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BOREHOLE: BHLR-13

Project:	Pioneer-Burdekin PHES	Position:	Lower Reservoir	Sheet	1 of 3
Location:	Netherdale/Dalrymple Heights	Coords:	657728.7 m E 7662273.6 m N MGA2020-55		
Client:	Queensland Hydro	Surface RL:	230.4 m AHD	Date Started:	9/4/2024
Job No.:	PS138693	Contractor:	Twin Hills Engineering & Drilling Drill Rig: Hanjin D&B-DTM	Date Completed:	11/4/2024
		Inclination:	-90° Direction: 000°	Logged:	TH

Drilling				Sampling		Field Material Description							
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	GROUP SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
AD/T	E		0	230.41				SW	TOPSOIL Silty SAND: fine to coarse grained, sub-angular, dark brown, silt is low plasticity; with low plasticity clay; with grass rootlets and organic plant fragments.	W	L	TOPSOIL	
				0.20				SP	Silty SAND: fine to medium grained, poorly graded, orange brown, silt is low plasticity.			RESIDUAL SOIL	
	F		1	230.21	SPT 0.50-0.93 m 13,19,30/125mm HB N=R D 0.50-0.93 m					M			
			2	2.00					Pale brown, fine to coarse grained, sub-angular to angular.				
				228.41	SPT 2.00-2.23 m 13,31/80mm HB N=R D 2.00-2.23 m								
			3										
			4		SPT 3.50-3.62 m 31/120mm HB N=R D 3.50-3.62 m								
			5	5.00					Brown and white, coarse grained.	VD			
				225.41	SPT 5.00-5.24 m 26,31/90mm HB N=R D 5.00-5.24 m								
	H		6							D			
WB			7	7.00	SPT 6.50-6.57 m 31/70mm HB N=R D 6.50-6.57 m				Fine to medium grained.				
				223.41									
			8		SPT 8.00-8.08 m 31/80mm HB N=R D 8.00-8.08 m								
			9										
			10		SPT 9.50-9.56 m 31/60mm HB N=R D 9.50-9.56 m								

Comments

Continued as Cored Borehole

Checked GEM
Date 2/12/2024

PEPHES LIB-REV0-GLB Log IS AU BOREHOLE 3 BHLR-13_241202.GPJ <<Drawingfile>> 2/12/2024 14:37 10.03.00.09 D:\glb\lib and in situ\tool - DGD | Lib: WSP 5.07.2 2023-10-30 Proj: WSP 5.04.1 2023-06-14



BOREHOLE: BHLR-13

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 657728.7 m E 7662273.6 m N MGA2020-55

Surface RL: 230.4 m AHD

Contractor: Twin Hills Engineering & Drilling

Drill Rig: Hanjin D&B-DTM

Inclination: -90° Direction: 000°

Sheet 2 OF 3

Date Started: 9/4/2024

Date Completed: 11/4/2024

Logged: TH

Drilling					Field Material Description				Defect Information		
METHOD	WATER	TCR	RQD	DEPTH (metres)	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)	AVERAGE DEFECT SPACING (mm)	
				DEPTH RL		Continuation from non-cored borehole	VL-2 J M H VH-200 EH	■ - UCS			
WB	Groundwater Not Observed				10	10.00	XW				
		90	0		220.31	SP Silty SAND: fine to medium grained, poorly graded, orange brown, silt is low plasticity. very dense; dry to moist. NO CORE 0.10m (10.00-10.10) GRANITE: coarse grained, pale grey and brown, crystalline, massive, trace pyrites.					
HQ3	Groundwater Not Observed				11				11.28: J, 10°, oxide SN, UN, RF		
									11.52: J, 55°, oxide SN, PR, RF		
		100	0						11.66: J, 20°, SN, PR, RF		
					12				12.33: J, 60°, SN, UN, RF		
					12.50						
					217.91	NO CORE 1.10m (12.50-13.60)					
		40	0								
					13						
					13.60						
					216.81	GRANITE: coarse grained, pale grey and brown, crystalline, massive, trace pyrites.	XW				
					14						
					14.00						
					216.41	NO CORE 0.50m (14.00-14.50)					
					14.50						
		67	11		215.91	GRANITE: pale grey and brown, crystalline, massive, trace pyrites.	XW				
					15						
					15.62		MW		15.30: J, 20°, SN, PR, RF		
					15.75				15.44: J, 10°, SN, PR, RF		
		71	0		214.66	NO CORE 0.13m (15.62-15.75)					
					16	GRANITE: medium to coarse grained, white, pale grey and grey, crystalline, massive, with pyrites.	MW				
							SW		16.10: J, 70°, Fe SN, PR, RF		
									16.13: J, 5°, SN, PR, RF		
									16.54: J, 10°, SN, PR, RF		
		100	96		17				16.90: J, 5°, SN, PR, RF		
									17.20: J, 10°, SN, PR, RF		
							FR		17.20-17.26: EW, 0 - 15°, rubbled host rock IN, UN, RF		
									17.54: J, 15°, CN, UN, RF		
		100	100		18	5-10% disseminated pyrites.					
					18.00						
					212.41						
					19						
		100	100		20						

