

Appendix D2

Geotechnical investigations:

RMS Factual Geotechnical Investigation Report

APPENDIX A
BOREHOLE LOGS AND CORE PHOTOS

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B15

FILE / JOB NO : G4372

SHEET : 1 OF 3

PROJECT : BERRY BYPASS
LOCATION : SOUTHERN ALIGNMENT

POSITION : E: 288091.920, N: 6148241.940 (56 MGA94)

SURFACE ELEVATION : 1.850 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : COMACCHIO 205 MOUNTING : Track

CONTRACTOR : TERRATEST

DRILLER : A ZUMMO

DATE STARTED : 15/4/12

DATE COMPLETED : 16/4/12

DATE LOGGED : 16/4/12

LOGGED BY : RH

CHECKED BY : DH

DRILLING					MATERIAL						
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER										
AD/T	N/A				0.0	[Diagonal Hatching]	CI	SILTY CLAY: black, medium plasticity			TOPSOIL
					0.25m	[Dashed]	CI-CH	SILTY CLAY: grey, medium with high plasticity			ALLUVIUM
					0.60m	[Vertical Lines]		CLAY: pale grey, yellow brown and red brown, high plasticity, trace silt, and organic material			
				1.00m SPT 1, 3, 4 N*=7	1.0	[Vertical Lines]	CH				1.00: SPT Recovery: 0.45 m 1.10: Acid sulphate test sample 1.30: HP Samp = 150 - 200 kPa
				1.45m		[Vertical Lines]	CH			St	
				2.50m SPT 2, 3, 5 N*=8	2.5	[Vertical Lines]		CLAY: as above pale grey with red brown and yellow brown. Trace Fe cemented nodules			2.50: SPT Recovery: 0.35 m 2.60: Acid sulphate test sample 2.80: HP Samp = 125 - 175 kPa
				2.95m 3.00m U75	3.0	[Vertical Lines]	CH			VSt	3.35: HP Samp = 225 kPa
				3.35m		[Vertical Lines]	CH			M	
				4.00m SPT 5, 6, 8 N*=14	4.0	[Vertical Lines]		CLAY: as above yellow brown and red brown with pale grey. Fe cemented zones throughout			4.00: SPT Recovery: 0.35 m 4.10: Acid sulphate test sample 4.30: HP Samp = 175 - 350 kPa
				4.45m		[Vertical Lines]	CH			St and VSt	
				5.55m SPT 4, 6, 10 N*=16	5.5	[Vertical Lines]		becoming sandy with depth			
				5.60m		[Diagonal Hatching]	SC	CLAYEY SAND: pale grey, red brown and yellow brown, fine and medium grained sand, low and medium plasticity, trace coarse grained sand, with pockets of sandy clay			5.55: SPT Recovery: 0.45 m 5.60: Acid sulphate test sample
				6.00m	6.0	[Diagonal Hatching]	SC			MD	
				6.45m		[Diagonal Hatching]		CLAYEY SANDY GRAVEL: brown and red brown with pale grey, fine to coarse gravel, sub-rounded, basalt, fine to coarse grained sand, low and medium plasticity clay, trace basalt cobbles			
				7.15m SPT 25/150mm N*=R 7.30m	7.0	[Diagonal Hatching]	GC	with gravelly clayey sand pockets			7.15: SPT Recovery: 0.1 m
				7.30m		[Diagonal Hatching]	GC			VD	
				8.00m	8.0	[Diagonal Hatching]					

RMS.LIB 32.GLB Log RTA NON-CORE DRILL HOLE G4372 BERRY BYPASS.GPJ <<DrawingFiles>> 10/May/2012 14:47:8.30.002 Datgel.CPT Tool.gINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B15

FILE / JOB NO : G4372

SHEET : 2 OF 3

PROJECT : BERRY BYPASS
 LOCATION : SOUTHERN ALIGNMENT

POSITION : E: 288091.920, N: 6148241.940 (56 MGA94)

SURFACE ELEVATION : 1.850 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : COMACCHIO 205 MOUNTING : Track

