Appendix O

Geotechnical Factual Report

Part 2 of 2

APPENDIX 2:

Machine Borehole Logs

BOREHOLE: BH01

Sheet 1 of 2

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802906.6 E: 387771.1 (Bay of Plenty 2000)
SURFACE RL: 1.34 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m

START: 27/05/25 09:00
END: 27/05/25 03:30

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
0.0		(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets and fine sand; dark brown. Low plasticity.	F	M		1.0		HQ3		100	
1.0		(3b) PEAT		Fibrous PEAT with some organics; dark brown.	VL	W		0.0					
2.0		(4b) LOOSE ALLUVIAL SANDS		Sandy SILT with some quartz and trace lithics; brown. No plasticity. Sand is fine.	VL	S	▼	-1.0	1.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		0	
				2.10 m: Becomes dark grey.						HQ3		100	
3.0								-2.0	3m: SPT 1, 0// 1, 0, 1, 0 N = 2	SS		100	
4.0				4.00 m: 150mm lens of amorphous PEAT; dark brown to black.						HQ3		100	
5.0		(4c) MEDIUM DENSE ALLUVIAL SANDS		Fine to medium SAND with some quartz and trace silt and lithics; grey. Poorly graded.	L	S		-3.0	4.5m: SPT 1, 2// 2, 2, 2, 2 N = 8	SS		100	
										HQ3		100	
6.0				5.70 m: With some fine GRAVEL. Gravel is sub-rounded pumice.	MD			-4.0	6m: SPT 2, 3// 2, 3, 3, 3 N = 11	SS		78	
7.0					L			-5.0		HQ3		100	
8.0				Fine to coarse pumiceous gravelly SAND with some quartz and minor lithics; dark grey. Well graded. Gravel is fine sub-rounded pumice.		S		-6.0	7.5m: SPT 2, 2// 2, 2, 2, 2 N = 8	SS		89	
								-7.0		HQ3		100	
9.0		(5b) FLUVIAL DEPOSITS		Sandy SILT with minor organic lenses and staining; light brown with dark brown streaks. Low plasticity. Sand is fine.	VL	W							
				Gravelly fine to coarse SAND; yellow brown. Well graded. Gravel is fine to medium sub-rounded pumice with trace of fine volcanic lithics.	VL	W		-8.0	9m: SPT 1, 0// 1, 0, 1, 0 N = 2	SS		89	
10.0										HQ3		100	

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth	Event
27/05/2025 15:30	1.70m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: BH01

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802906.6 E: 387771.1 (Bay of Plenty 2000)
SURFACE RL: 1.34 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m

START: 27/05/25 09:00
END: 27/05/25 03:30

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
		(5b) FLUVIAL DEPOSITS		Gravelly fine to coarse SAND; yellow brown. Well graded. Gravel is fine to medium sub-rounded pumice with trace of fine volcanic lithics.	VL	W		-9.0	10.5m: SPT 1, 0// 1, 1, 1, 1 N = 4	HQ3 / SS		100 / 100	
11.0				Silty fine to medium SAND with some coarse sand; grey. Low plasticity. Coarse sand is pumiceous.	VL	W							
				Silty fine SAND; grey. Poorly graded. Low plasticity.	VL	S		-10.0					
				Gravelly fine to coarse SAND; light yellow. Well graded. Gravel is fine to medium sub-rounded pumice with trace of fine volcanic lithics.	VL	W				HQ3		100	
12.0				SILT with thin dark green organic lenses; greenish grey. No plasticity. Dilatant.	VL	W		-11.0	12m: SPT 1, 0// 0, 0, 0, 0 N = 0	SS		100	
13.0										HQ3		100	
		(6) LOWER FLUVIAL DEPOSITS		Gravelly fine to coarse SAND; light grey. Well graded. Gravel is fine sub-rounded pumice.	MD	S		-12.0	13.5m: SPT 2, 5// 6, 6, 6, 6 N = 24	SS		100	
14.0								-13.0		HQ3		100	
				Pumiceous SILT; light blue grey. No plasticity. Dilatant.	MD	S							
				Gravelly fine to coarse SAND; light grey with dark green inclusions. Well graded. Gravel is fine sub-rounded pumice.	MD	W							
15.0				Pumiceous SILT; light blue grey. No plasticity. Dilatant.	MD	W			15m: SPT 2, 3// 5, 7, 9, 11 N = 32	SS		100	
				Fine to coarse SAND with large 100mm pumice clast; grey. Well graded.	D	W		-14.0					
				Gravelly fine to coarse SAND; dark grey. Well graded. Gravel is fine sub-rounded pumice. 15.80 m: Becomes light grey.	D	W				HQ3		100	
16.0				Silty fine to coarse SAND; greenish grey. Well graded. Low plasticity.	MD	W		-15.0	16.5m: SPT 2, 3// 4, 2, 3, 3 for 74mm N = 50+	SS		44	
17.0								-16.0		HQ3		100	
18.0				Gravelly fine to coarse SAND with some volcanic lithics and quartz; greenish grey. Well graded. Gravel is fine sub-rounded pumice.	MD	W		-17.0	18m: SPT 2, 3// 3, 6, 8, 13 N = 30	SS		100	
19.0								-18.0		HQ3		100	
									19.5m: SPT 3, 4// 4, 4, 7, 10 N = 25	SS		100	
20.0				Terminated at 19.95 m. Target depth.									

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth	Event
27/05/2025 15:30	1.70m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BH01 Box 1: 0.00 - 3.70 m

BH01 Box 2: 3.70 - 6.50 m

BH01 Box 3: 6.50 - 10.00 m

BH01 Box 4: 10.00 - 13.50 m

BH01 Box 5: 13.50 - 17.50 m

BH01 Box 6: 17.50 - 19.95 m

BOREHOLE: BH02

Sheet 1 of 2

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802339.8 E: 387762.4 (Bay of Plenty 2000)
SURFACE RL: 1.42 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m

START: 26/05/25 12:00
END: 26/05/25 04:00

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
0.0		(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets and fine sand; dark brown. Low plasticity.	F	M		1.0		HQ3		100	
		(3b) PEAT		Sandy SILT; light brown. Low plasticity. Sand is fine to coarse.	F	M							
1.0				Fibrous to amorphous PEAT with some wood inclusions; dark brown. 0.35 m: 10mm thick fine to coarse SAND lense.	VL	W		0.0	1.5m: SPT 0, 0// 0, 0, 1, 1 N = 2	SS		100	
2.0		(4b) LOOSE ALLUVIAL SANDS		Silty fine to medium SAND with trace rootlets; orange brown. Poorly graded. Low plasticity.	VL	S		-1.0		HQ3		100	
				Silty fine to medium SAND with trace rootlets; grey. Poorly graded. Low plasticity.	VL	S							
3.0				Medium to coarse SAND with some gravel and volcanic lithics; grey. Poorly graded. Gravel is fine sub-rounded pumice.	L	S		-2.0	3m: SPT 2, 1// 2, 2, 2, 2 N = 8	SS		100	
4.0		(4c) MEDIUM DENSE SANDS			MD			-3.0	4.5m: SPT 2, 2// 2, 2, 4, 5 N = 13	HQ3		100	
5.0								-4.0		SS		100	
6.0		(5a) ESTUARINE MUD		Clayey pumiceous SILT with trace sand and plant fibres; dark grey. Low plasticity. Slightly dilatant.	VL	W		-5.0	6m: SPT 0, 0// 0, 0, 0, 0 N = 0	HQ3		100	
7.0								-6.0	7.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		100	
8.0								-7.0		HQ3		100	
9.0		(5b) FLUVIAL DEPOSITS		Sandy SILT; brown grey. Low plasticity. Sand is fine to medium.	VL	W		-8.0	9m: SPT 0, 0// 0, 1, 0, 0 N = 1	SS		100	
				Silty fine to coarse SAND; light grey brown. Well graded. Low plasticity.	VL	W				HQ3		100	
10.0				Gravelly fine to coarse SAND; light grey brown. Well graded. Gravel is fine to medium sub-rounded pumice.	VL	W							

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth	Event
16/05/2025 16:00	1.20m	

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: BH02

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802339.8 E: 387762.4 (Bay of Plenty 2000)
SURFACE RL: 1.42 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m

START: 26/05/25 12:00
END: 26/05/25 04:00

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
11.0		(5b) FLUVIAL DEPOSITS		Gravelly fine to coarse SAND; light grey brown. Well graded. Gravel is fine to medium sub-rounded pumice.	VL	W		-9.0	10.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	HQ3 / SS		100 / 100	
				Sandy SILT; light whitish brown. Low plasticity. Sand is fine.	MD	W		-10.0		HQ3		100	
12.0				SILT with thin dark green organic lenses; greenish grey. No plasticity. Dilatant.				-11.0	12m: SPT 1, 2// 2, 3, 2, 3 N = 10	SS		100	
13.0										HQ3		100	
14.0					MD	S		-12.0	13.5m: SPT 3, 3// 3, 3, 3, 3 N = 12	SS		100	
15.0								-13.0		HQ3		100	
16.0		(6) LOWER FLUVIAL DEPOSITS		16.50 m: 100mm lense of fine to medium pumiceous gravels.				-14.0	15m: SPT 3, 3// 4, 5, 6, 6 N = 21	SS		100	
17.0								-15.0		HQ3		100	
				Sandy SILT; grey. Low plasticity. Sand is fine to medium.	MD	W		-16.0	16.5m: SPT 4, 3// 4, 4, 8, 9 N = 25	SS		100	
					MD	W				HQ3		100	
18.0				Gravelly fine to coarse SAND with some quartz and trace lithics; blue grey. Well graded. Gravel is fine sub-rounded pumice. 17.80 m: Becomes dark grey.				-17.0	18m: SPT 5, 5// 5, 5, 5, 5 N = 20	SS		100	
19.0					MD	S		-18.0		HQ3		100	
20.0				Terminated at 19.95 m. Target depth.					19.5m: SPT 2, 3// 4, 7, 6, 6 N = 23	SS		100	

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth	Event
16/05/2025 16:00	1.20m	

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BH02 Box 1: 0.00 - 3.00 m

BH02 Box 2: 3.00 - 6.90 m

BH02 Box 3: 6.90 - 10.20 m

BH02 Box 4: 10.20 - 13.50 m

BH02 Box 5: 13.50 - 17.50 m

BH02 Box 6: 17.50 - 19.95 m

BOREHOLE: BH03

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802670.5 E: 388738.5 (Bay of Plenty 2000)
SURFACE RL: 0.78 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m
START: 28/05/25 08:00
END: 28/05/25 03:00

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
0.0		(2) TS		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	F	M		0.0		HQ3		100	
		(3b) PEAT		Fibrous to amorphous PEAT with trace small rootlets; dark brown. Poor recovery.	VS	W	▼						
0.60				0.60 m: With some wood inclusions. Fresh to slightly weathered.									
1.0		(4b) LOOSE ALLUVIAL SANDS		Clayey SILT with some fine sand; dark grey. Low plasticity.	S	S		-1.0					
				Fine to medium SAND; dark grey. Poorly graded.	VL	S			1.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		0	
2.0										HQ3		100	
3.0								-2.0	3m: SPT 0, 1// 0, 1, 0, 1 N = 2	SS		100	
		(4c) MEDIUM DENSE ALLUVIAL SANDS		Fine to coarse pumiceous SAND with trace fine gravels; dark grey with yellow mottles. Well graded. Gravel is sub-rounded pumice.	MD	W				HQ3		100	
4.0								-3.0					
									4.5m: SPT 1, 2// 2, 3, 4, 4 N = 13	SS		100	
5.0								-4.0		HQ3		100	
				5.90-7.00 m: With some shells.				-5.0					
6.0									6m: SPT 1, 2// 3, 4, 5, 5 N = 17	SS		67	
								-6.0		HQ3		100	
7.0				[CORE LOSS]								0	
				Fine to coarse SAND with minor shells; dark grey. Well graded. Fine to coarse pumiceous SAND with minor shells and with trace fine gravels; dark grey. Well graded. Gravel is sub-rounded pumice.	L	W		-7.0	7.5m: SPT 0, 1// 1, 1, 2, 2 N = 6	SS		100	
7.50				7.50-7.95 m: With some shells.									
8.0		(5b) FLUVIAL DEPOSITS		Gravelly medium to coarse SAND; yellow brown. Well graded. Gravel is fine to medium sub-rounded pumice.	L	W		-8.0		HQ3		100	
				8.50 m: Becoming coarse SAND with some medium gravel. Gravel is sub-rounded pumice; pumice is dominated with minor lithics.									
9.0									9m: SPT 1, 1// 1, 1, 1, 2 N = 5	SS		100	
				9.60 m: Becomes light grey to light brown.				-9.0		HQ3		100	
10.0													

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
TS = TOPSOIL

Groundwater Observations

Date/Time	Depth	Event
28/05/2025 15:00	0.60m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: BH03

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802670.5 E: 388738.5 (Bay of Plenty 2000)
SURFACE RL: 0.78 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 19.95 m

START: 28/05/25 08:00
END: 28/05/25 03:00

DRILL RIG: Morooka
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
				Gravelly fine to coarse SAND; yellow brown with black mottles. Well graded. Gravel is sub-angular volcanics.	L	W				HQ3		100	
				Gravelly fine to coarse SAND; yellow brown. Well graded. Gravel is fine to medium sub-rounded pumice.	L	W				HQ3		100	
		(5b) FLUVIAL DEPOSITS		Pumiceous SILT; light white grey. No plasticity. Dilatant.	VL	W		-10.0	10.5m: SPT 1, 1// 0, 0, 0, 0 N = 0	SS		100	
11.0										HQ3		100	
					MD			-11.0	12m: SPT 2, 2// 2, 3, 5, 5 N = 15	SS		100	
12.0										HQ3		100	
				SILT with some gravelly sand; grey. No plasticity. Sand is fine to coarse. Gravel is fine to medium sub-rounded pumice. Well graded.	MD	W		-12.0					
				Pumiceous SILT; light white grey. No plasticity. Dilatant.	D	W			13.5m: SPT 4, 6// 10, 10, 12, 14 N = 46	SS		100	
13.0										HQ3		100	
14.0								-14.0					
15.0					MD				15m: SPT 3, 6// 6, 4, 4, 3 N = 17	SS		89	
		(6) LOWER FLUVIAL DEPOSITS		Gravelly fine to coarse pumiceous SAND with occasional thin dark green organic lenses and lithics; dark grey mottled black. Well graded.	VD	W		-15.0		HQ3		100	
16.0				16.20 m: 100mm lens of pumiceous SILT; light white grey. Poorly graded. No plasticity.					16.5m: SPT 6, 7// 8, 12, 15, 15 N = 50	SS		100	
17.0								-16.0		HQ3		100	
				Sandy SILT; whitish grey. No plasticity. Sand is fine pumice. Dilatant.	MD	W		-17.0					
18.0				Fine to coarse pumiceous SAND with thin dark green organic lenses and lithics; dark grey. Well graded.	MD	W			18m: SPT 2, 2// 4, 4, 3, 3 N = 14	SS		100	
				Gravelly fine to coarse SAND; grey. Well graded. Gravel is fine sub-rounded pumice. Sand is quartz dominated.	MD	S		-18.0		HQ3		100	
19.0				Silty fine to medium SAND with organic lenses and clast; brown.	MD	W							
				Poorly graded. Low plasticity.	MD	W							
				Fine to medium pumiceous SAND; brown. Poorly graded.									
				Fine to coarse SAND; grey. Well graded.	MD	W		-19.0	19.5m: SPT 2, 3// 4, 4, 5, 5 N = 18	SS		100	
20.0				Terminated at 19.95 m. Target depth.									

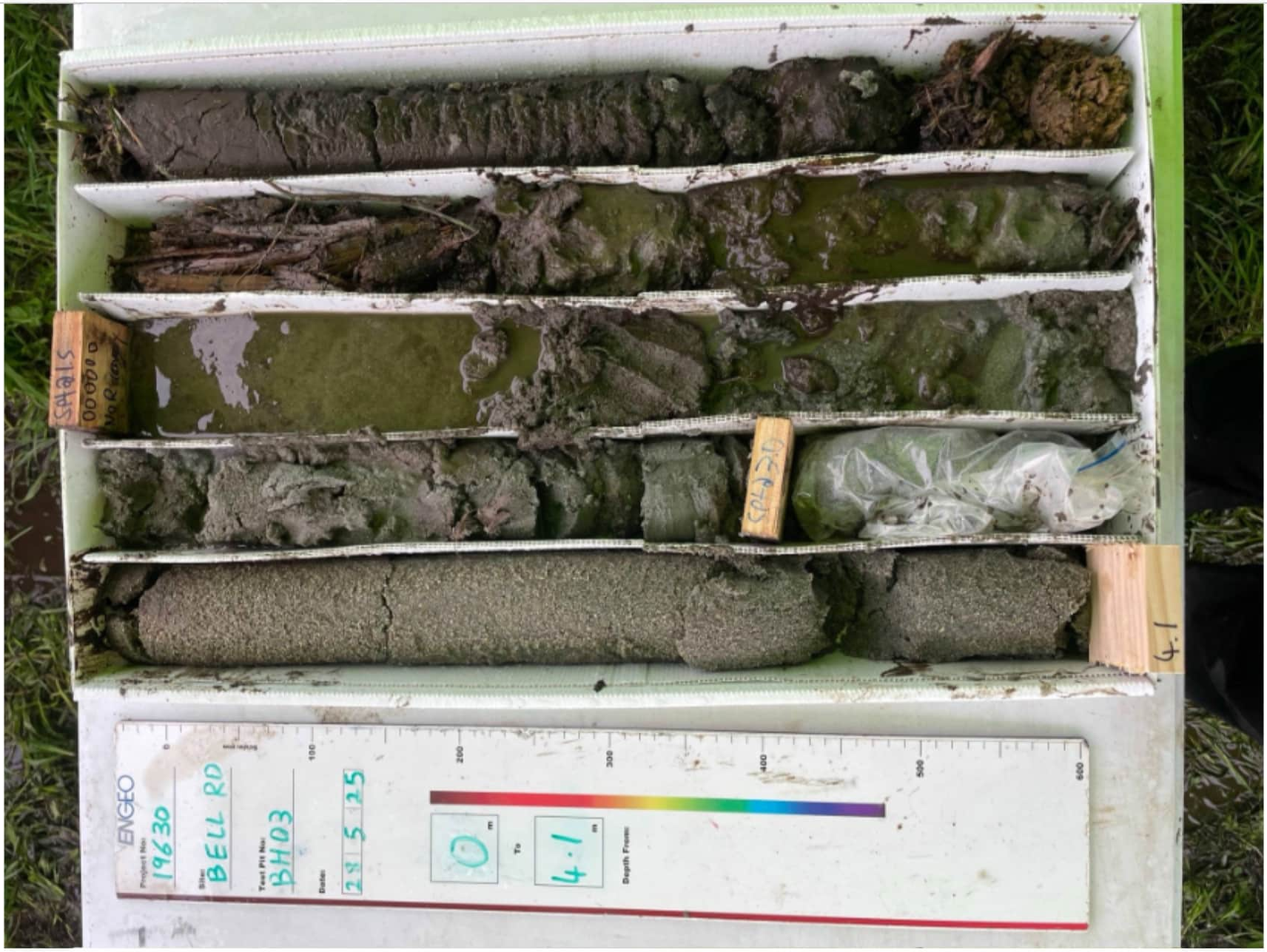
General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
TS = TOPSOIL

Groundwater Observations

Date/Time	Depth	Event
28/05/2025 15:00	0.60m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.



BH03 Box 1: 0.00 - 4.10 m

BH03 Box 2: 4.10 - 8.00 m

BH03 Box 3: 8.00 - 11.80 m

BH03 Box 4: 11.80 - 16.20 m

BH03 Box 5: 16.20 - 18.90 m

BH03 Box 6: 18.90 - 19.95 m

BOREHOLE: BH04

Sheet 1 of 2

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802011.4 E: 387633.4 (Bay of Plenty 2000)
SURFACE RL: 1.08 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 13.95 m

START: 06/08/25 03:30
END: 06/08/25 06:00

DRILL RIG: Fraste Tractor Rig
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
0.0		(2) TS		[TOPSOIL] Organic SILT with trace rootlets and fine sand; dark brown. Low plasticity.	F	M		1.0		HQ3		100	
		(3b) PEAT		Amorphous PEAT with some decomposed rootlet inclusions; dark brown. Low plasticity. 0.60 m: Becomes with some medium pumiceous gravel.	VL	W	▼	0.0	1.5m: SPT 1, 2// 2, 0, 0, 1 N = 3	SS		0	
1.0								-1.0		HQ3		100	
2.0		(4b) LOOSE ALLUVIAL SANDS		Silty fine to medium SAND; brownish grey. Poorly graded. Low plasticity. 2.00 m: Becomes fibrous peat with some wood inclusions (fresh to slightly weathered).	F	W		-2.0	3m: SPT 1, 2// 1, 1, 1, 1 N = 4	SS		100	
3.0				Fine to coarse SAND; grey. Poorly graded.	L	W		-3.0		HQ3		38	
4.0									4.5m: SPT 1, 2// 2, 2, 3, 5 N = 12	SS		100	
5.0		(4c) MEDIUM DENSE SANDS		Fine to coarse SAND with some shells and coarse pumiceous sand; grey. Poorly graded.	MD	W		-4.0		HQ3		100	
6.0								-5.0	6m: SPT 1, 2// 1, 0, 0, 0 N = 1			56	
7.0								-6.0				100	
8.0		(5a) ESTUARINE MUD		Clayey pumiceous SILT with trace sand and plant fibres; grey. Low plasticity. Slightly dilatant.	VL	S		-7.0	Push Tube Sample, C: 8.00-8.50 m	PT		100	
9.0								-8.0	Push Tube Sample, C: 8.50-9.00 m			100	
10.0				[CORE LOSS]		N/A			9m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		0	
										HQ3		0	

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
TS = TOPSOIL

Groundwater Observations

Date/Time	Depth	Event
06/08/2025 18:00	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: BH04

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802011.4 E: 387633.4 (Bay of Plenty 2000)
SURFACE RL: 1.08 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 13.95 m
START: 06/08/25 03:30
END: 06/08/25 06:00

DRILL RIG: Fraste Tractor Rig
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
11.0		(5a) ESTUARINE MUD		Clayey pumiceous SILT with trace sand and plant fibres; grey. Low plasticity. Slightly dilatant.	VL	S		-9.0		HQ3		0	
									10.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		100	
								-10.0		HQ3		100	
12.0								-11.0	12m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		100	
13.0				13.00 m: 13.0 m - Becomes with some shells.				-12.0		HQ3		100	
									13.5m: SPT 0, 0// 0, 0, 0, 0 N = 0	SS		100	
14.0				Terminated at 13.95 m. Target depth.				-13.0					
15.0								-14.0					
16.0								-15.0					
17.0								-16.0					
18.0								-17.0					
19.0								-18.0					
20.0													

General Notes:

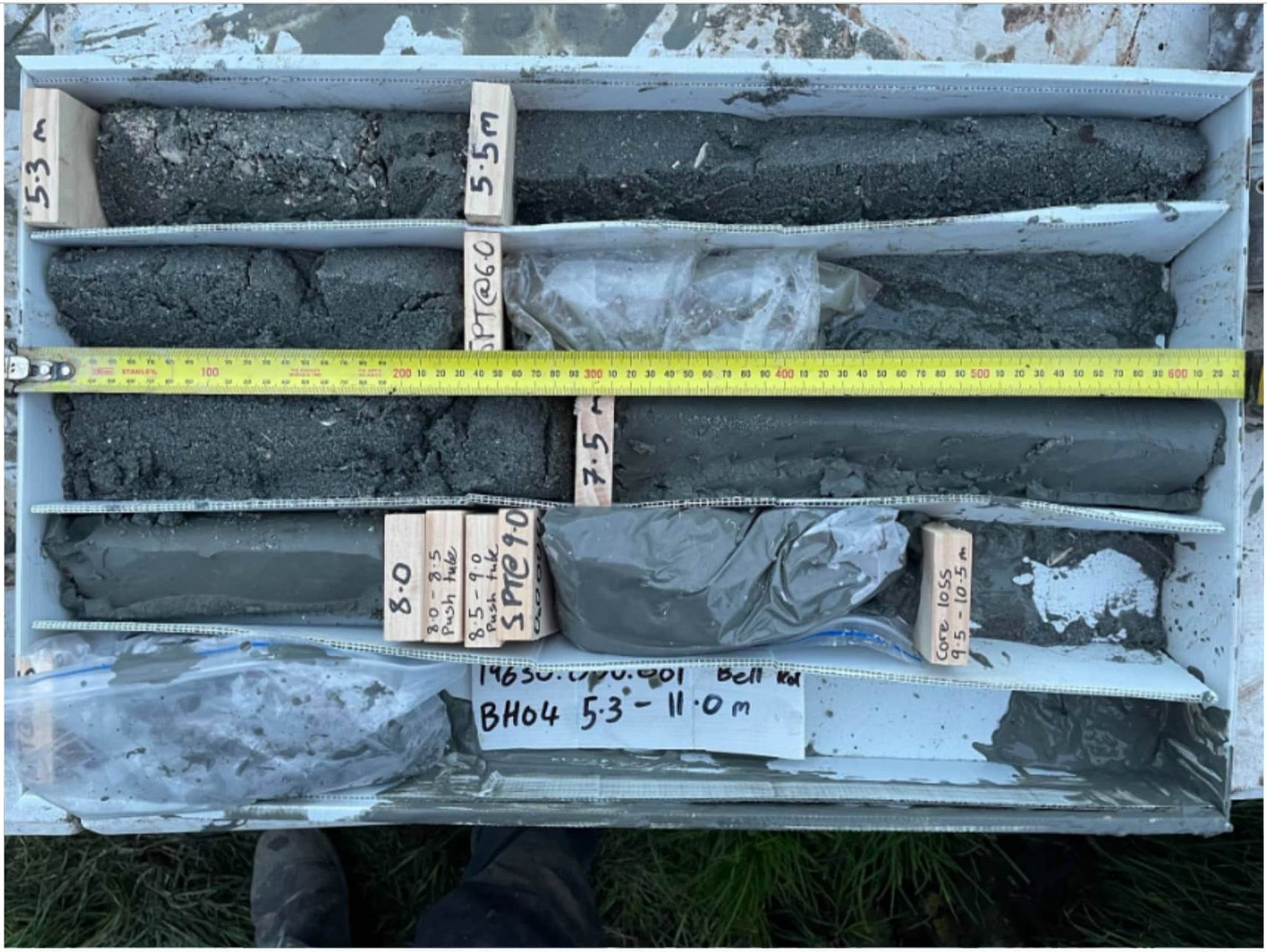
Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
TS = TOPSOIL

Groundwater Observations

Date/Time	Depth	Event
06/08/2025 18:00	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BH04 Box 1 :0.00 - 5.30 m



BH04 Box 2 :5.30 - 11.00 m

BH04 Box 3 :11.00 - 14.00 m

BOREHOLE: BH05

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802360.2 E: 387527.5 (Bay of Plenty 2000)
SURFACE RL: 1.65 m (NZVD2016)
INCLINATION: 0°
HOLE DEPTH: 9.00 m

START: 07/08/25 08:00
END: 07/08/25 12:00

DRILL RIG: Fraste Tractor Rig
CONTRACTOR: Perry Geotech
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	INSTALLATION / BACKFILL	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	ELEVATION mRL (NZVD2016)	SAMPLES & FIELD TESTS	DRILLING METHOD	RQD	TCR%	DISCONTINUITIES & LABORATORY DATA
0.0				WASHBORE			▼	1.0		WB		0	
8.0		(5a) ESTUARINE MUD		Clayey pumiceous SILT with trace sand and plant fibres; grey. Low plasticity. Slightly dilatant.				-6.0	Push Tube Sample, C: 8.00-8.50 m	PT		100	
								-7.0	Push Tube Sample, C: 8.50-9.00 m			100	
9.0				Terminated at 9.00 m. Target depth.				-8.0					
10.0													

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth	Event
07/08/2025 12:00	0.40m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

NZGD ID: 89252

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Borehole No: 640b Ch15400m CL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment: Stock Underpass
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E388232.77, N803603.02
Grid: BOP2000
Elevation: 6.049m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
				Ground Surface							
0	HQ, Triple Tube, Wireline, Rotary Coring	Casing to 3m.	TOPSOIL	**SAND** Brown organic fine-medium SAND, minor silt. "Very loose", dry, poorly graded, homogeneous, non-plastic. Rootlets (TOPSOIL). Gradational change to greater silt content.		0.00 0.15					Concrete
				Silty SAND Dark brown silty fine-medium SAND. "Loose", wet, non-plastic. Trace rootlets.		0.31					Steel Casing
1				**SAND** Brown medium SAND. "Loose-medium dense", moist, uniformly graded, homogeneous, non-plastic. 0.59m wet. 1.08m brownish orange, medium dense.			HQ	99			0735, 23/2/11
							SPT	60	15	2/3//2/4/4/5	
2							HQ	58			
3				2.99m brownish grey fine-medium SAND. Poorly graded.			SPT	76	11	1/2//1/3/3/4	1125, 23/2/11
			DUNE SAND	3.33m Brownish orange medium SAND. Uniformly graded. 3.50m brownish grey. 3.66m brownish orange.							
4				3.91m brownish grey.			HQ	56			Walton Park Sand
				4.50m brownish grey, speckled black, medium-coarse SAND. "Very loose", wet-saturated, poorly graded.			SPT	36	1	1/0//0/0/1/0	
5				5.16m medium SAND. Faint subhorizontal bedding.			HQ	95			
				5.71m "Loose", homogeneous.			SPT	98	9	1/1//1/2/3/3	
6						6.66					
7				**SAND** Brownish grey medium-coarse SAND. 'Loose', wet, poorly graded, homogeneous, non-plastic. 6.76m trace black fine gravel.			HQ	76			
							SPT	82	7	1/0//1/2/2/2	Bentonite
8			ALLUVIAL SAND	8.32m greyish brown, speckled black, wet, subhorizontal bedding. 8.37m no gravel. 8.56m medium SAND. Uniformly graded.			HQ	77			
9				9.00m brownish grey, medium dense, homogeneous.			SPT	156	19	1/2//3/3/7/6	32mm slotted screen
				9.49m medium-coarse SAND, trace fine gravel. Single orange subrounded-rounded pumice cobble. 9.59m medium SAND, no gravel.			HQ	73			
10						10.10					

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon) ——— = Boundary
PT = Thin Walled Push Tube - - - - - - = Unknown boundary
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 22-23/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 22/2/11 Finish Date: 23/2/11

Scale: 1:50 (approx.)

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Borehole No: 640b Ch15400m CL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment: Stock Underpass
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E388232.77, N803603.02
Grid: BOP2000
Elevation: 6.049m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
11	HQ, Triple Tube, Wireline, Rotary Coring		ALLUVIAL SAND	**SAND** Grey fine-medium SAND. "Medium dense", wet, poorly graded, homogeneous, non-plastic. 10.44m 1cm, minor silt.			SPT	98	9	1/1//0/1/3/5	
				10.90m fine SAND. "Loose", uniformly graded.							
				11.44m greyish brown medium-coarse SAND. Poorly graded.			HQ	94			
12							SPT	156	13	1/2//3/3/3/4	
				12.68m brownish grey medium SAND. "Medium dense", uniformly graded.			HQ	76			
13				13.13m grey fine-medium SAND, poorly graded.			SPT	122	24	1/3//3/5/8/8	
14				14.47m subhorizontal bedding.			HQ	86			
15				15.28m medium-coarse SAND, trace fine-medium gravel, homogeneous, trace shells.			SPT	73	13	2/8//6/2/2/3	
				Silty SAND Brown silty fine-medium SAND. "Medium dense", wet, poorly graded, homogeneous, non-plastic.		15.45 / 15.65					
16				**SAND** Light brown fine-coarse SAND, minor silt, trace fine-medium gravel. "Medium dense", wet, well graded, homogeneous, non-plastic.			HQ	53			
				GRAVEL Light brown speckled black fine-medium GRAVEL, minor fine-coarse sand, trace silt. Very loose, wet, poorly graded, homogeneous, non-plastic. Gravel subrounded-subangular. 16.90m minor silt.		16.50	SPT	93	3	1/2//1/0/1/1	
17				**SAND** Brownish grey fine-coarse SAND, minor silt, trace fine gravel. "Loose", wet, well graded, homogeneous, non-plastic. 17.26m 8cm dark green fine-medium SAND, trace silt. "Medium dense", wet, poorly graded, homogeneous, non-plastic. 17.34m minor gravel, trace silt.		17.03 / 17.69	HQ	99			
18			ALLUVIAL SILT	**SILT** Brownish grey SILT, some clay. Soft-firm, wet, moderately plastic. 17.92m light greyish green, trace clay. Soft, slightly plastic.			SPT	131	72/18 5	SV 72/18 kPa 1/1//1/1/1/2	
19			ALLUVIAL SAND	**Silty SAND** Grey silty fine-coarse SAND, minor fine-medium gravel. "Loose", wet, well-graded, homogeneous, non-plastic. 18.86m silty fine SAND, no gravel. Uniformly graded.		18.76 / 19.12	HQ	99			
				SAND Dark green medium SAND. "Medium dense", wet, uniformly graded, subhorizontal bedding, non plastic. 19.24m grey, homogeneous. 19.40m brownish grey fine SAND, trace silt, uniformly graded. 19.50m grey fine-medium SAND. Poorly graded. 19.78m 2cm dark green.			SPT	37	23	2/3//4/6/6/7	
20											

Collapsed borehole

Remarks: SV - Perry's Geo261, const. 1.672

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SPT = Standard Penetration Test (Split Spoon)
PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

——— = Boundary
- - - - - - = Unknown boundary

Logged: M McDonald Date: 22-23/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 22/2/11 Finish Date: 23/2/11

Scale: 1:50 (approx.)