Comments

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BOREHOLE: BHLR-13

Project: Pioneer-Burdekin PHES

Location: Netherdale/Dalrymple Heights

Client: Queensland Hydro

Job No.: PS138693

Position: Lower Reservoir

Coords: 657728.7 m E 7662273.6 m N MGA2020-55

Surface RL: 230.4 m AHD

Contractor: Twin Hills Engineering & Drilling

Inclination: -90° Direction: 000°

Sheet 3 OF 3

Date Started: 9/4/2024

Date Completed: 11/4/2024

Logged: TH

Drilling					Field Material Description					Defect Information				
METHOD	WATER	TCR	RQD	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	ROCK / SOIL MATERIAL DESCRIPTION	WEATHERING	INFERRED STRENGTH (MPa)	DEFECT DESCRIPTION & Additional Observations (Core partings shown - refer to Detailed Defect Descriptions table for all logged features)			AVERAGE DEFECT SPACING (mm)	
									VL-2 J M H VH EH				10 30 100 300 1000 3000	
HQ3	Groundwater Not Observed			100	100		GRANITE: medium to coarse grained, white, pale grey and grey, crystalline, massive, with pyrites.	FR		22.85: J, 20°, CN, UN, RF				
				100	100									
				100	100									
				100	100									
				100	100									
				25.10	205.31		Hole Terminated at 25.10 m Target depth. Standpipe Piezometer Installed.							

Comments

Checked GEM

Date 2/12/2024



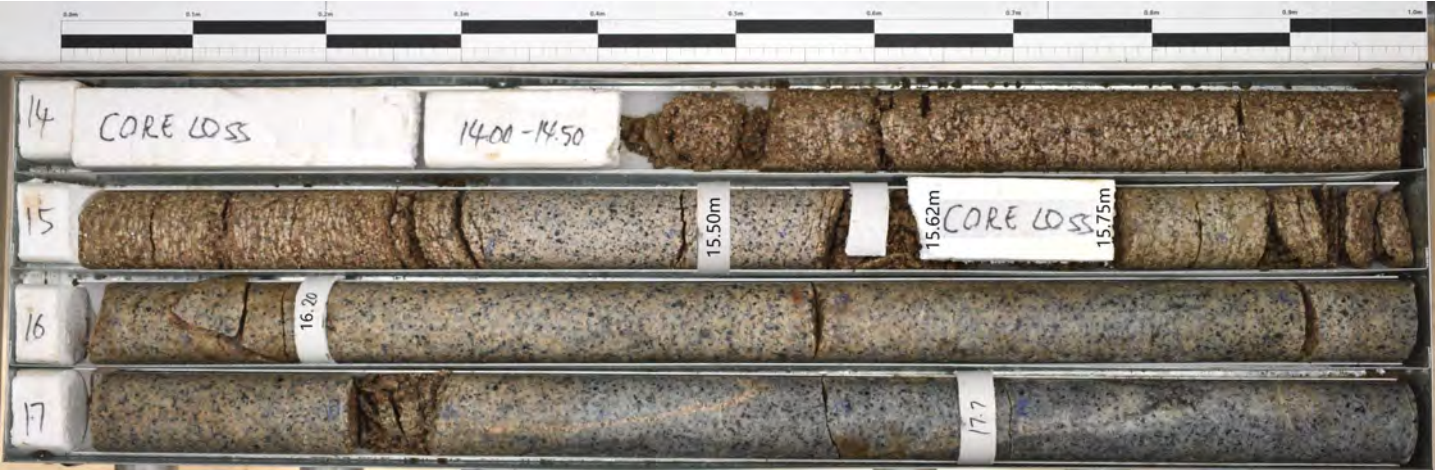
Pioneer Burdekin Pumped Hydro Energy Storage: Tranche 2 – BHLR - 13 Defects List