CONTRACTOR : TERRATEST

DRILLER : A ZUMMO

DATE STARTED : 15/4/12

DATE COMPLETED : 16/4/12

DATE LOGGED : 16/4/12

LOGGED BY : RH

CHECKED BY : DH

DRILLING					MATERIAL							
DRILLING & CASING	WATER	DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	STRUCTURE & Other Observations
					8.0		GC	CLAYEY SANDY GRAVEL: as above some siltstone gravel				
					8.25			SANDY SILTSTONE AND SILTSTONE: grey, grey brown and red brown, layered, horizontally; highly weathered				
					8.65							
					8.75							8.65: SPT Recovery: 0.1 m
					9.0			Continued as Cored Drill Hole				
					10.0							
					11.0							
					12.0							
					13.0							
					14.0							
					15.0							
					16.0							

See Explanatory Notes for details of abbreviations & basis of descriptions.

CORED DRILL HOLE LOG

HOLE NO : B15

FILE / JOB NO : G4372

SHEET : 3 OF 3

PROJECT : BERRY BYPASS
LOCATION : SOUTHERN ALIGNMENT

POSITION : E: 288091.920, N: 6148241.940 (56 MGA94) SURFACE ELEVATION : 1.850 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : COMACCHIO 205 MOUNTING : Track CONTRACTOR : TERRATEST DRILLER : A ZUMMO

DATE STARTED : 15/4/12 DATE COMPLETED : 16/4/12 DATE LOGGED : 16/4/12 LOGGED BY : RH CHECKED BY : DH

CASING DIAMETER : HW BARREL (Length) : 3.00 m BIT : DIAMOND STEPSFACE BIT CONDITION : GOOD

Table with columns: DRILLING (Progress, Depth, Graphical Log), MATERIAL (Description, Weathering, Strength, Fractures), and ADDITIONAL DATA (Visual, Joints, etc.). Rows describe geological layers from 8.0m to 14.73m depth, including silty sandstone, sandy siltstone, and clay beds.

RMS.LIB 32.GLB Log RTA CORED DRILL HOLE G4372 BERRY BYPASS.GPJ <DrawingFiles> 10/May/2012 14:47 8.30.002 Datgel CPT Tool.GINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.





Geotechnical Investigation
Bore Hole: B15

Photo 1 of 2

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services



Geotechnical Investigation
Bore Hole: B15

Photo 2 of 2

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B17

FILE / JOB NO : G4372

SHEET : 1 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287355.240, N: 6148169.580 (56 MGA94)

SURFACE ELEVATION : 10.380 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515

MOUNTING : Track

CONTRACTOR : RMS

DRILLER : R MORTON

DATE STARTED : 28/3/12

DATE COMPLETED : 29/3/12

DATE LOGGED : 29/3/12

LOGGED BY : MH

CHECKED BY : DH

DRILLING					MATERIAL							
PROGRESS	DRILLING & CASING	WATER	DRILLING PENETRATION	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	STRUCTURE & Other Observations
					0.0			SILTY SANDY CLAY: brown and dark brown, low plasticity, with fine to medium gravel				ALLUVIUM
					0.50m							
					0.95m		GP	GRAVEL WITH SAND AND SILT: brown and red brown, fine gravel, sub-rounded to sub-angular, with fine to coarse gravel, with sand and silt				0.50: SPT Recovery: 0.2 m
					1.50m		SC	SANDY CLAY: dark brown and dark red brown, medium to low plasticity, fine grained sand				1.50: SPT Recovery: 0.45 m 1.65: HP Samp = 100 - 130 kPa
					1.95m							
					2.35m							
					2.50m		SC	SANDY CLAY WITH GRAVEL: dark brown and brown, medium to low plasticity, fine grained sand, with fine to medium gravel				F to St
					2.95m							
					3.20m		GW	GRAVEL WITH SAND: brown and grey brown, fine to coarse gravel, with fine to medium grained sand, trace silt and clay				4.20: SPT Recovery: 0.2 m
					4.20m							
					5.00m			GRAVEL WITH SILT AND CLAY: brown, orange brown and pale grey, fine to coarse gravel, with silt, with clay, possible cobbles				5.70: SPT Recovery: 0.2 m
					5.70m							
					6.10m			SILTY SANDSTONE: dark grey, with thin siltstone laminations; moderately weathered				BEDROCK
					6.50m			Continued as Cored Drill Hole				
					7.0							
					8.0							

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See Explanatory Notes for details of abbreviations & basis of descriptions.