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Borehole No: 640b Ch15400m CL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment: Stock Underpass
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E388232.77, N803603.02
Grid: BOP2000
Elevation: 6.049m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
21	HQ, Triple Tube, Wireline, Rotary Coring		ALLUVIAL SAND	**SAND** Light greenish grey fine-medium SAND, trace silt. "Medium dense", wet, poorly graded, homogeneous, non-plastic. 20.43m light grey fine SAND. Uniformly graded, subhorizontal bedding. 20.67m 2cm trace silt. 20.69m grey medium SAND. Uniformly graded, homogeneous. 20.94m dark green medium-coarse SAND. Poorly graded.		20.35	HQ	100			
				SILT Dark brown SILT, some fine sand. Very soft, wet, slightly plastic.		21.00	SPT	0	5	3/4//2/1/1/1	
22				**SAND** Greenish grey fine-medium SAND, trace silt. "Loose". wet, poorly graded, homogeneous, non-plastic.		21.67	HQ	133			
				SAND Brown speckled black coarse SAND, trace fine gravel. "Medium dense", wet, uniformly graded, homogeneous, non-plastic. 22.06m brownish grey fine-medium SAND. Poorly graded. 22.36m grey fine-medium SAND. Very dense.		21.92	SPT	132	50+	8/14//19/22/9 for 33mm	
23				23.15m medium SAND. Uniformly graded. 23.45m medium-coarse SAND. "Dense", poorly graded.			HQ	69			
24							SPT	111	27	1/2//4/5/7/11	
25				**SAND** Light grey fine-medium SAND. "Medium dense", wet, poorly graded, homogeneous, non-plastic.		24.73	HQ	79			
							SPT	100	23	1/2//4/4/6/9	
26				End of Log		25.95					
27											
28											
29											
30											

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon) ——— = Boundary - - - - - - = Unknown boundary
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Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 22-23/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 22/2/11 Finish Date: 23/2/11

Scale: 1:50 (approx.)

NZGD ID: 89252

NZGD ID: 89252

Tauranga Eastern Link – 2/06-007/601

Project No : 1-C0341.30
Lab Ref No : 11/807/001

Core Photos

BH: 640b Ch15400m

Main Alignment:
Stock Underpass

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Tauranga Eastern Link – 2/06-007/601

Project No : 1-C0341.30
Lab Ref No : 11/807/001

Core Photos

BH: 640b Ch15400m

Main Alignment:
Stock Underpass

Pg 2 of 2

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NZGD ID: 89253

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Borehole No: 642 Ch17660m 10mL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment, Culvert A
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E389968.6, N802310.4
Grid: BOP2000
Elevation: 2.020m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa / SPT N	Additional Lab Tests/Notes	Piezometer Installation
				Ground Surface							
0	HQ, Triple Tube, Wireline, Rotary Coring			**SAND/Silty SAND** Brown fine-coarse SAND, minor silt. "Very loose", wet, well graded, non-plastic. Rootlets. (Stopbank FILL). 0.06m fine SAND, minor silt, uniformly graded. 0.40m alternate layers of dark brown silty fine SAND with rootlets and brown medium-coarse SAND.		0.00	HQ	44			
1			FILL	1.37m medium-coarse SAND. 1.45m no rootlets.			SPT	42	1	1//0/1/0/0	
2			ORGANIC SILT	**Organic SILT** Dark brown organic SILT, some clay. Very soft, wet, plastic. Rootlets. (Buried TOPSOIL).		2.01	HQ	46			
				2.30m 18cm long wood fragment.		2.46					
3				**SAND** Grey fine-medium SAND, trace silt. Loose, wet-saturated, homogeneous, poorly graded, non-plastic. Trace rootlets.			SPT	89	9	2//1/2/2/4	
4				**SAND** Dark grey fine-coarse SAND. Medium dense, wet, well graded, homogeneous, non-plastic. 4.33m medium-coarse sand, poorly graded.		3.92	HQ	74			
5				4.80m 20cm with trace fine gravel. 5.00m wet-saturated.			SPT	96	2	1//2/2/4/4	
6				6.53m fine-medium sand.			HQ	54			
7							SPT	64	18	2//4/4/5/5	
8			ALLUVIAL SANDS	8.46m trace fine shell fragments.			HQ	59			
9				8.95m minor medium shell fragments.			SPT	71	7	1//1/2/2/2	
10				9.30m no shell fragments.			HQ	86			
							SPT	100	12	1//2/2/3/5	
						10.05	HQ	85			

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon)
PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

——— = Boundary
- - - - - - = Unknown boundary

Logged: M McDonald Date: 4/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 4/2/11 Finish Date: 4/2/11

Scale: 1:50 (approx.)

NZGD ID: 89253

NZGD ID: 89253

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Borehole No: 642 Ch17660m 10mL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment, Culvert A
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E389968.6, N802310.4
Grid: BOP2000
Elevation: 2.020m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
				Dark grey fine-medium SAND. Medium dense, wet, poorly graded, homogeneous, non-plastic.							
				10.50m grey/light grey horizontal bedding.			SPT	78	25	4//4/5/8/8	
11				10.95 homogeneous.			HQ	77			
12							SPT	60	20	8//5/5/5/5	
13							HQ	59			
				SILT		13.50					
				Dark grey SILT, trace fine sand. Very soft, saturated, slightly plastic.			SPT	100	0	0//0/0/0/0	
				13.90m minor fine shell fragments.					5/2		
14				13.95m minor fine sand.			HQ	88			
				14.20m trace shell fragments, no sand.						SV 5/2 kPa	
15	HQ, Triple Tube, Wireline, Rotary Coring						SPT	100	0	0//0/0/0/0	
							HQ	56			
									17/3	SV 17/3 kPa	
16							SPT	0	0	0//0/0/0/0	
			ESTUARINE SILTS								
17							HQ	63			
									10/7	SV 10/7 kPa	
18							SPT	100	0	0//0/0/0/0	
				18.45m trace clay.							
19							HQ	65			
									22/8	SV 22/8 kPa	
							SPT	100	0	0//0/0/0/0	
20											

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

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PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 4/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 4/2/11 Finish Date: 4/2/11

Scale: 1:50 (approx.)

NZGD ID: 89253

NZGD ID: 89253

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Borehole No: 642 Ch17660m 10mL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment, Culvert A
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E389968.6, N802310.4
Grid: BOP2000
Elevation: 2.020m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
21	HQ, Triple Tube, Wireline, Rotary Coring		ESTUARINE SILTS	Dark grey SILT, trace clay. Very soft, saturated, slightly plastic.		20.10	HQ	51	17/3	SV 17/3 kPa 0//0/0/0/0	
22							SPT	100	0		
				SILT Dark brown organic SILT, trace fine sand. Firm, wet, slightly plastic. Trace rootlets. 22.13m brown, minor fine sand. 22.45m light brown, trace clay. 22.50m very soft. 22.70m 2cm fine gravelly SILT.		21.93	HQ	93	27/7	SV 27/7 kPa 0//0/0/0/0	
							SPT	138	0		
23				End of Log		22.95					
24											
25											
26											
27											
28											
29											
30											

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon) ——— = Boundary - - - - - - = Unknown boundary
PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 4/2/11
Checked: S Cooke

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 4/2/11 Finish Date: 4/2/11

Scale: 1:50 (approx.)

NZGD ID: 89253

NZGD ID: 89253

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Borehole No: 642a Ch17660m 10mL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment: Culvert A
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E389968.6, N802310.4
Grid: BOP2000
Elevation: 2.020m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
10	HQ, Triple Tube, Wireline, Rotary Coring	No casing run		**WASH DRILLED** Borehole washdrilled to 10.5m. No recovery.							
			ALLUVIAL SANDS	**SAND** Dark grey medium SAND. "Medium dense", wet, uniformly graded, homogeneous, non-plastic. 10.90m trace coarse sand sized shell.		10.50	SPT	84	27	1/3//4/6/7/10	
11							HQ	76			
				11.88m medium-coarse SAND, some shells, trace fine-medium gravel.							
12				12.32m 12cm fine-medium shelly medium-coarse SAND.			SPT	82	14	5/5//2/3/4/5	
				Sandy GRAVEL Dark grey coarse sandy fine-medium GRAVEL. "Medium dense", wet, poorly graded, homogeneous, non-plastic. Gravel subrounded-subangular, some large shells.		12.50	HQ	61			
13						12.84					
				SAND Dark grey fine SAND. "Medium dense", wet, uniformly graded, homogeneous, non-plastic.							
				SILT Brownish grey SILT, trace fine sand. Very soft, wet-saturated, slightly plastic. Minor shells.		13.50	SPT	144	0	0/0//0/0/0/0	
14							HQ	77			
				14.58m no sand. Saturated.							
15									17/13	SV 17/3kPa	
							PT	93			
							SPT	149	0	0/0//0/0/0/0	
16							HQ	14			
			ESTUARINE SILTS						5/2	SV 5/2 kPa	
17							PT	0			
							SPT	167	0	0/0//0/0/0/0	
18							HQ	68			
									8/3	SV 8/3 kPa	
19							PT	92			
							SPT	167	0	0/0//0/0/0/0	
20						20.03					

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon) ——— = Boundary - - - - - - = Unknown boundary
PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 22/02/11
Checked: S Amoore

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 22/02/11 Finish Date: 22/02/11

Scale: 1:50 (approx.)

NZGD ID: 89253

NZGD ID: 89253

Hamilton Laboratory
Private Bag 3057
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New Zealand
Tel. 64 7 856 2870
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Borehole No: 642a Ch17660m 10mL

Project: Tauranga Eastern Link (2/06-007/601)
Client: NZ Transport Agency
Location: Main Alignment: Culvert A
Project No. 1-C0341.30 Lab Ref. 11/807/001

Co-ordinates: E389968.6, N802310.4
Grid: BOP2000
Elevation: 2.020m Datum: Moturiki
Inclination: Vertical Azimuth: n/a

Depth	Drilling Method	Casing	Geological Description	Description	Graphic Log	Depth/Elev	Type	Recovery	Vane Test kPa (0 20 60 100) / SPT N (0 10 30 50)	Additional Lab Tests/Notes	Piezometer Installation
21	HQ, Triple Tube, Wireline, Rotary Coring	HQ	ESTUARINE SILTS	Brownish grey SILT. Very soft, wet-saturated, slightly plastic. Minor shells.			HQ	68	20/8	SV 20/8 kPa	
							PT	90			
			ALLUVIAL SANDS	**SAND** Light grey medium-coarse SAND, trace fine gravel. Very loose, wet, poorly graded, homogeneous, non-plastic. Occasional wood fragments. 21.35m medium SAND.		21.50	SPT	156	3	0/0//0/2/0/1	
22				**Organic SILT** Brown organic SILT, trace fine sand. Very soft, wet, slightly plastic.		21.90 22.05					
				End of Log							
23											
24											
25											
26											
27											
28											
29											
30											

Remarks: SV - Perry's Geo261, const. 1.672

Logged in accordance with NZ Geotechnical Soc. Inc. - Field Description of Soil and Rock (2005)

SPT = Standard Penetration Test (Split Spoon) ——— = Boundary - - - - - - = Unknown boundary
PT = Thin Walled Push Tube
Shear Vanes - NZ Geotechnical Soc. Inc. - Guideline For Hand Held Shear Vane Test (2001)

Logged: M McDonald Date: 22/02/11
Checked: S Amoore

Drill Rig: Tractor Mounted; Perry Drilling
Start Date: 22/02/11 Finish Date: 22/02/11

Scale: 1:50 (approx.)

NZGD ID: 89253

NZGD ID: 89253

Tauranga Eastern Link – 2/06-007/601

Project No : 1-C0341.30
Lab Ref No : 11/807/001

Core Photos

BH: 642 Ch17660m

Main Alignment:
Culvert A, 10mL

Opus International Consultants Limited
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NZGD ID: 89253

NZGD ID: 89253

Tauranga Eastern Link – 2/06-007/601

Project No : 1-C0341.30
Lab Ref No : 11/807/001

Core Photos

BH: 642 Ch17660m

Main Alignment:
Culvert A, 10mL

Pg 2 of 2

Opus International Consultants Limited
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NZGD ID: 89253

NZGD ID: 89253

Tauranga Eastern Link – 2/06-007/601

Project No : 1-C0341.30
Lab Ref No : 11/807/001

Core Photos

BH: 642a Ch17660m

Main Alignment:
Culvert A, 10mL

Pg 1 of 1

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NZGD ID: 89253

NZGD ID: 93008

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH111**

SHEET 1 of 4

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa — CLIENT: Transit New Zealand

BOREHOLE LOCATION: Bell Rd

COORDINATES: N 389,539.40 m — R L: 5.9 m

E 802,893.17 m — DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Topsoil			67 %	TT										PT	D	VL	Very loose medium brown speckled light brown Organic Silty fine SAND, trace rootlets; moist, non plastic. (H4 peat). Thin beds very loose dark brown Organic SILT, some sand, moist, non plastic.	
Dune Sand			100 %	TT			65/35	105/56			5	1		SW	M	L	Grades to loose medium brown fine to medium SAND, minor organic silt; moist, non plastic. Grades to yellowish orange, laminated orange, speckled black, trace silt.	
			79 %	SPT					4 4 5 N=9		4	2		SW	W	L	Light greyish yellow, silt absent. Laminations of greyish brown silt moist, non plastic. Loose yellowish brown, fine to medium SAND, trace silt; wet, non plastic. Silt absent.	
			86 %	TT							3	3						
			87 %	SPT					3 3 5 N=8									
			89 %	TT							2	4					Moderately thick bed of brownish orange laminated light yellowish grey, speckled black, fine to coarse sand, trace silt. Thin orange beds, trace silt.	
			78 %	SPT					5 5 6 N=11		1	5					Light yellowish grey, speckled black, orange.	
			86 %	TT							0	6						
			73 %	SPT					8 7 9 N=16									
Alluvial Sands			100 %	TT							-1	7		SW	M	MD	Grades to medium dense fine to coarse SAND, trace fine sub-angular gravel; moist, non plastic.	
			73 %	SPT					10 12 11 N=23		-2	8					Fine to medium grained, trace laminations of fine black SAND.	
			79 %	TT							-3	9					Very thin bed fine to coarse, with trace shell fragments (bivalves).	
			69 %	SPT					10 11 11 N=22								Interbedded fine to medium silica sand, trace fine shell fragments/ fine to coarse sand, trace fine to medium sub-rounded gravel, minor fine to coarse shell fragments.	
			95 %	TT							-4							

DATE STARTED: 20/11/06 — DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 20/11/06 — DRILL TYPE: Edson Versa Drill 300

LOGGED BY: EC2 — DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO359 — DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_LOG P:\3933932036\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: 93008

NZGD ID: 93008

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH111**

SHEET 2 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand

BOREHOLE LOCATION: Bell Rd

COORDINATES: N 389,539.40 m, E 802,893.17 m — R L: 5.9 m — DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	WATER LEVEL	CORE RECOVERY	METHOD	RQD	CASING	IN-SITU TESTS: SV (kPa)	τ (kPa)	SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Alluvial Sands			95 %	TT					12 13 13 N=26		-5	11		SW	M	MD	Interbedded fine to medium silica sand, trace fine shell fragments/ fine to coarse sand, trace fine to medium sub-rounded gravel, minor fine to coarse shell fragments.	
			67 %	SPT														
			57 %	TT														
			100 %	SPT					2 1 3 N=4		-6	12		ML	M	S	Soft greyish brown SILT, minor clay, minor sand, trace fine highly weathered gravel; moist, moderately plastic.	
(Fluvial Terrace) Volcanic ash			71 %	TT							-7	13		SW	W	L	Grades to loose yellowish orange, speckled dark green, dark grey, fine to coarse pumice SAND, some silt, trace fine to medium sub-rounded to sub-angular gravel, breaks down to Silty SAND, minor clay; wet, slightly plastic.	
			100 %	SPT					1 1 3 N=4		-8	14		SW	W	L	Grades to loose Sandy GRAVEL; wet, non plastic. Breaks down to Silty SAND, minor clay when reworked under finger pressure. Light greyish pink.	
			70 %	TT							-9	15					Moderately thin bed fine to coarse SAND, some silt, trace fine gravel. Thin green stains bed. Thin bed of gravelly sand.	
			84 %	SPT							-10	16					Moderately thick bed of pink, speckled black fine to medium grained sand, trace silt, trace white silty clay laminations.	
			68 %	TT										CH	M	S	Soft light greenish grey speckled brown and dark green Silty CLAY, some sub-angular fine to medium highly weathered pumice gravel; moist, highly plastic. Thin light pinkish grey bed, minor clay; moderately plastic.	
			100 %	UT						U1(63)	-11	17		SW	M	L	Loose light pinkish grey speckled black fine to medium pumice SAND, minor silt, trace fine brown organic fragments; moist, non plastic.	
			100 %	SPT					1 2 4 N=6								Light bluish grey.	
			64 %	TT							-12	18						
			100 %	SPT					1 0 4 N=4								Interbedded very loose, light bluish grey, speckled black, red Silty fine pumice SAND, trace clay, trace laminations Clayey SILT; moist, slightly plastic/ Fine to coarse pumice SAND; wet, non plastic.	
			76 %	TT							-13	19					Thin bed light green Clayey SILT, trace fine sand; moist, highly plastic.	
Fluvial Terrace			100 %	SPT					2 1 2 N=3		-14			OL PT SM	M M M	F F L	Firm dark greyish brown, streaked black Organic Clayey SILT, trace fine sand; moist, moderately plastic. Sharp upper boundary. (H7 peat).	

DATE STARTED:	20/11/06	DRILLED BY:	Perry Drilling Ltd
DATE FINISHED:	20/11/06	DRILL TYPE:	Edson Versa Drill 300
LOGGED BY:	EC2	DRILL METHOD:	Rotary TT wireline
[illegible]NE No:	GEO359	DRILL FLUID:	Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_P:\3931393203\6\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 13/03/07

NZGD ID: 93008

NZGD ID: 93008

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH111**

SHEET 3 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand

BOREHOLE LOCATION: Bell Rd

COORDINATES: N 389,539.40 m E 802,893.17 m

R.L: 5.9 m

DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R.L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			13 %	TT										SP-SW	W	L	Dark brown, streaked and speckled white. Grades to firm dark brown PEAT; moist, highly plastic. (H9 peat). Grades to loose brown Organic Silty Sand, minor clay; moist, moderately plastic. Loose brown speckled black Organic fine SAND, some silt, trace clay; wet, slightly plastic.	
			86 %	SPT					23 32 18 for 75mm N=50+		-15	21		SW-SP SW	W M	VD VD	Very dense green speckled black, fine SAND, some silt; moist, non plastic. Very dense light bluish grey, speckled green, grey, fine to coarse silica SAND, trace fine gravel, trace silt, trace laminations brown and green fine SAND; moist, non plastic.	
			67 %	TT							-16	22		SW	M	VD	Moderately thin bed Sandy GRAVEL. Gravel; fine to medium, well rounded.	
			NO CORE	SPT					27 38 12 for 50mm N=50+		-17	23						
			87 %	TT							-18	24						
			NO CORE	SPT					11 18 15 N=33									
			100 %	TT							-19	25		SP	W	D	Grades to dense light bluish grey speckled black, minor white laminations, fine SAND, trace medium and coarse sand, trace silt; wet, slightly plastic. Trace coarse, rounded gravel.	
			100 %	SPT					3 4 6 N=10		-20	26					Grades to blue/greenish grey, medium dense, .	
			67 %	TT							-21	27						
			78 %	SPT					3 2 4 N=6					SW-SP	W	L	Trace coarse pumice gravel. Interbedded loose light blue laminated white, grey, greenish grey pumiceous Silty SAND, trace clay, trace gravel/ Silty fine SAND/ Silty pumice GRAVEL. Gravel is angular to sub-rounded, fine to coarse.	
			90 %	TT							-22	28						
			91 %	SPT					7 43 7 for 20mm N=50+		-23	29					Light grey fine to medium sand, minor silt. Thin bed fine to coarse sand, trace fine gravel.	
			100 %	TT							-24							

DATE STARTED:	20/11/06	DRILLED BY:	Perry Drilling Ltd
DATE FINISHED:	20/11/06	DRILL TYPE:	Edson Versa Drill 300
LOGGED BY:	EC2	DRILL METHOD:	Rotary TT wireline
PILCON VANE No:	GEO359	DRILL FLUID:	Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_GS P:\3931393203\6\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: 93008

NZGD ID: 93008

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH111**

SHEET 4 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand
BOREHOLE LOCATION:	Bell Rd		
COORDINATES:	N 389,539.40 m E 802,893.17 m	R L: DATUM:	5.9 m BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			NO CORE	SPT					27 23 N=50+		-25 -26 -27 -28 -29 -30 -31 -32 -33 -34	31 32 33 34 35 36 37 38 39		SW-SM			Interbedded loose light blue laminated white, grey, greenish grey pumiceous Silty SAND, trace clay, trace gravel/ Silty fine SAND/Silty pumice GRAVEL. Gravel is angular to sub-rounded, fine to coarse. End of Borehole 30.45m.	

DATE STARTED:	20/11/06	DRILLED BY:	Perry Drilling Ltd	COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.
DATE FINISHED:	20/11/06	DRILL TYPE:	Edson Versa Drill 300	
LOGGED BY:	EC2	DRILL METHOD:	Rotary TT wireline	
[illegible] NE No:	GEO359	DRILL FLUID:	Water+Biovis	REVIEWED BY:

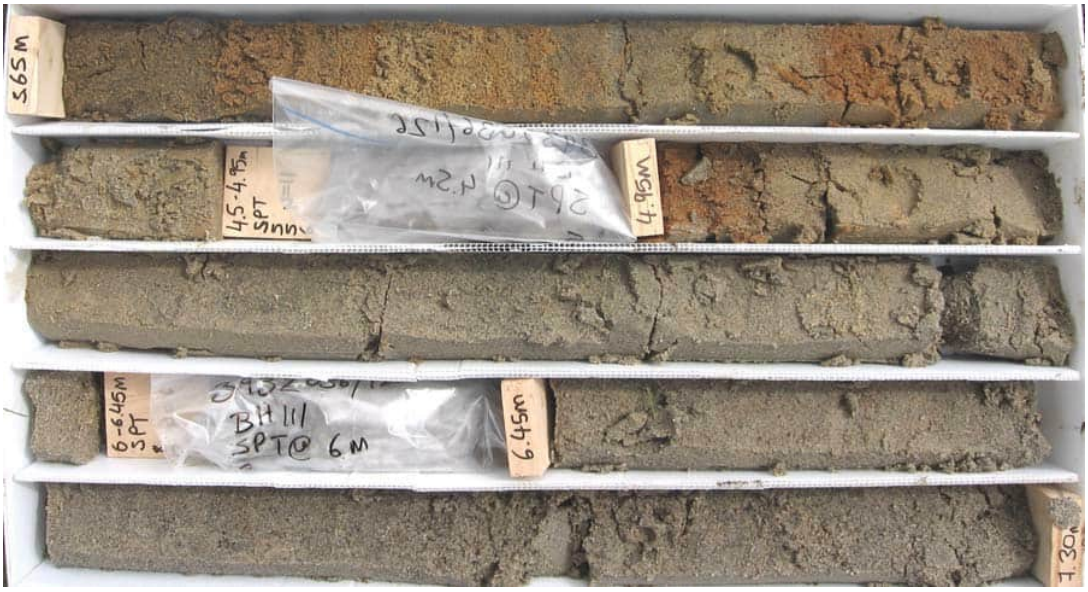
FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MACHINE P:\39313932036\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: 93008

BOX 1

Depth: 0 to 3.65 m



BOX 2

Depth 3.65 to 7.3 m

BOX 3

Depth: 7.3 to 11.4 m

BOX 4

Depth 11.4 to 15.9 m

BOX 5 15.9 to 22 m

BOX 6 22 to 26.8 m

26.8m
27-27.45m
SPT
3
7
N=6
27.45m
SPT @28.5
28.5-28.95
SPT
7
43
28.95m
30-30.45
SPT
33,21,23

BOX 7

. to 3 .45 m

NZGD ID: BH_93010

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH114**

SHEET 1 of 4

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa — CLIENT: Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,177.50 m — R L: 3.028 m

E 801,738.90 m — DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Topsoil			40 %	TT			52/6	83/10			2	1		SM	M		Brown Silty fine SAND, minor clay, trace organics; moist, moderately plastic when wet.	
Peat			100 %	TT			50/15	80/24						OL	W	F	Firm brown mottled light brown Organic SILT, minor clay; wet, moderately plastic. (H6 peat).	
			100 %	SPT					0 1 0 N=1					SM	W	VL	Grades to very loose Organic Silty fine SAND, trace clay; wet, slightly plastic.	
Alluvial Sands/Silt			78 %	TT							1	2		SP	W	VL	Very loose greyish brown fine pumice SAND, trace to minor organic silt, trace clay; wet, slightly plastic.	
			100 %	SPT					2 4 6 N=8		0	3				L	Grades to loose, grey, clay absent; non plastic.	
			68 %	TT													Thin lamination with black fibrous decomposing organics.	
			22 %	SPT					1 2 4 N=6		-1	4						
			75 %	TT							-2	5					Fine to medium grained.	
			11 %	SPT					2 4 6 N=10		-3	6		SW	S		Fine to coarse grained. Fine to medium. Lamination black decomposing wood. Dark grey fine to coarse pumice SAND; saturated, non plastic.	
			81 %	TT							-4	7					Minor greenish grey, bluish grey fine to medium rhyolite/andesite sub-rounded gravel.	
			38 %	SPT					3 5 7 N=12		-5	8					Fine to medium grained, trace brownish grey laminations.	
			100 %	TT							-6	9					Grey speckled light greyish white greenish, pinkish, dark grey, fine to coarse.	
			79 % NO CORE	SPT					4 5 8 N=13									
				TT														

DATE STARTED: 16/11/06 — DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 16/11/06 — DRILL TYPE: Edson Versa Drill 300

LOGGED BY: LGT — DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO261 — DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3931\39320361\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93010

NZGD ID: BH_93010

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH114**

SHEET 2 of 4

PROJECT: Tauranga Eastern Motorway | JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa | CLIENT: Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,177.50 m | R L: 3.028 m

E 801,738.90 m | DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Alluvial Sands/Silt			79 %	TT					1					SP		VL	Very loose grey fine to medium SAND, trace fine to medium rounded light grey pumice gravel.	
			100 %	SPT					1 1 N=2			0.0		GW	S	VL	Grades to very loose light grey mottled greenish and dark grey, highly weathered fine to medium pumice gravel, minor fine to medium pumice sand, trace silt; saturated, non plastic.	
			54 %	TT							-8	11		SP	S	VL	Very loose greenish grey pumice Gravelly fine SAND; saturated, non plastic.	
			100 %	SPT					2 1 0 N=1		-9	12					Grades to light grey speckled black, pinkish greenish grey, very sensitive: breaks down to silt under finger pressure.	
			68 %	TT							-10	13		SW	S	VL	Grades to very loose, light grey, white, fine to coarse SAND, some fine gravel, trace silt; saturated, non plastic.	
			NO CORE	SPT					1 0 0 N=0						S		Thin bed (90mm) of brownish grey fine to medium grained sand. Light grey speckled black fine to coarse pumice SAND, trace fine gravel; saturated, non plastic.	
			85 %	TT							-11	14		MH ML	W	F	Grades to grey SILT, some clay, trace fine sand; moist, highly plastic. Grades to firm, light brownish grey , speckled orange pumiceous SILT, trace clay; wet, slightly plastic.	
			90 %	UT						U1(63mm)	-12	15					Greenish light grey, minor clay; wet, moderately plastic.	
							70/6	112/10									Loose greyish white pumiceous SILT, trace fine sand; wet, non plastic.	
			95 %	TT							-13	16		SM	W	L	Loose greenish grey Silty fine to coarse pumiceous SAND; wet, non plastic. Loose light brownish grey fine pumice SAND, trace silt, trace coarse sand in laminations; wet, non plastic. Orange lamination. Grades to grey speckled white fine to coarse.	
			80 %	SPT					1 2 4 N=6		-14	17					Greenish grey.	
			77 %	TT							-15	18					Lamination Silty fine to medium SAND. Lamination dark greenish grey fine to coarse. Extremely closely spaced sub-horizontal thin laminations of light pink, grey, light grey, greenish grey, brownish grey, Silty fine to medium SAND; wet, non plastic	
Fluvial Terrace			82 %	SPT					10 13 9 N=22					SW	W	MD	Medium dense grey fine to medium pumice SAND; wet, non plastic.	
			76 %	TT							-16	19					Grey speckled white fine to coarse.	
			100 %	SPT					2 5 8 N=13					OH	M W	F MD	30mm bed of firm brown, Organic SILT, some clay; moist, highly plastic (H8 peat). Medium dense brownish grey fine to medium pumice SAND.	

DATE STARTED: 16/11/06 | DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 16/11/06 | DRILL TYPE: Edson Versa Drill 300

LOGGED BY: LGT | DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO261 | DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\3931393203\6\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93010

NZGD ID: BH_93010

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH114**

SHEET 3 of 4

PROJECT: Tauranga Eastern Motorway | JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa | CLIENT: Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,177.50 m | R L: 3.028 m

E 801,738.90 m | DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			41 %	TT										SW	W	MD	trace silt; wet, non plastic. Greenish grey. Medium dense greenish grey fine to medium pumice SAND, trace silt; wet, non plastic.	
			100 %	SPT					12 18 20 N=30		-18	21				D	Dense speckled dark grey, fine to coarse. Light grey, fine to medium grained.	
			80 %	TT							-19	22					Thin bed of fine grained, trace medium.	
			55 %	SPT					9 22 28 for 100mm N=50+							VD	Very dense fine to medium.	
			100 %	TT							-20	23					Grades to fine sand, trace silt.	
			100 %	SPT					2 5 7 N=12		-21	24				MD	Medium dense very closely spaced sub-horizontal laminations of various tones of grey.	
			61 %	TT													Light grey streaked orange.	
			100 %	SPT					3 5 7 N=12		-22	25					Lamination light grey streaked orange.	
			29 %	TT							-23	26			W		Yellowish grey streaked orange, trace clay; wet, slightly plastic.	
			100 %	SPT					3 4 7 N=11		-24	27		ML SM	W W	L MD	Grades to bluish grey, streaked orange, white fine to coarse Sandy SILT, minor clay; wet, moderately plastic. Grades to medium dense light brownish grey mottled white Silty fine to coarse SAND; wet, non plastic.	
			98 %	TT							-25	28		SW	W	MD	Grades to medium dense light grey speckled dark grey fine to coarse SAND, trace fine gravel, trace silt; wet, non plastic.	
			100 %	SPT					3 5 5 N=10		-26	29		SW	W	MD	Grades to medium dense Gravelly pumice SAND, trace silt; wet, non plastic.	
			100 %	TT					4					GP	W	MD	Pinkish laminations. Brown lamination. Very closely spaced laminations of medium dense yellowish grey/ greenish grey/ green/ dark green/ brown Sandy fine pumice GRAVEL, trace silt; wet, non plastic.	
														SW	W	MD	Brownish grey speckled white, mottled greenish brown Gravelly fine to coarse pumice SAND; wet, non plastic.	