PointID	Depth	Bottom	Fracture Set	Defect Number	Type	Type Suffix	Dip Minimum (degrees)	Dip Maximum (degrees)	Infilling Material	Aperture Observation	Planarity	Roughness	Aperture Measurement Sign	Aperture Measurement	Aperture	Spacing	Remark
BHLR-13	10.61				HB												
BHLR-13	11.28				J		10		oxide	SN	UN	RF					
BHLR-13	11.52				J		55		oxide	SN	PR	RF					
BHLR-13	11.66				J		20			SN	PR	RF					
BHLR-13	11.86	12.00			HB												
BHLR-13	12.33				J		60			SN	UN	RF					
BHLR-13	12.45	12.50			DB												
BHLR-13	13.68				HB												
BHLR-13	13.90	14.00			DB												
BHLR-13	15.30				J		20			SN	PR	RF					
BHLR-13	15.44				J		10			SN	PR	RF					
BHLR-13	15.70	16.00			MB												
BHLR-13	16.10				J		70		Fe	SN	PR	RF					
BHLR-13	16.13				J		5			SN	PR	RF					
BHLR-13	16.20				DB												
BHLR-13	16.54				J		10			SN	PR	RF					
BHLR-13	16.90				J		5			SN	PR	RF					
BHLR-13	17.20				J		10			SN	PR	RF					
BHLR-13	17.20	17.26			EW		0	15	rubbled host rock	IN	UN	RF					
BHLR-13	17.27	17.51			hJ		80		quartz	CT	UN				tight		
BHLR-13	17.54				J		15			CN	UN	RF					
BHLR-13	17.60	17.85			hJ		70		wh-bk mi		UN		<=	10			wh mi alt halo up to 40mm
BHLR-13	17.70				MB												
BHLR-13	17.88				hJ		10		wh mi		PR						
BHLR-13	17.90				hJ		20				CU						
BHLR-13	17.99				hJ		0		wh mi		UN						
BHLR-13	18.30	19.20			hJ		80	85	pl pk mi		UN						pk mi alt halo <5mm
BHLR-13	19.40	19.74			hJ		80	90	wh mi		UN						
BHLR-13	20.20	20.74			hJ		70	90	wh-pk mi		UN						
BHLR-13	20.61	20.70			hJ		80		wh-pk mi		UN						
BHLR-13	22.04	22.40			hJ		75		wh-pk mi		UN						
BHLR-13	22.17				MB												
BHLR-13	22.85				J		20			CN	UN	RF					
BHLR-13	23.20				hJ		70	90	wh-pk mi		CU						wh-pi alt halo 10mm
BHLR-13	23.36	23.53			hJ		70		wh-pk mi		PR						wh-pi alt halo 5mm
BHLR-13	23.71				MB												
BHLR-13	23.71	23.95			hJ		70		wh-pk mi		UN						wh-pi alt halo 10mm
BHLR-13	24.70	25.10			hJ		85	90	pk mi		PR						pk mi alt halo

