	99.9				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,

Page 1 of 1

Not relevant

Nata Accreditation No: 19902

Laboratory: Brisbane South



Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

Approved Signatory

ASCT Doc No. Q63 Rev.1, 21/09/2016



ASCT Brisbane South Pty Ltd
 PO Box 1232 Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
 Email: brisbane.south@asct.com.au

Telephone: Not relevant
 Mobile: Not relevant
 A.B.N: 73 193 500 470

REPORT OF FIELD DENSITY

CLIENT:	See Civil Pty Ltd	REPORT NO:	364
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	LOT NO:	SG-005
PROJECT:	Beaudesert Town Centre Bypass Project	REQUEST NO:	TR-208
JOB No.:	115	MATERIAL:	Subgrade
LOCATION:	MC10/MC20	MATERIAL SOURCE:	Cryna Quarry
TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	20/04/2017	DATE REPORTED:	24/04/2017

SAMPLE No.	5467	5468	5469	-	-	-	-
LOCATION/CHAINAGE (m)	40404	40426	66	-	-	-	-
CONTROL LINE	MC10	MC10	MC20	-	-	-	-
OFFSET (m)	3.0	9.6	2.8	-	-	-	-
LEVEL OF TEST (m)(RL)	Subgrade	Subgrade	Subgrade	-	-	-	-
TEST DEPTH (mm)	200	200	200	-	-	-	-
OVERSIZE IEVE SIZE (mm)	37.5	37.5	37.5	-	-	-	-
% OVERSIZE	9	10	7	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.663	2.678	2.652	-	-	-	-
MOISTURE RATIO (%)	95	94	107	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.050	2.076	2.029	-	-	-	-
FIELD MOISTURE CONTENT (%)	10.0	9.2	10.4	-	-	-	-
COMPACTION SAMPLE No.	5467	5468	5469	-	-	-	-
DATE MOD AND OMC TESTED	21.04.2017	21.04.2017	21.04.2017	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	1.979	2.010	2.002	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	2.027	2.063	2.036	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	11.6	10.9	10.5	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	10.5	9.8	9.8	-	-	-	-
DENSITY RATIO: (%)	103.6	103.3	101.4	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	101.8			-	-	-	-

TEST PROCEDURES: TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A
 CALIBRATION DETAILS: Q4-2-Cryna
 DATE Q144A ASSIGNED: N/A
 LAYER DEPTH (mm): 200

Not relevant
 Authorised Signatory...

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.



NATA Accreditation Number: 19902
 Laboratory Name: ASCT Brisbane South

ASCT QLD Doc No. Q59 Rev No. 0 02-09-16



STRAIGHT EDGE CONFORMANCE SHEET

Test Frequency: 1 Per 50m (LHS & RHS)

Conformance: Max 25mm

Lot No: SG006 (Brisbane Street - Pavement Type A)

5

	LHS (Turn)	LHS	RHS	RHS (Turn)
MC10				
CH 40390	/	7	4	/
CH 40440	/	2	6	/
MC20				
CH 40	/	2	5	/
CH 90	/	4	3	/
CH 140	/	4	4	/

Signed:

Not relevant

Date: 28/04/17

Released under RTI/DMR



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG017

Lot: SG017

Work Type: SG

Area:

Description: Subgrade
Brisbane Street
MC10 CH 40380 (LHS) to MC20 CH 110 (RHS)

Other Details:

Raised By: Not relevant

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 15 Jun 2017 **Closed:** 05 Oct 2017

Work St: 15 Jun 2017 **Work End:** 20 Jun 2017

Guaranteed: **Conformed:** 05 Oct 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3402.01P	Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14)	889	889 m2

Checklists:

Subgrade SubgradeBrisbane StreetMC10 CH 40380 (LHS) to MC20 CH 110 (RHS)

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been actioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Approved by (signature): Not relevant _____

Print Name: Not relevant _____ **Date:** 05/10/17



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG017 Subgrade
 Brisbane Street
 MC10 CH 40380 (LHS) to MC20 CH 110 (RHS)

Date Open: 15 Jun 2017 Date Work Starts: 15 Jun 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 5000m ² .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	Subgrade Fill Material MRTS04 Clause 14.2 Responsibility: Works Supervisor / Project Engineer Subgrade fill material shall be General Fill Class A or Class B. Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10% Required Standard (Class B Fill): WPI - 1200-2200 Single Point Soaked CBR - 10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Hold Point	Construct Subgrade in Cuttings MRTS04 Clause 18.3.3.1 & MRTS04.1 Clause 13.5 Responsibility: Works Supervisor If a subgrade treatment was directed by the Administrator (refer to Road Excavation Lot - HOLD POINT 5), Subgrade Treatments Type A or B shall be applied as directed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Check Item	Testing of Subgrade in Cuttings MRTS04 Clause 18.3.3.2 & MRTS04.1 Clause 13.6 Responsibility: Works Supervisor / Project Engineer Testing of the insitu material in cuttings (other than rock) shall be performed. TEST - Material Properties Grading, Atterberg Limits, Single Point Soaked CBR. Frequency - 1 per material type.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Check Item	Earthworks Transition from Cut to Fill MRTS04 Clause 18.3.4.1 & 18.3.4.2 Responsibility: Works Supervisor Embankment subgrade shall continue longitudinally up to the line where the subgrade level intercepts the prepared ground surface. Construction as a near-grade embankment shall continue for a distance of 10m into the cuttings. Additional foundation testing and preparation at near-grade embankments is required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

BU

BU

1318.5m²

N/A

Subgrade in cutting

BU

Refer to Lot Ex010

BU

Unsuitable treatment directed. No further testing performed to determine subgrade suitability.

BU



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG017 Subgrade
 Brisbane Street
 MC10 CH 40380 (LHS) to MC20 CH 110 (RHS)

Date Open: 15 Jun 2017 Date Work Starts: 15 Jun 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
7 Check Item	Compaction MRTS04 Table 15.3B - Density Requirements Responsibility: Works Supervisor / Project Engineer TEST - Sand Replacement Criteria - 97% RDD Frequency - 1 per 500m ² , Min 4 per Lot.	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
				<i>Cv = 99.8%</i>	
8 Check Item	Moisture Content MRTS04 Table 15.3C - Moisture Content Responsibility: Works Supervisor Class A 50 - 80 of OMC - 90 of OMC	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
				<i>Class B 60 Ranges 114% - 124%</i>	
9 Witness Point	Proof Roll Witness Point MRTS04 Clause 18.3.1 & MRTS04.1 Clause 13.4 Responsibility: Administrator / Works Supervisor / Project Engineer The material at subgrade level shall provide a stable, dense surface which displays no visible vertical movement under the rear axle of a fully loaded water truck with a gross mass of not less than 15 tonnes with a single rear axle, or similar vehicle approved by the Administrator.	<input type="checkbox"/>	<input type="checkbox"/>		
10 Check Item	Geometrics MRTS04 Clause 6.2 Responsibility: Works Supervisor / Surveyor Horizontal Tolerances - Edges not adjacent to a structure +250/-50mm - Edges adjacent to a structure +/-50mm MRTS04 Clause 6.3 Vertical Tolerances +/- 25mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
				<i>see attached report.</i>	
11 Hold Point	Placement of Pavement HOLD POINT 9 MRTS04 Clause 18.3.1 Responsibility: Administrator / Works Supervisor / Project Engineer The subgrade shall be constructed and tested to subgrade level in accordance with all standard requirements prior to placement of the pavement.	<input type="checkbox"/>	<input type="checkbox"/>		