DATE STARTED: 16/11/06 | DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 16/11/06 | DRILL TYPE: Edson Versa Drill 300

LOGGED BY: LGT | DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO261 | DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\3931393203\6\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93010

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Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH114**

SHEET 4 of 4

PROJECT: Tauranga Eastern Motorway | JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa | CLIENT: Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,177.50 m | R L: 3.028 m

E 801,738.90 m | DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			100 %	SPT					5 5 N=10		-28	31		SW				
											-29	32		ML	W	MD	Medium dense light bluish grey laminated yellowish grey SILT, minor clay; wet, moderately plastic. Dark green lamination.	
											-30	33					End of Borehole 30.45m.	
											-31	34						
											-32	35						
											-33	36						
											-34	37						
											-35	38						
											-36	39						

DATE STARTED: 16/11/06 | DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 16/11/06 | DRILL TYPE: Edson Versa Drill 300

LOGGED BY: LGT | DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO261 | DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

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FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\3931393203\6\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93010

BOX 1

0 to 4.4 m

BOX 2

4.4 to 9.0 m

NZGD ID: BH_93010

BOX 3

9.0 to 13.95 m

BOX 4

13.95 to 18.45 m

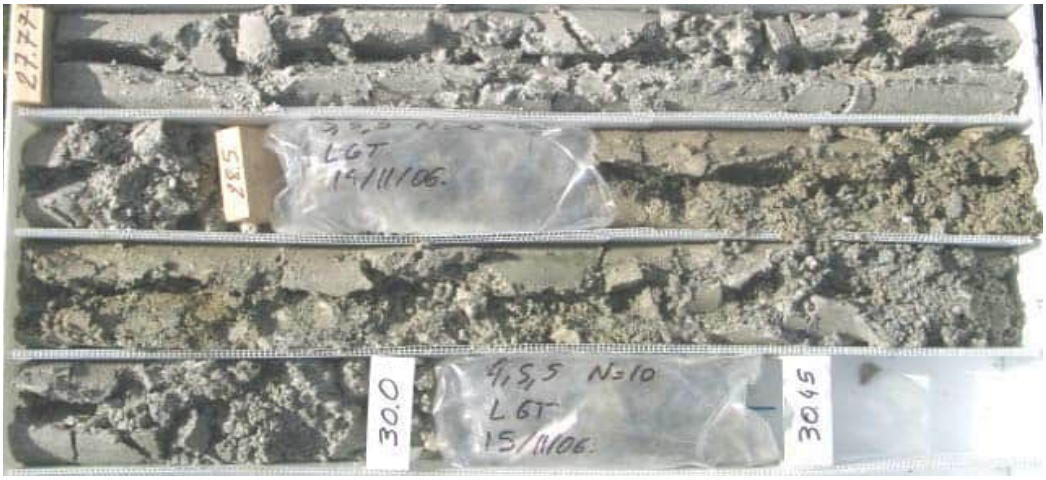
NZGD ID: BH_93010

BOX 5

18.45 to 23.34 m

BOX 6

23.34 to 27.77 m



BOX . to 30.45 m

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 1 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ
BOREHOLE LOCATION:	On Niccol's property, north side of Kaituna River.		
COORDINATES:	N 390,108.20 m	R L:	2.4 m
	E 801,802.40 m	DATUM:	Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: 'T' (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Topsoil														ML	W	VL	Loosely packed, 'very loose', dark brown organic sandy SILT, minor rootlets, trace gravel; wet, non plastic. Gravel: fine to medium, rounded.	
Alluvial Sands			50 %	OB							2			SM	W	VL		
			100 %	OB													Very loose, yellow brown SAND, some silt; wet, non plastic. Sand: fine to medium, uniformly graded.	
			100 %	OB							1	1					Trace gravel: medium, sub-rounded pumice.	
			100 %	SPT					2 2 2 N=4		1			SM	M	L	Loose, dark grey, mottled black silty SAND, minor clay, trace fibrous organics; moist, low plasticity. Sand: fine.	
			48 %	OB								2					Mottled light grey.	
											0						Light to dark brown, mottled light grey, speckled black; moist, non plastic. Sand: fine.	
														SP	M	L	Light brownish grey lamination.	
			0 %	SPT					0 0 0 N=0		-1	3					Grades to loose, greyish brown SAND, trace silt; moist, non plastic. Sand: medium to coarse, pumiceous. Minor organics: fibrous (wood fragments).	
																	No Recovery.	
Peat			68 %	OB										OL	W	VS	Very soft, brownish grey sandy organic SILT, minor clay; wet, low plasticity. Sand: fine.	
Alluvial Sands												4		SP	W	VL	Very loose, grey SAND, trace silt; wet, non plastic. Sand: medium to coarse.	
			100 %	SPT					3 3 3 N=6		-2							
			0 %	OB								5					No recovery.	
			100 %	SPT					1 3 5 N=8		-3			SP	W	L	Poor Recovery. Loose, grey SAND, trace gravel, trace silt; wet, non plastic. Sand: medium to coarse. Gravel: sub-rounded (lithics). Trace organics: decomposing, fibrous (wood fragments).	
			35 %	TT							-4	6						
											-5	7					Minor shell fragments, trace fine to medium sub-rounded gravel. Dilatant.	
			0 %	SPT					4 4 6 N=10		-6	8					No recovery.	
			38 %	TT								9		SP	W	MD	Poor recovery. Medium dense, grey SAND, minor shell fragments, trace gravel , trace silt; wet, non plastic. Sand: medium to coarse. Gravel: fine, sub-rounded (lithics).	
			100 %	SPT					3 5 6 N=11		-7							

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\393\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTERN MOTORWAY - 2008.GPJ BOHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 2 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ

BOREHOLE LOCATION: On Niccol's property, north side of Kaituna River.

COORDINATES: N 390,108.20 m E 801,802.40 m

R L: 2.4 m

DATUM: Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Alluvial Sands			24 %	TT							-8	11		SP	W	MD	Poor recovery. Medium dense, grey SAND, minor shell fragments, trace gravel, trace silt; wet, non plastic. Sand: medium to coarse. Gravel: fine, sub-rounded (lithics).	
			0 %	SPT					2 3 4 N=7		-9						No Recovery.	
			44 %	TT								12		SP	W	MD L	Medium dense, grey SAND, minor shell fragments, trace gravel, trace silt; wet, non plastic. Sand: medium to coarse. Gravel: fine, sub-rounded (lithics). Poor recovery. Loose, grey fine to medium SAND, minor silt. Trace organics: decomposing, fibrous (wood fragments).	
			75 %	SPT					1 1 2 N=3		-10					VL	Very loose.	
Fluvial Terrace (re-deposited Ignimbrite)			100 %	TT							-11	13		GP	W	VL	Very loose, greyish white, mottled green, speckled black and light brown sandy GRAVEL; wet, non plastic. Gravel: fine to medium, sub-angular to sub-rounded, HW pumice (under finger pressure breaks down to sandy SILT). Sand: medium to coarse. Moderately thin dark green bed.	
			100 %	SPT					1 2 2 N=4		-12	14						
			57 %	TT							-13	15						
			0 %	SPT					1 0 0 N=0								No Recovery.	
			76 %	TT							-14	16		SM	W	VL	Very loose, greyish white, mottled green silty SAND, trace gravel; wet, non plastic, dilatant. Sand: fine to medium, pumiceous. Gravel: fine, HW pumice.	
														MH	W	VS	Very soft, greenish white, speckled dark green clayey pumiceous SILT, minor fine sand; wet, high plasticity. Grey/brown thin horizontal lamination.	
			0 %	SPT					2 3 3 N=6		-15	17					No Recovery.	
			100 %	TT								18		SP	S W	L MD	Grades to loose, greyish white, mottled green, pumiceous SAND, minor silt, trace organics; saturated, non plastic. Sand: fine. Organics: decomposing, fibrous (wood fragments). Grey, speckled black; wet. Green to light orange speckled black thinly laminated SAND, trace silt. Minor silt. Dilatant. Trace mica flakes. Trace gravel. Sand: medium to coarse, pumiceous. Gravel: fine, sub-angular to angular pumice. Medium dense.	
			100 %	SPT					11 11 9 N=20		-16							
			100 %	TT							-17	19		SM	S		Greenish white, speckled black, minor silt. Sand: fine to medium. Laminated light brown. Moderately thickly interbedded with thin to moderately thin beds of grey speckled black sandy pumice gravel; saturated. Sand: medium to coarse.	
									9									

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3993\39320361\TGE\10 INVESTIGATION\GINT\TAURANGA EASTERN MOTORWAY - 2008.GPJ BCHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 3 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ
BOREHOLE LOCATION:	On Niccol's property, north side of Kaituna River.		
COORDINATES:	N 390,108.20 m E 801,802.40 m	R L: DATUM:	2.4 m Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: T (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace (re-deposited Ignimbrite)			91 %	SPT					9 8 N=17		-18			SP	S	MD	Dilatant. Medium dense, grey, speckled black SAND; saturated, non plastic. Sand: medium to coarse. Trace gravel: fine, pumiceous.	
			52 %	TT										ML	W	VSt	Very stiff, light green, mottled light grey, speckled light green sandy SILT; wet, non plastic, extra sensitive. Sand: fine, pumiceous.	
												21		SP	S W	MD	Medium dense, grey, speckled black SAND; saturated, non plastic. Sand: fine to medium, pumiceous. Dark brown medium to coarse sand, minor silt; wet.	
			100 %	SPT					9 10 14 N=24		-19						Greyish green, speckled black, trace silt.	
												22					Poor Recovery.	
			7 %	TT							-20							
			89 %	SPT					6 7 14 N=21		-21	23					Greyish green, speckled black, trace gravel, trace silt. Sand: medium to coarse. Gravel: rounded lithics. Mottled light yellow white. Trace gravel: sub-rounded lithics, trace HW medium pumice (breaks down to silt on reworking).	
			0 %	TT													No Recovery.	
			0 %	SPT					4 6 9 N=15		-22	24						
			0 %	TT							-23	25						
			100 %	SPT					7 7 7 N=14		-24	26		SP	W	MD	Medium dense, grey mottled light yellowish white SAND, trace gravel, trace silt; wet, non plastic. Sand: medium to coarse. Silica rich. Gravel: medium, sub-rounded, lithics, HW pumice. Light greyish green, speckled black, mottled white fine to medium SAND, minor silt. Semi-dilatant.	
			100 %	TT								27					Non dilatant. Orange (Fe oxide) staining, speckled light green. Light grey silt lamination.	
			100 %	SPT					0 0 1 N=1		-25					VL	Very loose.	
			84 %	TT							-26	28					Semi-dilatant.	
			0 %	SPT					4 4 4 N=8		-27	29		SP	W	VL	Very loose, greyish white, speckled black and light green mottled yellowish white gravelly SAND; wet, non plastic. Sand: pumiceous. Gravel: fine to medium, HW pumice (under finger pressure reworks to sandy SILT).	
			100 %	TT													No Recovery.	
														SP	W	L	Loose, greyish white, speckled black and light green mottled yellowish white gravelly SAND; wet, non plastic. Sand: pumiceous. Gravel: fine to medium, HW pumice (under	

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3931\39320361TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTERN MOTORWAY - 2008.GPJ BCHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 4 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ

BOREHOLE LOCATION: On Niccol's property, north side of Kaituna River.

COORDINATES: N 390,108.20 m E 801,802.40 m

R L: 2.4 m

DATUM: Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace (re-deposited Ignimbrite)			100 %	TT					5 7 8 N=15		-28	31		SP		MD	finger pressure reworks to sandy SILT). Very thin bed of light green, speckled green/black pumiceous silt. Medium dense greyish white pumiceous SILT lamination.	
			50 %	SPT							-29						Trace greenish orange staining. Gravel: fine to coarse, well graded, MW pumice.	
			100 %	TT					6 8 9 N=17		-30	32					Minor gravel: fine to medium pumice.	
			100 %	SPT							-31	33					Minor gravel: coarse pumice.	
			100 %	TT					7 6 8 N=14		-32	34					Light green and pinkish brown. Dark green, speckled black, some silt. Gravel: fine, sub-angular to sub-rounded. Sand: medium to coarse, pumiceous. Greenish white, speckled black and green. Gravel: fine to coarse, MW pumice (under finger pressure, breaks down to sandy SILT).	
			0 %	SPT					7 7 9 N=16		-33	35					No Recovery	
			100 %	TT										SP	W	MD	Medium dense, greenish white, speckled black and light green, mottled yellowish white gravelly SAND; wet, non plastic. Gravel: fine to coarse, moderately weathered, pumiceous (under finger pressure, breaks down to sandy SILT).	
			100 %	SPT					7 10 18 N=28		-34	36		SP	W	MD	Medium dense, grey, speckled black/light orange SAND, trace gravel; wet, non plastic. Sand: medium to coarse, poorly graded, pumiceous. Gravel: fine to medium, sub-angular to sub-rounded pumice.	
			100 %	TT							-35	37					Some gravel. Grades to greenish brown.	
			100 %	SPT					9 10 15 N=25		-36	38					Thin bed of hard, dark green sandy SILT; moist, non plastic, welded/cemented. Sand: fine.	
			71 %	TT							-37	39					Minor gravel: coarse, very angular. No Recovery.	
			0 %	SPT					12 20 21 N=41									

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3933\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTERN MOTORWAY - 2008.GPJ BCHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 5 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ
BOREHOLE LOCATION:	On Niccol's property, north side of Kaituna River.		
COORDINATES:	N 390,108.20 m E 801,802.40 m	R L: DATUM:	2.4 m Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: 'T' (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace (re-deposited Ignimbrite)			0 %	TT							-38	41					No Recovery.	
Fluvial Terrace (re-deposited Ignimbrite)			100 %	SPT					6 9 14 N=23		-39			GW	S	D MD	Dense, grey/green, speckled black/light orange, mottled yellow sandy GRAVEL; saturated, non plastic. Sand: medium to coarse. Gravel: fine to coarse, well graded, pumice and lithics. Medium dense.	
			100 %	TT								42					Trace pumice cobbles.	
											-40						Mottled orange (Fe oxide staining).	
			100 %	SPT					50 for 130mm N=50+							D	Dense.	
												43					Dark orange/brown (Fe oxide staining).	
			95 %	TT							-41						Very thin sub-horizontal lamination of grey silty fine SAND.	
																	Fe oxide staining.	
																	Hard, dark green to light green clayey sandy SILT; moist, high plasticity. Sand: fine. Thinly laminated dark orange.	
			82 %	SPT					8 28 22 for 70mm N=50+			44						
											-42			SM SP	W W	VD VD	Very dense, light grey, speckled black silty fine SAND; wet, non plastic, dilatant.	
			48 %	TT													Poor Recovery. Very dense, greenish white, speckled black, mottled white SAND, trace gravel; wet, non plastic. Sand: medium to coarse, pumiceous. Gravel: sub-rounded pumice. Thin beds of laminated grey speckled black fine sand. Dark green/light grey/ light green horizontal fine to medium sand laminations.	
			40 %	SPT					10 50 for 130mm N=50+		-43	45						
														MH SP	M W	H VD	Hard, dark green to light green clayey sandy SILT; moist, high plasticity. Sand: fine. Thinly laminated dark orange.	
			84 %	TT								46					Very dense, greenish white, speckled black, mottled white pumiceous SAND, trace gravel; wet, non plastic. Sand: medium to coarse, sub-angular to sub-rounded. Gravel: sub-rounded, pumice. Thin beds of fine to medium sand. Dark green.	
			100 %	SPT					15 20 30 for 150mm N=50		-44						Moderately thick beds of greenish white, speckled black/light pink GRAVEL. Gravel: fine to medium, sub-angular to sub-rounded pumice. Light grey, laminated dark to light green SAND. Sand: fine to medium, pumiceous. Minor fine pumice gravel. Light to dark grey laminations. Dark green.	
			100 %	TT							-45	47						
			100 %	SPT					23 50 for 145mm N=50+		-46	48					Fine to medium sand. Grey/green/dark green/light green horizontal very thin to laminations (300 mm thick zone). Some fine to medium pumice gravel.	
			76 %	TT					25		-47	49					Moderately thin bed of green, mottled white, speckled black sandy GRAVEL. Sand: medium to coarse. Gravel: fine pumice. Trace coarse pumice gravel. Interbedded with laminations of green/light grey/dark green SAND, trace gravel. Sand: fine to medium, pumiceous. Gravel: sub-angular to sub-rounded pumice.	

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\393\3932036\TGE\10 INVESTIGATIONS\GINTITAURANGA EASTERN MOTORWAY - 2008.GPJ BCHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH154**

SHEET 6 of 6

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/240
SITE LOCATION:	Tauranga to Te Puke	CLIENT:	Transit NZ

BOREHOLE LOCATION: On Niccol's property, north side of Kaituna River.

COORDINATES: N 390,108.20 m E 801,802.40 m

R L: 2.4 m

DATUM: Moturiki

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace (re-deposited Ignimbrite)			100 %	SPT					50 for 100mm N=50+		-48	51		SP	W	VD	Very dense, grey/green to light grey, speckled black SAND; wet, non plastic. Sand: medium to coarse, pumiceous. Sand: fine to medium. Sand: medium to coarse. Dark green. Sand: fine to medium. Light green, very thinly to thinly bedded medium to coarse pumiceous SAND. Dark green.	
			62 %	TT														
			100 %	SPT					16 50 for 120mm N=50+		-49	52					Dark green to light green, greyish white, mottled light grey, speckled black laminated SAND, trace gravel. Gravel: fine to medium, MW pumice.	
			63 %	TT							-50						Light greyish white fine pumiceous SAND. Medium to coarse sand, trace gravel. Gravel: sub-angular to sub-rounded pumice. Fine pumiceous SAND.	
			SC	SPT					50 for 140mm N=50+			53						
			85 %	TT							-51	54		SP	W	VD	Very dense, greyish white, mottled light/dark green gravelly SAND; wet, non plastic. Gravel: fine to medium pumice. Sand: medium to coarse. Moderately thinly interbedded with grey/white, mottled light /dark green, laminations of fine to medium pumiceous SAND.	
			SC	SPT					50 for 100mm N=50+		-52	55						
			93 %	TT							-53	56						
			SC	SPT					50 for 110mm N=50+		-54	57						
			87 %	TT														
			SC	SPT					50 for 120mm N=50+		-55	58		GP	W	VD	Very dense, light green/greyish white, speckled black sandy GRAVEL; wet, non plastic. Gravel: fine to coarse. Sand: medium to coarse, pumiceous. Trace gravel: sub-angular to sub-rounded pumice.	
			87 %	TT							-56						Sand: fine to medium.	
			SC	SPT					50 for 95mm N=50+		-57	59		SP	W	VD	Very dense, greyish white gravelly SAND; wet, non plastic. Sand: fine to medium. Gravel: fine to medium, HW.	
																	End of Borehole 59.1m.	

DATE STARTED:	2/4/08	DRILLED BY:	Pro-drill (Auck) Ltd
DATE FINISHED:	4/4/08	DRILL TYPE:	Trailer Rig
LOGGED BY:	BGW	DRILL METHOD:	Rotary
PILCON VANE No:	DR163	DRILL FLUID:	Water/CR650

COMMENTS:
Coordinate system is BOP 2000.
SC= solid cone SPT

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3393\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTERN MOTORWAY - 2008.GPJ BCHFMB2.GDT 29/9/08

NZGD ID: BH_93087
NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 1 0-3.9m

Tauranga Eastern Motorway
BH154

393236/240
BOX 2 3.9-12.95m

beca

3932036/240

BH154

Machine Borehole Photos

NZGD ID: BH_93087
NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 3 12.95-17.80m

Tauranga Eastern Motorway
BH154

3932036/240
BOX 4 17.80-23.45m

NZGD ID: BH_93087
NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 5 23.45-30.1m

Tauranga Eastern Motorway
BH154

3932036/240
BOX 6 30.1-33.95m

NZGD ID: BH_93087
NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 7 33.95-38.0m

Tauranga Eastern Motorway
BH154

3932036/240
BOX 8 38.0-44.37m

NZGD ID: BH_93087

NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 9 44.37-48.8m

Tauranga Eastern Motorway
BH154

3932036/240
BOX 10 48.8-53.0m

beca

3932036/240

BH154

Machine Borehole Photos

NZGD ID: BH_93087
NZGD ID: BH_93087

Tauranga Eastern Motorway
BH154

3932036/240
BOX 11 53.0-56.75m

Tauranga Eastern Motorway
BH154

3932036/240
BOX 12 56.75-59.1m

NZGD ID: BH_93087
NZGD ID: BH_93087

NZGD ID: BH_93131

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH113**

SHEET 1 of 4

PROJECT: Tauranga Eastern Motorway | JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Paengaroa | CLIENT: Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,091.15 m | R L: 0.8 m

E 801,985.37 m | DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Topsoil														ML	M	F	Firm brown Organics SILT, minor clay, trace organics, trace fine sand; moist, moderately plastic.	
Alluvial Sands														SM	M	L		
							73/16	117/27						SW	M	L	Grades to light greyish brown, streaked orange Silty fine SAND, minor clay; moist, moderately plastic.	
		16/11/06	53 %	TT							0	1					Grades to loose brownish grey mottled yellowish orange fine to medium pumice SAND; moist, non plastic.	
			53 %	TT			13/7	23/11									Grey speckled white.	
			100 %	SPT					1 3 3 N=6		-1	2					Laminations of black, minor decomposing organics. Dark grey speckled white, fine to coarse. Grey fine to medium. Lamination of black, decomposing organics.	
			49 %	TT							-2	3					Decomposing piece of wood.	
			100 %	SPT					1 2 2 N=4									
			78 %	TT							-3	4						
			NO CORE	SPT					1 1 3 N=4		-4						No recovery.	
			52 %	TT								5		SW	M	L	Loose grey fine to medium pumice SAND; moist, non plastic.	
			100 %	SPT					2 6 9 N=15		-5						Thin bed of grey decomposing treated timber.	
			36 %	TT								6		SP		MD	Medium dense grey speckled white fine to medium SAND, trace fine to medium white/yellowish white broken shells; moist, non plastic.	
			95 %	SPT					5 9 12 N=17		-6							
			100 %	TT								7					Thin bed (120mm) fine to coarse pumice, andesite, rhyolite sand.	
			78 %	SPT					5 4 1 N=5		-7							
			52 %	TT								8					Lamination of light grey, fine grained sand.	
											-8						Lamination light grey, fine grained.	
												9					Lamination light grey, fine grained.	
											-9			SW	W	L	Grades to loose, grey speckled white, yellowish pinkish bluish white, fine to coarse pumice SAND, some fine to medium broken shells; wet, non-plastic.	

DATE STARTED: 16/11/06 | DRILLED BY: Perry Drilling Ltd

DATE FINISHED: 16/11/06 | DRILL TYPE: Edson Versa Drill 300

LOGGED BY: LGT | DRILL METHOD: Rotary TT wireline

PILCON VANE No: GEO261 | DRILL FLUID: Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_MB P:\3931393\2036\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93131

NZGD ID: BH_93131

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH113**

SHEET 2 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand
BOREHOLE LOCATION:	Niccol's farm, just outside property		
COORDINATES:	N 390,091.15 m E 801,985.37 m	R L:	0.8 m
		DATUM:	BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Alluvial Sands			52 %	TT										SP			Grey, fine grained.	
			NO CORE	SPT					0 0 0 N=0		-10	11		MH	W	VL	Grades to very loose grey speckled white SILT, some clay, trace fine to medium broken shells; wet, highly plastic.	
			100 %	TT										SW-SM	W	VL	Grades to very loose grey Silty fine to medium SAND, trace clay; wet, slightly plastic.	
														SW	W	VL	Grades to very loose, grey mottled pinkish white fine to coarse pumice SAND, minor fine gravel, minor silt; wet, non plastic.	
			100 %	SPT					2 2 2 N=4		-11	12		SW	W	L	Grades to loose light bluish grey mottled/ speckled white Gravelly SAND, trace silt; wet, non plastic. Gravel is fine pumice. Light brownish grey, speckled brownish white. Thin bed of fine to medium sand.	
			48 %	TT							-12	13						
			100 %	SPT					1 2 2 N=4		-13	14		SM	W	L	Loose light brown laminated brown Silty fine pumice SAND; wet, non plastic.	
			38 %	TT							-14			MH	M	F	Grades to firm greyish white speckled brown pumiceous SILT, some clay; moist, highly plastic. Poor recovery.	
			100 %	UT						U1(63mm)		15		SM	W	L	Loose light brownish grey laminated yellowish brown Silty fine to coarse SAND, trace fine highly weathered pumice gravel; wet, non plastic.	
														MH	M		Grades to white, grey laminated bluish grey and light brown, SILT, minor clay; moist, moderately plastic.	
											-15			ML	M	L	Loose white laminated greenish grey Sandy SILT; moist, non plastic.	
			52 %	TT								16		SW	M	L	Loose light grey speckled white fine to coarse pumice SAND; moist, non plastic.	
			80 %	SPT					6 6 6 N=12		-16						Thin bed (50mm) greenish white SILT.	
																MD	Thin lamination orange. Thin bed light grey laminated pink silty fine pumice sand. Medium dense.	
			77 %	TT							-17	17					Light grey speckled white. Thin bed of light grey silty fine sand.	
			100 %	SPT					3 5 6 N=11			18					Grey, fine to medium grained, wet.	
											-18			SM	W	MD	Medium dense greenish white Silty fine pumice SAND; wet, non plastic.	
														SP	M	MD	Medium dense light grey laminated green dark grey and brown fine SAND, trace laminations of silt, trace clay; moist, slightly plastic.	
Paleosoil												19		OL	M	St	Stiff brown laminated dark brown Organic SILT, some clay (H8 peat); moist, highly plastic.	
Fluvial Terrace			87 %	TT										SW	W	MD	Medium dense light fine to medium pumice SAND; wet, non plastic.	
			100 %	SPT					11 13 22 N=35		-19					D	Two very closely spaced dark grey fine grained laminations. Dense.	

DATE STARTED:	16/11/06	DRILLED BY:	Perry Drilling Ltd
DATE FINISHED:	16/11/06	DRILL TYPE:	Edson Versa Drill 300
LOGGED BY:	LGT	DRILL METHOD:	Rotary TT wireline
PILCON VANE No:	GEO261	DRILL FLUID:	Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel.
Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\39313932036\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93131

NZGD ID: BH_93131

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH113**

SHEET 3 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,091.15 m E 801,985.37 m

R L: 0.8 m

DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			80 %	TT							-20	21		SW	W	D	Dense dark grey fine to medium pumice SAND, trace coarse, trace silt; wet, non plastic.	
														SW	W	D	Dense dark grey fine to medium pumice SAND, trace coarse, trace silt; wet, non plastic.	
			100 %	SPT					12 18 25 N=43								Bluish grey, speckled black, fine to coarse grained.	
			79 %	TT							-21	22		SP	W	D	Dense light grey fine SAND, trace fine sub-rounded andesite gravel; wet, non plastic.	
			77 %	SPT					18 22 28 N=50		-22	23		SW			Fine to medium grained. 20mm lamination of greenish white silty fine sand.	
			58 %	TT							-23	24					Lamination light grey.	
			0 %	SPT					1 2 2 N=4								Speckled orange and dark grey, trace fine to medium rounded andesite or rhyolite gravel. No recovery.	
			80 %	TT							-24	25		SP	W	L	Loose bluish grey laminated orange brown grey fine SAND, trace silt; wet, non plastic.	
			100 %	SPT					1 1 2 N=3		-25	26		SM	M	L	Loose bluish grey speckled orange, brown Silty fine SAND, trace clay; moist, moderately plastic.	
			67 %	TT										SW	M	L	Grades to loose grey mottled white and greenish grey speckled white fine to medium SAND, minor silt; moist, non plastic.	
			100 %	SPT					2 3 5 N=8		-26	27		SW-SM	M	L	Loose greyish white speckled dark grey and black Silty fine to coarse pumice SAND, trace silt; moist, non plastic. Grey mottled white.	
			83 %	TT							-27	28		SW	M	L	Loose light grey mottled white, speckled dark grey, black, fine to medium pumice SAND, trace silt; moist, non plastic.	
			NO CORE	SPT					3 4 6 N=10		-28	29		SW	M	L	Light brown lamination. 20mm lamination greenish brown Sandy pumice GRAVEL. Loose, light grey mottled white, speckled white, dark grey, greenish grey Gravelly fine to coarse pumice SAND, trace silt; moist, non plastic. Gravel is mainly pumice, trace rounded rhyolite, andesite.	
			67 %	TT					4		-29			SW	W	MD	Grades to medium dense grey speckled white fine to coarse pumice SAND, trace fine gravel; wet, non plastic. Trace greenish grey laminations.	

DATE STARTED:	16/11/06	DRILLED BY:	Perry Drilling Ltd
DATE FINISHED:	16/11/06	DRILL TYPE:	Edson Versa Drill 300
LOGGED BY:	LGT	DRILL METHOD:	Rotary TT wireline
PILCON VANE No:	GEO261	DRILL FLUID:	Water+Biovis

COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.

REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\393\39320361\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93131

NZGD ID: BH_93131

Beca

MACHINE BOREHOLE LOG

BOREHOLE No: **BH113**

SHEET 4 of 4

PROJECT:	Tauranga Eastern Motorway	JOB NUMBER:	3932036/126
SITE LOCATION:	Tauranga to Paengaroa	CLIENT:	Transit New Zealand

BOREHOLE LOCATION: Niccol's farm, just outside property

COORDINATES: N 390,091.15 m E 801,985.37 m

R L: 0.8 m

DATUM: BOP2000

GEOLOGICAL UNIT	DRILLING: FLUID LOSS	DRILLING: WATER LEVEL	DRILLING: CORE RECOVERY	DRILLING: METHOD	DRILLING: RQD	DRILLING: CASING	IN-SITU TESTS: SV (kPa)	IN-SITU TESTS: τ (kPa)	IN-SITU TESTS: SPT 'N'	SAMPLES	R L (m)	DEPTH (m)	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL / ROCK DESCRIPTION	INSTRUMENTATION
Fluvial Terrace			100 %	SPT					4 6 N=10					SW				
																	End of Borehole 30.45m.	
											-30	31						
											-31	32						
											-32	33						
											-33	34						
											-34	35						
											-35	36						
											-36	37						
											-37	38						
											-38	39						
											-39							

DATE STARTED:	16/11/06	DRILLED BY:	Perry Drilling Ltd	COMMENTS: Shear strengths (SV) measured in end of core barrel. Refer to attached descriptive table for organic soil rank.
DATE FINISHED:	16/11/06	DRILL TYPE:	Edson Versa Drill 300	
LOGGED BY:	LGT	DRILL METHOD:	Rotary TT wireline	
PILCON VANE No:	GEO261	DRILL FLUID:	Water+Biovis	REVIEWED BY:

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BH_MB P:\39339320361TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 07/03/07

NZGD ID: BH_93131

NZGD ID: BH_93131

BOX 1

0 to 5.77 m

BOX 2

5.77 to 10.95 m

NZGD ID: BH_93131

NZGD ID: BH_93131

BOX 3

10.95 to 16.2 m

BOX 4

16.2 to 20.55 m

NZGD ID: BH_93131

NZGD ID: BH_93131

BOX 5

20.55 to 24.85 m

BOX 6

24.85 to 29.55 m

NZGD ID: BH_93131

BOX

29.55 to 30.45 m

NZGD ID: 107550

BOREHOLE No #1

Page 1 of 3

Project No 5CC0976.00
Project Name Papamoa Liquifaction
Client TCC

Location Bell Rd Farmland
Elevation ≤0.5m a.s.l
Datum

Start Date 24.2.06
Finish Date 27.2.06
Drill Rig ST-30 Kyoto

Depth	Boring Method	Soil Profile: Description	Soil Profile: Plot	Samples / In-situ Tests: Depth	Type	No. Shoe Cone	Recovery	Result SPT	Notes
0.0	OH								• Set up 1:00pm. Open hole to 1.5m.
		clayey SILT: dark brown, dry, stiff Topsoil.							• Flat low lying farmland @ southern extent of sand dunes. 0–1.5m Poor recovery
1.0									
	OH			1.5	SPT	81/84	lost	0	1.5–3.0m • No recovery to 3.0m. • Difficult to tell moisture content & fines percentage from washed return sample.
2.0		light grey, homogenous, fine–medium sand, 75% quartz, 25% andesite lithics, tries to liquify when saturated.							
3.0	OH	SAND (fine–medium).		3.0	SPT		n/a	15	3.0–4.5m
		Light grey, homogenous 75% quartz, 25% andesite lithics. Fine–medium, well sorted							
4.0									
	OH	SAND with trace silt,		4.5	SPT		n/a	9	4.5–6.0m • sand starting to coarsen with pumice lithics making an appearance.
5.0		grey, homogenous, poorly sorted, very fine → coarse. • 70% quartz grains 30% shell fragmented rock lithics.							
6.0	OH	SAND with trace silt		6.0	SPT		n/a	15	6.0–7.5m • granule size lithics ≤30%.
		grey, moist–wet, massive firm–loose, poorly sorted very fine → granule. • 70% quartz (medium) 30% shell & pumice granules							
7.0									
	OH	SAND medium–coarse		7.5	SPT		n/a	16	7.5–9.0m
8.0									

Driller Rob: Perrys Drilling
Logged By: Carol Ferrier
Opus International Consultants Limited

NZGD ID: 107550

NZGD ID: 107550

BOREHOLE No #1

Project No: SC0976.00
Project Name: Papamoa Liquefaction
Client: TTC
Location: Bell Rd farmland
Elevation: ~0.5m a.s.l.
Datum:
Page: 2 of 3
Start Date: 24-2-06
Finish Date: 27-2-06
Drill Rig: ST-30 Kyoto

Depth	Boring Method	Soil Profile: Description	Plot	Depth	Samples / In-situ Tests: Type	No.	Recovery	Result	Notes
8.0	OH	grey/massive, poorly sorted. Lithic granules ≤30%., 70% medium-fine quartz grains.							
9.0	OH	SAND medium-granular grey/wet/thin/firm sensitive		9.0	SPT			8	9.0–10.5m
10.0		clayey SILT grey, thin, sensitive/ moist-wet, firm.							
11.0	OH	SAND with silt Light cream, wet, soft-firm, thick, well sorted. 95% pumice granules <5% fine andesite lithics		10.5	SPT			2	10.5–12.0m Possibly Rotoiti Breccia? Clast supported pumice granule-pebble airfall. Wet saturated pumice granules easily collapse, & transmit H2O, altered to clay (white, possibly Kaolinite?)
12.0	OH	Pumice GRAVEL with trace sand & clay		12.0	SPT			4	12.0–13.5m logged as SAND but may have had >% pumice granules lost in return wash, left with denser/durable quartz sand component. Marine enviro – coarse shell
13.0	OH	grey, wet, moderately sorted → poorly. Pumice granules → fine quartz. coarse SAND Glue-grey, soft, wet, massive, sensitive.		13.5	SPT			4	13.5–15.0m • Highly weathered Hamilton ash? • Contains rare relic andesite gravel–granule size lithics.
14.0									
15.0	OH HQ	CLAY with trace silt silty CLAY: light grey-green Light white-grey, v soft-v.stiff, sensitive.		15.0	SPT			3	15.0–16.5m • HQ coring from 15.1m • Highly weathered, base of Hamilton Ash, characterised by interbedded coarse sandy eruptive with fine silty eruptive events.
16.0	HQ	Thin SILT & Silty SAND beds: airfall.							