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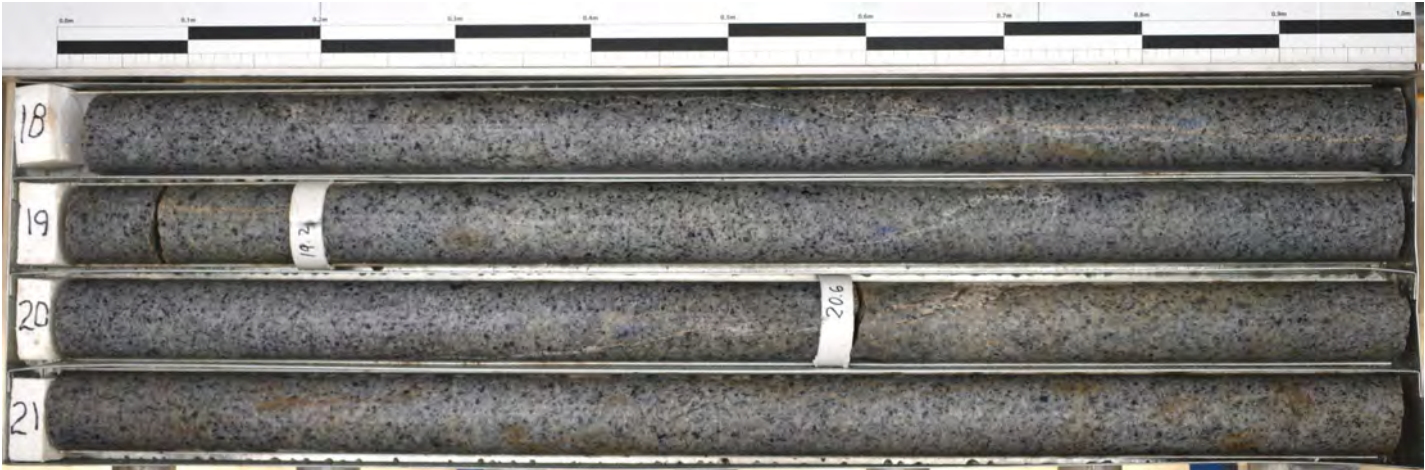
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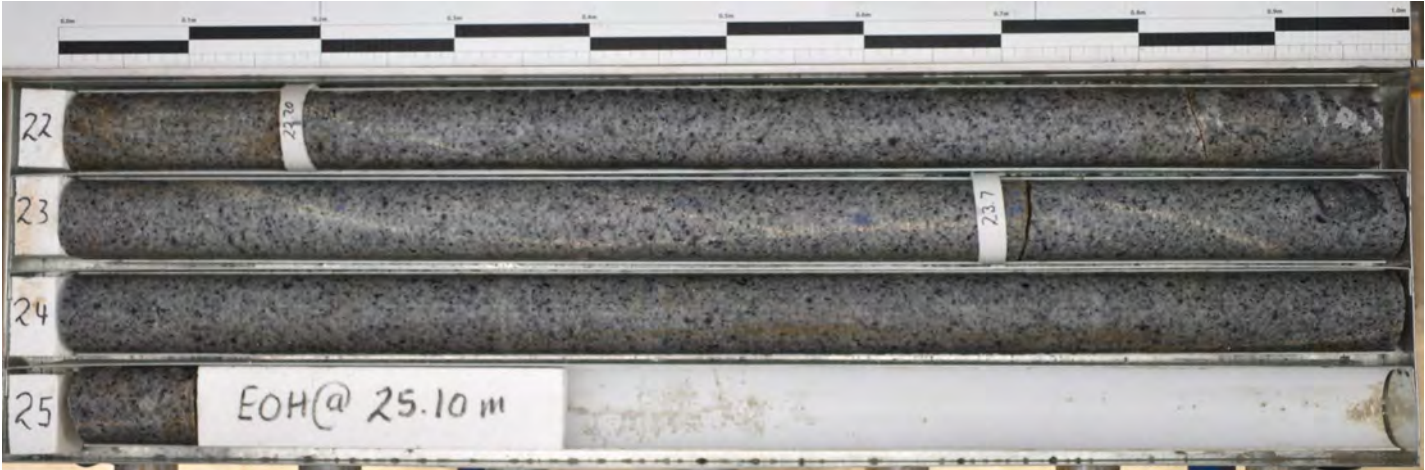
PointID : BHLR-13 Depth Range: 14.00 - 18.00 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHLR-13	DRAWN	RC	DATE	11/11/2024
		CHECKED	GEM	DATE	18/11/2024
		SCALE	Not To Scale		A4
		PROJECT No	PS138693		FIGURE No 1/2

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PointID : BHLR-13 Depth Range: 18.00 - 22.00 m



PointID : BHLR-13 Depth Range: 22.00 - 25.10 m

	TITLE Queensland Hydro Netherdale/Dalrymple Heights Pioneer-Burdekin PHES Core photo - BHLR-13	DRAWN RC	DATE 11/11/2024
		CHECKED GEM	DATE 18/11/2024
		SCALE Not To Scale	A4
		PROJECT No PS138693	FIGURE No 2/2