CORED DRILL HOLE LOG

HOLE NO : B17

FILE / JOB NO : G4372

SHEET : 2 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287355.240, N: 6148169.580 (56 MGA94) SURFACE ELEVATION : 10.380 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515 MOUNTING : Track CONTRACTOR : RMS DRILLER : R MORTON

DATE STARTED : 28/3/12 DATE COMPLETED : 29/3/12 DATE LOGGED : 29/3/12 LOGGED BY : MH CHECKED BY : DH

CASING DIAMETER : HW/NW BARREL (Length) : 1.50 m BIT : ROCK ROLLER/STEPFACE BIT CONDITION : GOOD

DRILLING				MATERIAL				FRACTURES							
PROGRESS		CORE LOSS (CORE LOSS DRILL RUN %)	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50)				NATURAL FRACTURE (mm)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other	
DRILLING & CASING	WATER							EL _{-0.03}	VL _{-0.03}	L _{-0.1}	M _{-0.3}				H ₋₁
				0.0											
				1.0											
				2.0											
				3.0											
				4.0											
				5.0											
				6.0											
				6.50	6.50m	START CORING AT 6.50m									
				7.0		SILTY SANDSTONE: dark grey, fine grained, with very thin siltstone laminations, moderately to well cemented	SW to F								
		0% LOSS													
		2% Water LOSS													
		7.25													
		0% LOSS													
				8.0											

See Explanatory Notes for details of abbreviations & basis of descriptions.

ROADS AND MARITIME SERVICES, NSW



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CORED DRILL HOLE LOG

HOLE NO : B17

FILE / JOB NO : G4372

SHEET : 3 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287355.240, N: 6148169.580 (56 MGA94) SURFACE ELEVATION : 10.380 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515 MOUNTING : Track CONTRACTOR : RMS DRILLER : R MORTON

DATE STARTED : 28/3/12 DATE COMPLETED : 29/3/12 DATE LOGGED : 29/3/12 LOGGED BY : MH CHECKED BY : DH

CASING DIAMETER : HW/NW BARREL (Length) : 1.50 m BIT : ROCK ROLLER/STEPFACE BIT CONDITION : GOOD

DRILLING		MATERIAL				FRACTURES					
DRILLING & CASING	WATER	CORE LOSS (CORE LOSS DRILL DEPTH DEPTH)	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering SW to F	ESTIMATED STRENGTH Is(50) ● - Axial ○ - Diametral	NATURAL FRACTURE (mm)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
NMLC	0% Water LOSS	0% LOSS	Is(50) d=1.13 a=1.32 MPa	8.0	●	SILTY SANDSTONE: dark grey, fine grained, with very thin siltstone laminations, moderately to well cemented <i>(continued)</i>	SW to F	●	20 40 100 300 1000	DB DB DB DB DB DL JT 60° MU IR RF clay DB JT 60° CN IR RF DB DB JT 20° CN IR RF DB JT 40° CN IR RF DB	(joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
		8.68		9.0							
		0% LOSS	Is(50) d=1.15 a=1.61 MPa	10.0	●	BOREHOLEB17 TERMINATED AT 10.14 m Standpipe Installed		●			
		10.14		10.14							
				11.0							
				12.0							
				13.0							
				14.0							
				15.0							
				16.0							

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See Explanatory Notes for details of abbreviations & basis of descriptions.



Geotechnical Investigation
Bore Hole: B17

Photo 1 of 1

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B19A

FILE / JOB NO : G4372

SHEET : 1 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 288017.220, N: 6147735.220 (56 MGA94)

SURFACE ELEVATION : 2.380 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515