Driller: Rob: Perry's Drilling
Logged By: Carol Ferrier
Opus International Consultants Limited

NZGD ID: 107550

NZGD ID: 107550

BOREHOLE No #1

Project No 5C0976.00 | Location Bell Rd Farmland | Page 3 of 3
Project Name Paparamoa Liquefaction | Elevation ≤0.5m a.s.l. | Start Date 24.6.06
Client TDC | Datum | Finish Date 27.6.06
Drill Rig ST-30 Kyoto

Depth	Boring Method	Soil Profile: Description	Plot	Depth	Samples: Type	No.	Recovery	Result	Notes
16.0	HQ								Coarsally wet, stiff, sensative & highly weathered
	HQ	silty SAND		16.5	SPT		1.2	17	16.5–18.0m: interfingering Ash. ① very thin light white-grey SILT interfingering with light grey white fine SAND
17.0		•thin SILT & silty SAND beds: soft, wet, sensative	①						② Light white-grey, pumice granules collapse to clays
		•light, soft, wet sensative SAND with silt & clay	②						③ Paleosol: brown, moist, stiff, sensative: CLAY
		SILT: wet, stiff, sensative. CLAY							
		grey, wet, loose, sensative SAND	③						
18.0	HQ			18.0	SPT		0.9	44	18.0–19.5m
		silty SAND: green-grey, wet, stiff, sensative							Ash airfall with collapsed pumice granules giving silt & clay component
		SAND with silt & trace clay: grey, firm, wet, medium grain size. <5% andesite lithics, 80% med-fine quartz.							
19.0									
	HQ			19.5	SPT		0.4	35	19.5–21.0m
		•sandy GRAVEL with silt & trace clay.	①						① Green-grey, clast supported, poorly sorted, sub-rounded hard andesite pebbles.
20.0		•SAND with trace silt.							
		grey, wet, loose, 80% quartz 20% andesite lithics. fine-medium							② Not unlike Rotorehu Ash.
		•coarse SAND with trace clay & silt, grey-green, wet thin, stiff, 60% quartz.	②						③ Airfall.
			③						NB Change to terrestrial environment from ≈ 14.0m.
21.0	HQ			21.0	SPT		0.6	34	21.0–22.5m
		•sand GRAVEL: dark green-grey/wet/loose,							① sandy GRAVEL, sub rounded fluvial pebbles & granules of ≥% andesite.
			①						② fine sensative SAND/Ash
		• silty SAND: soft							③ Fluvial, sub rounded
22.0		•sandy GRAVEL	②						④ Airfall, firm,
			③						
			④						
	HQ	•SAND: grey-green, moist, fine		22.5	SPT		0.7	40	
			EOH						

Driller Rob: Perrys Drilling | Logged By: Carol Ferrier.
Opus International Consultants Limited

NZGD ID: 107550

NZGD ID: 112218

AECOM

LOG OF DRILLHOLE

HOLE IDENTIFICATION **BH227**

Client Tauranga City Council
Project Waiari Watermain
Project number 60532148

Co-ordinates 1893092.201mE 5816442.967mN
Orientation -90° Elevation 2m (Approx)
Location Te Puke
Feature Armer Farms Ltd

GEOLOGICAL DESCRIPTION	Test Records: Shear Vane residual - peak 0 - 200 kPa	Test Records: N Values 0 - 50	Drilling Method / Casing remarks	Core Loss/Lift 0 - 100%	Depth	Graphic Log	SOIL PROPERTIES	Instrumentation
0m: Topsoil.							0m: SILT, minor sand; brown. Firm, wet, low plasticity.	
0.15m: Alluvium comprising sands and silts with interbedded peat.							0.15m: SILT; light brown. Firm, wet, low plasticity.	
							0.25m: PEAT; black. Very soft to soft, wet, fibrous to amorphous, slightly decomposed. 0.29 to 0.3m: Peice of wood which most likely prevented core recovery.	10.5 ▽
			HQ3		1		0.3 to 2m: Core Loss	
			PT				1.5 to 2m: Failed push tube.	
			HQ3		2		2m: PEAT; black. Very soft to soft, wet, fibrous to amorphous, slightly decomposed.	
							2.65m: Fine SAND, minor organic fragments; grey. Saturated, poorly garded. Organic fragments, sticks and wood, slightly decomposed. 2.9m: No organic fragments.	
			PT		3		3 to 3.5m: Core Loss Failed push tube.	
			HQ3		4		4.5m: Minor silt, trace organic fragments, trace shells.	

TAURANGA GROUP

FLUID DEPTHS DURING DRILLING

Date Time	Drilled Depth (m)	Casing Depth (m)	Fluid Depth (m)

Hand Held Shear Vane

vane shear strength per NZGS guideline

Remarks
Elevation RL's estimated from Council lidar data.

New Zealand Transverse Mercator Projection

Casing Details
Depth Diameter

Date logged
Logged AH
Checked DM

Driller Perry
Started 30/08/2018
Drill Rig Tractor Rig
Finished 30/08/2018
Core Boxes 3

DRILLHOLE LOG SOIL 20180914 WAIARI WATERMAIN.GPJ BASE.GDT 14/09/18

Date Printed: 14/09/2018

NZGD ID: 112218

NZGD ID: 112218

AECOM

LOG OF DRILLHOLE

HOLE IDENTIFICATION **BH227**

Client Tauranga City Council
Project Waiari Watermain
Project number 60532148

Co-ordinates 1893092.201mE 5816442.967mN
Orientation -90° Elevation 2m (Approx)
Location Te Puke
Feature Armer Farms Ltd

GEOLOGICAL DESCRIPTION	Test Records (Shear Vane residual - peak 0 - 200 kPa; N Values 0 - 50)	Drilling Method / Casing remarks	Core Loss/Lift 0 - 100%	Depth	Graphic Log	SOIL PROPERTIES	Instrumentation
TAURANGA GROUP		HQ3		6		2.65m: Fine SAND, minor organic fragments; grey. Saturated, poorly garded. Organic fragments, sticks and wood, slightly decomposed. *(continued)* 5.4m: No silt. 5.8 to 6m: Minor shells.	
		HQ3		7		6.9 to 8.25m: Core Loss	
		HQ3		8		8.25m: Fine SAND, trace organic fragments; grey. Saturated, poorly garded. Organic fragments, sticks and wood, slightly decomposed. 8.5m: Fine to medium SAND. 8.8m: Fine to coarse SAND, trace organic fragments; grey. Saturated, well garded. Organic fragments, sticks and wood, slightly decomposed.	
		HQ3		9		9 to 10.2m: Core Loss	

FLUID DEPTHS DURING DRILLING

Date Time	Drilled Depth (m)	Casing Depth (m)	Fluid Depth (m)

Hand Held Shear Vane

vane shear strength per NZGS guideline

Remarks
Elevation RL's estimated from Council lidar data.

New Zealand Transverse Mercator Projection

Casing Details
Depth Diameter

Date logged
Logged AH
Checked DM

Driller Perry
Started 30/08/2018
Drill Rig Tractor Rig
Finished 30/08/2018
Core Boxes 3

DRILLHOLE LOG SOIL 20180914 WAIARI WATERMAIN.GPJ BASE.GDT 14/09/18

Date Printed: 14/09/2018

NZGD ID: 112218

NZGD ID: 112218

AECOM

LOG OF DRILLHOLE

HOLE IDENTIFICATION **BH227**

Client Tauranga City Council
Project Waiari Watermain
Project number 60532148

Co-ordinates 1893092.201mE 5816442.967mN
Orientation -90° Elevation 2m (Approx)
Location Te Puke
Feature Armer Farms Ltd

GEOLOGICAL DESCRIPTION	Test Records: Shear Vane residual - peak 0 - 200 kPa	Test Records: N Values 0 - 50	Drilling Method / Casing remarks	Core Loss/Lift 0 - 100%	Depth	Graphic Log	SOIL PROPERTIES	Instrumentation
			HQ3				9 to 10.2m: Core Loss *(continued)*	
							10.2m: Fine to coarse SAND, trace silt, trace gravel. Saturated, well graded. Gravel, fine, subrounded.	
							10.35m: Fine, subrounded GRAVEL, minor sand; black. Saturated, well graded. Sand, fien to coarse. Some material bound together to form large gravel-sized clumps. 10.4 to 10.45m: White.	
							BH227 terminated at 10.5m Target Depth	
					11			
					12			
					13			
					14			

Soil properties: Subordinate MAJOR minor; colour; structure. Strength; moisture condition; grading; bedding; plasticity; sensitivity; major fraction description; subordinate fraction description; minor fraction description etc

FLUID DEPTHS DURING DRILLING

Date Time	Drilled Depth (m)	Casing Depth (m)	Fluid Depth (m)
30/08/2018 00:00	10.50	-	0.5

Hand Held Shear Vane

vane shear strength per NZGS guideline

Remarks
Elevation RL's estimated from Council lidar data.

New Zealand Transverse Mercator Projection

Casing Details
Depth Diameter

Date logged
Logged AH
Checked DM

Driller Perry
Started 30/08/2018
Drill Rig Tractor Rig
Finished 30/08/2018
Core Boxes 3

DRILLHOLE LOG SOIL 20180914 WAIARI WATERMAIN.GPJ BASE.GDT 14/09/18

Date Printed: 14/09/2018

NZGD ID: 112218

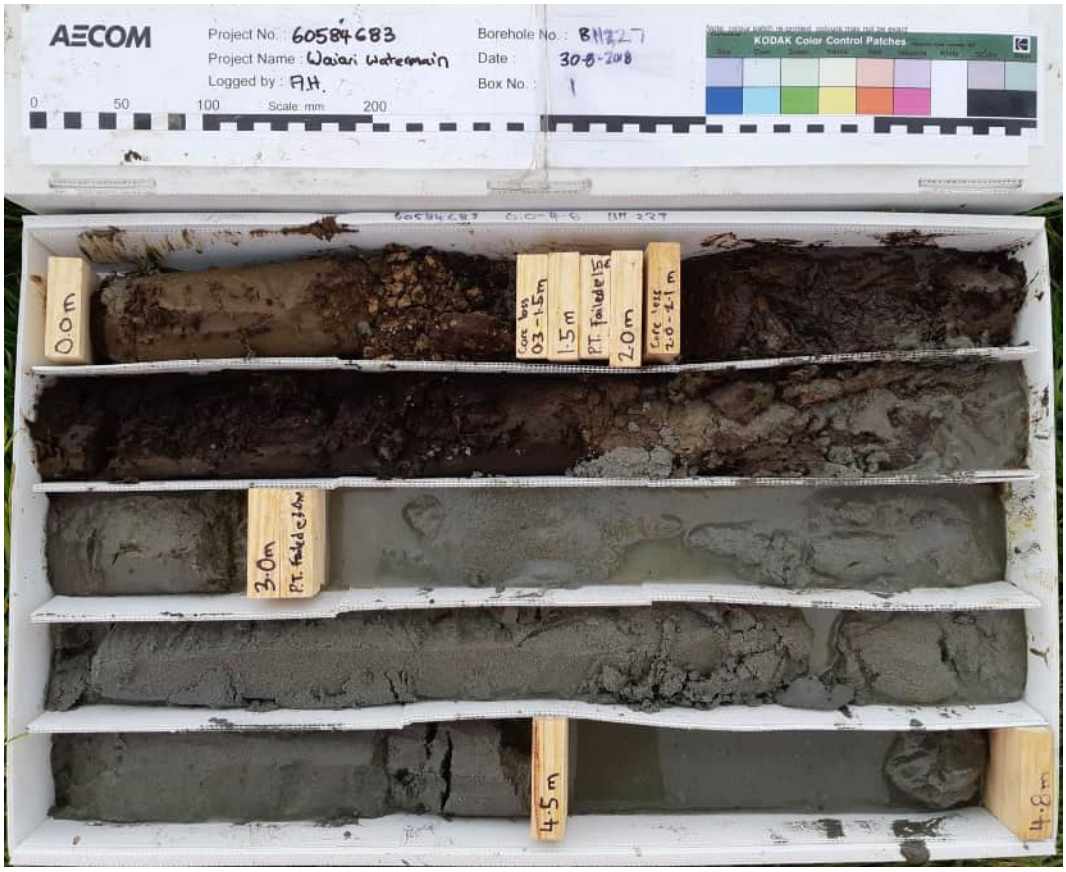
PHOTOGRAPHIC LOG OF DRILLHOLE

AECOM

Project Waiari Watermain

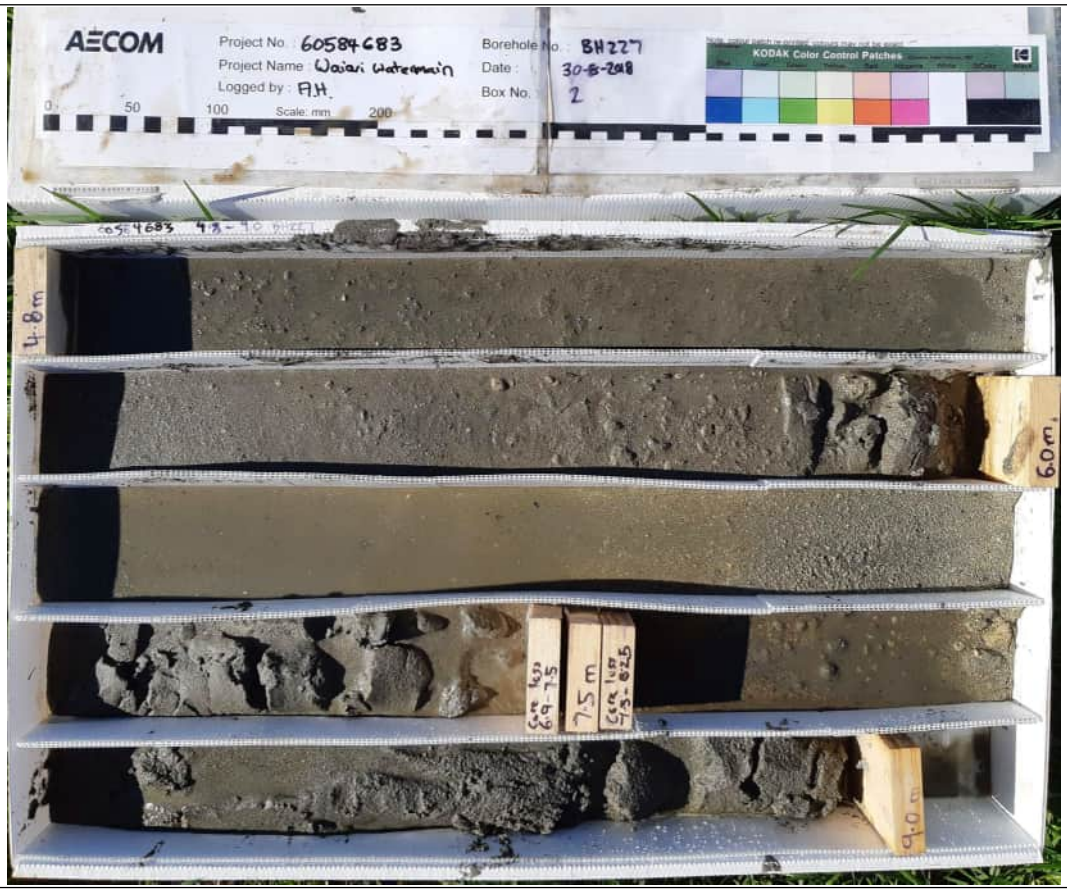
Location Te Puke

HOLE IDENTIFICATION **BH227**



Box: 1 of 3 - Depth: 00.00m to 04.80m of 10.50m

Date Drilled 30/08/2018 to 30/08/2018



Box: 2 of 3 - Depth: 04.80m to 09.00m of 10.50m

Date Drilled 30/08/2018 to 30/08/2018

NZGD ID: 112218

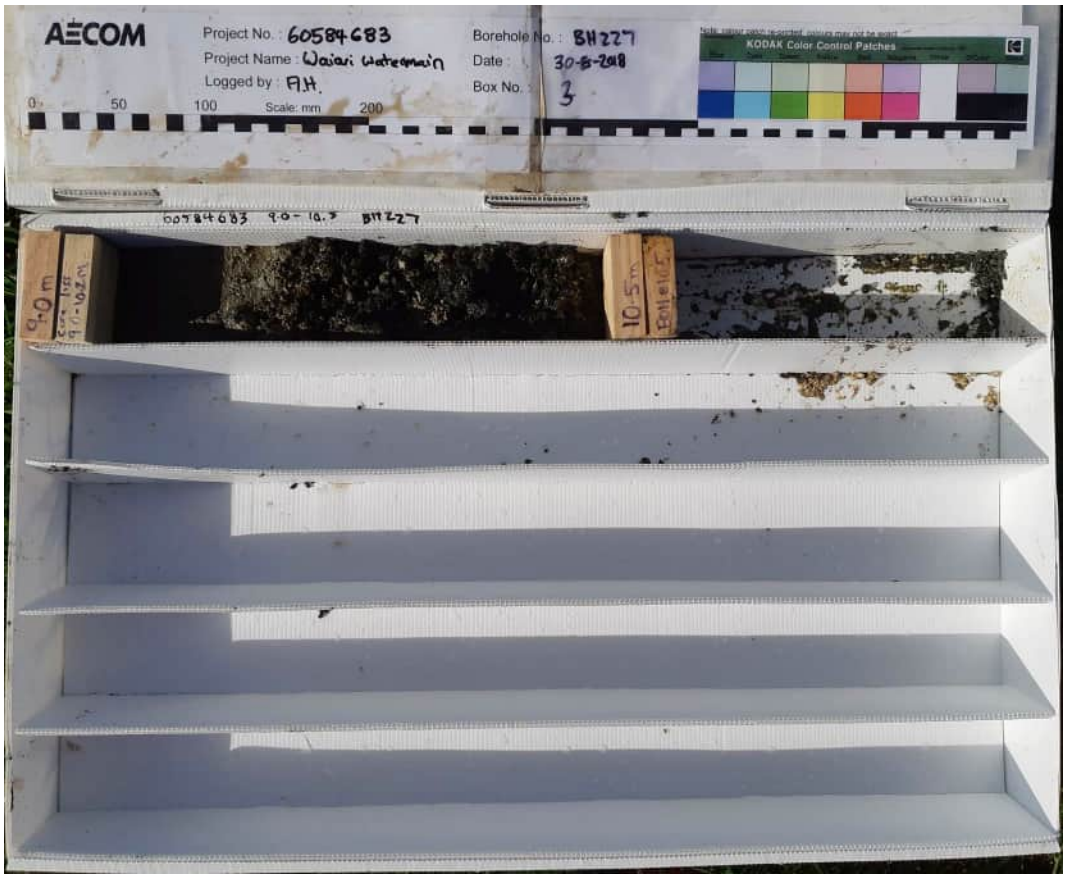
AECOM

PHOTOGRAPHIC LOG OF DRILLHOLE

Project Waiari Watermain

Location Te Puke

HOLE IDENTIFICATION **BH227**



Box: 3 of 3 - Depth: 09.00m to 10.50m of 10.50m

Date Drilled 30/08/2018 to 30/08/2018

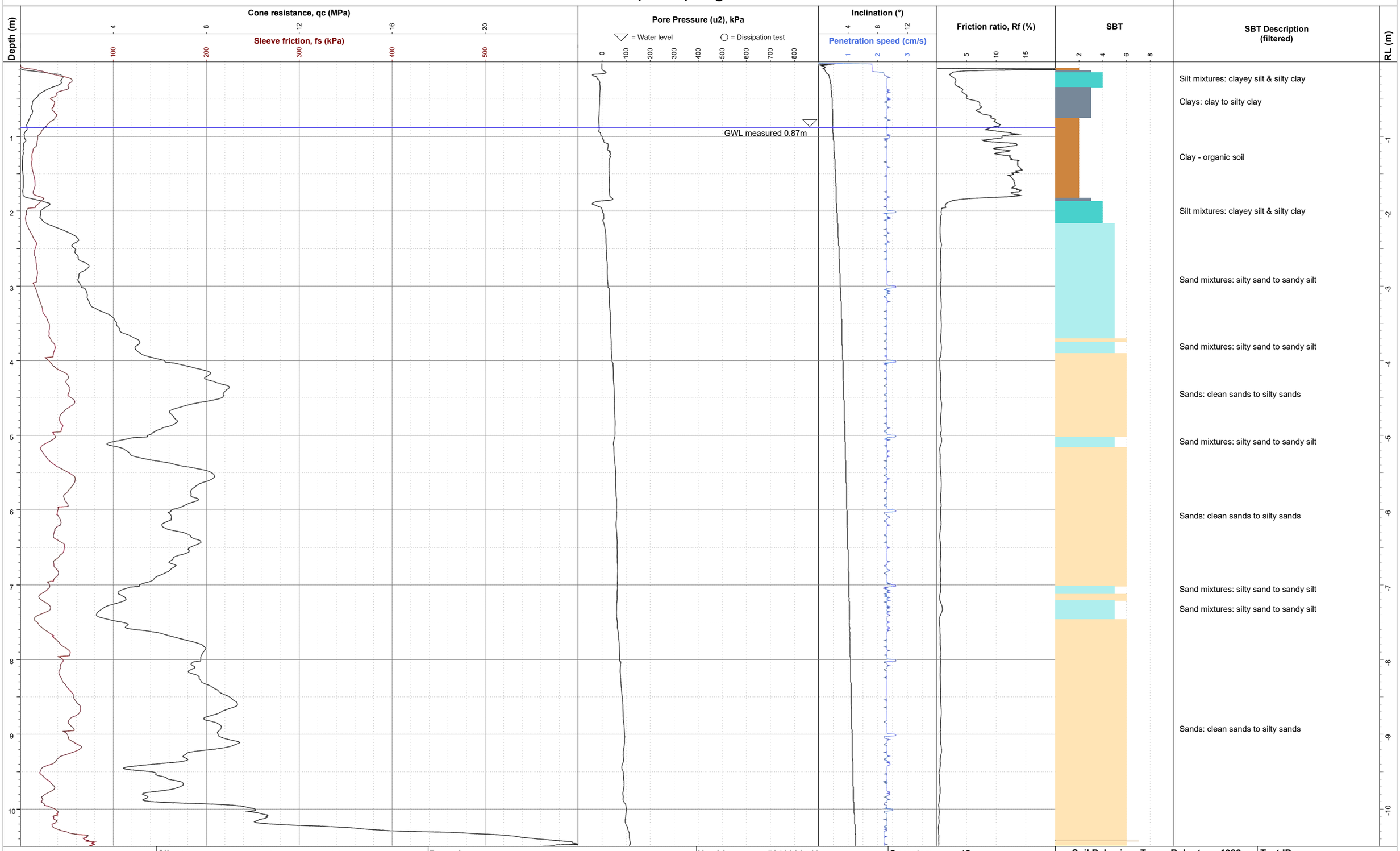
NZGD ID: 112218

APPENDIX 3:

Cone Penetrometer Tests

Cone Penetration Test (CPTu) Log

Test ID: CPT-01



SBT Description (filtered)

- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Clay - organic soil
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.87M

Termination Reason:
Target Depth

Northing: 5819036mN
Easting: 1893326mE
System:
Elevation: Ground
Located By: GPS Pagani
Location:

Operator: *JC*
Rig: *TG63-150 Pagani*
Cone ID: *MKJ650*
Type: *PC*
Cone Area: *10.00*
Sleeve Area: *150*
Area Ratio: *0.7864*

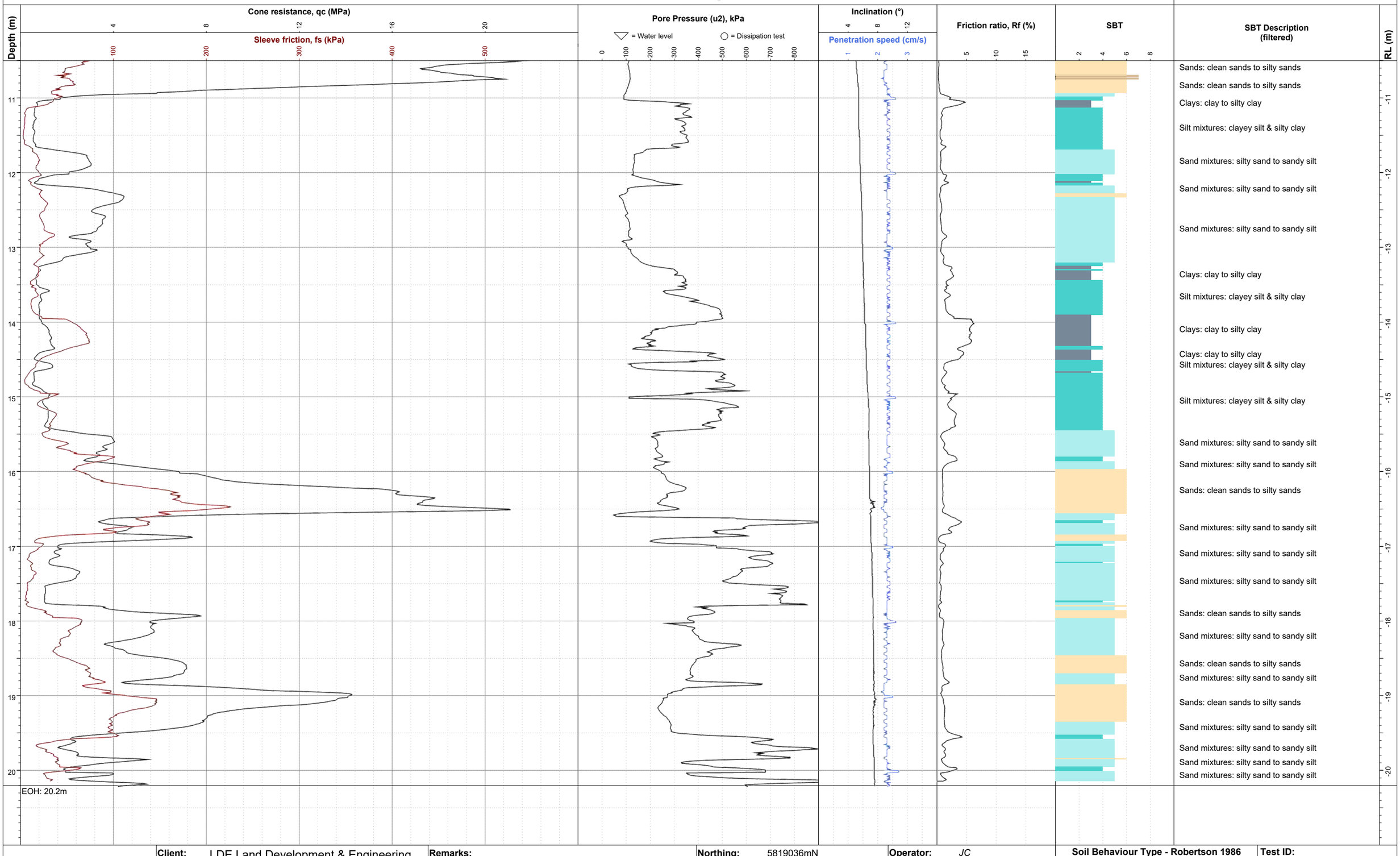
Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-01
Project ID: 17255:P2
Depth: 20.2m
Sheet: 1 of 2
Date: *21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-01



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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.87M

Termination Reason:
Target Depth

Northing:	5819036mN
Easting:	1893326mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

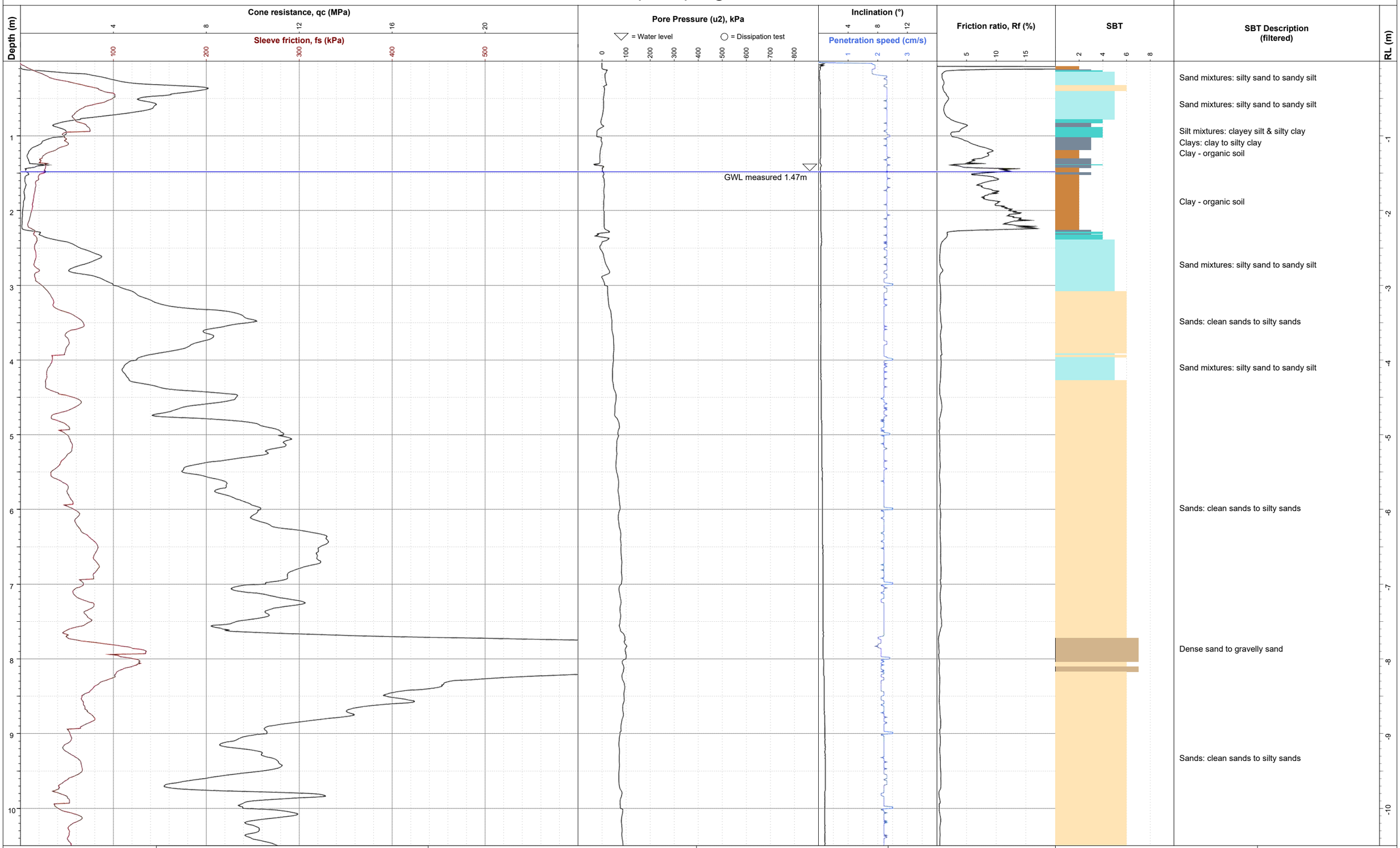
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-01

