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## SOIL LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation JOB NO : QB10200.4 PAGE : 1 OF 8  
POSITION : E: 470417, N: 6949745 (56 MGA94) SURFACE ELEVATION : 57.8 (AHD) LOCATION : Brisbane Valley Hwy  
RIG TYPE : Hydrapower Scout CONTRACTOR : GeoDrill - T Partleton DIP / AZIMUTH : 90°  
DATE DRILLED : 10/5/11 to 10/5/11 LOGGED BY : LN CHECKED BY : VP STANDARD : AS1736

DRILLING & WATER DETAIL		LAB DATA				SAMPLES & SPT DATA	RL (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY / RELATIVE DENSITY				COMMENTS Field Test Data & Other Observations
		Moisture Content	Dry Density	% Fines	Atterberg Limits							S / L	F / MD	SI / D	VS / VD	
Groundwater										CLAY - sandy CLAY, high plasticity, brown, fine to medium sand, moist, firm.	M					0.00: Topsoil
										0.30m CLAY - silty sandy CLAY, high plasticity, grey brown mottled orange red, some fine sand, trace of fine gravel, moist, stiff.						
						57.3	-0.5									
													</			

DRILLING				SAMPLES & FIELD TESTS				DENSITY (N-value)			CONSISTENCY (Su) {N-value}		
HA	Hand Auger	HQ	HQ Coring	D	Disturbed Sample	SPT	SPT Sample	VL	Very Loose	0 - 4	VS	Very Soft	< 12 kPa {0-2}
AS	Auger	NQ	NQ Coring	ES	Env Soil Sample	U	Undisturbed Tube Sample	L	Loose	4 - 10	S	Soft	12 - 25 {2-4}
WB	Washbore	PQ	PQ Coring	EW	Env Water Sample	W	Water Sample	MD	Medium Dense	10 - 30	F	Firm	25 - 50 {4-8}
RR	Rock Rolling	NMLC	NMLC Coring					D	Dense	30 - 50	St	Stiff	50 - 100 {8-15}
								VD	Very Dense	50 - 100	VSt	Very Stiff	100 - 200 {15-30}
								CO	Compact	>50/150mm	H	Hard	> 200 kPa {>30}
GROUNDWATER SYMBOLS				MOISTURE CONDITION									
▼ = Water level (static)				D = Dry M = Moist W = Wet									
▽ = Water level (during drilling)													
				HP Hand Penetrometer									
				HV Hand Vane Shear									
				(P: Peak Su R: Residual Su)									
				N SPT blows per 300mm									
				HW SPT penetration by hammer weight									
				RW SPT penetration by rod weight									



## SOIL LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation	JOB NO : QB10200.4	PAGE : 2 OF 8
POSITION : E: 470417, N: 6949745 (56 MGA94)	SURFACE ELEVATION : 57.8 (AHD)	LOCATION : Brisbane Valley Hwy
RIG TYPE : Hydrapower Scout	CONTRACTOR : GeoDrill - T Partleton	DIP / AZIMUTH : 90°
DATE DRILLED : 10/5/11 to 10/5/11	LOGGED BY : LN	CHECKED BY : VP
STANDARD : AS1736		

DRILLING & WATER DETAIL	LAB DATA				SAMPLES & SPT DATA	RL (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY / RELATIVE DENSITY			COMMENTS Field Test Data & Other Observations
	Moisture Content	Dry Density	% Fines	Aterberg Limits							S / L	F / MD	St / D	
Groundwater									CLAY - silty sandy CLAY, high plasticity, grey mottled orange, some fine sand, some fine extremely weathered and extremely low strength ironstone layering, moist, stiff to very stiff. (continued)	M				
					4.00m SPT 3, 4, 9 N=13	53.8	4.0		SILT - sandy SILT, high plasticity, grey with some orange mottling, some fine sand, moist, hard.	M				
					4.45m	53.3	4.5			M				
					5.00m SPT 5, 12, 14 N=26	52.8	5.0		SILT - sandy gravelly SILT, high plasticity, grey with some orange mottling, some fine sand, some fine to medium orange brown extremely weathered and extremely low strength ironstone gravel, moist, hard.	M				
					5.45m	52.3	5.5		IRONSTONE - orange to dark red brown, fine to medium sand and gravel, extremely weathered and of extremely low strength, moist, medium dense.	M				
					6.00m SPT 11, 20, 22 N=42	51.8	6.0		SAND - silty SAND, fine to coarse sand, orange with grey layeres, low plasticity fines, moist, dense.	M				
					6.45m	51.3	6.5							
									IRONSTONE - orange to dark red brown, fine to medium sand and gravel, extremely weathered and of extremely low strength, moist, medium dense.	M				
					7.00m		7.00m							