Item No.	Description	Qty



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG017 Subgrade
Brisbane Street
MC10 CH 40380 (LHS) to MC20 CH 110 (RHS)

Date Open: 15 Jun 2017 Date Work Starts: 15 Jun 2017 Date Compl:

Comments

Responsible Officer

Verifying Authority

Signature: _____

Print Name: _____ Date: _____

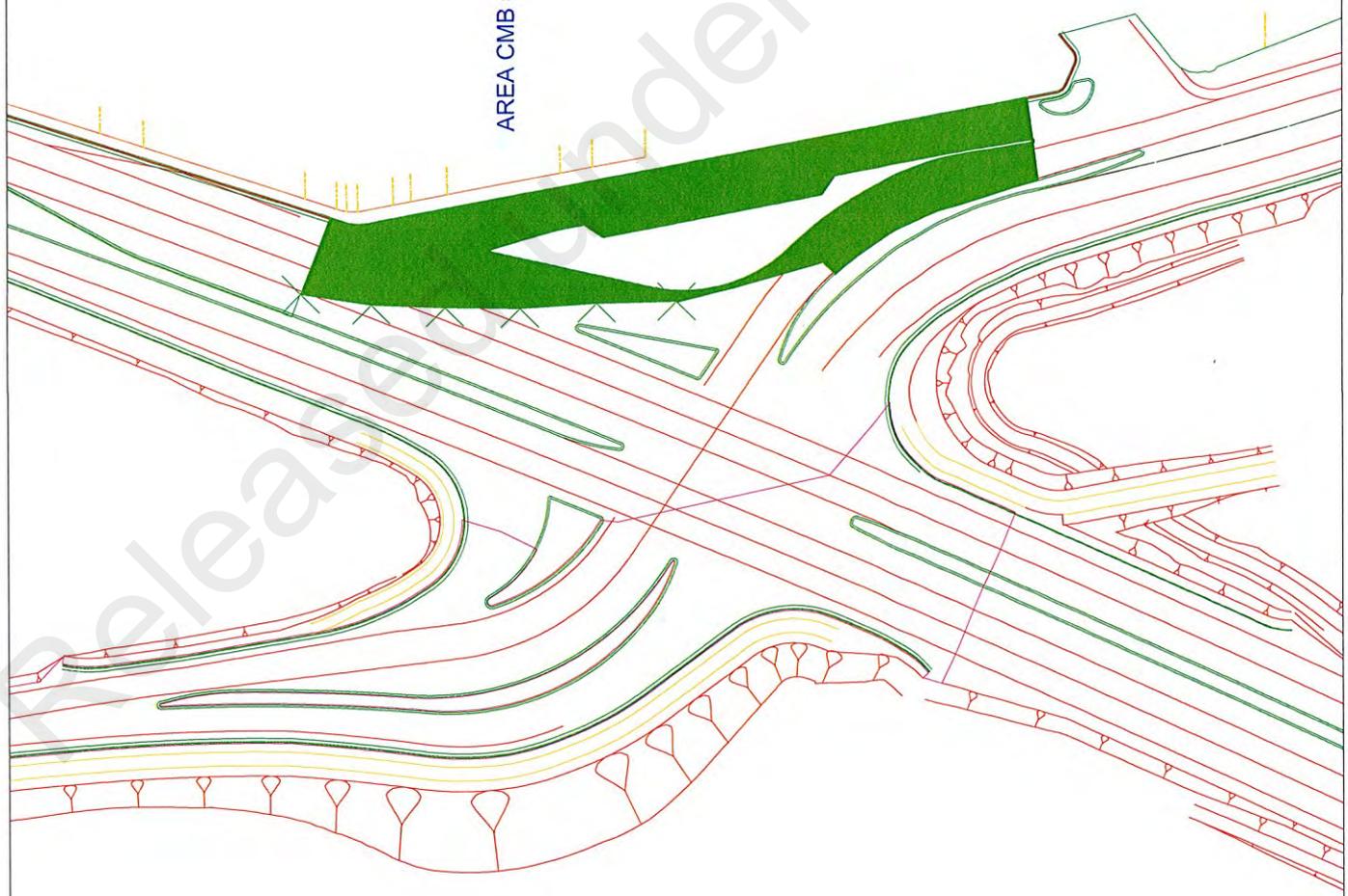
_____ Date: _____

Released under RTI - DTMR

SG017

SG018
Item 3402.01P - 1318.5m²

AREA CMB = 1318.5 sq m



AREA CMB
PLACED 170621

12d Model
Scale: 1:1000
Mon Jun 26 15:52:18 2017



ASCT Brisbane South Pty Ltd
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 4/31 Tradelink Road Hillcrest Q 4118
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Telephone: Not relevant
 Mobile: Not relevant
 A.B.N: 73 193 500 470

REPORT OF FIELD DENSITY

CLIENT:	See Civil Pty Ltd	REPORT NO:	588
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	LOT NO:	SG-017
PROJECT:	Beaudesert Town Centre Bypass Project	REQUEST NO:	TR-283
JOB No.:	115	MATERIAL:	Subgrade
LOCATION:	MC20	MATERIAL SOURCE:	Cryna Quarry
TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	21/06/2017	DATE REPORTED:	27/06/2017