Project ID:	17255:P2
Depth:	20.2m
Sheet:	2 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-02



SBT Description (filtered)

- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
  Clays: clay to silty clay
  Clay - organic soil
- Clay - organic soil
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Dense sand to gravelly sand
- Sands: clean sands to silty sands

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 1.47M

Termination Reason:
Target Depth

Northing:	5818776mN
Easting:	1893716mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Test ID: CPT-02

Project ID:	17255:P2
Depth:	20.21m
Sheet:	1 of 2
Date:	*21/11/2019*

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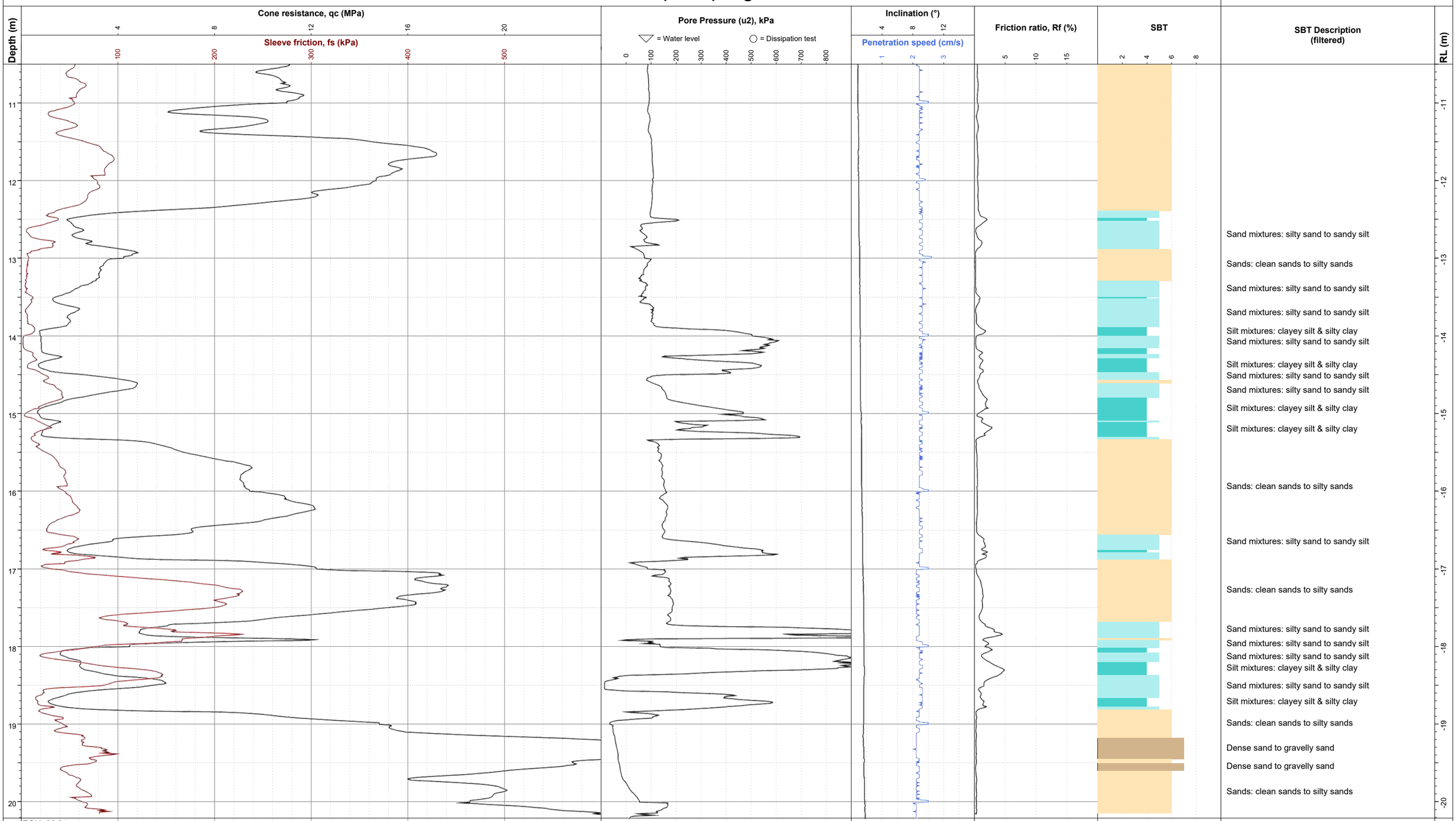
Cone Penetration Test (CPTu) Log

Test ID: CPT-02



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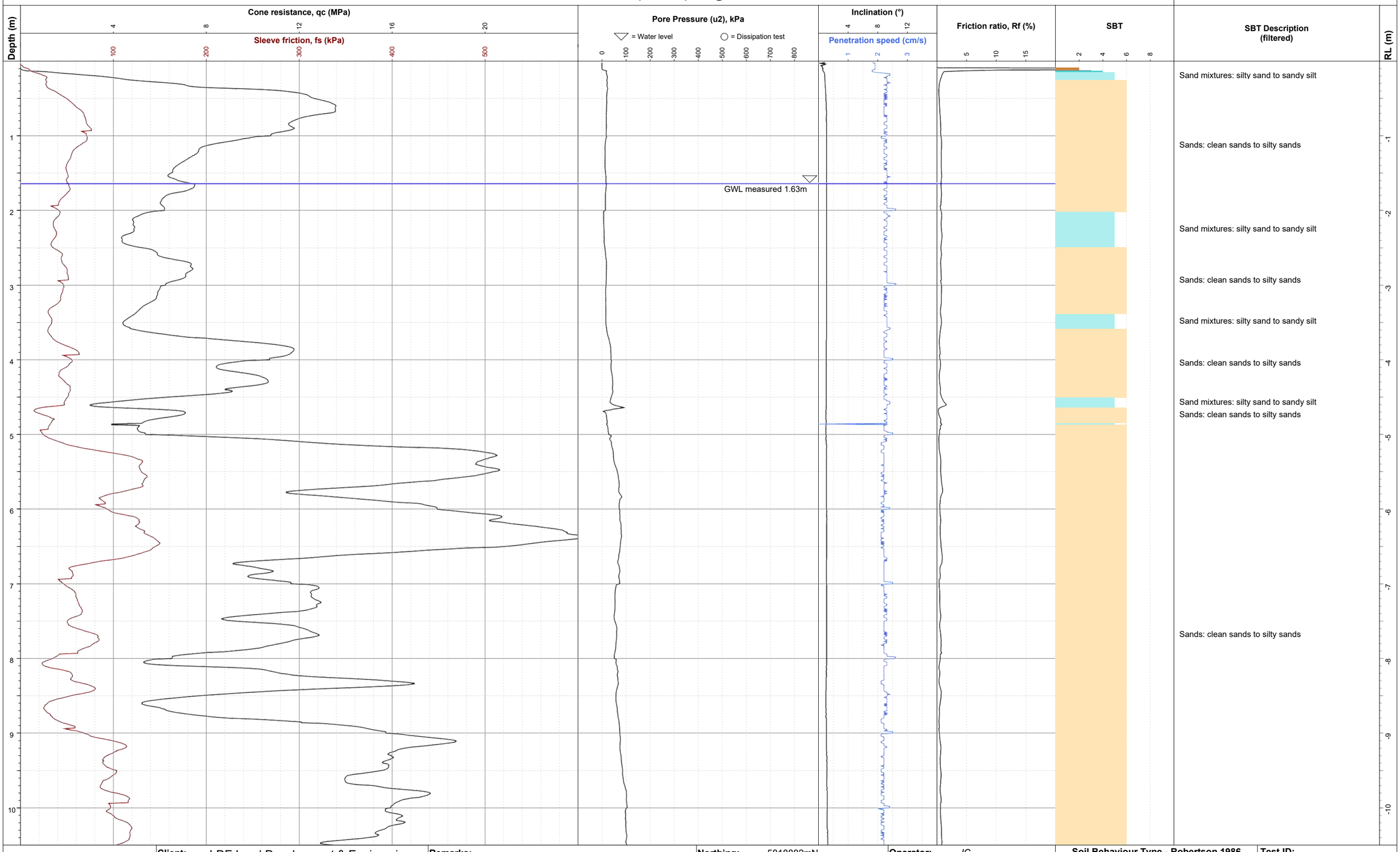
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 1.47M	**Northing:**	5818776mN	**Operator:**	*JC*	**Test ID:** CPT-02
Project:	Geotechnical Investigation	**Termination Reason:** Target Depth	**Easting:**	1893716mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 20.21m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 2 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *21/11/2019*
			Location:		**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-03



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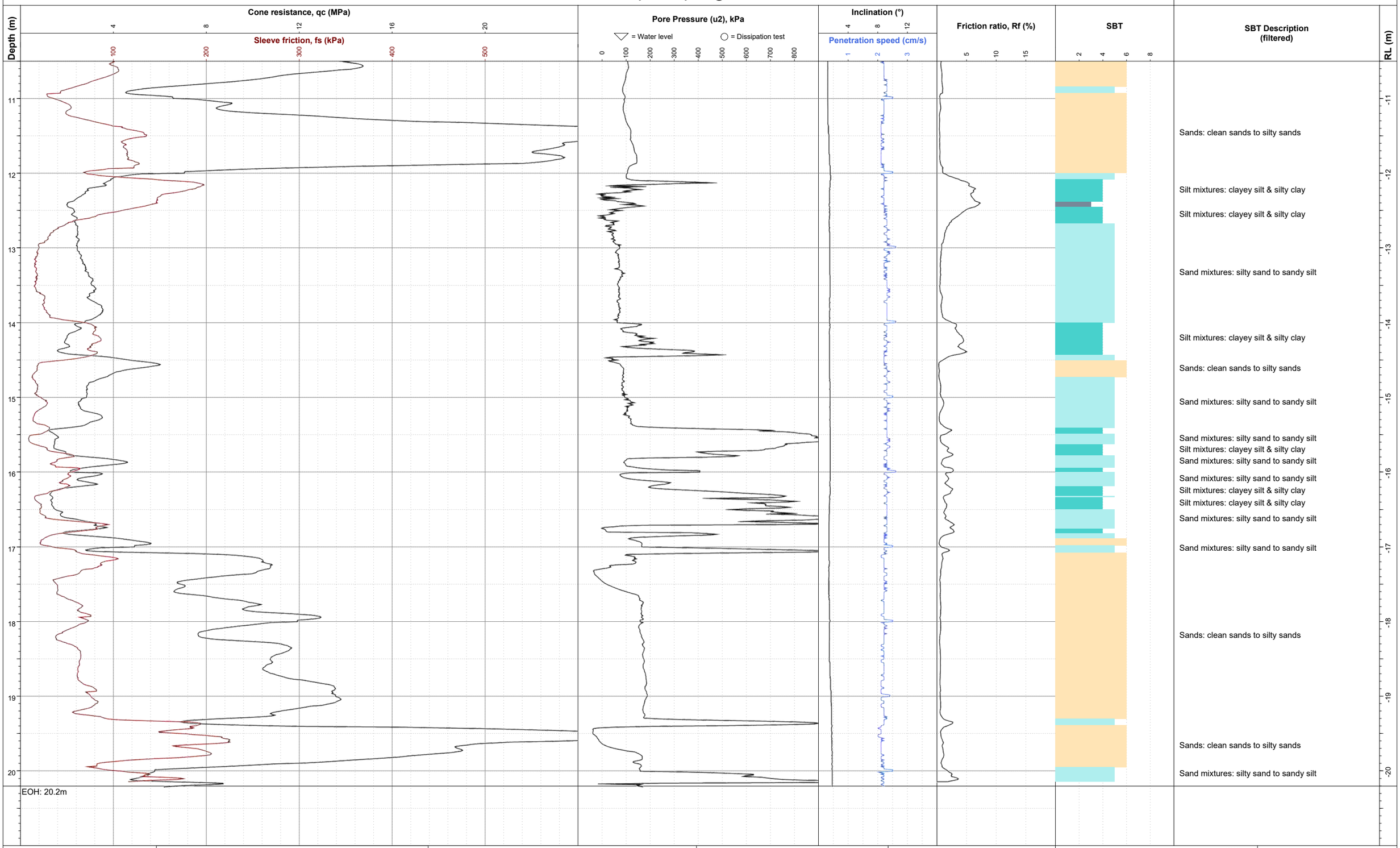
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 1.63M	**Northing:**	5818882mN	**Operator:**	*JC*	**Test ID:** CPT-03
Project:	Geotechnical Investigation	**Termination Reason:** Target Depth	**Easting:**	1893937mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 20.2m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 1 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *21/11/2019*
			Location:		**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-03



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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 1.63M

Termination Reason:
Target Depth

Northing:	5818882mN
Easting:	1893937mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-03

Project ID:	17255:P2
Depth:	20.2m
Sheet:	2 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-04

Depth (m)

Cone resistance, qc (MPa) — 4, 8, 12, 16, 20

Sleeve friction, fs (kPa) — 100, 200, 300, 400, 500

Pore Pressure (u2), kPa — = Water level, = Dissipation test — 0, 100, 200, 300, 400, 500, 600, 700, 800

Inclination (°) — 4, 8, 12

Penetration speed (cm/s) — 1, 2, 3

Friction ratio, Rf (%) — 5, 10, 15

SBT — 2, 4, 6, 8

GWL measured 0.87m

Depth (m)	SBT Description (filtered)
0	Sand mixtures: silty sand to sandy silt
	Silt mixtures: clayey silt & silty clay
	Clays: clay to silty clay
	Clay - organic soil
1	Clays: clay to silty clay
	Clay - organic soil
	Sand mixtures: silty sand to sandy silt
	Sands: clean sands to silty sands
2	Sand mixtures: silty sand to sandy silt
	Sands: clean sands to silty sands
	Sand mixtures: silty sand to sandy silt
3	Sands: clean sands to silty sands
	Sand mixtures: silty sand to sandy silt
4	Sands: clean sands to silty sands
5	Sands: clean sands to silty sands
6	Sand mixtures: silty sand to sandy silt
7	Sands: clean sands to silty sands
8	Dense sand to gravelly sand
9	Sands: clean sands to silty sands
10	

RL (m): 0, -1, -2, -3, -4, -5, -6, -7, -8, -9, -10

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.87M

Termination Reason:
Target Depth

Northing:	5818707mN
Easting:	1894045mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

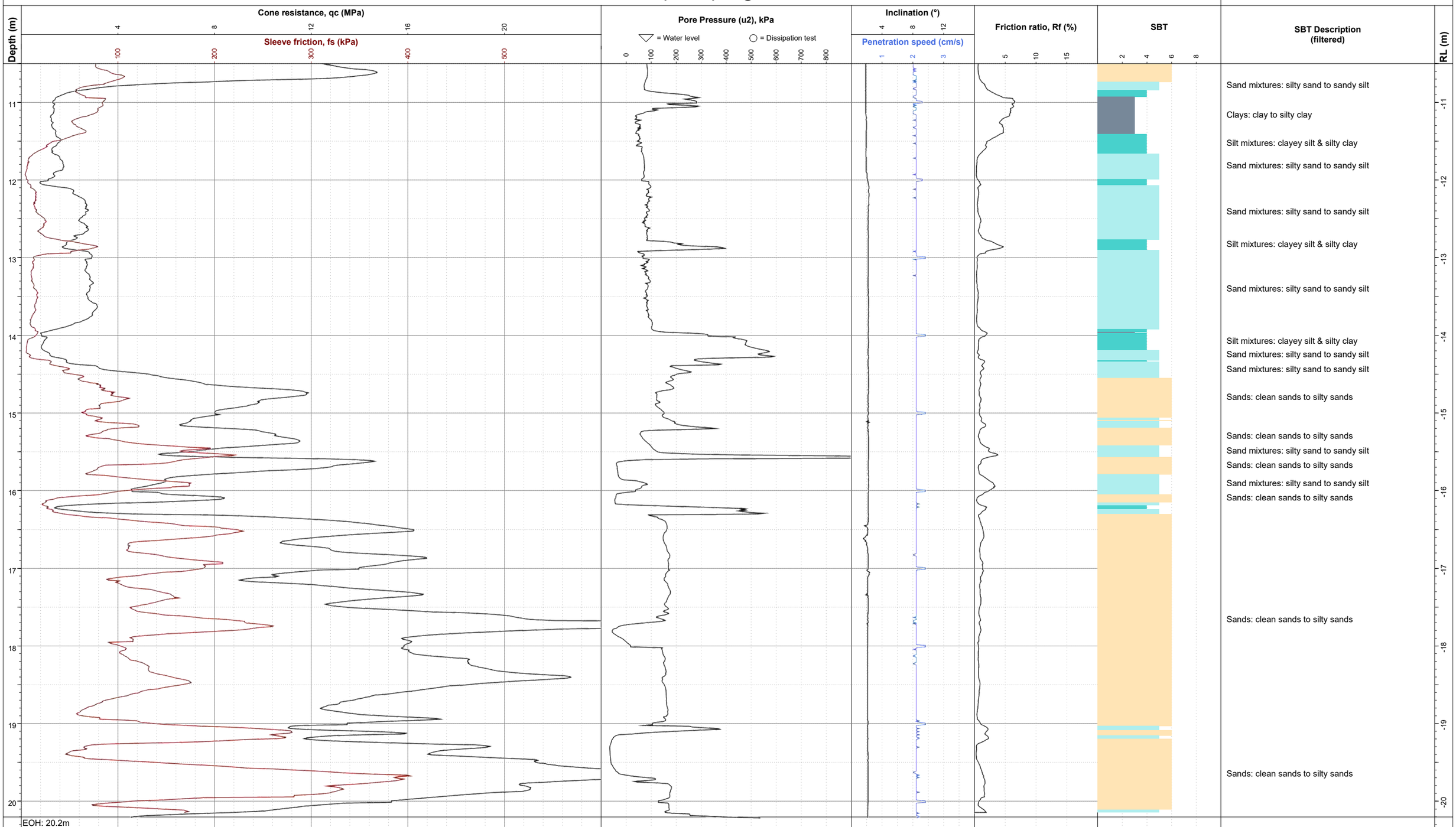
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-04

Project ID:	17255:P2
Depth:	20.2m
Sheet:	1 of 2
Date:	*22/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-04



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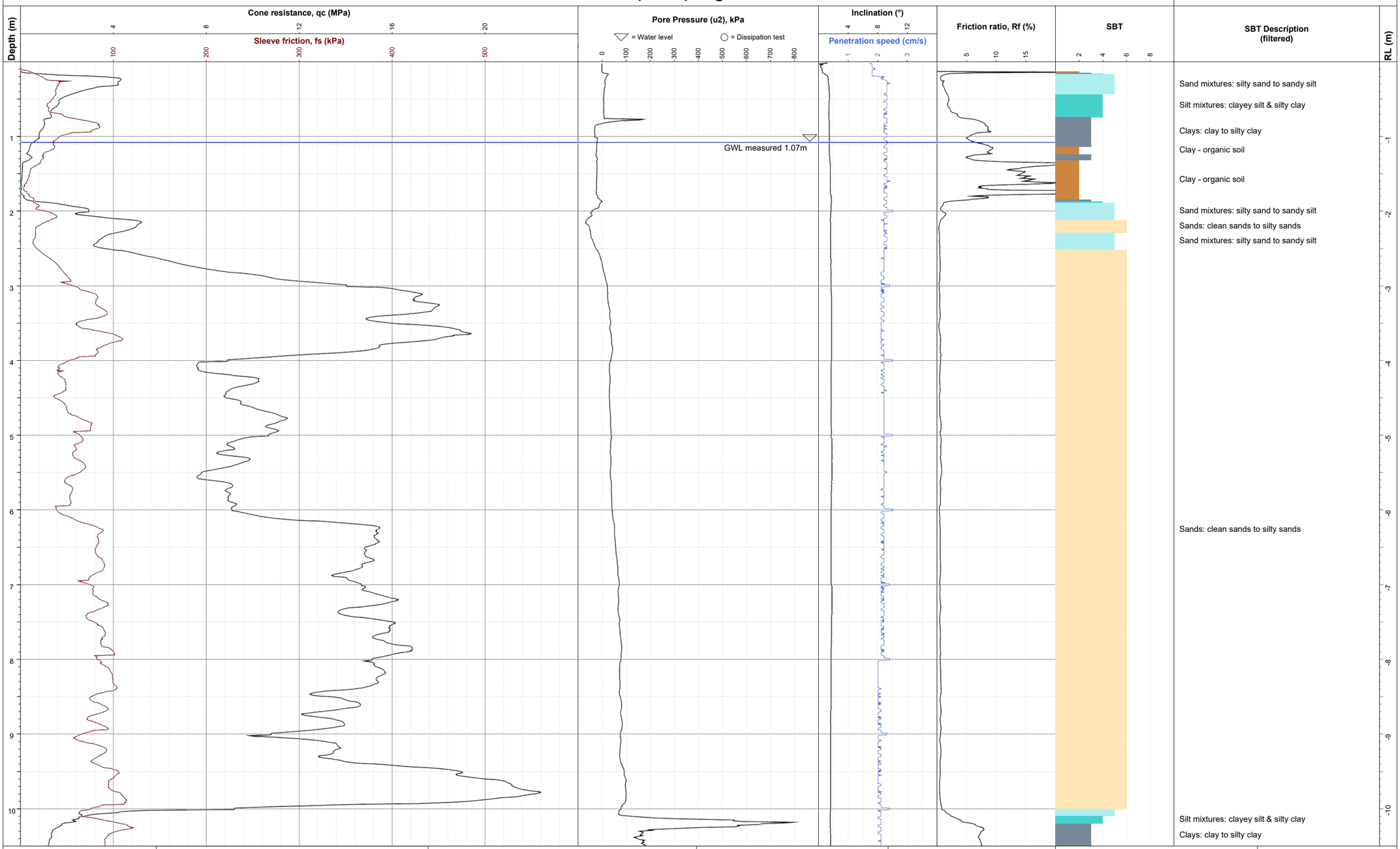
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.87M	**Northing:**	5818707mN	**Operator:**	*JC*	**Test ID:** CPT-04
Project:	Geotechnical Investigation	**Termination Reason:** Target Depth	**Easting:**	1894045mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 20.2m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 2 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *22/11/2019*
			Location:		**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-05



SBT Description (filtered)

Sand mixtures: silty sand to sandy silt
Silt mixtures: clayey silt & silty clay
Clays: clay to silty clay
Clay - organic soil
Clay - organic soil
Sand mixtures: silty sand to sandy silt
Sands: clean sands to silty sands
Sand mixtures: silty sand to sandy silt
Sands: clean sands to silty sands
Silt mixtures: clayey silt & silty clay
Clays: clay to silty clay

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering
Project: Geotechnical Investigation
Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 1.07M

Termination Reason:
Target Depth

Northing: 5818532mN
Easting: 1894216mE
System:
Elevation: Ground
Located By: GPS Pagani
Location: North

Operator: *JC*
Rig: *TG63-150 Pagani*
Cone ID: *MKJ650*
Type: *PC*
Cone Area: *10.00*
Sleeve Area: *150*
Area Ratio: *0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-05
Project ID: 17255:P2
Depth: 20.2m
Sheet: 1 of 2
Date: *21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-05

Depth (m) | Cone resistance, qc (MPa) | Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa | Inclination (°) | Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT | SBT Description (filtered) | RL (m)

= Water level = Dissipation test

SBT Description (filtered):

- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands

EOH: 20.2m

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Client:	LDE Land Development & Engineering	**Remarks:** GWL: 1.07M	**Termination Reason:** Target Depth
Project:	Geotechnical Investigation		
Location:	Bell Road, Papamoa, Tauranga		

Northing:	5818532mN
Easting:	1894216mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	North

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

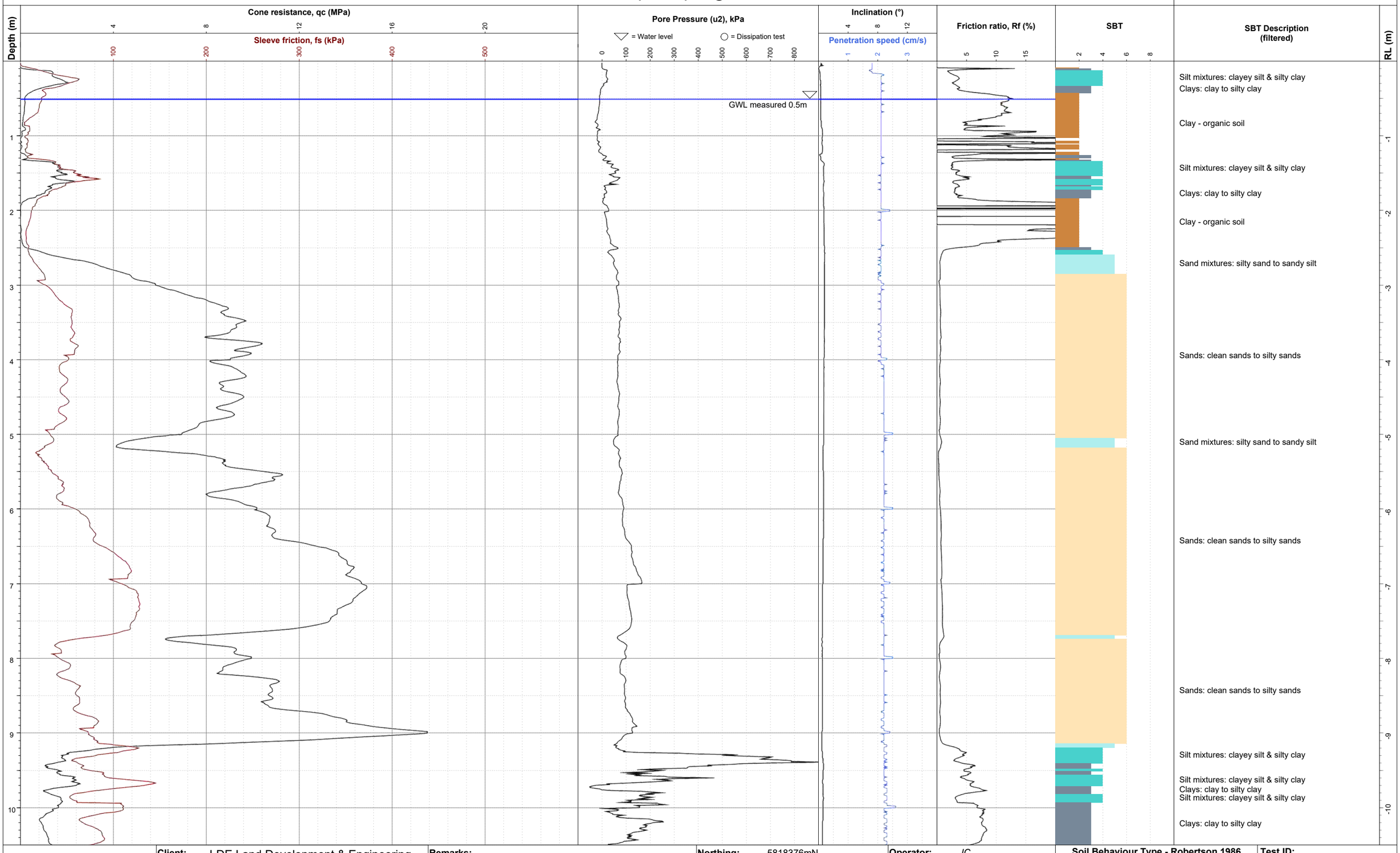
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-05

Project ID:	17255:P2
Depth:	20.2m
Sheet:	2 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-06



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LDE LAND DEVELOPMENT & ENGINEERING

Client:	LDE Land Development & Engineering
Project:	Geotechnical Investigation
Location:	Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.50M

Termination Reason:
Limit Of Reaction Force

Northing:	5818376mN
Easting:	1894522mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	North

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

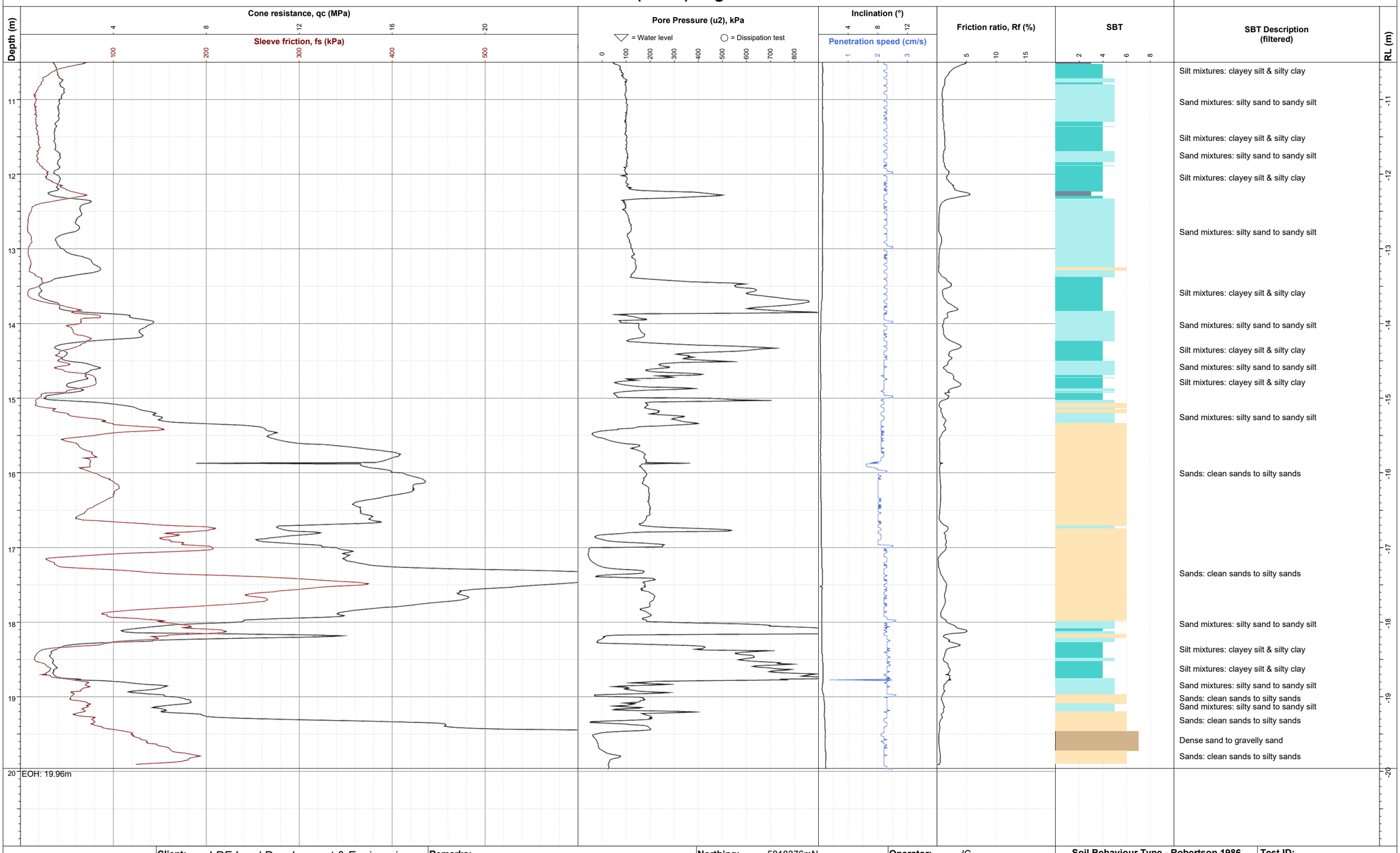
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-06