DRILLING				SAMPLES & FIELD TESTS				DENSITY (N-value)			CONSISTENCY (Su) (N-value)						
HA	Hand Auger	HQ	HQ Coring	D	Disturbed Sample	SPT	SPT Sample	VL	Very Loose	0 - 4	VS	Very Soft	< 12 kPa {0-2}				
AS	Auger	NQ	NQ Coring	ES	Env Soil Sample	U	Undisturbed Tube Sample	L	Loose	4 - 10	S	Soft	12 - 25 {2-4}				
WB	Washbore	PQ	PQ Coring	EW	Env Water Sample	W	Water Sample	MD	Medium Dense	10 - 30	F	Firm	25 - 50 {4-8}				
RR	Rock Rolling	NMLC	NMLC Coring					D	Dense	30 - 50	St	Stiff	50 - 100 {8-15}				
<div>GROUNDWATER SYMBOLS</div> <div>▼ = Water level (static)</div> <div>▽ = Water level (during drilling)</div>				HP	Hand Penetrometer	MOISTURE CONDITION		VD	Very Dense	50 - 100	VSt	Very Stiff	100 - 200 {15-30}				
				HV	Hand Vane Shear	D	Dry	M	Moist	W	Wet	CO	Compact	>50/150mm	H	Hard	> 200 kPa {>30}
				(P: Peak Su R: Residual Su)													
				N SPT blows per 300mm													
				HW SPT penetration by hammer weight													
				RW SPT penetration by rod weight													







## SOIL LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation JOB NO : QB10200.4 PAGE : 5 OF 8  
POSITION : E: 470417, N: 6949745 (56 MGA94) SURFACE ELEVATION : 57.8 (AHD) LOCATION : Brisbane Valley Hwy  
RIG TYPE : Hydrapower Scout CONTRACTOR : GeoDrill - T Partleton DIP / AZIMUTH : 90°  
DATE DRILLED : 10/5/11 to 10/5/11 LOGGED BY : LN CHECKED BY : VP STANDARD : AS1736

DRILLING & WATER DETAIL	LAB DATA				SAMPLES & SPT DATA	RL (m)	DEPTH (m)	GRAPHIC LOG	MATERIAL DESCRIPTION Soil Type, Colour, Plasticity or Particle Characteristic Secondary and Minor Components	MOISTURE	CONSISTENCY / RELATIVE DENSITY				COMMENTS Field Test Data & Other Observations
	Moisture Content	Dry Density	% Fines	Aterberg Limits							S / L	F / MD	St / D	VS / VD	
					SPT 30/75mm N=R (14.08m)		43.3-14.5		SILT - high plasticity, light grey brown, trace of fine sand, moist, hard. (continued)	M					
					SPT 30/50mm N=R (15.05m)		42.8-15.0		SILT - sandy SILT, high plasticity fines, grey, some fine to medium sand, moist, hard.	M					
							42.3-15.5		Continued as Cored Borehole						
							41.8-16.0								
							41.3-16.5								
							40.8-17.0								

DRILLING				SAMPLES & FIELD TESTS				DENSITY (N-value)			CONSISTENCY (Su) {N-value}		
HA	Hand Auger	HQ	HQ Coring	D	Disturbed Sample	SPT	SPT Sample	VL	Very Loose	0 - 4	VS	Very Soft	< 12 kPa {0-2}
AS	Auger	NQ	NQ Coring	ES	Env Soil Sample	U	Undisturbed Tube Sample	L	Loose	4 - 10	S	Soft	12 - 25 {2-4}
WB	Washbore	PQ	PQ Coring	EW	Env Water Sample	W	Water Sample	MD	Medium Dense	10 - 30	F	Firm	25 - 50 {4-8}
RR	Rock Rolling	NMLC	NMLC Coring					D	Dense	30 - 50	St	Stiff	50 - 100 {8-15}
				HP	Hand Penetrometer			VD	Very Dense	50 - 100	VSt	Very Stiff	100 - 200 {15-30}
				HV	Hand Vane Shear			CO	Compact	>50/150mm	H	Hard	> 200 kPa {>30}
					(P: Peak Su R: Residual Su)								
					N SPT blows per 300mm								
					HW SPT penetration by hammer weight								
					RW SPT penetration by rod weight								
GROUNDWATER SYMBOLS				MOISTURE CONDITION									
▼ = Water level (static)				D = Dry M = Moist W = Wet									
▽ = Water level (during drilling)													



## ROCK LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation JOB NO : QB10200.4 PAGE : 6 OF 8  
POSITION : E: 470417, N: 6949745 (56 MGA94) SURFACE ELEVATION : 57.8 (AHD) LOCATION : Brisbane Valley Hwy  
RIG TYPE : Hydrapower Scout CONTRACTOR : GeoDrill - T Partleton DIP / AZIMUTH : 90°  
DATE DRILLED : 10/5/11 to 10/5/11 LOGGED BY : LN CHECKED BY : VP STANDARD : AS1736