SAMPLE No.	6725	6726	6727	-	-	-	-	-
LOCATION/CHAINAGE (m)	96	115	129	-	-	-	-	-
CONTROL LINE	MC20	MC20	MC20	-	-	-	-	-
OFFSET (m)	6.0	11.0	31.0	-	-	-	-	-
LEVEL OF TEST (m)(RL)	Subgrade	Subgrade	Subgrade	-	-	-	-	-
TEST DEPTH (mm)	200	200	200	-	-	-	-	-
OVERSIZE IEVE SIZE (mm)	37.5	37.5	37.5	-	-	-	-	-
% OVERSIZE	12	10	9	-	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.698	2.722	2.682	-	-	-	-	-
MOISTURE RATIO (%)	124	119	114	-	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.035	2.055	2.042	-	-	-	-	-
FIELD MOISTURE CONTENT (%)	12.1	10.6	11.3	-	-	-	-	-
COMPACTION SAMPLE No.	6725	6726	6727	-	-	-	-	-
DATE MDD AND OMC TESTED	24/06/2017	24/06/2017	24/06/2017	-	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	1.976	1.988	1.949	-	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	2.041	2.045	2.000	-	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	11.1	9.9	10.9	-	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	9.8	8.9	9.9	-	-	-	-	-
DENSITY RATIO: (%)	99.7	100.5	102.1	-	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	99.8			-	-	-	-	-

TEST PROCEDURES: TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A
 CALIBRATION DETAILS: C4-2-Cryna
 DATE Q144A ASSIGNED: N/A
 LAYER DEPTH (mm): 200

Authorised Signatory: Not relevant

NATA Accreditation Number: 19902
 Laboratory Name: ASCT Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.





Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486**
 Project: **Beaudesert Town Centre Bypass Project**

Job No: **115**
 Report No: **589**
 Report Date: **27/06/2017**
 Tested By: N/R
 Test Date: **21/06/2017**
 Test Request No: **TR-283**

Component: **MC10**
 Lot No: **SG-017**

Sample No.:	6728				
Material Source:	Existing	-	-	-	-
Material Type:	Subgrade	-	-	-	-
Client Reference:	TR-283	-	-	-	-
Control Line / Road:	MC10	-	-	-	-
Chainage:	40411	-	-	-	-
Offset:	-15	-	-	-	-
Test Level:	Subgrade	-	-	-	-
Test Depth:	150	-	-	-	-
Compactive Effort:	Standard	-	-	-	-
Oversize Sieve Size (mm):	19.0	-	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.826	-	-	-	-
Field Moisture Content (%)	15.3	-	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.832	-	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	15.0	-	-	-	-
Adjusted Optimum Moisture Content (%)	-	-	-	-	-
M.D.D. Date Tested:	24/06/2017	-	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	102	-	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	99.6	-	-	-	-
Density Ratio Required % :	97.0				
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	-				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A

Page 1 of 1



Nata Accreditation No: 19902
 Laboratory: Brisbane South
Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant
 [Signature]

N/R
 Approved Signatory
 ASCT Doc No. Q63 Rev.1, 21/09/2016

SUBGRADE LEVEL REPORT - 457 Below FSL

Project: Beaudesert Town Centre Bypass

Surveyed: Not relevant

Surveyor:

Date: 20/06/17

QA File/s: 170620 ASB SG.FLD



1. Out-of-tolerance results are highlighted **Red/Blue and Bold** for ΔRL (+/-25mm) as per MRTS04 Clause 6.3.1

2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth
Control Line: MC10 AND 20

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
AUTO1641	110	0.21	499370.167	6905216.760	55.988	56.012	-0.023		
AUTO1642	110	4.99	499374.324	6905219.117	56.189	56.203	-0.014		
AUTO1643	110	6.41	499375.564	6905219.800	56.270	56.259	0.010		
AUTO1624	110	10.50	499379.099	6905221.864	56.328	56.321	0.007		
AUTO1623	110	15.42	499383.360	6905224.327	56.176	56.175	0.001		
AUTO1640	120	1.44	499365.164	6905225.638	55.857	55.855	0.002		M
AUTO1639	120	5.06	499367.805	6905228.114	55.992	55.999	-0.007		C
AUTO1638	120	6.46	499368.863	6905229.031	56.039	56.057	-0.018		2
AUTO1625	120	13.89	499374.333	6905234.059	56.277	56.285	-0.009		0
AUTO1626	120	22.10	499380.364	6905239.632	56.033	56.035	-0.002		
AUTO1637	130	9.82	499362.179	6905239.273	55.800	55.797	0.002		
AUTO1628	130	25.08	499370.848	6905251.841	56.099	56.110	-0.011		
AUTO1627	130	35.01	499376.464	6905260.022	55.830	55.821	0.008		
AUTO1630	40400	-20.91	499373.683	6905274.488	55.681	55.676	0.005		
AUTO1631	40400	-15.45	499368.598	6905276.483	55.758	55.750	0.008		
AUTO1629	40410	-21.62	499370.612	6905264.838	55.909	55.900	0.010		M
AUTO1632	40410	-15.51	499364.901	6905267.006	55.746	55.753	-0.007		C
AUTO1633	40420	-17.37	499362.908	6905257.083	55.730	55.721	0.009		1
AUTO1634	40420	-13.02	499358.892	6905258.753	55.609	55.613	-0.004		0
AUTO1635	40430	-19.45	499361.032	6905246.948	55.701	55.695	0.005		
AUTO1636	40430	-18.51	499360.169	6905247.323	55.796	55.785	0.011		

Points Tested :	21	
Within Tolerance :	21	100.0%
Too High :	0	0.0%
Too Low :	0	0.0%
Maximum Conformance:	0.011	
Minimum Conformance:	-0.023	
Average Conformance:	-0.001	
Standard Deviation :	0.010	



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG018

Lot: SG018

Work Type: SG

Area:

Description: Subgrade
Brisbane Street
MC10 CH 40300-40380 (LHS)

Other Details:

Raised By: N/R

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 23 Jun 2017 **Closed:** 05 Oct 2017

Work St: 23 Jun 2017 **Work End:** 26 Jun 2017

Guaranteed: **Conformed:** 05 Oct 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3402.01P	Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14)	1,318.5	1,318.5 m2

Checklists:

Subgrade SubgradeBrisbane StreetMC10 CH 40300-40380 (LHS)

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been actioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Approved by (signature): N/R _____

Print Name: Not relevant _____ **Date:** 05/10/17



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG018 Subgrade
Brisbane Street
MC10 CH 40300-40380 (LHS)