Project ID:	17255:P2
Depth:	19.96m
Sheet:	1 of 2
Date:	*20/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-06



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Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.50M	**Northing:**	5818376mN	**Operator:**	*JC*	**Test ID:** CPT-06
Project:	Geotechnical Investigation	**Termination Reason:** Limit Of Reaction Force	**Easting:**	1894522mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 19.96m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 2 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *20/11/2019*
			Location:	North	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-07

Cone resistance, qc (MPa) | Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa | Inclination (°) | Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT

= Water level ○ = Dissipation test

GWL measured 0.89m

Depth (m)	SBT Description (filtered)	RL (m)
0	Silt mixtures: clayey silt & silty clay	
	Clays: clay to silty clay	
1	Clay - organic soil	-1
2	Sand mixtures: silty sand to sandy silt	-2
3	Sand mixtures: silty sand to sandy silt	-3
	Sands: clean sands to silty sands	
4	Sand mixtures: silty sand to sandy silt	-4
	Sands: clean sands to silty sands	
5	Sands: clean sands to silty sands	-5
6	Sands: clean sands to silty sands	-6
7	Sands: clean sands to silty sands	-7
8	Sands: clean sands to silty sands	-8
9	Sands: clean sands to silty sands	-9
	Silt mixtures: clayey silt & silty clay	
10	Clays: clay to silty clay	-10
	Clays: clay to silty clay	

LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.89M

Termination Reason:
Target Depth

Northing: 5818700mN
Easting: 1893222mE
System:
Elevation: Ground
Located By: GPS Pagani
Location:

Operator: *JC*
Rig: *TG63-150 Pagani*
Cone ID: *MKJ650*
Type: *PC*
Cone Area: *10.00*
Sleeve Area: *150*
Area Ratio: *0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-07
Project ID: 17255:P2
Depth: 18.97m
Sheet: 1 of 2
Date: *21/11/2019*

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Cone Penetration Test (CPTu) Log

Test ID: CPT-07

Depth (m) | Cone resistance, qc (MPa) | Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa | = Water level | = Dissipation test | Inclination (°) | Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT | SBT Description (filtered) | RL (m)

- 11 — Silt mixtures: clayey silt & silty clay
- 12 — Silt mixtures: clayey silt & silty clay; Silt mixtures: clayey silt & silty clay; Silt mixtures: clayey silt & silty clay; Clays: clay to silty clay
- 13 — Sand mixtures: silty sand to sandy silt
- 14 — Silt mixtures: clayey silt & silty clay; Silt mixtures: clayey silt & silty clay; Clays: clay to silty clay
- 15 — Sands: clean sands to silty sands; Sand mixtures: silty sand to sandy silt; Sand mixtures: silty sand to sandy silt
- 16 — Sands: clean sands to silty sands; Sand mixtures: silty sand to sandy silt
- 17 — Silt mixtures: clayey silt & silty clay; Silt mixtures: clayey silt & silty clay; Silt mixtures: clayey silt & silty clay
- 18 — Sand mixtures: silty sand to sandy silt; Sands: clean sands to silty sands
- 19 — Sands: clean sands to silty sands; EOH: 18.97m
- 20

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.89M

Termination Reason:
Target Depth

Northing:	5818700mN
Easting:	1893222mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

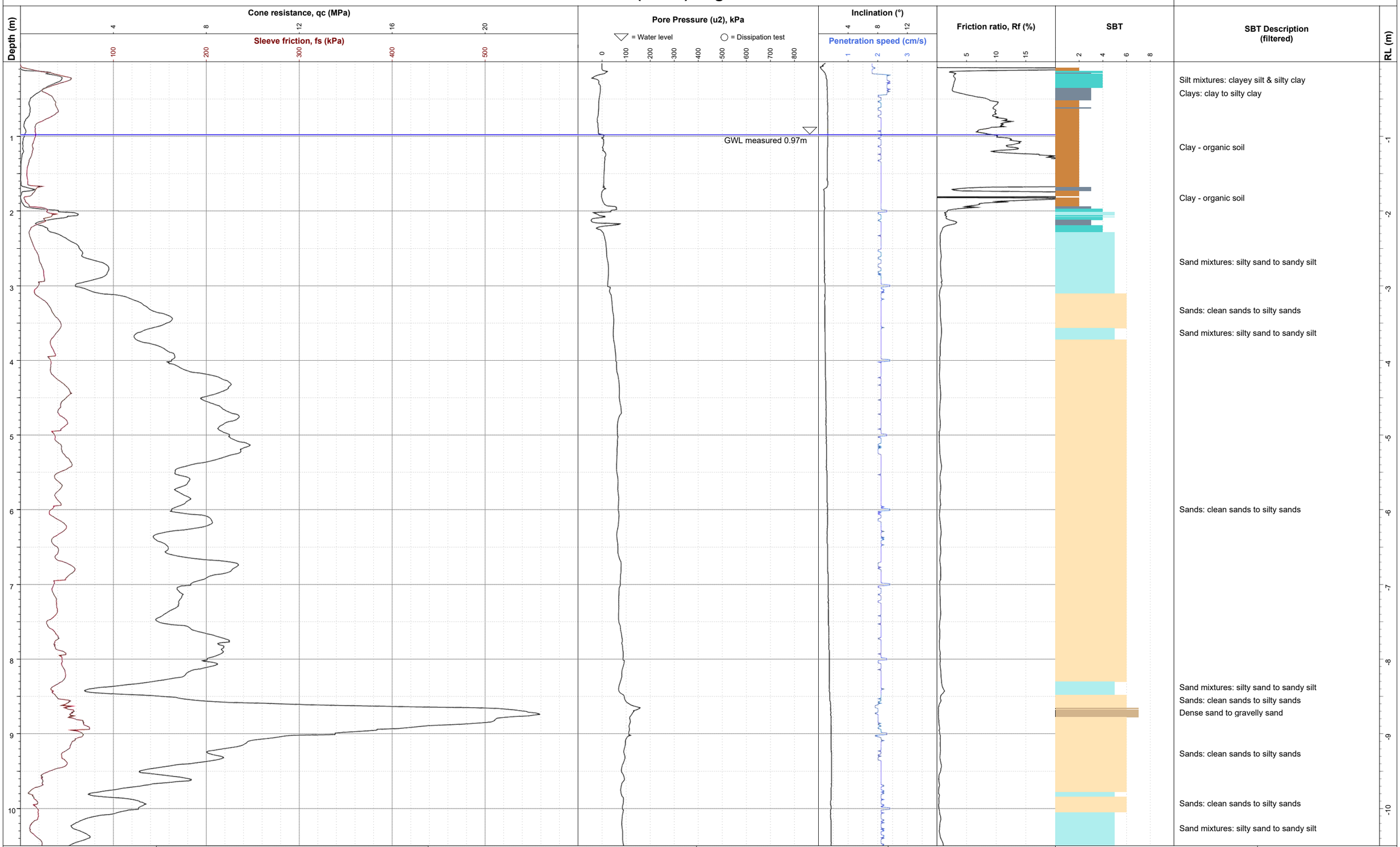
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-07

Project ID:	17255:P2
Depth:	18.97m
Sheet:	2 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-08



SBT Description (filtered)

- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Clay - organic soil
- Clay - organic soil
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Dense sand to gravelly sand
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.97M

Termination Reason:
Limit Of Reaction Force

Northing:	5818649mN
Easting:	1893500mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

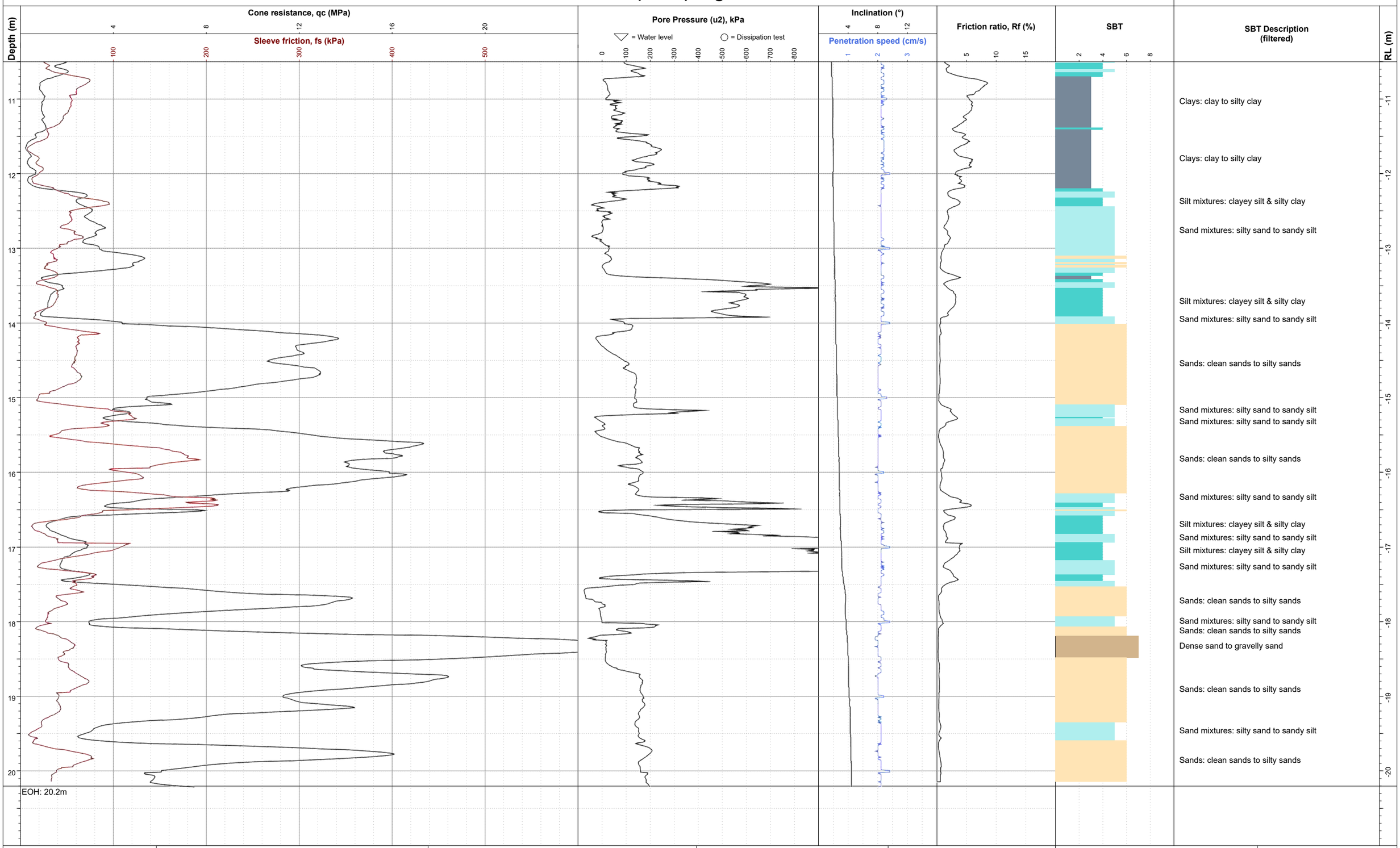
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-08

Project ID:	17255:P2
Depth:	20.2m
Sheet:	1 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-08



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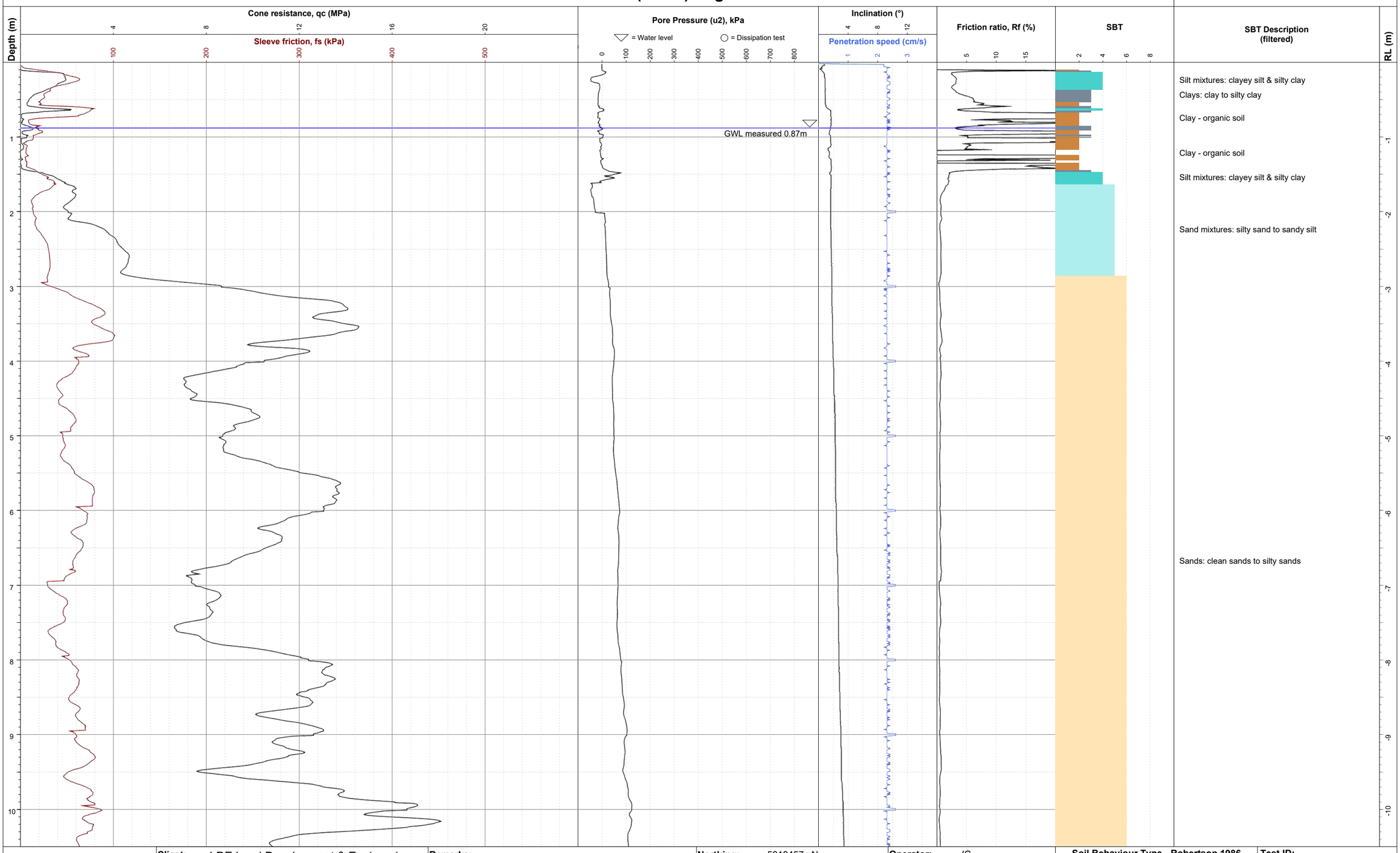
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.97M	**Northing:**	5818649mN	**Operator:**	*JC*	**Soil Behaviour Type - Robertson 1986**
Project:	Geotechnical Investigation		**Easting:**	1893500mE	**Rig:**	*TG63-150 Pagani*	0 Undefined; 1 Sensitive fine-grained; 2 Clay - organic soil; 3 Clays: clay to silty clay; 4 Silt mixtures: clayey silt & silty clay; 5 Sand mixtures: silty sand to sandy silt; 6 Sands: clean sands to silty sands; 7 Dense sand to gravelly sand; 8 Stiff sand to clayey sand; 9 Stiff fine-grained
Location:	Bell Road, Papamoa, Tauranga	**Termination Reason:** Limit Of Reaction Force	**System:**		**Cone ID:**	*MKJ650*	
			Elevation:	Ground	**Type:**	*PC*	**Test ID:** CPT-08
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Project ID:** 17255:P2
			Location:		**Sleeve Area:**	*150*	**Depth:** 20.2m
					Area Ratio:	*0.7864*	**Sheet:** 2 of 2
							Date: *21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-09



SBT Description (filtered)

Silt mixtures: clayey silt & silty clay

Clays: clay to silty clay

Clay - organic soil

Clay - organic soil

Silt mixtures: clayey silt & silty clay

Sand mixtures: silty sand to sandy silt

Sands: clean sands to silty sands

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Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.87M	**Northing:**	5818457mN	**Operator:**	*JC*	**Test ID:** CPT-09
Project:	Geotechnical Investigation	**Termination Reason:** Target Depth	**Easting:**	1893891mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 20.2m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 1 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *22/11/2019*
			Location:		**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

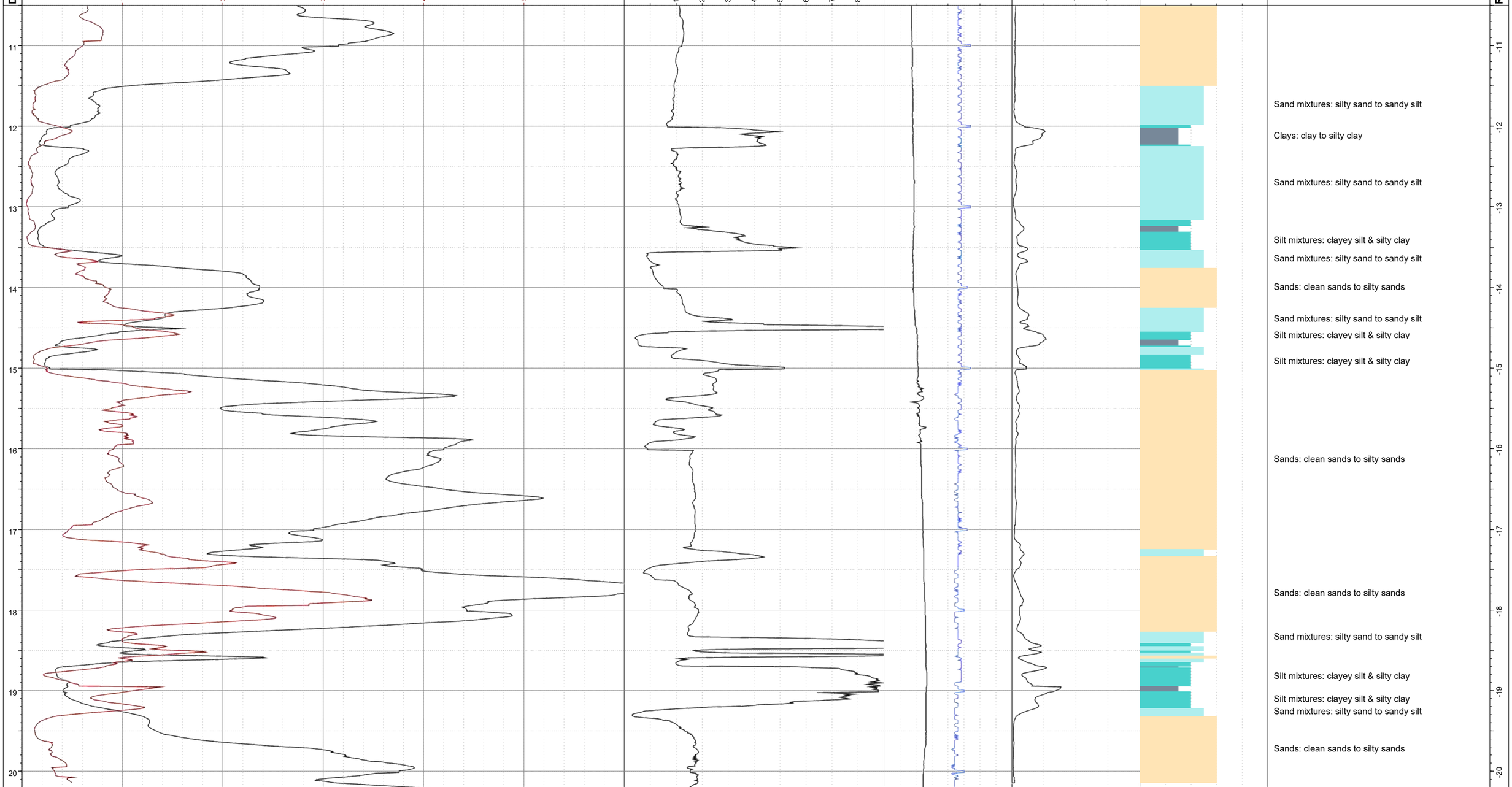
Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-09

Depth (m) | Cone resistance, qc (MPa) / Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa (▽ = Water level, ○ = Dissipation test) | Inclination (°) / Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT | SBT Description (filtered) | RL (m)



Sand mixtures: silty sand to sandy silt

Clays: clay to silty clay

Sand mixtures: silty sand to sandy silt

Silt mixtures: clayey silt & silty clay

Sand mixtures: silty sand to sandy silt

Sands: clean sands to silty sands

Sand mixtures: silty sand to sandy silt

Silt mixtures: clayey silt & silty clay

Silt mixtures: clayey silt & silty clay

Sands: clean sands to silty sands

Sands: clean sands to silty sands

Sand mixtures: silty sand to sandy silt

Silt mixtures: clayey silt & silty clay

Silt mixtures: clayey silt & silty clay

Sand mixtures: silty sand to sandy silt

Sands: clean sands to silty sands

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.87M

Termination Reason:
Target Depth

Northing:	5818457mN
Easting:	1893891mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-09

Project ID:	17255:P2
Depth:	20.2m
Sheet:	2 of 2
Date:	*22/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-010

Cone resistance, qc (MPa) / Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa | Inclination (°) / Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT

= Water level ○ = Dissipation test

GWL measured 0.55m

Depth (m)	SBT Description (filtered)	RL (m)
0		0
1	Clays: clay to silty clay	-1
	Clay - organic soil	
	Clays: clay to silty clay	
	Clay - organic soil	
2	Clay - organic soil	-2
	Clay - organic soil	
3	Clay - organic soil	-3
	Clay - organic soil	
	Clays: clay to silty clay	
	Sand mixtures: silty sand to sandy silt	
4	Sands: clean sands to silty sands	-4
5	Sand mixtures: silty sand to sandy silt	-5
	Sand mixtures: silty sand to sandy silt	
6		-6
7	Sands: clean sands to silty sands	-7
8	Sand mixtures: silty sand to sandy silt	-8
9	Silt mixtures: clayey silt & silty clay	-9
	Clays: clay to silty clay	
10	Silt mixtures: clayey silt & silty clay	-10
	Sand mixtures: silty sand to sandy silt	

LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.55M

Termination Reason:
Target Depth

Northing:	5818330mN
Easting:	1894316mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	North

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-010

Project ID:	17255:P2
Depth:	20.3m
Sheet:	1 of 2
Date:	*20/11/2019*

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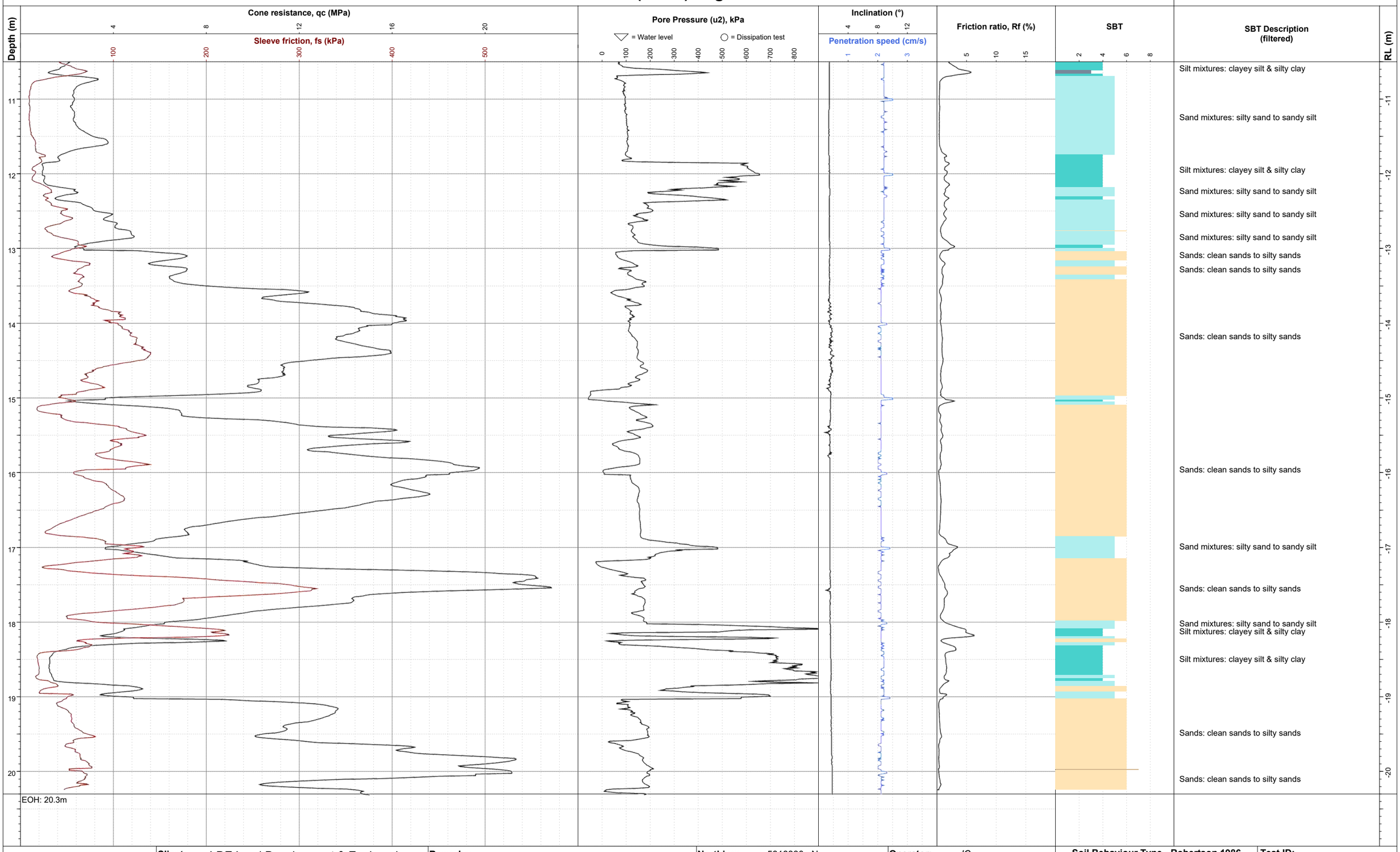
Cone Penetration Test (CPTu) Log

Test ID: CPT-010



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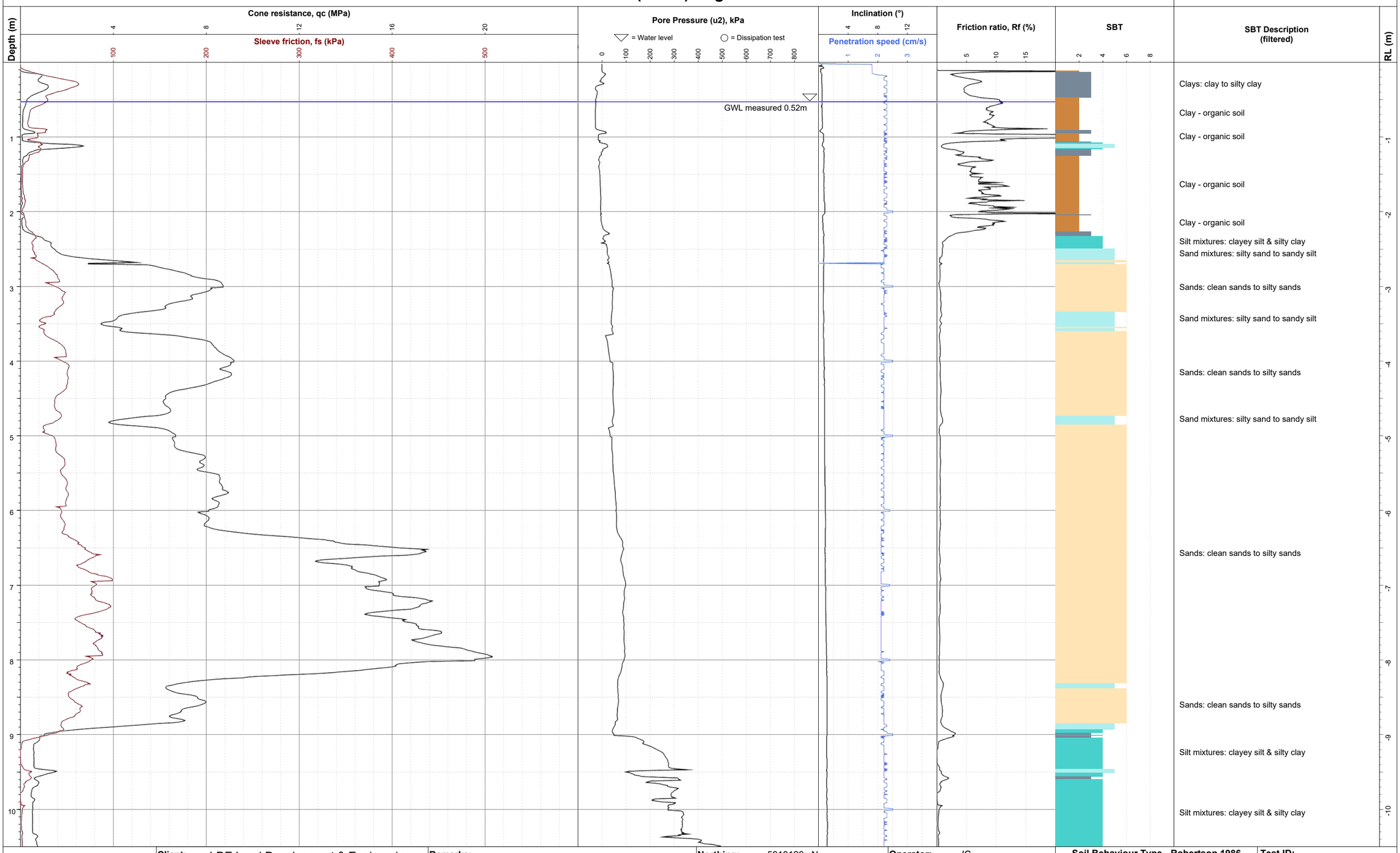
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.55M	**Northing:**	5818330mN	**Operator:**	*JC*	**Soil Behaviour Type - Robertson 1986**
Project:	Geotechnical Investigation	**Termination Reason:** Target Depth	**Easting:**	1894316mE	**Rig:**	*TG63-150 Pagani*	0 Undefined; 1 Sensitive fine-grained; 2 Clay - organic soil; 3 Clays: clay to silty clay; 4 Silt mixtures: clayey silt & silty clay; 5 Sand mixtures: silty sand to sandy silt; 6 Sands: clean sands to silty sands; 7 Dense sand to gravelly sand; 8 Stiff sand to clayey sand; 9 Stiff fine-grained
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	
			Elevation:	Ground	**Type:**	*PC*	
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	
			Location:	North	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Test ID: CPT-010

Project ID:	17255:P2
Depth:	20.3m
Sheet:	2 of 2
Date:	*20/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-011