MOUNTING : Track

CONTRACTOR : RMS

DRILLER : R MORTON

DATE STARTED : 4/4/12

DATE COMPLETED : 4/4/12

DATE LOGGED : 4/4/12

LOGGED BY : MH

CHECKED BY : DH

DRILLING				MATERIAL			
PROGRESS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	STRUCTURE & Other Observations
ADT HW Casing	0.0			CLAY: dark brown, brown, orange brown and grey mottled orange, high plasticity, trace silt			ALLUVIUM
	0.50m						0.50: SPT Recovery: 0.4 m
	0.95m		CH		M	VSt	0.80: HP Samp = 200 - 300 kPa
	1.50m						1.50: SPT Recovery: 0.4 m
	1.95m		SC-SM	SILTY CLAYEY SAND: grey and grey brown, fine grained sand, low to medium plasticity	M to W	L	1.60: HP Samp = 250 kPa
	2.50m			CLAY: grey and dark grey, high plasticity, trace patches and thin lens to 4mm of fine grained sand			1.90: HP Samp = 110 kPa
	2.95m						2.50: SPT Recovery: 0.45 m
	3.35m		CH		F to St		2.80: HP Samp = 100 - 150 kPa
	4.15m		CH	CLAY: grey and pale grey, high plasticity		St to VSt	
	4.60m		CI-CH	SANDY CLAY / CLAY WITH SAND: pale grey and grey, medium to high plasticity, fine grained sand		St	4.15: SPT Recovery: 0.45 m
	5.20m			CLAY: pale grey and grey mottled orange red, high plasticity	M		4.30: HP Samp = 300 - 350 kPa
	5.65m		CH				4.60: HP Samp = 150 kPa
	6.10m		CH			VSt	5.65: SPT Recovery: 0.45 m
	7.15m		CI	CLAY WITH SAND AND SILT: dark red brown and brown mottled grey, medium plasticity, with fine grained sand, and silt		F to St	5.80: HP Samp = 250 - 450 kPa
	7.60m						7.15: SPT Recovery: 0.45 m
	7.70m						7.30: HP Samp = 120 - 150 kPa

RMS:LIB 32, GLE Log RTA NON-CORE DRILL HOLE G4372 BERRY BYPASS.GPJ <-DrawingFiles> 10/May/2012 14:48.30.002 Datgel.CPT Tool.gINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B19A

FILE / JOB NO : G4372

SHEET : 2 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 288017.220, N: 6147735.220 (56 MGA94)

SURFACE ELEVATION : 2.380 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515

MOUNTING : Track

CONTRACTOR : RMS

DRILLER : R MORTON

DATE STARTED : 4/4/12

DATE COMPLETED : 4/4/12

DATE LOGGED : 4/4/12

LOGGED BY : MH

CHECKED BY : DH

DRILLING					MATERIAL							
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER											
WB	WB	E			8.0	CI		CLAY WITH SAND AND SILT: dark red brown and brown mottled grey, medium plasticity, with fine grained sand, and silt (<i>continued</i>)	M	F to St		
				8.65m SPT 15, 20, 23 N*=43	8.65m			SANDY CLAYEY GRAVEL WITH SILT: brown and pale blue grey, fine to medium gravel, sub-rounded to sub-angular, patchy high plasticity clay, fine to coarse grained sand, with silt	M to W	D		8.65: SPT Recovery: 0.22 m
		F-H			9.10m	GC						
				10.15m SPT 11, 30/150mm N*=R 10.45m	9.70m			GRAVEL WITH SAND AND SILT: brown, orange brown and grey brown, fine to medium gravel, sub-angular to angular, with silt, fine to coarse grained sand, trace clay				10.15: SPT Recovery: 0.2 m
					11.0	GP						
		H		11.65m SPT 16, 30/100mm N*=R 11.90m	11.0			gravel is sandstone / siltstone fragments to 30mm	W	VD		11.65: SPT Recovery: 0.2 m
					12.0							
					13.0							
				13.15m SPT 8/30mm HB N*=R 13.18m	12.90m			SANDY SILTSTONE: dark grey and grey; extremely weathered to highly weathered, very low to low strength				BEDROCK
					13.0			Continued as Cored Drill Hole				13.15: SPT Recovery: 0.03 m
					14.0							
					15.0							
					16.0							

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See Explanatory Notes for details of abbreviations & basis of descriptions.