Date Open: 23 Jun 2017 Date Work Starts: 23 Jun 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	<p>Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	<p>Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 5000m².</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	<p>Subgrade Fill Material MRTS04 Clause 14.2 Responsibility: Works Supervisor / Project Engineer Subgrade fill material shall be General Fill Class A or Class B.</p> <p>Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10%</p> <p>Required Standard (Class B Fill): WPI - 1200-2200 Single Point Soaked CBR - 10%</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Hold Point	<p>Construct Subgrade in Cuttings MRTS04 Clause 18.3.3.1 & MRTS04.1 Clause 13.5 Responsibility: Works Supervisor If a subgrade treatment was directed by the Administrator (refer to Road Excavation Lot - HOLD POINT 5), Subgrade Treatments Type A or B shall be applied as directed.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Check Item	<p>Testing of Subgrade in Cuttings MRTS04 Clause 18.3.3.2 & MRTS04.1 Clause 13.6 Responsibility: Works Supervisor / Project Engineer Testing of the insitu material in cuttings (other than rock) shall be performed.</p> <p>TEST - Material Properties Grading, Atterberg Limits, Single Point Soaked CBR.</p> <p>Frequency - 1 per material type.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Check Item	<p>Earthworks Transition from Cut to Fill MRTS04 Clause 18.3.4.1 & 18.3.4.2 Responsibility: Works Supervisor Embankment subgrade shall continue longitudinally up to the line where the subgrade level intercepts the prepared ground surface.</p> <p>Construction as a near-grade embankment shall continue for a distance of 10m into the cuttings. Additional foundation testing and preparation at near-grade embankments is required.</p>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

889m²

N/A

Subgrade in Cutting

Refer to Lot Ex010

Unsuitable treatment directed. No further testing performed to determine subgrade suitability.



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG018 Subgrade
 Brisbane Street
 MC10 CH 40300-40380 (LHS)

Date Open: 23 Jun 2017 Date Work Starts: 23 Jun 2017 Date Compl:

Check Type:	Description:	Check	Verify	Appr.	NCR
7 Check Item	Compaction MRTS04 Table 15.3B - Density Requirements Responsibility: Works Supervisor / Project Engineer TEST - Sand Replacement Criteria - 97% RDD Frequency - 1 per 500m ² , Min 4 per Lot.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>Cv = 100.3%</i>			
8 Check Item	Moisture Content MRTS04 Table 15.3C - Moisture Content Responsibility: Works Supervisor Class A 50 - 80 of OMC - 90 of OMC	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>Class B 60 Ranges 103% - 109%</i>			
9 Witness Point	Proof Roll Witness Point MRTS04 Clause 18.3.1 & MRTS04.1 Clause 13.4 Responsibility: Administrator / Works Supervisor / Project Engineer The material at subgrade level shall provide a stable, dense surface which displays no visible vertical movement under the rear axle of a fully loaded water truck with a gross mass of not less than 15 tonnes with a single rear axle, or similar vehicle approved by the Administrator.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>N/R</i>			
10 Check Item	Geometrics MRTS04 Clause 6.2 Responsibility: Works Supervisor / Surveyor Horizontal Tolerances - Edges not adjacent to a structure +250/-50mm - Edges adjacent to a structure +/-50mm MRTS04 Clause 6.3 Vertical Tolerances +/- 25mm	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>see attached report</i>			
X 11 Hold Point	Placement of Pavement HOLD POINT 9 MRTS04 Clause 18.3.1 Responsibility: Administrator / Works Supervisor / Project Engineer The subgrade shall be constructed and tested to subgrade level in accordance with all standard requirements prior to placement of the pavement.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<i>yes</i>			

Item No.	Description	Qty



Checklist

J518-1: Beaudesert Town Centre Bypass

QVC: ITP 0408Subgrade

Lot: SG018 Subgrade
Brisbane Street
MC10 CH 40300-40380 (LHS)

Date Open: 23 Jun 2017 Date Work Starts: 23 Jun 2017 Date Compl:

Comments

Responsible Officer

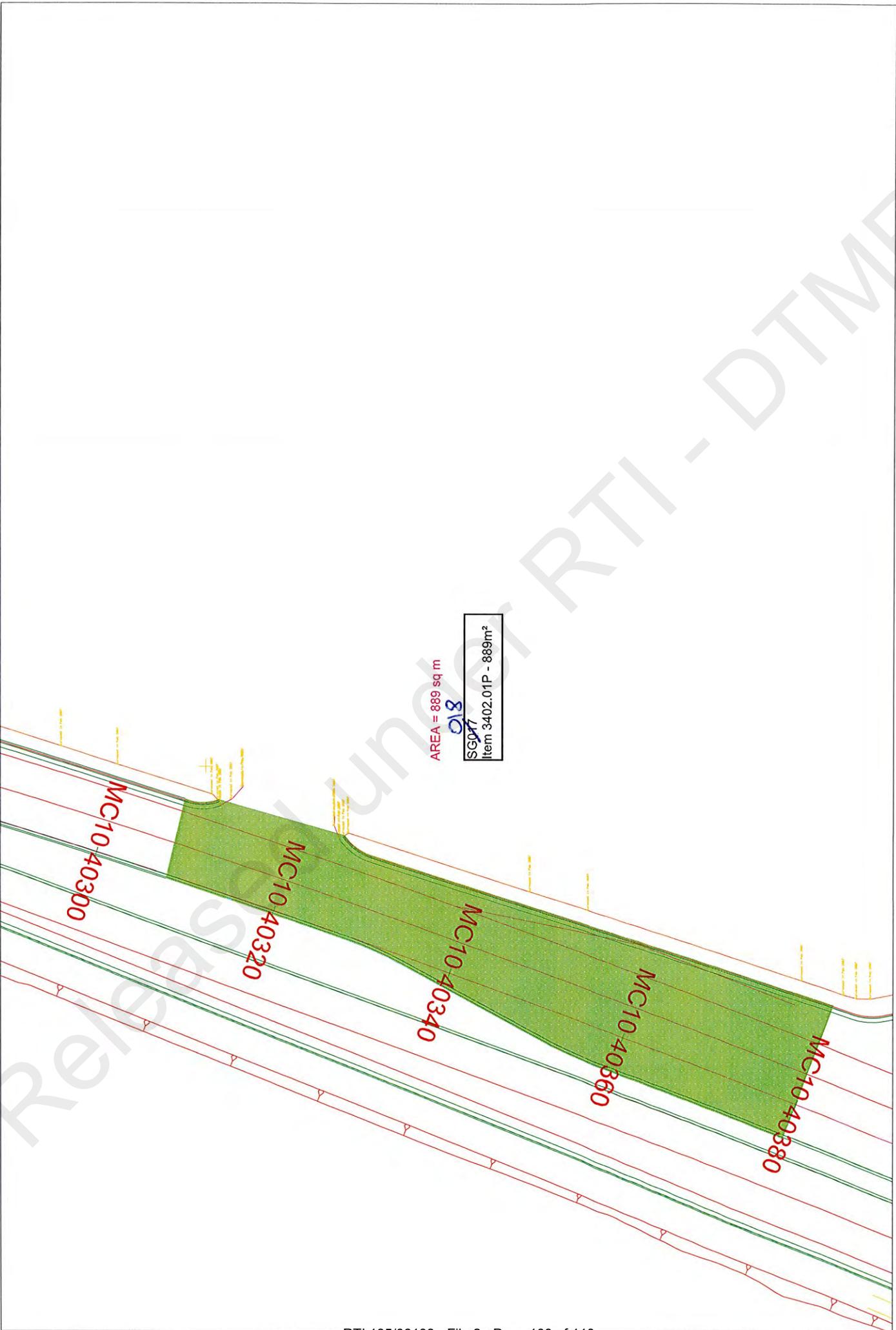
Verifying Authority

Signature: _____

Print Name: _____ Date: _____

_____ Date: _____

Released under RTI - DTMR



AREA = 889 sq m

818

SGOIT
Item 3402.01P - 889m²

MC10-40300

MC10-40320

MC10-40340

MC10-40360

MC10-40380

Area CMB Placed 170628
MC10 CH 40310 40380

12d Model
Scale 1:500
Thu Jun 29 11:04:14 2017



ASCT Brisbane South Pty Ltd
 PO Box 1232 Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
 Email: brisbane.south@asct.com.au

Telephone: Not relevant
 Mobile: Not relevant
 A.B.N: 73 193 500 470

REPORT OF FIELD DENSITY

CLIENT:	See Civil Pty Ltd	REPORT NO:	622
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	LOT NO:	SG-018
PROJECT:	Beaudesert Town Centre Bypass Project	REQUEST NO:	TR-290
JOB No.:	115	MATERIAL:	Subgrade
LOCATION:	Brisbane St CH:40300-40380 (LHS)	MATERIAL SOURCE:	Cryna Quarry
TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	26/06/2017	DATE REPORTED:	30/06/2017

SAMPLE No.	6816	6817	-	-	-	-	-	-
LOCATION/CHAINAGE (m)	40324	40360	-	-	-	-	-	-
CONTROL LINE	MC10	MC10	-	-	-	-	-	-
OFFSET (LHS) (m)	2.8	0.1	-	-	-	-	-	-
LEVEL OF TEST (m)(RL)	Subgrade	Subgrade	-	-	-	-	-	-
TEST DEPTH (mm)	200	200	-	-	-	-	-	-
OVERSIZE IEVE SIZE (mm)	37.5	37.5	-	-	-	-	-	-
% OVERSIZE	8	9	-	-	-	-	-	-
DENSITY OF OVERSIZE (t/m ³)	2.677	2.691	-	-	-	-	-	-
MOISTURE RATIO (%)	103	109	-	-	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.078	2.119	-	-	-	-	-	-
FIELD MOISTURE CONTENT (%)	10.4	9.6	-	-	-	-	-	-
COMPACTION SAMPLE No.	6816	6817	-	-	-	-	-	-
DATE MDD AND OMC TESTED	27/06/2017	27/06/2017	-	-	-	-	-	-
MAXIMUM DRY DENSITY (t/m ³)	2.028	2.052	-	-	-	-	-	-
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)	2.070	2.098	-	-	-	-	-	-
OPTIMUM MOISTURE CONTENT (%)	11.0	9.7	-	-	-	-	-	-
ADJUSTED OPTIMUM MOISTURE CONTENT (%)	10.1	8.8	-	-	-	-	-	-
DENSITY RATIO: (%)	100.4	101.0	-	-	-	-	-	-
CHARACTERISTIC VALUE OF DENSITY RATIO: (%)	100.3		-	-	-	-	-	-

TEST PROCEDURES: TEST METHODS Q020, Q050, Q061, Q140A, Q143, Q141A, Q142A
 CALIBRATION DETAILS: C4-2-Cryna
 DATE Q144A ASSIGNED: N/A
 LAYER DEPTH (mm): 200

Not relevant

Authorised Signatory



NATA Accreditation Number: 19902
 Laboratory Name: ASCT Brisbane South

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.



Laboratory: **ASCT Brisbane South**
 Postal Address: PO Box 1232 Park Ridge QLD 4125
 Address: 4/31 Tradelink Road Hillcrest Q 4118
 Mobile: Not relevant
 Email: brisbane.south@asct.com.au
 A.B.N.: 73 193 500 470

Density Report - Sand Replacement

Client: **See Civil Pty Ltd** Job No: **115**
 Address: **24A Ozone Street, Tweed Heads, NSW, 2486** Report No: **623**
 Project: **Beaudesert Town Centre Bypass Project** Report Date: **30/06/2017**
 Component: **MC10** Tested By: **N/R**
 Lot No: **SG-018** Test Date: **26/06/2017**
 Test Request No: **TR-290**

Sample No.:	6818	6819			
Material Source:	Existing	Existing	-	-	-
Material Type:	Subgrade	Subgrade	-	-	-
Client Reference:	TR-290	TR-290	-	-	-
Control Line / Road:	MC10	MC10	-	-	-
Chainage:	40308	40356	-	-	-
Offset (LHS) (m)	4.7	9.7	-	-	-
Test Level:	Subgrade	Subgrade	-	-	-
Test Depth:	150	150	-	-	-
Compactive Effort:	Standard	Standard	-	-	-
Oversize Sieve Size (mm):	19.0	37.5	-	-	-
Percentage of Oversize Dry (%):	-	-	-	-	-
Density of Oversize (t/m3)	-	-	-	-	-
Field Dry Density (t/m3)	1.751	1.953	-	-	-
Field Moisture Content (%)	8.1	11.1	-	-	-
Assigned Value Report No:	-				
Assigned Value Report Date:	-				
Maximum Dry Density (t/m3)	1.764	1.946	-	-	-
Adjusted Maximum Dry Density (t/m3)	-	-	-	-	-
Optimum Moisture Content (%)	16.0	11.3	-	-	-
Adjusted Optimum Moisture Content (%)	-	-	-	-	-
M.D.D. Date Tested:	27/06/2017	27/06/2017	-	-	-
APD Sample No. / Date:	-	-	-	-	-
Apparent Particle Density (t/m3)	-	-	-	-	-
Moisture Ratio (%)	51	98	-	-	-
Moisture Ratio Specification (If any):	-	-	-	-	-
Density Ratio % :	99.2	100.4	-	-	-
Density Ratio Required % :	97.0	97.0	-	-	-
Degree of Saturation % :	-	-	-	-	-
Characteristic Value (Density) % :	99.1				
Characteristic Value (D.O.S) % :	-				

Sampling Procedures: Q050, Q061
 Test Procedures: Q102A, Q140A, Q141B, Q142A, Q143,



Nata Accreditation No: 19902

Laboratory: Brisbane South

ACCREDITED FOR TECHNICAL COMPETENCE

Accredited for compliance with ISO/IEC 17025. The results of the tests included in this document are traceable to Australian/national standards.