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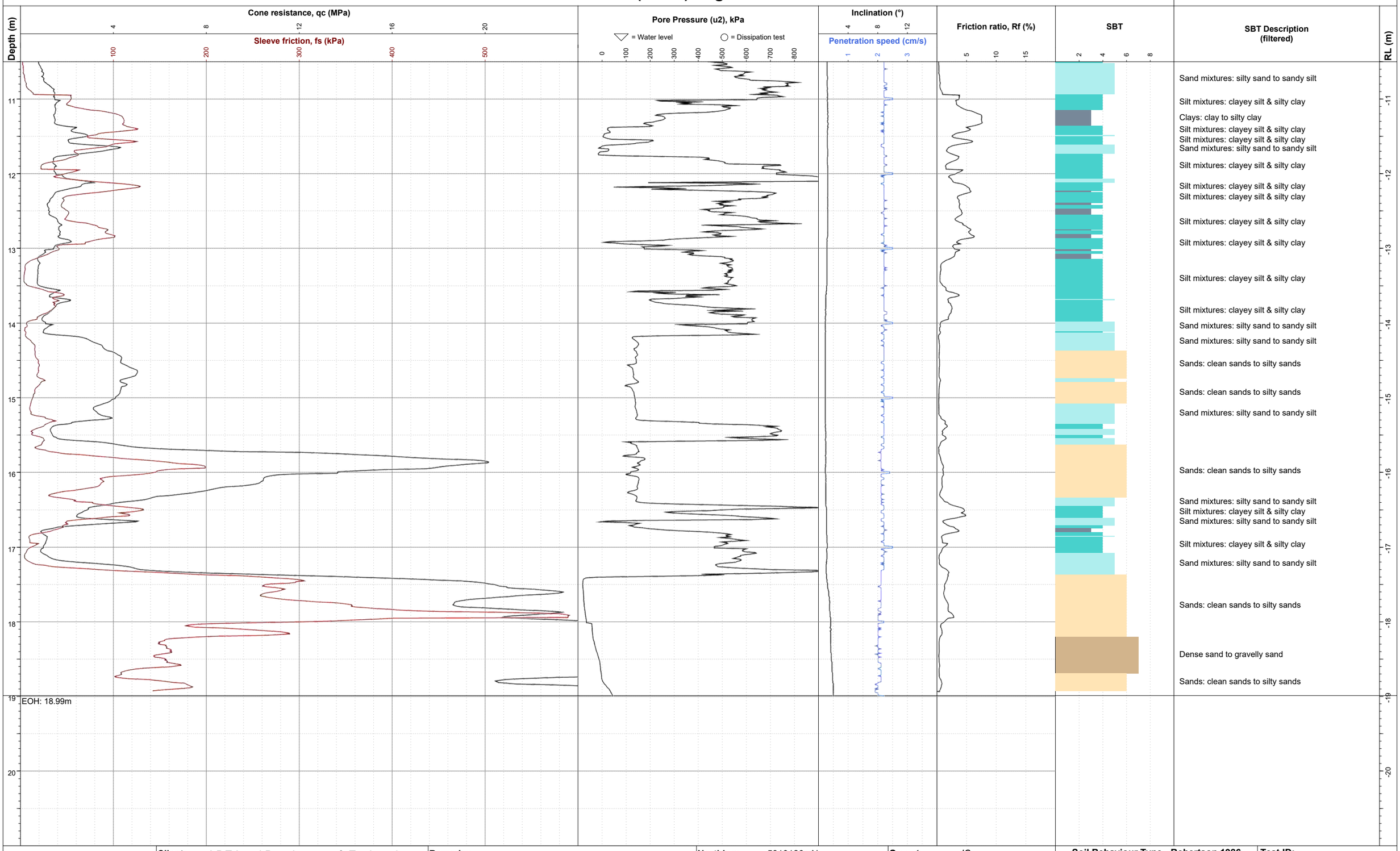
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.52M	**Northing:**	5818126mN	**Operator:**	*JC*	**Test ID:** CPT-011
Project:	Geotechnical Investigation	**Termination Reason:** Limit Of Reaction Force	**Easting:**	1894927mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 18.99m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 1 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *19/11/2019*
			Location:	North East	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-011



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Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.52M	**Northing:**	5818126mN	**Operator:**	*JC*	
Project:	Geotechnical Investigation		**Easting:**	1894927mE	**Rig:**	*TG63-150 Pagani*	
Location:	Bell Road, Papamoa, Tauranga	**Termination Reason:** Limit Of Reaction Force	**System:**		**Cone ID:**	*MKJ650*	
			Elevation:	Ground	**Type:**	*PC*	
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	
			Location:	North East	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

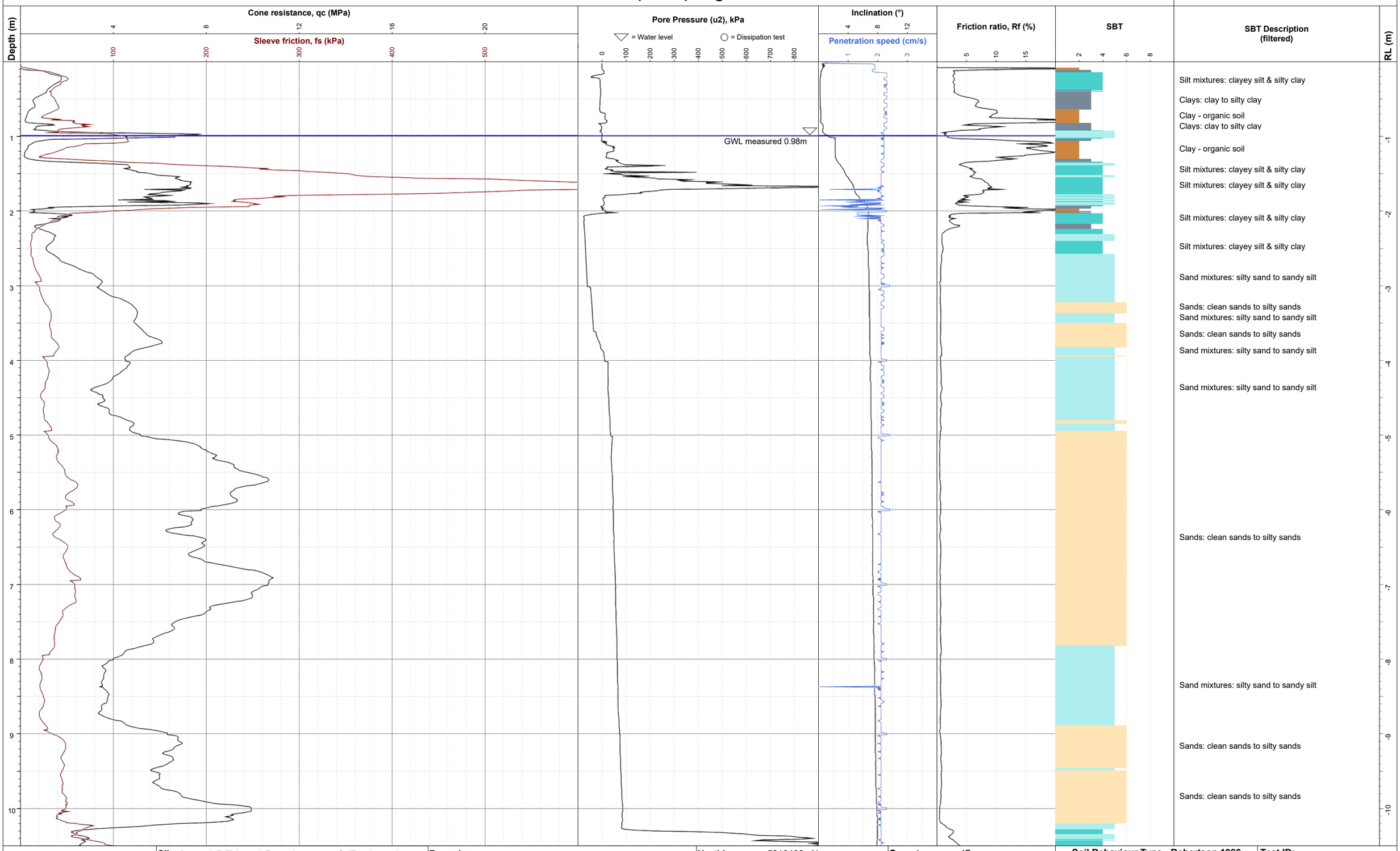
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-011

Project ID:	17255:P2
Depth:	18.99m
Sheet:	2 of 2
Date:	*19/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-012



SBT Description (filtered)

- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Clay - organic soil
- Clays: clay to silty clay
- Clay - organic soil
- Silt mixtures: clayey silt & silty clay
- Silt mixtures: clayey silt & silty clay
- Silt mixtures: clayey silt & silty clay
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.98M

Termination Reason:
Limit Of Reaction Force

Northing:	5818498mN
Easting:	1893255mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-012

Project ID:	17255:P2
Depth:	18.16m
Sheet:	1 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-012

Depth (m) | Cone resistance, qc (MPa) / Sleeve friction, fs (kPa) | Pore Pressure (u2), kPa (= Water level, = Dissipation test) | Inclination (°) / Penetration speed (cm/s) | Friction ratio, Rf (%) | SBT | SBT Description (filtered) | RL (m)

Depth (m)	SBT Description (filtered)	RL (m)
11	Silt mixtures: clayey silt & silty clay	-11
	Clays: clay to silty clay	
12	Silt mixtures: clayey silt & silty clay Clays: clay to silty clay	-12
	Silt mixtures: clayey silt & silty clay	
13	Clays: clay to silty clay	-13
	Sand mixtures: silty sand to sandy silt	
	Sands: clean sands to silty sands	
14	Sand mixtures: silty sand to sandy silt	-14
	Sands: clean sands to silty sands Sand mixtures: silty sand to sandy silt	
15	Silt mixtures: clayey silt & silty clay	-15
	Sands: clean sands to silty sands	
16	Sand mixtures: silty sand to sandy silt	-16
	Sands: clean sands to silty sands	
17	Silt mixtures: clayey silt & silty clay	-17
	Silt mixtures: clayey silt & silty clay	
18	Silt mixtures: clayey silt & silty clay Sand mixtures: silty sand to sandy silt	-18
	Sand mixtures: silty sand to sandy silt	
	Sands: clean sands to silty sands	
19	EOH: 18.16m	-19
20		-20

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.98M

Termination Reason:
Limit Of Reaction Force

Northing:	5818498mN
Easting:	1893255mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

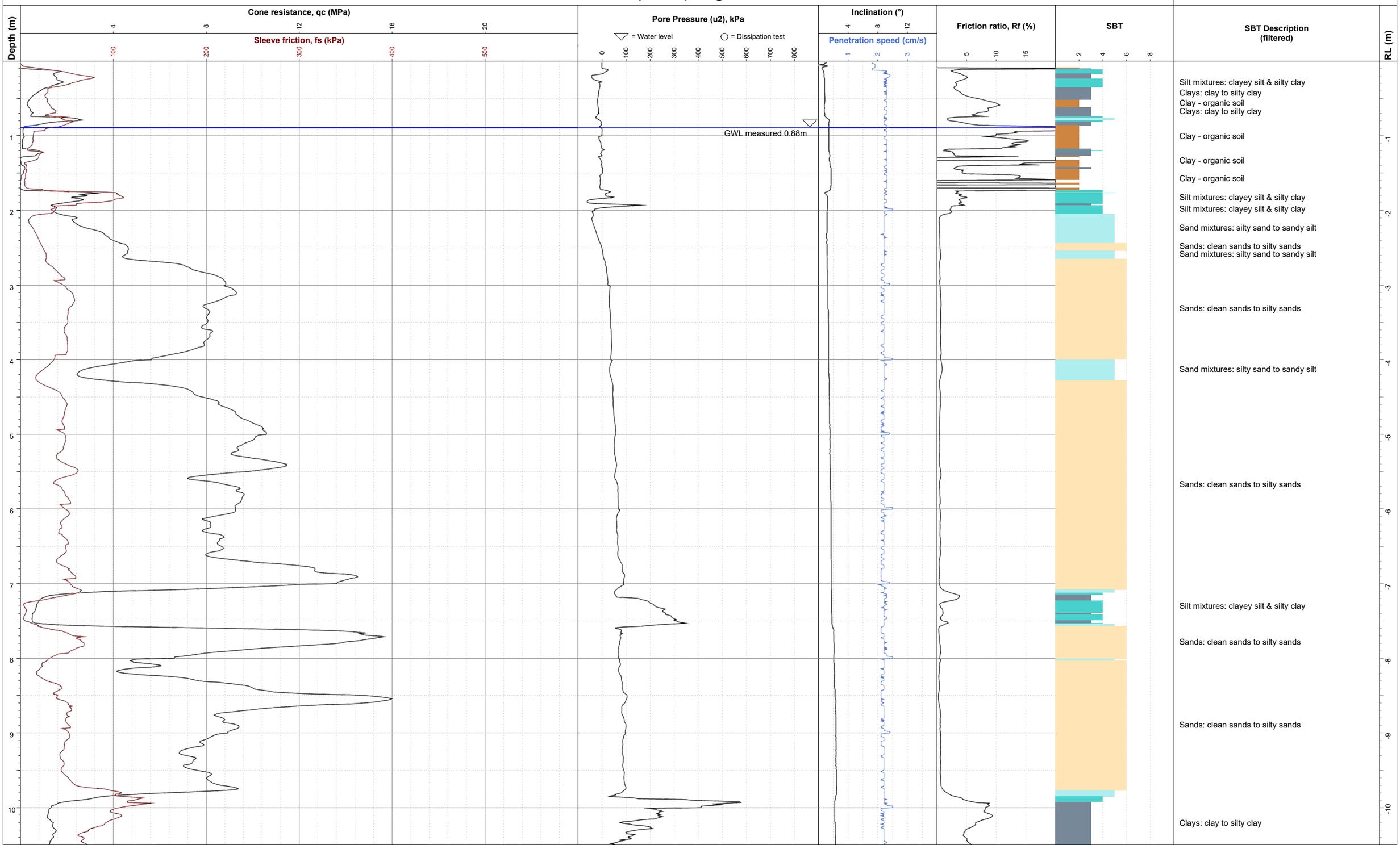
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-012

Project ID:	17255:P2
Depth:	18.16m
Sheet:	2 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-013



SBT Description (filtered)

- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Clay - organic soil
- Clays: clay to silty clay
- Clay - organic soil
- Clay - organic soil
- Clay - organic soil
- Silt mixtures: clayey silt & silty clay
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Silt mixtures: clayey silt & silty clay
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Clays: clay to silty clay

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.88M

Termination Reason:
Target Depth

Northing: 5818441mN
Easting: 1893597mE
System:
Elevation: Ground
Located By: GPS Pagani
Location:

Operator: *JC*
Rig: *TG63-150 Pagani*
Cone ID: *MKJ650*
Type: *PC*
Cone Area: *10.00*
Sleeve Area: *150*
Area Ratio: *0.7864*

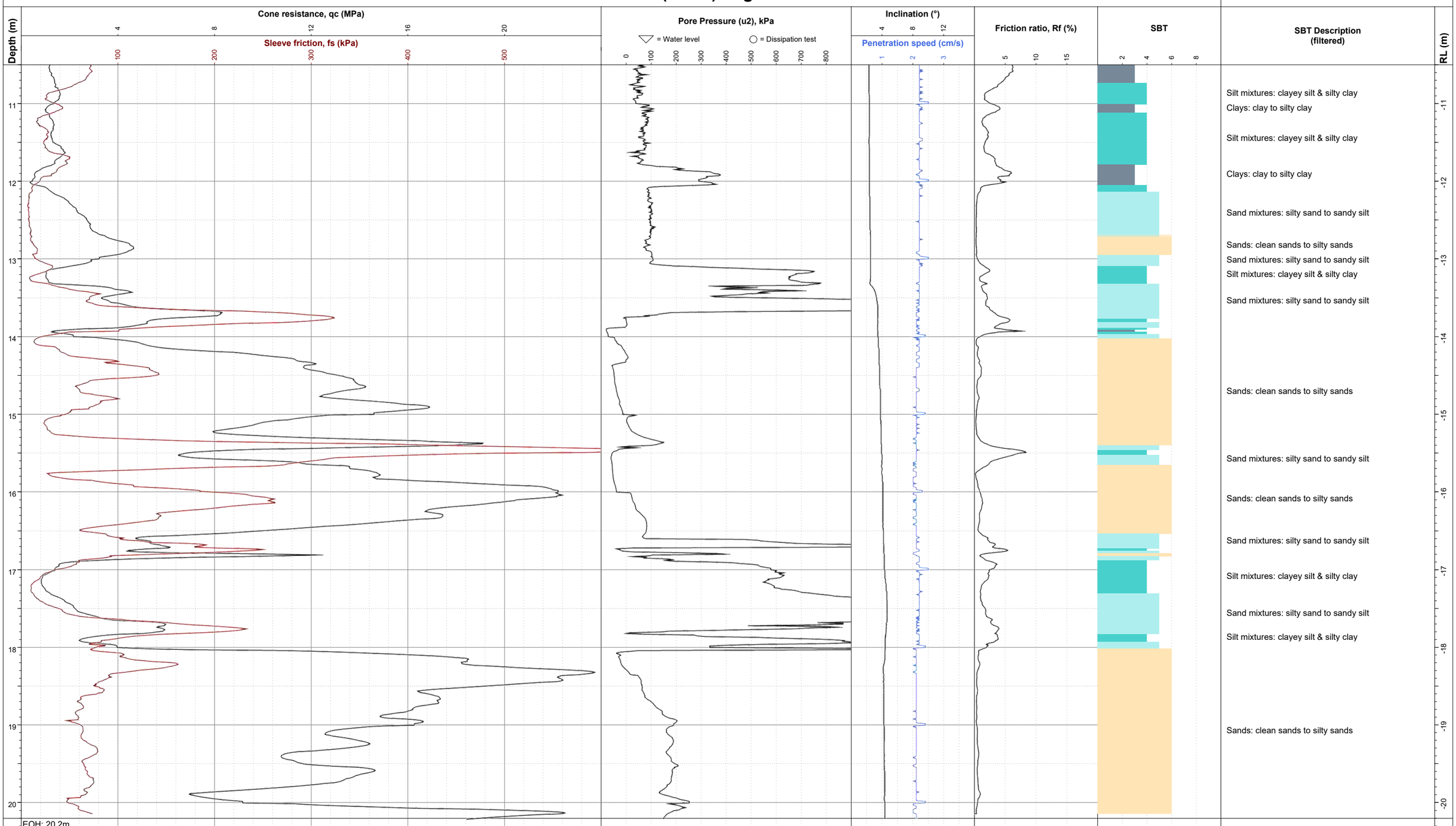
Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-013
Project ID: 17255:P2
Depth: 20.2m
Sheet: 1 of 2
Date: *22/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-013



SBT Description (filtered)

- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Sands: clean sands to silty sands

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.88M

Termination Reason:
Target Depth

Northing:	5818441mN
Easting:	1893597mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

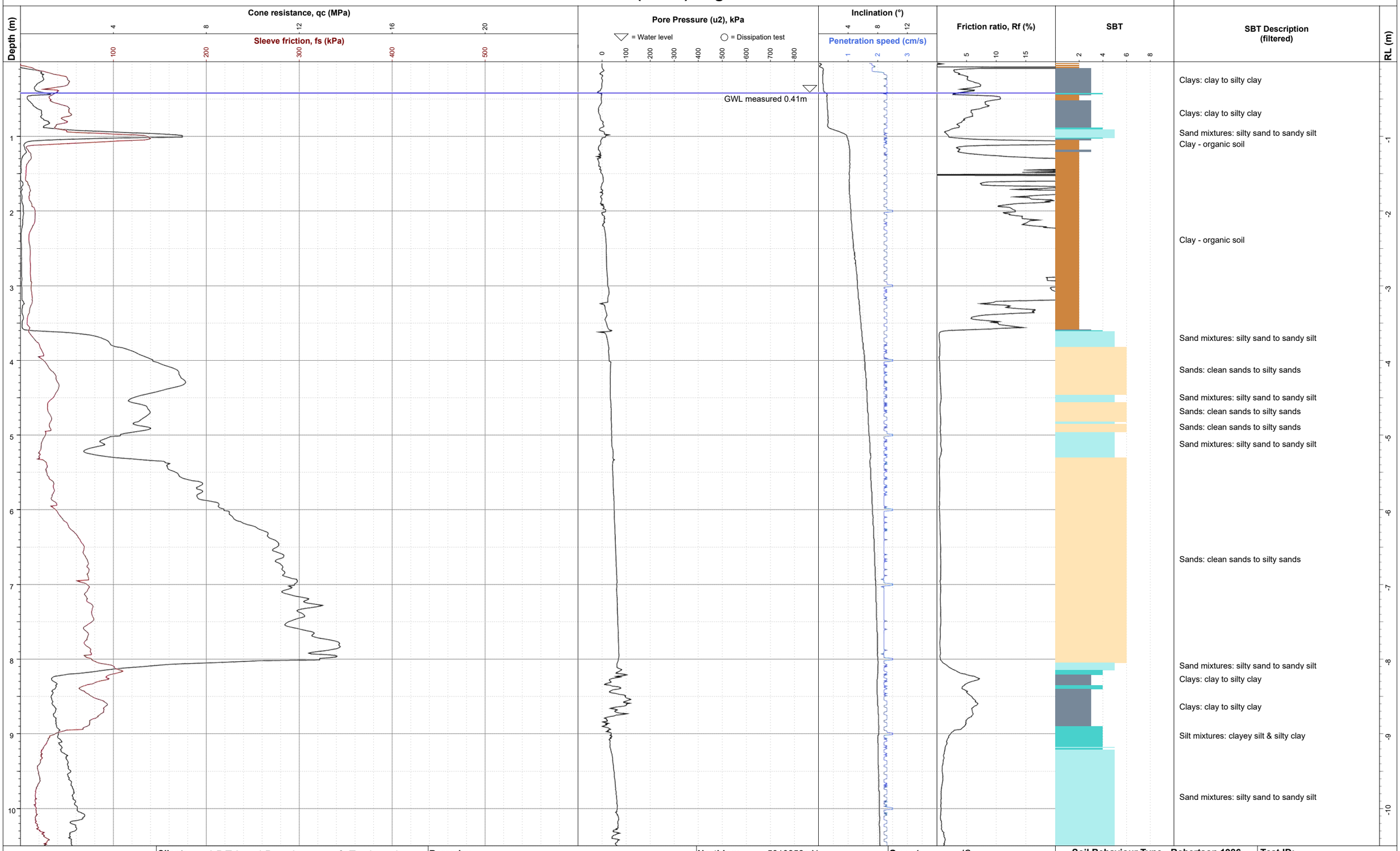
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-013

Project ID:	17255:P2
Depth:	20.2m
Sheet:	2 of 2
Date:	*22/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-014



SBT Description (filtered)

- Clays: clay to silty clay
- Clays: clay to silty clay
- Sand mixtures: silty sand to sandy silt
- Clay - organic soil
- Clay - organic soil
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Clays: clay to silty clay
- Clays: clay to silty clay
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt

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LDE LAND DEVELOPMENT & ENGINEERING

Client:	LDE Land Development & Engineering
Project:	Geotechnical Investigation
Location:	Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.41M

Termination Reason:
Limit Of reaction Force

Northing:	5818252mN
Easting:	1894048mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	South

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

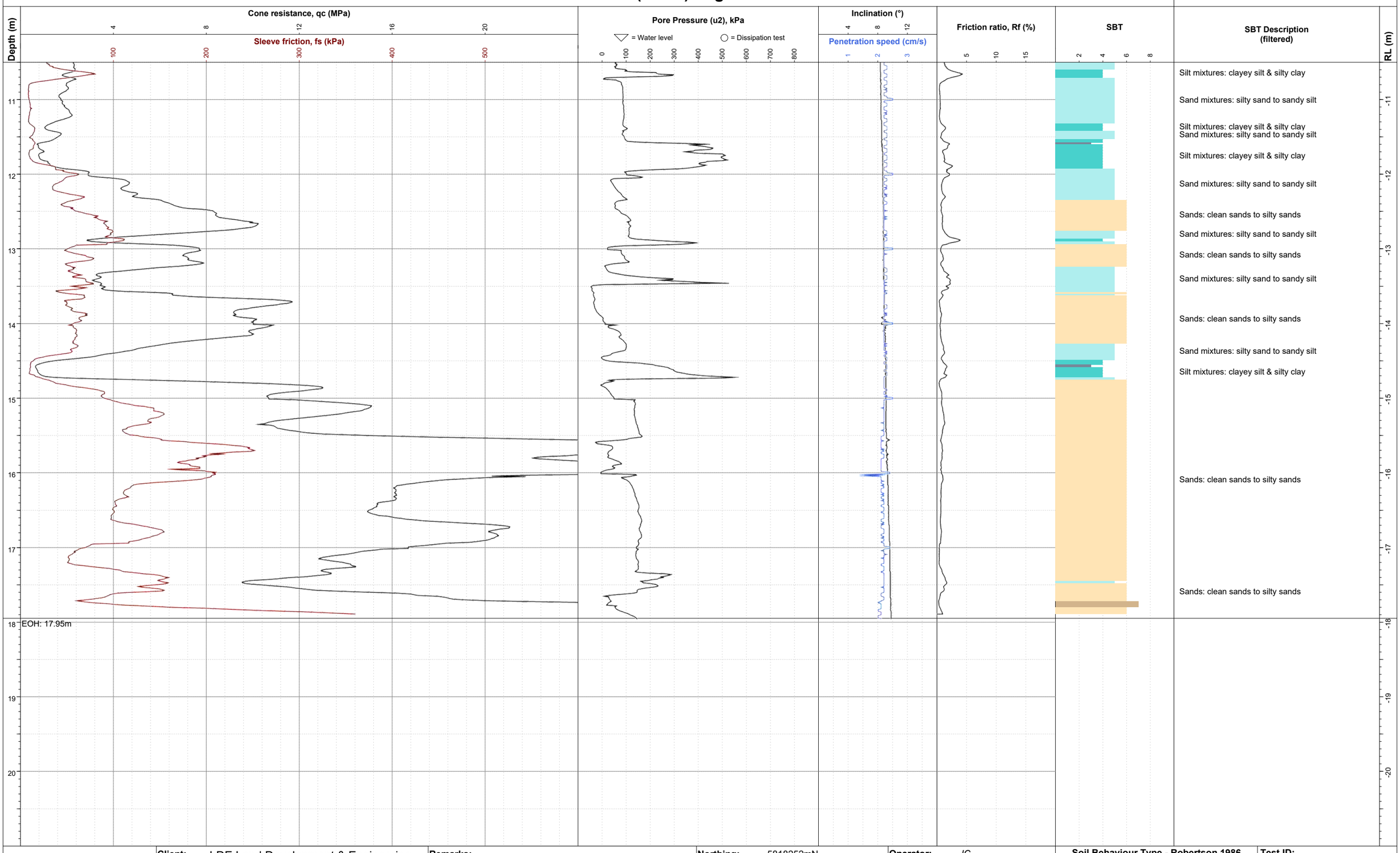
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-014

Project ID:	17255:P2
Depth:	17.95m
Sheet:	1 of 2
Date:	*21/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-014



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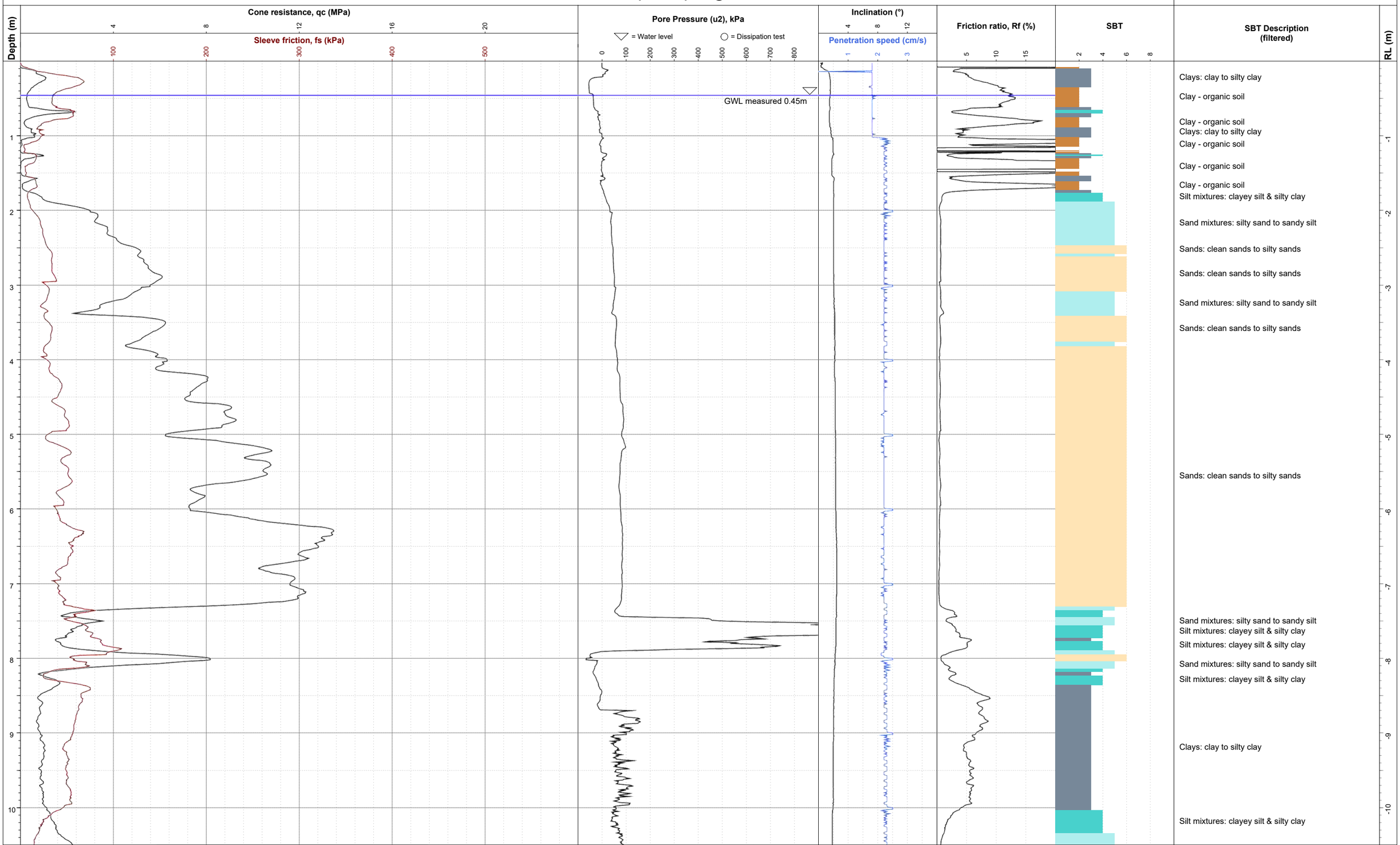
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.41M	**Northing:**	5818252mN	**Operator:**	*JC*	**Test ID:** CPT-014
Project:	Geotechnical Investigation	**Termination Reason:** Limit Of reaction Force	**Easting:**	1894048mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 17.95m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 2 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *21/11/2019*
			Location:	South	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-015



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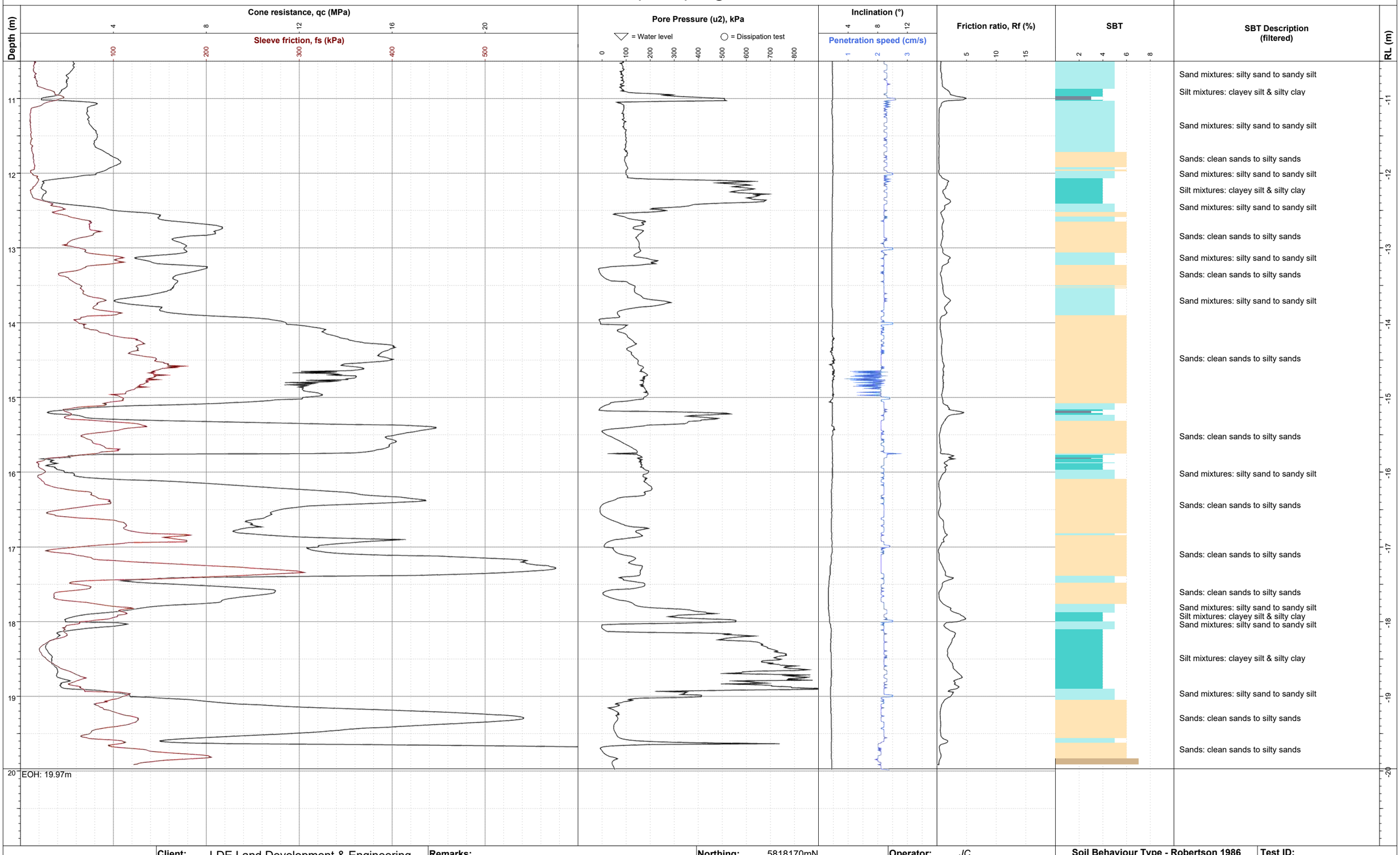
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.45M	**Northing:**	5818170mN	**Operator:**	*JC*	**Test ID:** CPT-015
Project:	Geotechnical Investigation	**Termination Reason:** Limit Of Reaction Force	**Easting:**	1894394mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 19.97m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 1 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *20/11/2019*
			Location:	South	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-015