CORED DRILL HOLE LOG

HOLE NO : B19A

FILE / JOB NO : G4372

SHEET : 3 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 288017.220, N: 6147735.220 (56 MGA94) SURFACE ELEVATION : 2.380 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515 MOUNTING : Track CONTRACTOR : RMS DRILLER : R MORTON

DATE STARTED : 4/4/12 DATE COMPLETED : 4/4/12 DATE LOGGED : 4/4/12 LOGGED BY : MH CHECKED BY : DH

CASING DIAMETER : HW/NW BARREL (Length) : 1.50 m BIT : DRAG BIT/ROCK ROLLER/STEPFACE BIT CONDITION : GOOD

DRILLING			MATERIAL				FRACTURES				
DRILLING & CASING	WATER	CORE LOSS (CORE LOSS DEPTH / DRILL RUN %)	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50)	NATURAL FRACTURE (mm)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
								● Axial ○ Diametral EL -0.03 VL -0.1 L -0.1 M -1 H -3 VH -10 EH -10			
				8.0							
				9.0							
				10.0							
				11.0							
				12.0							
				13.0							
				13.18		13.18m START CORING AT 13.18m					
				14.0		SILTY SANDSTONE / SANDY SILTSTONE: grey and dark grey, fine grained, layered, thickly bedded, moderately to well cemented, poorly sorted, thin carbonaceous siltstone veneers and laminations at 0°	SW to F				
			14.70								
			15.0								
				15.72		15.72m					
				16.0		BOREHOLEB19A TERMINATED AT 15.72 m					

RMS.LIB 32.GLB Log RTA CORED DRILL HOLE G4372 BERRY BYPASS.GPJ <DrawingFiles> 10/May/2012 14:49 8.30.002 Datgel CPT Tool.GINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.



Geotechnical Investigation
Bore Hole: B19A

Photo 1 of 1

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B20A

FILE / JOB NO : G4372

SHEET : 1 OF 1

PROJECT : BERRY BYPASS
LOCATION : SOUTHERN ALIGNMENT

POSITION : E: 287669.280, N: 6147639.670 (56 MGA94)

SURFACE ELEVATION : 4.870 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : COMACCHIO 205 MOUNTING : Track

CONTRACTOR : TERRATEST

DRILLER : A ZUMMO

DATE STARTED : 16/4/12

DATE COMPLETED : 16/4/12

DATE LOGGED : 16/4/12

LOGGED BY : RH

CHECKED BY : DH

DRILLING					MATERIAL							
PROGRESS		DRILLING PENETRATION	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER											
ADT	N/A	E			0.0	ML	0.15m	SANDY CLAYEY SILT: brown, low plasticity, fine grained sand, trace coarse grained sand, trace gravel				TOPSOIL
		F-H		1.00m SPT 3, 6, 7 N ₆₀ =13	1.0	CI-CH		SANDY CLAY AND CLAY: brown, red brown, grey and pale grey, medium and high plasticity, fine to coarse grained sand, trace fine to coarse sub-rounded gravel				ALLUVIUM
		F		1.45m								Vst
					2.0	GC	1.75m	SANDY CLAYEY GRAVEL: brown, red brown and grey, fine to coarse gravel, sub-rounded, medium and high plasticity, fine to coarse grained sand, possible cobbles, with pockets of gravelly sandy clay	M			D
				2.50m SPT 11, 8, 12 N ₆₀ =20	2.5	CH	2.50m	CLAY: pale blue grey, high plasticity, with silt				Vst
				2.95m	3.0	SM	2.75m	SILTY SAND: pale brown grey, fine grained sand, non plastic, trace clay				MD
					3.2	CI-CH	3.20m	SILTY CLAY AND CLAY: pale grey, yellow brown and red brown, medium and high plasticity, with Fe cemented zones				Vst
					4.0		4.00m	BOREHOLEB20A TERMINATED AT 4.00 m Site vacated under instruction from property owner				

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See Explanatory Notes for details of abbreviations & basis of descriptions.

NON-CORE DRILL HOLE - GEOLOGICAL LOG

HOLE NO : B21A

FILE / JOB NO : G4372

SHEET : 1 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287415.060, N: 6147491.420 (56 MGA94)

SURFACE ELEVATION : 10.240 (AHD)

ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515

MOUNTING : Track

CONTRACTOR : RMS

DRILLER : R MORTON

DATE STARTED : 30/3/12

DATE COMPLETED : 31/3/12

DATE LOGGED : 31/3/12

LOGGED BY : MH

CHECKED BY : DH

DRILLING				MATERIAL							
PROGRESS		GROUND WATER LEVELS	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION SYMBOL	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE CONDITION	CONSISTENCY	RELATIVE DENSITY	STRUCTURE & Other Observations
DRILLING & CASING	WATER										
ADT HW Casing				0.0	[Hatched Pattern]	CH	CLAY: brown and dark brown, medium to high plasticity, with silt, trace fine to coarse grained sand			F to St	ALLUVIUM
			0.50m SPT 3, 2, 4 N*=6	0.40m	[Hatched Pattern]	CH	CLAY: orange brown and pale grey, high plasticity, with silt			St	0.50: SPT Recovery: 0.2 m 0.60: HP Samp = 150 kPa
			0.95m	1.0	[Hatched Pattern]	CH					
			1.50m SPT 4, 7, 12 N*=19	1.30m	[Hatched Pattern]	Cl-CH	CLAY WITH GRAVEL AND SAND: orange red and orange brown mottled pale grey, medium to high plasticity, with fine to medium sub-rounded to sub-angular gravel, with fine to coarse grained sand			Vst	1.50: SPT Recovery: 0.45 m 1.70: HP Samp = 350 - 380 kPa
			1.95m	2.0	[Hatched Pattern]	Cl-CH					
			2.50m SPT 9, 16, 20 N*=36	2.10m	[Dotted Pattern]	GP	GRAVEL WITH SILT AND CLAY: red and red brown with off white, fine to medium gravel, sub-rounded to sub-angular, with silt, with medium to high plasticity clay			D	2.50: SPT Recovery: 0.3 m
			2.95m	3.0	[Dotted Pattern]	GP					
			4.10m SPT 9, 11, 21 N*=32	3.50m	[Dotted Pattern]	Cl-CH	GRAVELLY CLAY / CLAYEY GRAVEL: clay is red, red brown, pale grey and pale yellow grey, medium to high plasticity; gravel is fine to medium gravel, rounded to angular, with sandstone gravel			M	4.10: SPT Recovery: 0.45 m 4.20: HP Samp = 130 kPa
			4.55m	4.0	[Dotted Pattern]	Cl-CH				H	
			5.60m SPT 6/10mm N=R 5.61m	5.00m	[Dotted Pattern]	GP	GRAVEL WITH CLAY: red brown and orange brown, fine to coarse gravel, with clay, with cobbles				
			7.10m SPT 12, 20, 26 N*=46	6.70m	[Dotted Pattern]	GP	SILTSTONE: pale grey and grey mottled orange and red, soil properties; extremely weathered, extremely low strength			VD	BEDROCK
			7.55m	7.0	[Dotted Pattern]	GP					7.10: SPT Recovery: 0.45 m
				7.55m	[Dotted Pattern]	GP					
				8.0	[Dotted Pattern]	GP	Continued as Cored Drill Hole				

RMS:LIB 32.GLB Log RTA NON-CORE DRILL HOLE G4372 BERRY BYPASS.GPJ <<DrawingFiles>> 10/May/2012 14:49:8.30.002 Datgel.CPT Tool.gINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.

CORED DRILL HOLE LOG

HOLE NO : B21A

FILE / JOB NO : G4372

SHEET : 2 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287415.060, N: 6147491.420 (56 MGA94) SURFACE ELEVATION : 10.240 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515 MOUNTING : Track CONTRACTOR : RMS DRILLER : R MORTON

DATE STARTED : 30/3/12 DATE COMPLETED : 31/3/12 DATE LOGGED : 31/3/12 LOGGED BY : MH CHECKED BY : DH

CASING DIAMETER : HW/NW BARREL (Length) : 1.50 m BIT : ROCK ROLLER/STEPFACE BIT CONDITION : GOOD

DRILLING				MATERIAL				FRACTURES						
PROGRESS		CORE LOSS (CORE LOSS DRILL DEPTH DEPTH)	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH (s(50))				NATURAL FRACTURE (mm)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
DRILLING & CASING	WATER							EL _{-0.03}	VL _{-0.1}	L _{-0.3}	M ₋₁			
				0.0										
				1.0										
				2.0										
				3.0										
				4.0										
				5.0										
				6.0										
				7.0										
				7.55		START CORING AT 7.55m								
				7.61		CORE LOSS 0.06m (7.55-7.61)								
				8.00		SANDY SILTSTONE / SILTSTONE: brown and orange brown, occasional clay seams to 100mm	HW	EW	HW					JT 30° Clay IR RF

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See Explanatory Notes for details of abbreviations & basis of descriptions.