Not relevant

(Signature area)

N/R

Approved Signatory

ASCT Doc No. Q63 Rev:1, 21/09/2016

SUBGRADE LEVEL REPORT - 812 Below FSL



Project: Beaudesert Town Centre Bypass

Surveyed: Not relevant

Surveyor:

Date: 26/06/17

QA File/s: 170626 ASB SG.FLD

1. Out-of-tolerance results are highlighted **Red/Blue and Bold** for ΔRL (+/-25mm) as per MRTS04 Clause 6.3.1

2. Chainages are rounded to the nearest metre, Offsets to the nearest centimetre.

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth
Control Line: MC10

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
AUTO1638	40310	-8.12	499393.241	6905363.866	55.576	55.585	-0.008		
AUTO1639	40310	-7.02	499392.234	6905364.322	55.671	55.678	-0.007		
AUTO1640	40310	-3.44	499388.813	6905365.374	55.800	55.787	0.014		
AUTO1641	40310	-0.03	499385.601	6905366.516	55.867	55.889	-0.022		
AUTO1637	40320	-7.02	499389.013	6905354.880	55.598	55.586	0.012		
AUTO1636	40320	-3.48	499385.611	6905355.859	55.697	55.689	0.007		
AUTO1635	40320	-0.04	499382.382	6905357.057	55.781	55.793	-0.012		
AUTO1634	40330	-7.03	499385.639	6905345.269	55.492	55.486	0.007		
AUTO1633	40330	-3.49	499382.343	6905346.559	55.604	55.595	0.010		
AUTO1632	40330	-0.08	499379.120	6905347.668	55.679	55.697	-0.017		
AUTO1627	40340	-8.67	499383.779	6905335.334	55.305	55.285	0.021		
AUTO1628	40340	-6.97	499382.149	6905335.822	55.406	55.393	0.013		
AUTO1629	40340	-3.49	499378.883	6905337.037	55.491	55.498	-0.007		
AUTO1630	40340	0.02	499375.564	6905338.191	55.578	55.603	-0.025		
AUTO1631	40340	1.21	499374.457	6905338.622	55.620	55.638	-0.018		
AUTO1626	40350	-9.13	499380.702	6905325.697	55.227	55.214	0.013		
AUTO1625	40350	-6.97	499378.671	6905326.417	55.316	55.297	0.019		
AUTO1624	40350	-3.52	499375.444	6905327.658	55.408	55.401	0.007		
AUTO1623	40350	-0.07	499372.201	6905328.834	55.520	55.504	0.015		
AUTO1622	40350	2.66	499369.676	6905329.854	55.601	55.587	0.014		
AUTO1617	40360	-9.46	499377.542	6905316.310	55.154	55.152	0.002		
AUTO1621	40360	-7.08	499375.258	6905317.000	55.213	55.199	0.014		
AUTO1620	40360	-3.46	499371.890	6905318.329	55.317	55.307	0.010		
AUTO1619	40360	0.02	499368.612	6905319.489	55.407	55.411	-0.004		
AUTO1618	40360	3.42	499365.421	6905320.670	55.485	55.506	-0.021		
AUTO1616	40370	-10.06	499374.498	6905306.591	55.209	55.200	0.009		
AUTO1615	40370	-6.97	499371.596	6905307.639	55.258	55.244	0.014		
AUTO1614	40370	-3.50	499368.338	6905308.839	55.278	55.279	-0.001		
AUTO1613	40370	0.01	499365.101	6905310.198	55.308	55.315	-0.007		
AUTO1612	40370	3.39	499361.906	6905311.319	55.340	55.348	-0.008		

Points Tested :	30	
Within Tolerance :	30	100.0%
Too High :	0	0.0%
Too Low :	0	0.0%
Maximum Conformance:	0.021	
Minimum Conformance:	-0.025	
Average Conformance:	0.001	
Standard Deviation :	0.014	



Conformance Report

J518-1: Beaudesert Town Centre Bypass

Lot: SG022

Lot: SG022

Work Type: SG

Area:

Description: Subgrade
Brisbane Street
MC20 CH 31-120 (RHS)

Other Details:

Raised By: N/R

Conformed By:

Testing Level: Normal Reduced

Key Dates:

Opened: 14 Jul 2017 **Closed:** 05 Oct 2017

Work St: 14 Jul 2017 **Work End:** 21 Jul 2017

Guaranteed: **Conformed:** 05 Oct 2017

Geometry: No geometry defined.

Quantities:

		Meas. Qty	Eff. Qty
3402.01P	Subgrade treatment Type A in cuttings and in embankments (Provisional Quantity if ordered) (MRS04 Oct 14)	1,023.3	1,023.3 m2

Checklists:

Subgrade	SubgradeBrisbane StreetMC20 CH 31-120 (RHS)
Subgrade	SubgradeBrisbane StreetMC20 CH 31-120 (RHS)

This lot conforms in all respects with the standards and requirements specified in the contract documents, the lot verification records are complete and any non conformances have been actioned in accordance with the contract requirements

Signed: _____

Print Name: _____ **Date:** _____

Approved by (signature): Not relevant

Print Name: _____ **Date:** 05/10/17



Checklist

J518-1: Beaudesert Town Centre Bypass

Checklist: ITP 0408: Subgrade

**Checklist: SG022: Subgrade
Brisbane Street
MC20 CH 31-120 (RHS)**

Date Open: 14 Jul 2017 Date Work Started: 14 Jul 2017 Date Work Complete:

Check Type:	Description:	Check	Verify	Appr.	NCR
1 Check Item	Safety Management Responsibility: Works Supervisor / Project Engineer Ensure all personnel signed onto daily pre-start and applicable SWMS. Ensure DBYD procedures have been carried out prior to commencing work and a dig permit in place. A copy must be held with the machine operator.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Check Item	Lot Size MRTS04.1 Clause 1.2 Responsibility: Project Engineer The maximum lot size shall not exceed 5000m ² .	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Check Item	Subgrade Fill Material MRTS04 Clause 14.2 Responsibility: Works Supervisor / Project Engineer Subgrade fill material shall be General Fill Class A or Class B. Required Standard (Class A Fill): % Passing 0.075mm Sieve - 15-30% PI - >7% WPI - <1200 Single Point Soaked CBR - 10% Required Standard (Class B Fill): WPI - 1200-2200 Single Point Soaked CBR - 10%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Hold Point	Construct Subgrade in Cuttings MRTS04 Clause 18.3.3.1 & MRTS04.1 Clause 13.5 Responsibility: Works Supervisor If a subgrade treatment was directed by the Administrator (refer to Road Excavation Lot - HOLD POINT 5), Subgrade Treatments Type A or B shall be applied as directed.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Check Item	Testing of Subgrade in Cuttings MRTS04 Clause 18.3.3.2 & MRTS04.1 Clause 13.6 Responsibility: Works Supervisor / Project Engineer Testing of the insitu material in cuttings (other than rock) shall be performed. TEST - Material Properties Grading, Atterberg Limits, Single Point Soaked CBR. Frequency - 1 per material type.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Check Item	Earthworks Transition from Cut to Fill MRTS04 Clause 18.3.4.1 & 18.3.4.2 Responsibility: Works Supervisor Embankment subgrade shall continue longitudinally up to the line where the subgrade level intercepts the prepared ground surface. Construction as a near-grade embankment shall continue for a distance of 10m into the cuttings. Additional foundation testing and preparation at near-grade embankments is required.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1,023.3m²

Subgrade in Cutting

Refer to Lot EX013

No further testing performed to determine subgrade suitability. Unsuitable treatment directed.