DRILLING				MATERIAL				DEFECTS & COMMENTS					
DRILLING & WATER DETAIL		TCR/RQD	FIELD TESTS	RL (m)	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)		DEFECT SPACING (mm)	COMMENTS Description of joints, seams, defects, additional observations and comments	INSTALLATION DETAIL
									EL -0.03 VL -0.1 L -0.3 M -1 H -3 VH -10 EH		20 60 200 600 2000		
										</			

DRILLING		SAMPLES & FIELD TESTS		DEFECT ABBREVIATIONS		ROCK STRENGTH ( $\leq 50$ MPa)	
NMLC NMLC Coring	HQ HQ Coring	D Disturbed Sample	ES Env Soil Sample	CS Crushed Seam	CN Clean	0-0.03	Extremely Low
NQ NQ Coring	PQ PQ Coring	W Water Sample	EW Env Water Sample	CZ Crushed Zone	CT Coating	0.03-0.1	Very Low
TCR % core run recovered		SPT SPT Sample		DB Drill Break	SN Stain	0.1-0.3	Low
RQD % core run > 100mm long (rock fraction only measured)		U Undisturbed Tube Sample		FZ Fractured Zone	VR Veneer	0.3-1.0	Medium
				JT Joint	ST Stepped	1.0-3.0	High
				IS Infilled Seam	Un Undulated	3.0-10	Very High
				SZ Shear Zone	POL Polished		
				VN Vein	RF Rough		
					S Smooth		
					SL Slickensided		
GROUNDWATER SYMBOLS		PHOTOGRAPHS NOTES					
= Water level (static)		<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO					
= Water level (during drilling)							

File: QB10200.4 BH BV 4 6 OF 8





## ROCK LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation JOB NO : QB10200.4 PAGE : 7 OF 8  
POSITION : E: 470417, N: 6949745 (56 MGA94) SURFACE ELEVATION : 57.8 (AHD) LOCATION : Brisbane Valley Hwy  
RIG TYPE : Hydrapower Scout CONTRACTOR : GeoDrill - T Partleton DIP / AZIMUTH : 90°  
DATE DRILLED : 10/5/11 to 10/5/11 LOGGED BY : LN CHECKED BY : VP STANDARD : AS1736

DRILLING			MATERIAL			DEFECTS & COMMENTS																
DRILLING & WATER DETAIL	TCR/RQD	FIELD TESTS	RL (m)	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)	DEFECT SPACING (mm)	COMMENTS  Description of joints, seams, defects, additional observations and comments	INSTALLATION DETAIL											
								● - Axial ○ - Diametral														
Run 2	100% TCR 90% RQD	18.41m	39.8	18.0		SANDSTONE - massive, medium to coarse sand, grey stained orange brown in places, medium strength, slightly weathered. <i>(continued)</i>	SW	EL -0.03	20 60 200 600 2000													
								VL -0.1														
								L -0.3														
								M -1														
								H -3														
								VH -10														
								EH														
								Run 3				100% TCR 93% RQD	18.55m	39.3	18.5		SANDSTONE -massive, medium to coarse sand, orange grey, trace of fine to medium gravel, medium to high strength, slightly weathered.	SW			— CN IR RF J10(op)(ro)W	
Run 3	100% TCR 93% RQD	19.40m	38.8	19.0		SANDSTONE - massive, medium to coarse sand, light grey to white, medium to high strength, slightly weathered.	SW				— CN IR RF J5(op)(ro)W											
								Run 3	100% TCR 93% RQD			19.58m	38.3	19.5		SANDSTONE - massive, medium to coarse sand, light grey to white, medium to high strength, slightly weathered.	SW				— CN IR RF J10(op)(ro)W	
Run 3	100% TCR 93% RQD	20.10	37.8	20.0		SANDSTONE - massive, medium to coarse sand, light grey to white, medium to high strength, slightly weathered.	SW											— CN IR RF J40(op)(ro)W				
								Run 3	100% TCR 93% RQD	20.36m		37.3	20.5		SANDSTONE - massive, medium to coarse sand, light grey to white, medium to high strength, slightly weathered.	SW					— CN IR RF J5(op)(ro)W	

## DRILLING

NMLC NMLC Coring HQ HQ Coring  
NQ NQ Coring PQ PQ Coring

TCR % core run recovered  
RQD % core run > 100mm long  
(rock fraction only measured)

GROUNDWATER SYMBOLS  
▼ = Water level (static)  
▽ = Water level (during drilling)

## SAMPLES &amp; FIELD TESTS

D Disturbed Sample ES Env Soil Sample  
W Water Sample EW Env Water Sample  
SPT SPT Sample  
U Undisturbed Tube Sample