CORED DRILL HOLE LOG

HOLE NO : B21A

FILE / JOB NO : G4372

SHEET : 3 OF 3

PROJECT : BERRY BYPASS
LOCATION :

POSITION : E: 287415.060, N: 6147491.420 (56 MGA94) SURFACE ELEVATION : 10.240 (AHD) ANGLE FROM HORIZONTAL : 90°

RIG TYPE : DB515 MOUNTING : Track CONTRACTOR : RMS DRILLER : R MORTON

DATE STARTED : 30/3/12 DATE COMPLETED : 31/3/12 DATE LOGGED : 31/3/12 LOGGED BY : MH CHECKED BY : DH

CASING DIAMETER : HW/NW BARREL (Length) : 1.50 m BIT : ROCK ROLLER/STEPFACE BIT CONDITION : GOOD

DRILLING		MATERIAL			FRACTURES						
DRILLING & CASING	WATER	CORE LOSS (DRILL RUN %)	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	DESCRIPTION ROCK TYPE : Colour, Grain size, Structure (texture, fabric, mineral composition, hardness alteration, cementation, etc as applicable)	Weathering	ESTIMATED STRENGTH Is(50) ● Axial ○ Diametral	NATURAL FRACTURE (mm)	VISUAL	ADDITIONAL DATA (joints, partings, seams, zones, etc) Description, orientation, infilling or coating, shape, roughness, thickness, other
NMLC	0% Water LOSS	0%	Is(50) d=0.44 a=0.44 MPa	8.0	8.73m	SANDY SILTSTONE / SILTSTONE: brown and orange red brown, occasional clay seams to 100mm, ironstained throughout	EW HW EW HW EW HW MW to HW MW	Et Vt L M H VH EH	20 40 100 300 1000	JT 50° Clay PR RF JT 50° Fe closed JT 20° Fe Clay IR RF DL JT 10° Fe IR RF JT 30° Fe IR RF JT 30° Fe IR RF JT 30° Fe closed JT 20° Fe IR RF JT 15° Fe IR RF BP 5° Fe IR RF BP 0° Fe IR RF 20° Fe IR RF BP 5° Fe IR RF BP 10° Fe IR RF BP 10° Fe IR RF BP 5° Fe IR RF DL JT 0° Fe IR RF DB BP 0° Fe IR RF BP 5° Fe IR RF BP 0° Fe IR RF DB BP 0° Fe IR RF BP 0° Fe IR RF BP 0° Clay IR RF DL	
		8.70									
		10.25									
		11.69									
NMLC	0% Water LOSS	0%	Is(50) d=0.71 a=0.84 MPa	10.0	13.05m	SANDY SILTSTONE: dark grey brown and dark grey, fine grained sand, numerous closed joints at 0° - 10°, carbonaceous laminae and veneers throughout	MW to SW				
		11.69									
NMLC	0% Water LOSS	0%	Is(50) d=0.36 a=0.52 MPa	11.0	13.05m	BOREHOLEB21A TERMINATED AT 13.05 m	MW to HW SW to F				
		11.69									
NMLC	0% Water LOSS	0%	Is(50) d=5.39 a=7.53 MPa	12.0	13.05m	BOREHOLEB21A TERMINATED AT 13.05 m					
		11.69									
NMLC	0% Water LOSS	0%	Is(50) d=4.53 a=5.8 MPa	13.0	13.05m	BOREHOLEB21A TERMINATED AT 13.05 m					
		11.69									

RMS:LIB:32.GLB:Log RTA CORED DRILL HOLE G4372 BERRY BYPASS.GPJ <DrawingFiles> 10/May/2012 15:13 8.30.002 Datgel CPT Tool.GINT Add-In

See Explanatory Notes for details of abbreviations & basis of descriptions.



Geotechnical Investigation
Bore Hole: B21A

Photo 1 of 2

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services



Geotechnical Investigation
Bore Hole: B21A

Photo 2 of 2

G4372
HW 1 - Princes Highway
Berry Bypass



Transport
Roads & Maritime
Services