Checklist

J518-1: Beaudesert Town Centre Bypass

Checklist: ITP 0408: Subgrade

**Checklist: SG022: Subgrade
Brisbane Street
MC20 CH 31-120 (RHS)**

Date Open: 14 Jul 2017 Date Work Started: 14 Jul 2017 Date Work Complete:

Responsible Officer

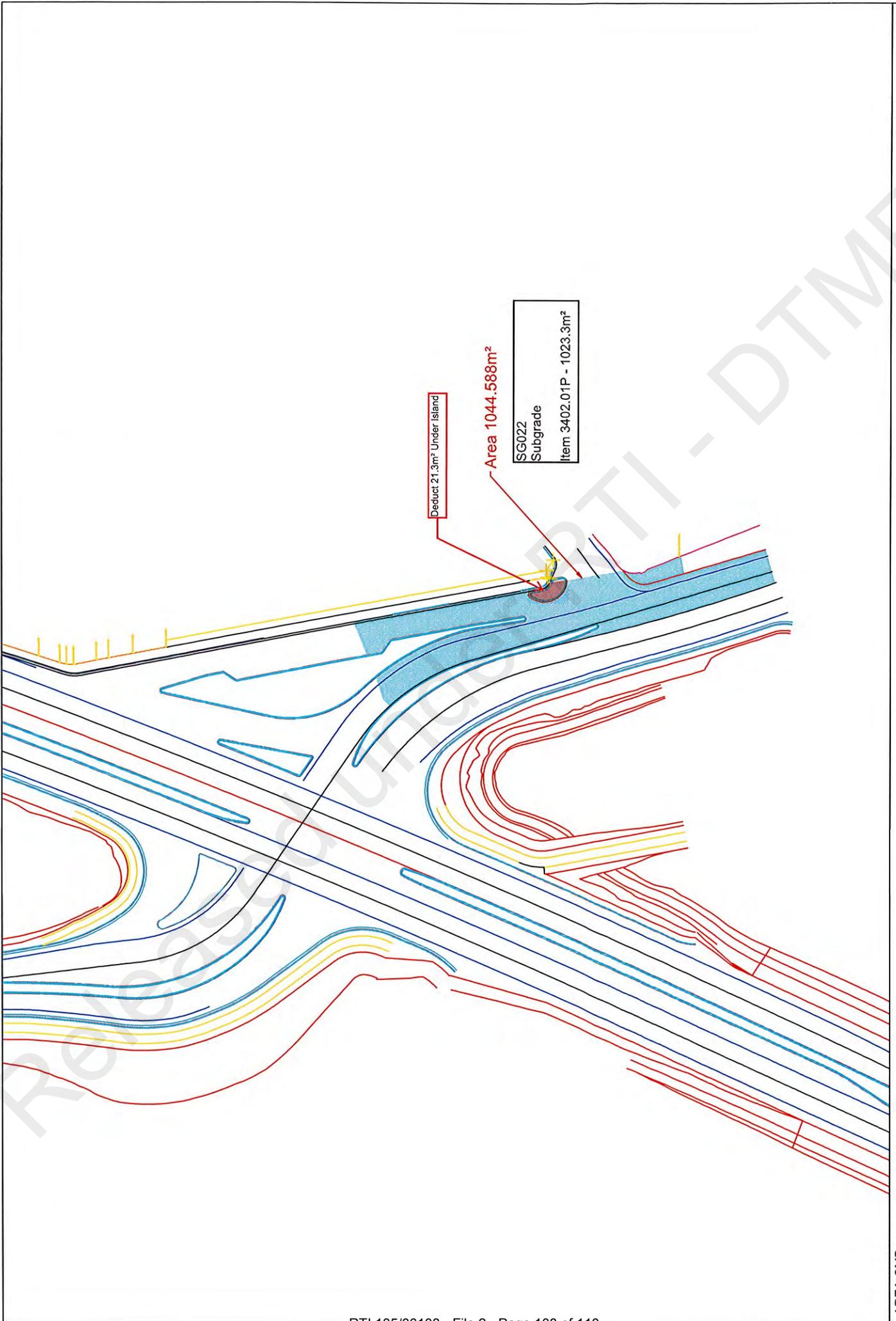
Verifying Authority

Signature: _____

Print Name: _____ Date: _____

_____ Date: _____

Released under RTI - DTMR





ASCT Brisbane South
 PO Box 1232 Park Ridge QLD 4125
 4/31 Tradelink Road Hillcrest Q 4118
 Email: brisbane.south@asct.com.au

Telephone: Not relevant
 Mobile: Not relevant
 A.B.N: 73 193 500 470

Report of Field Density

CLIENT:	See Civil Pty Ltd	JOB NUMBER:	115
ADDRESS:	24A Ozone Street, Tweed Heads, NSW, 2486	REPORT NO:	700
PROJECT:	Beaudesert Town Centre Bypass Project		

ZONE: - COMPONENT: Brisbane St MC20 CH 31-110 (RHS) DESCRIPTION: - LOT NUMBER: SG-022	LOT TYPE: Pavements MATERIAL SOURCE: Nielsons Quarry MATERIAL TYPE: Type 2.3C UB REQUEST NUMBER: TR-311
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TESTED BY:	N/R	REPORTED BY:	N/R
DATE TESTED:	21/07/2017	DATE REPORTED:	26/07/2017