PHOTOGRAPHS  
NOTES ☐ YES ☒ NO

## DEFECT ABBREVIATIONS

CS Crushed Seam CN Clean Cu Curved  
CZ Crushed Zone CT Coating IR Irregular  
DB Drill Break SN Stain PR Planar  
FZ Fractured Zone VR Veneer ST Stepped  
JT Joint Un Undulated  
IS Infilled Seam POL Polished  
SZ Shear Zone RF Rough  
VN Vein S Smooth  
SL Slickensided

ROCK STRENGTH ( $I_s(50)$  MPa)

0-0.03 Extremely Low  
0.03-0.1 Very Low  
0.1-0.3 Low  
0.3-1.0 Medium  
1.0-3.0 High  
3.0-10 Very High

SKM AGS REV02.1 (WORKIN-BRISBANE) GLB Log SKM ROCK(BRISBANE) BRISBANE VALLEY GRADE SEPARATION TPAH AND BH LOGS.GPJ <<DrawingFile>> 29/11/2011 11:28





## ROCK LOG

HOLE NO: BH BV 4

PROJECT : Brisbane Valley Grade Separation JOB NO : QB10200.4 PAGE : 8 OF 8  
POSITION : E: 470417, N: 6949745 (56 MGA94) SURFACE ELEVATION : 57.8 (AHD) LOCATION : Brisbane Valley Hwy  
RIG TYPE : Hydrapower Scout CONTRACTOR : GeoDrill - T Partleton DIP / AZIMUTH : 90°  
DATE DRILLED : 10/5/11 to 10/5/11 LOGGED BY : LN CHECKED BY : VP STANDARD : AS1736

DRILLING			MATERIAL				DEFECTS & COMMENTS				
DRILLING & WATER DETAIL	TCR/RQD	FIELD TESTS	RL (m)	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	DEFECT SPACING (mm)	COMMENTS Description of joints, seams, defects, additional observations and comments	INSTALLATION DETAIL
Run 4	100% TCR 93% RQD	21.50				SANDSTONE - massive, medium to coarse sand, light grey to white, medium to high strength, slightly weathered. (continued)	SW			— CN IR RF J5(op)(ro)W	
	100% TCR 91% RQD	22.40m 22.56m				SANDSTONE - massive, medium to coarse sand, light orange brown, fine to medium gravel, medium strength, moderately weathered.	MW			— CN IR RF J5(op)(ro)W	
		23.20 23.27m 23.39m									
						Terminated @ 23.5 m No water encountered.					
		</									

## DRILLING

NMLC NMLC Coring HQ HQ Coring  
NQ NQ Coring PQ PQ Coring

TCR % core run recovered  
RQD % core run > 100mm long  
(rock fraction only measured)

GROUNDWATER SYMBOLS  
▼ = Water level (static)  
▽ = Water level (during drilling)

## SAMPLES &amp; FIELD TESTS

D Disturbed Sample ES Env Soil Sample  
W Water Sample EW Env Water Sample  
SPT SPT Sample  
U Undisturbed Tube Sample

PHOTOGRAPHS  
NOTES ☐ YES ☒ NO

## DEFECT ABBREVIATIONS

CS Crushed Seam CN Clean Cu Curved  
CZ Crushed Zone CT Coating IR Irregular  
DB Drill Break SN Stain PR Planar  
FZ Fractured Zone VR Veneer ST Stepped  
JT Joint Un Undulated  
IS Infilled Seam POL Polished  
SZ Shear Zone RF Rough  
VN Vein S Smooth  
SL Slickensided

## ROCK STRENGTH (Is50 MPa)

0-0.03 Extremely Low  
0.03-0.1 Very Low  
0.1-0.3 Low  
0.3-1.0 Medium  
1.0-3.0 High  
3.0-10 Very High

SKM AGS REV02.1 (WORKIN-BRISBANE) GLB Log SKM ROCK(BRISBANE) BRISBANE VALLEY GRADE SEPARATION TPAH AND BH LOGS.GPJ <<DrawingFile>> 29/11/2011 11:28



CLIENT:TMR  
LOGGED BY:LN

CORE PHOTOGRAPHS

JOB NO.: QB10200.4  
BOREHOLE: BH BV 4  
COORDS:

PROJECT: Brisbane Valley Grade Separation

LOCATION: Warrego – Brisbane Valley Hwy Intersection  
DEPTH:23.2 m      RL:57.8  
DRILL RIG: Hydra Scout      CONTRACTOR: Geodrill  
CHECKED BY:VP      DATE:10/5/11

CORE: BH BV4, 15.4 m to 21.4 m



CORE: BH BV 4, 21.4 m to 23.2 m



CORE / FIGURE