SAMPLE No.	7375	7376	7377	7378	-	-	-	-
CHAINAGE (m)	36	60	81	96	-	-	-	-
LOCATION	Brisbane St	Brisbane St	Brisbane St	Brisbane St	-	-	-	-
CONTROL LINE	MC20	MC20	MC20	MC20	-	-	-	-
OFFSET (LHS) (m)	-1.10	-3.30	-4.80	-3.00	-	-	-	-
LEVEL OF TEST (m)(RL)	Subgrade	Subgrade	Subgrade	Subgrade	-	-	-	-
TEST DEPTH (mm)	150	150	150	150	-	-	-	-
% OVERSIZE								
DENSITY OF OVERSIZE (t/m ³)								
MOISTURE RATIO (%)	88	94	72	76	-	-	-	-
FIELD DRY DENSITY (t/m ³)	2.321	2.318	2.312	2.328	-	-	-	-
FIELD MOISTURE CONTENT (%)	6.4	6.9	5.2	5.6	-	-	-	-
COMPACTION SAMPLE No.	AV28.1	AV28.1	AV28.1	AV28.1				
MAXIMUM DRY DENSITY (t/m ³)	2.342	2.342	2.342	2.342				
ADJUSTED MAXIMUM DRY DENSITY (t/m ³)								
OPTIMUM MOISTURE CONTENT (%)	7.3	7.3	7.3	7.3				
DENSITY RATIO:	99.1	99.0	98.7	99.4				
DEGREE OF SATURATION	-							
CHARACTERISTIC VALUE OF DENSITY RATIO:	98.8							
CHARACTERISTIC VALUE OF DOS:	-							

TEST PROCEDURES:	QDot METHODS Q020 (CV), Q050 (ci:9.1), Q061 (ci:6.2), Q140A, Q143, Q144A, Q141A, Q142A	BIAS REPORT NO:	C6
BIAS DETAILS:		DATE Q144A ASSIGNED:	08/06/2017
APD DETAILS:		Authorised Signatory:	Not relevant
LAYER DEPTH (mm)		NATA Accreditation Number:	19902
		Laboratory Name:	ASCT Brisbane South



SUBGRADE LEVEL REPORT - 457 Below FSL

Project: **Beaudesert Town Centre Bypass**

Surveyed: Not relevant

Surveyor:

Date: 27/04/17

QA File/s: 170427 ASB SG.FLD



1. Out of tolerance results are highlighted Red/Blue and Bold for ΔRL ($\pm 25mm$) as per MRTSD4 Clause 6.3.1

2. Chainages are rounded to the nearest metre. Offsets to the nearest centimetre.

ΔRL

Upper Tolerance : 0.025

Lower Tolerance : -0.025

Material Type: Bare Earth

Control Line: MC20

Point No.	Chainage	Offset from CL (-Left/+Right)	Easting	Northing	Asbuilt RL	Design RL	ΔRL (-Low/+High)	Out of tolerance (Low/High)	Comment
96	32	-11.20	499382.720	6905138.717	56.808	56.821	-0.013		
97	32	-9.56	499384.292	6905139.181	56.825	56.887	-0.061	LOW	
98	33	-6.06	499387.248	6905141.516	56.911	56.903	0.007		
99	33	-2.58	499390.526	6905142.706	56.849	56.872	-0.023		
100	33	-1.32	499391.765	6905142.950	56.839	56.832	0.006		
91	40	-10.82	499380.680	6905146.906	56.646	56.685	-0.039	LOW	
92	40	-9.84	499381.618	6905147.196	56.688	56.715	-0.027	LOW	
93	40	-6.35	499384.977	6905148.130	56.774	56.820	-0.046	LOW	
94	40	-2.80	499388.371	6905149.189	56.792	56.840	-0.048	LOW	
95	40	-1.00	499390.100	6905149.687	56.761	56.786	-0.025		
86	50	-10.96	499377.694	6905156.482	56.537	56.566	-0.029	LOW	
87	50	-10.01	499378.600	6905156.763	56.564	56.595	-0.031	LOW	
88	50	-6.55	499381.946	6905157.657	56.663	56.700	-0.037	LOW	
89	50	-2.94	499385.400	6905158.711	56.767	56.795	-0.028	LOW	
90	50	-1.09	499387.149	6905159.289	56.721	56.739	-0.019		
82	60	-10.94	499374.870	6905166.050	56.463	56.474	-0.011		
83	60	-9.90	499375.877	6905166.331	56.486	56.505	-0.020		
85	60	-2.86	499382.603	6905168.385	56.702	56.711	-0.009		
84	60	-1.41	499384.017	6905168.743	56.658	56.681	-0.023		
78	70	-10.84	499372.138	6905175.622	56.376	56.380	-0.005		
77	70	-9.78	499373.164	6905175.866	56.395	56.412	-0.017		
79	70	-6.11	499376.647	6905177.050	56.477	56.520	-0.043	LOW	
80	70	-2.57	499380.056	6905178.003	56.602	56.624	-0.022		
81	70	-1.36	499381.224	6905178.305	56.582	56.601	-0.019		
73	80	-10.96	499369.168	6905185.181	56.203	56.244	-0.041	LOW	
74	80	-9.97	499370.134	6905185.433	56.257	56.274	-0.018		
75	80	-5.77	499374.138	6905186.690	56.377	56.397	-0.020		
76	80	-2.08	499377.667	6905187.761	56.496	56.505	-0.010		
70	90	-11.23	499366.068	6905194.675	56.015	56.037	-0.022		
69	90	-10.00	499367.221	6905195.132	56.051	56.072	-0.022		
71	90	-5.52	499371.544	6905196.309	56.192	56.212	-0.019		
72	90	-1.94	499374.977	6905197.311	56.308	56.329	-0.020		
65	100	-12.64	499361.882	6905203.821	55.708	55.730	-0.022		
66	100	-11.68	499362.835	6905203.975	55.754	55.775	-0.021		
67	100	-6.62	499367.673	6905205.455	55.942	55.968	-0.027	LOW	
68	100	-2.11	499371.962	6905206.860	56.125	56.133	-0.009		
61	110	-13.76	499358.045	6905209.812	55.446	55.470	-0.025		
62	110	-12.77	499358.881	6905210.352	55.485	55.508	-0.022		
63	110	-7.73	499363.299	6905212.777	55.707	55.727	-0.019		
64	110	-3.18	499367.256	6905215.022	55.907	55.924	-0.017		
101	180	11.45	499324.903	6905267.652	54.012	54.021	-0.009		
102	180	17.88	499329.880	6905271.719	54.469	54.470	-0.001		
103	190	21.60	499330.819	6905277.256	54.591	54.593	-0.002		

*C430-50
Match existing &
Edward St Levels.*

Points Tested :	43
Within Tolerance :	31 72.1%
Too High :	0 0.0%
Too Low :	12 27.9%
Maximum Conformance:	0.007
Minimum Conformance:	-0.061
Average Conformance:	-0.022
Standard Deviation :	0.014

- Too Low, 3 points.

Release Under RTI/MR