Generated with CORE-GS by Geroc - CPT Basic A3 - 25/11/2019 8:58:00 PM

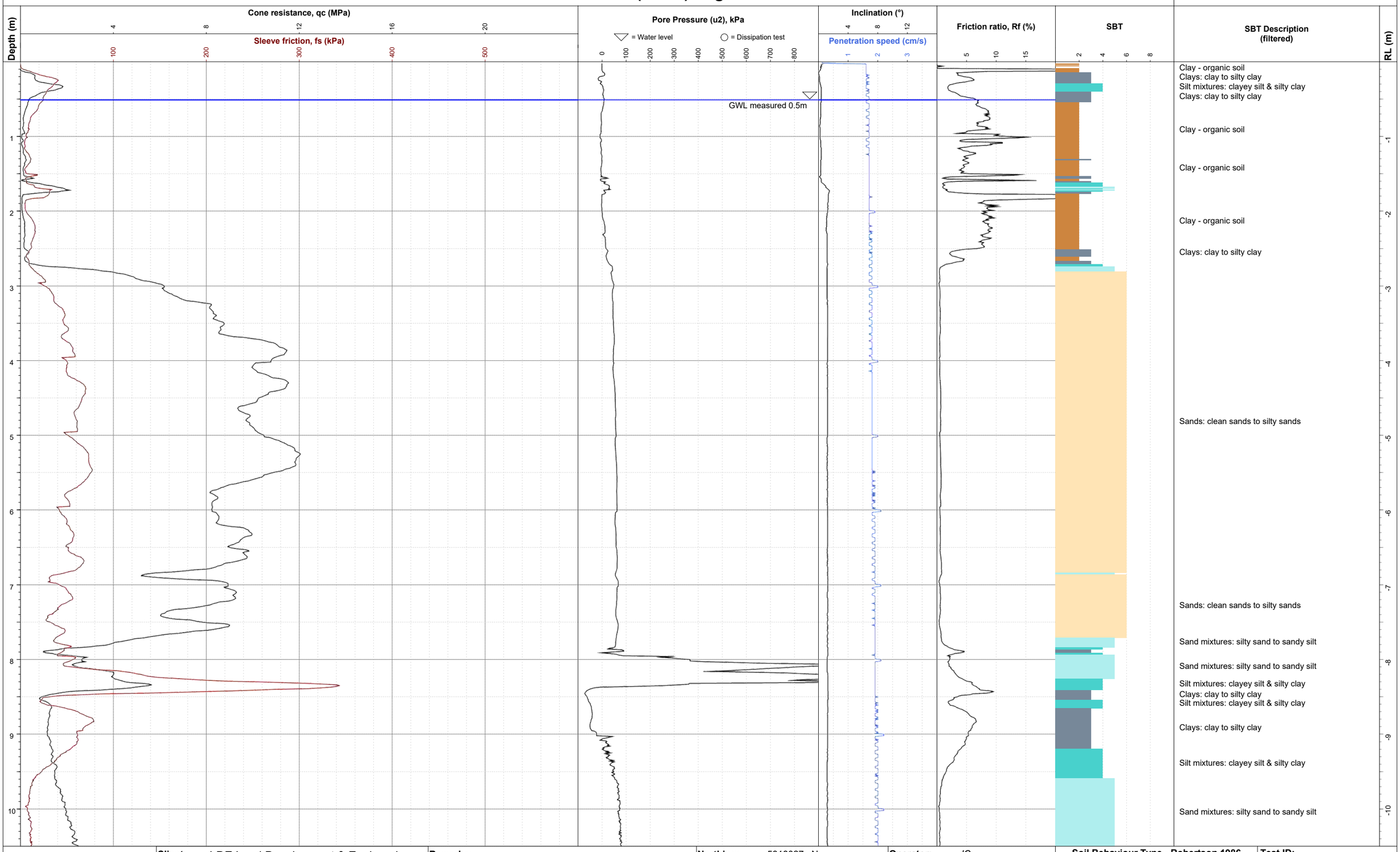
Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.45M	**Northing:**	5818170mN	**Operator:**	*JC*	**Test ID:** CPT-015
Project:	Geotechnical Investigation	**Termination Reason:** Limit Of Reaction Force	**Easting:**	1894394mE	**Rig:**	*TG63-150 Pagani*	**Project ID:** 17255:P2
Location:	Bell Road, Papamoa, Tauranga		**System:**		**Cone ID:**	*MKJ650*	**Depth:** 19.97m
			Elevation:	Ground	**Type:**	*PC*	**Sheet:** 2 of 2
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	**Date:** *20/11/2019*
			Location:	South	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Soil Behaviour Type - Robertson 1986

0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Cone Penetration Test (CPTu) Log

Test ID: CPT-016



SBT Description (filtered)

- Clay - organic soil
- Clays: clay to silty clay
- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Clay - organic soil
- Clay - organic soil
- Clay - organic soil
- Clays: clay to silty clay
- Sands: clean sands to silty sands
- Sands: clean sands to silty sands
- Sand mixtures: silty sand to sandy silt
- Sand mixtures: silty sand to sandy silt
- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Silt mixtures: clayey silt & silty clay
- Clays: clay to silty clay
- Silt mixtures: clayey silt & silty clay
- Sand mixtures: silty sand to sandy silt

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LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.50M

Termination Reason:
Limit Of Reaction Force

Northing:	5818027mN
Easting:	1894712mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	South East

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

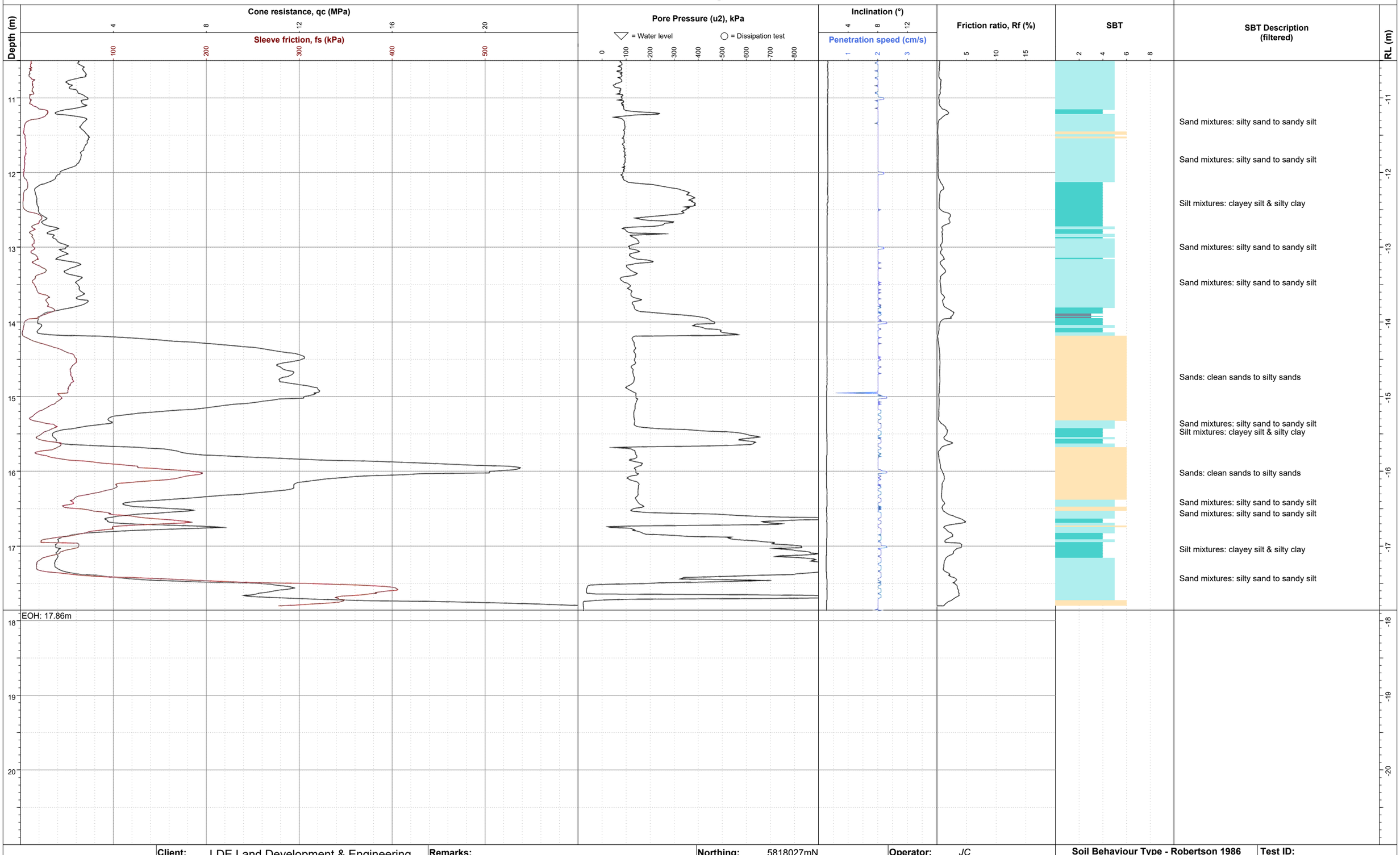
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-016

Project ID:	17255:P2
Depth:	17.86m
Sheet:	1 of 2
Date:	*20/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-016



Generated with CORE-GS by Geroc - CPT Basic A3 - 25/11/2019 8:58:01 PM

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.50M

Termination Reason:
Limit Of Reaction Force

Northing:	5818027mN
Easting:	1894712mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	South East

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

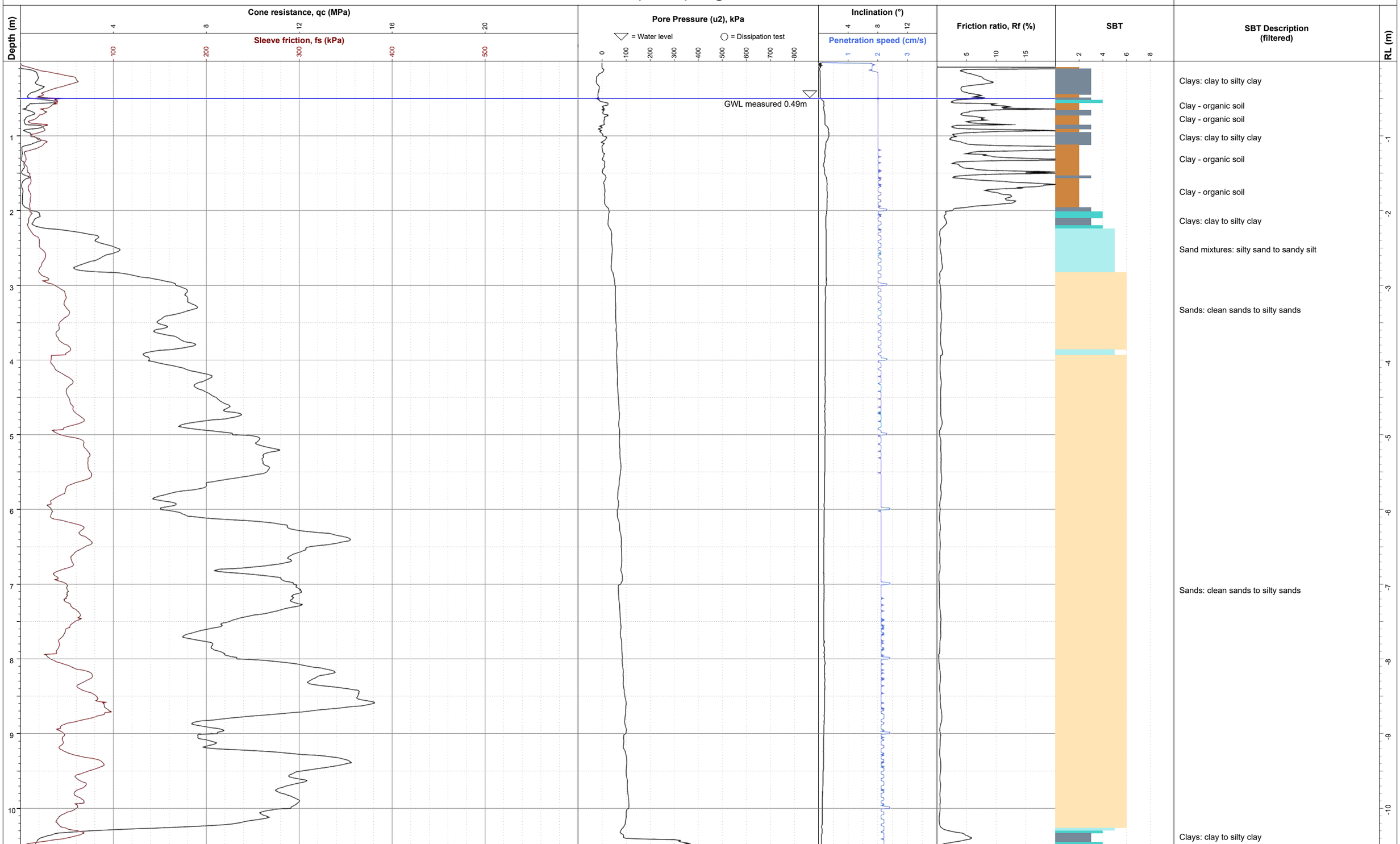
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-016

Project ID:	17255:P2
Depth:	17.86m
Sheet:	2 of 2
Date:	*20/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-017



SBT Description (filtered)

Clays: clay to silty clay

Clay - organic soil

Clay - organic soil

Clays: clay to silty clay

Clay - organic soil

Clay - organic soil

Clays: clay to silty clay

Sand mixtures: silty sand to sandy silt

Sands: clean sands to silty sands

Sands: clean sands to silty sands

Clays: clay to silty clay

Generated with CORE-GS by Geroc - CPT Basic A3 - 25/11/2019 8:58:01 PM

LDE LAND DEVELOPMENT & ENGINEERING

Client: LDE Land Development & Engineering

Project: Geotechnical Investigation

Location: Bell Road, Papamoa, Tauranga

Remarks:
GWL: 0.49M

Termination Reason:
Target Depth

Northing:	5817896mN
Easting:	1895044mE
System:	
Elevation:	Ground
Located By:	GPS Pagani
Location:	South East

Operator:	*JC*
Rig:	*TG63-150 Pagani*
Cone ID:	*MKJ650*
Type:	*PC*
Cone Area:	*10.00*
Sleeve Area:	*150*
Area Ratio:	*0.7864*

Soil Behaviour Type - Robertson 1986

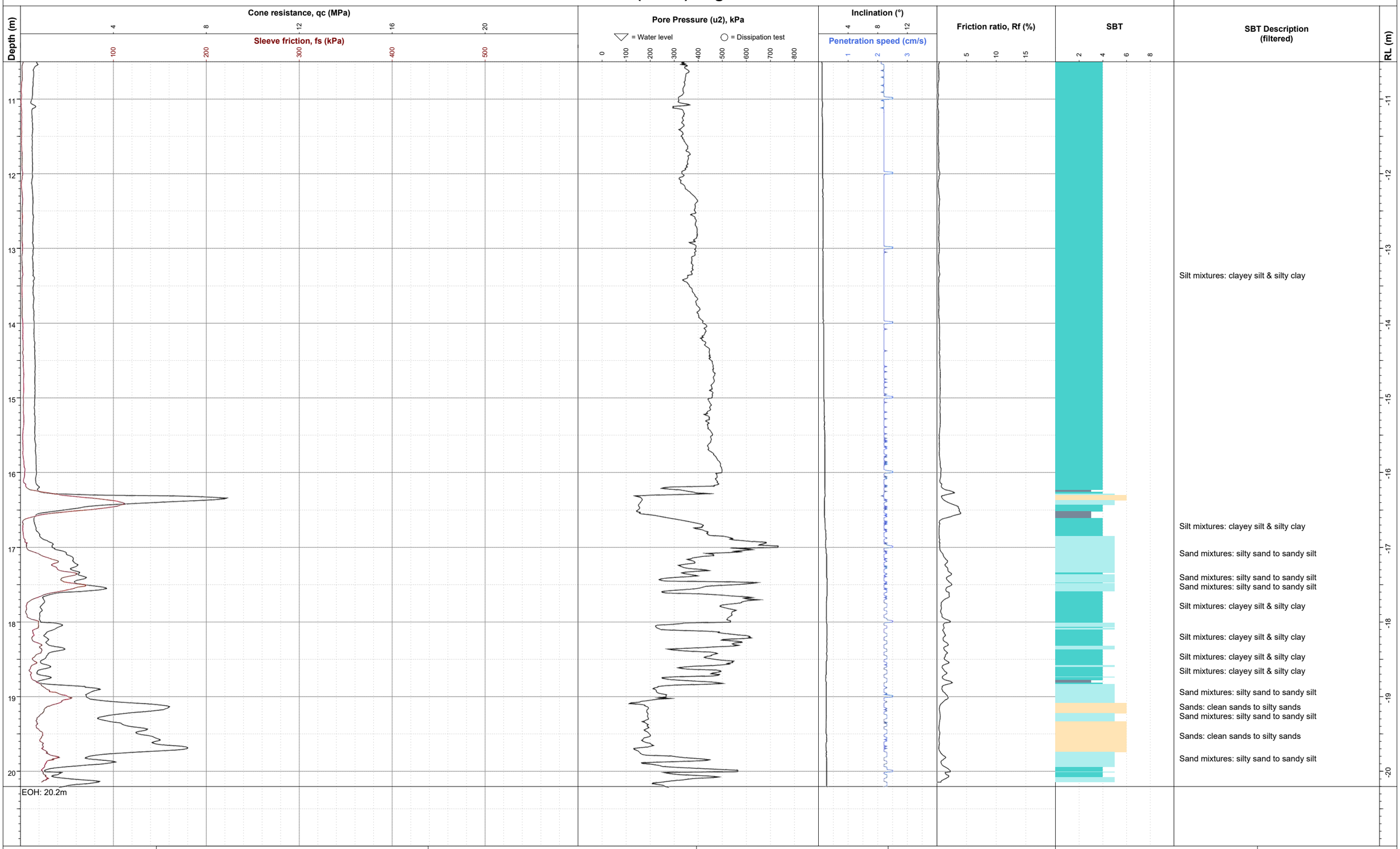
0	Undefined	5	Sand mixtures: silty sand to sandy silt
1	Sensitive fine-grained	6	Sands: clean sands to silty sands
2	Clay - organic soil	7	Dense sand to gravelly sand
3	Clays: clay to silty clay	8	Stiff sand to clayey sand
4	Silt mixtures: clayey silt & silty clay	9	Stiff fine-grained

Test ID: CPT-017

Project ID:	17255:P2
Depth:	20.2m
Sheet:	1 of 2
Date:	*19/11/2019*

Cone Penetration Test (CPTu) Log

Test ID: CPT-017

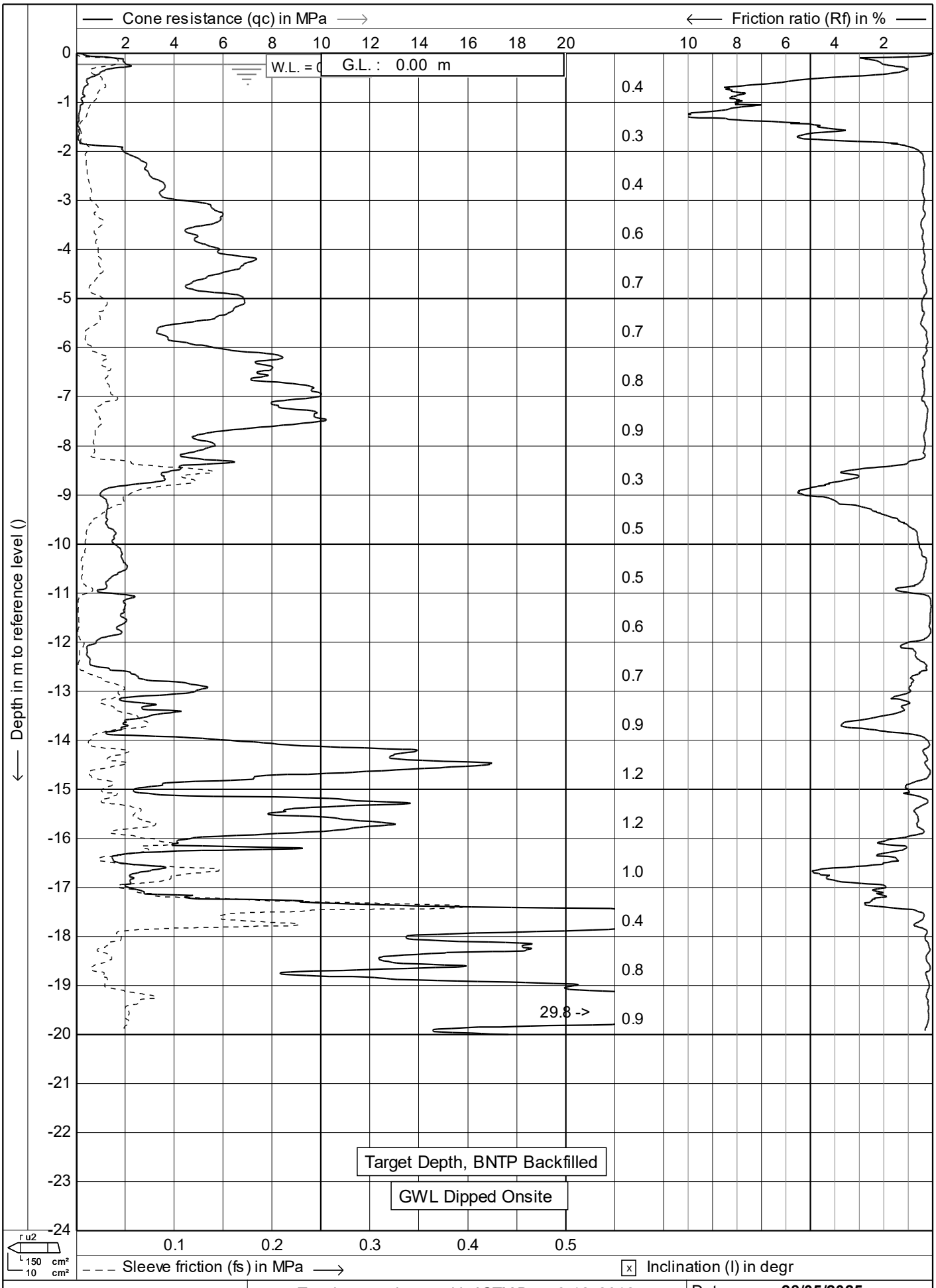


Generated with CORE-GS by Geroc - CPT Basic A3 - 25/11/2019 8:58:02 PM

Client:	LDE Land Development & Engineering	**Remarks:** GWL: 0.49M	**Northing:**	5817896mN	**Operator:**	*JC*	**Soil Behaviour Type - Robertson 1986**
Project:	Geotechnical Investigation		**Easting:**	1895044mE	**Rig:**	*TG63-150 Pagani*	0 Undefined; 1 Sensitive fine-grained; 2 Clay - organic soil; 3 Clays: clay to silty clay; 4 Silt mixtures: clayey silt & silty clay; 5 Sand mixtures: silty sand to sandy silt; 6 Sands: clean sands to silty sands; 7 Dense sand to gravelly sand; 8 Stiff sand to clayey sand; 9 Stiff fine-grained
Location:	Bell Road, Papamoa, Tauranga	**Termination Reason:** Target Depth	**System:**		**Cone ID:**	*MKJ650*	
			Elevation:	Ground	**Type:**	*PC*	
			Located By:	GPS Pagani	**Cone Area:**	*10.00*	
			Location:	South East	**Sleeve Area:**	*150*	
					Area Ratio:	*0.7864*	

Test ID: CPT-017

Project ID: 17255:P2
Depth: 20.2m
Sheet: 2 of 2
Date: *19/11/2019*



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

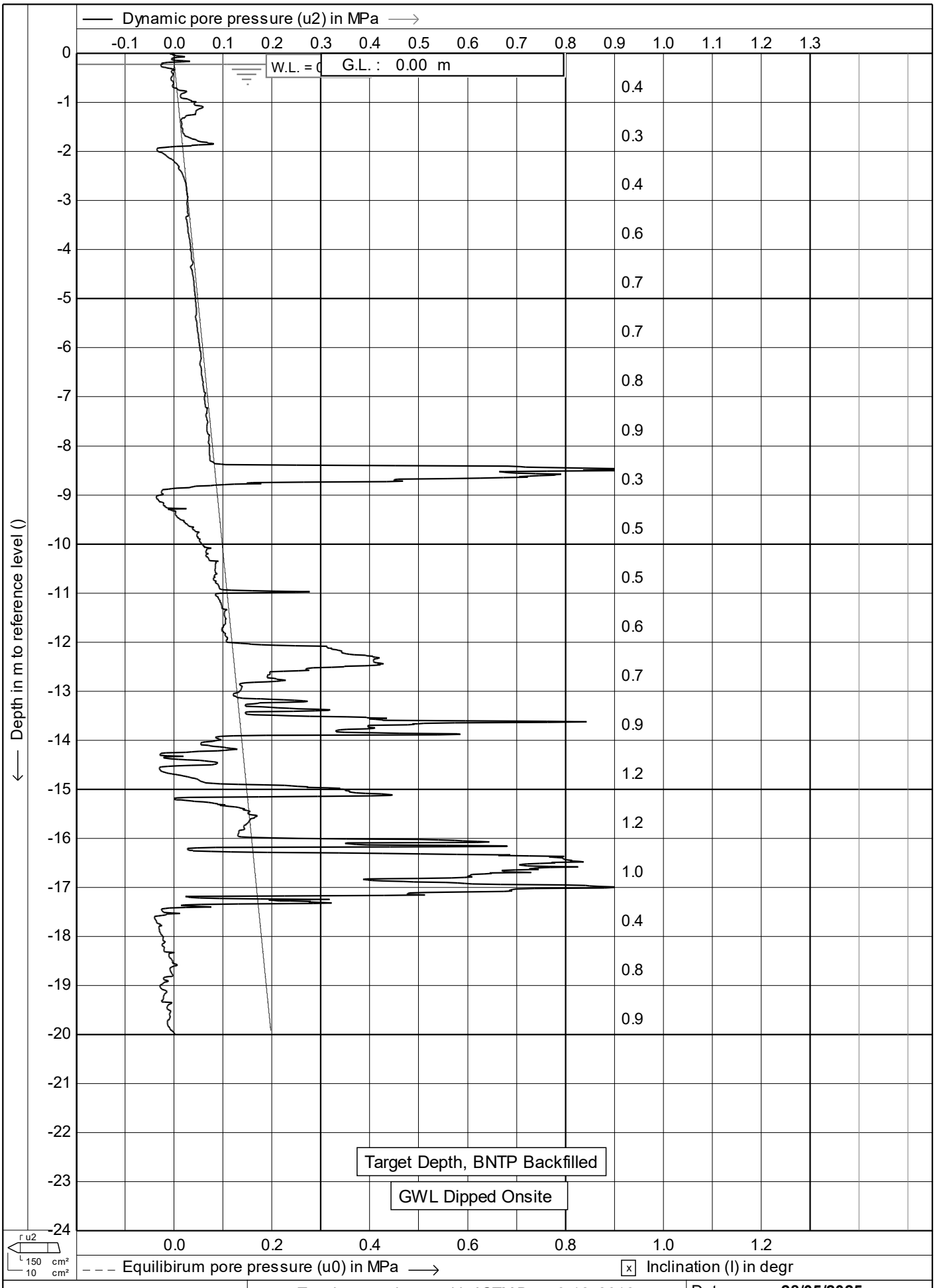
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT101** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

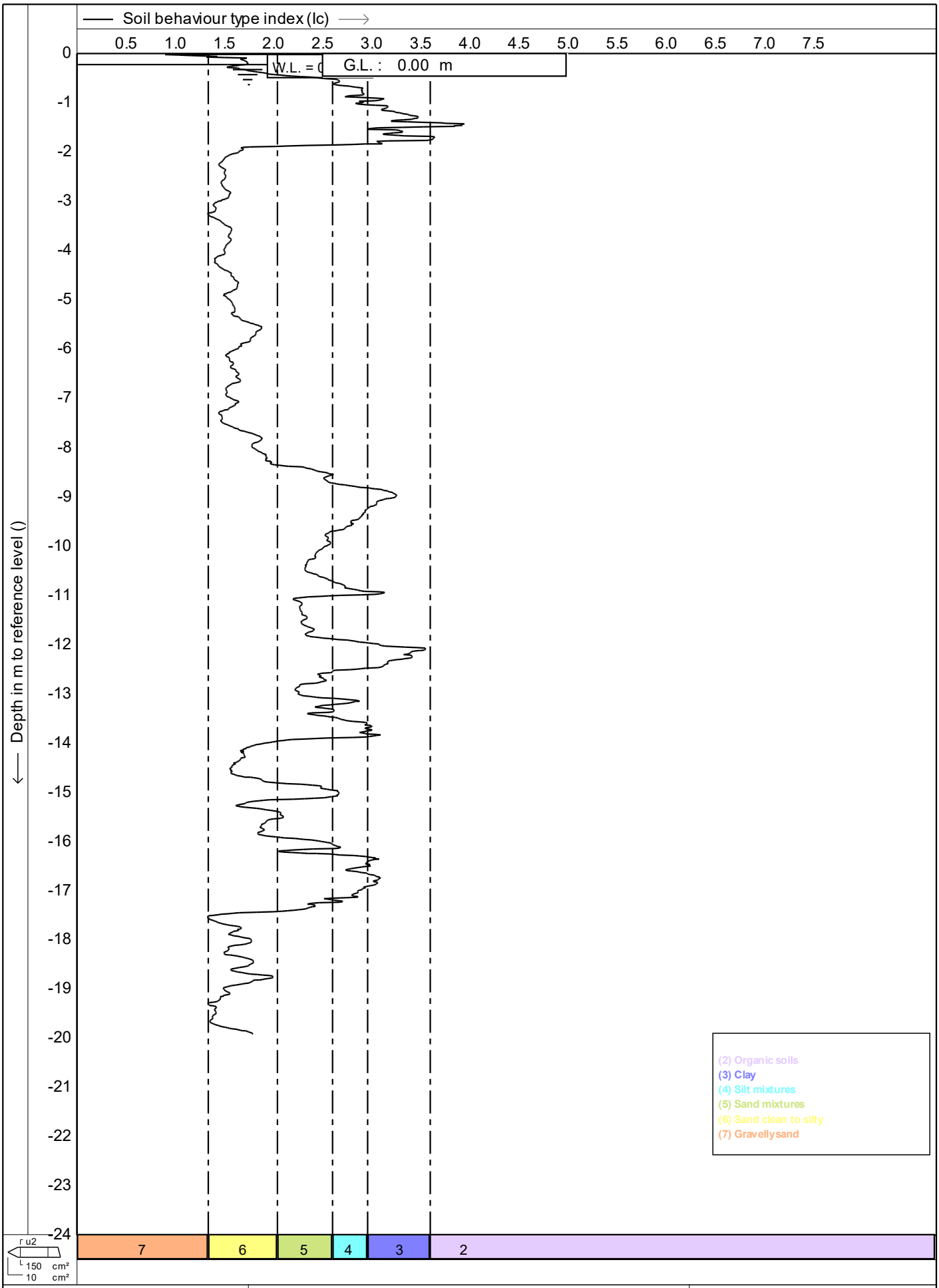
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **28/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT101**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

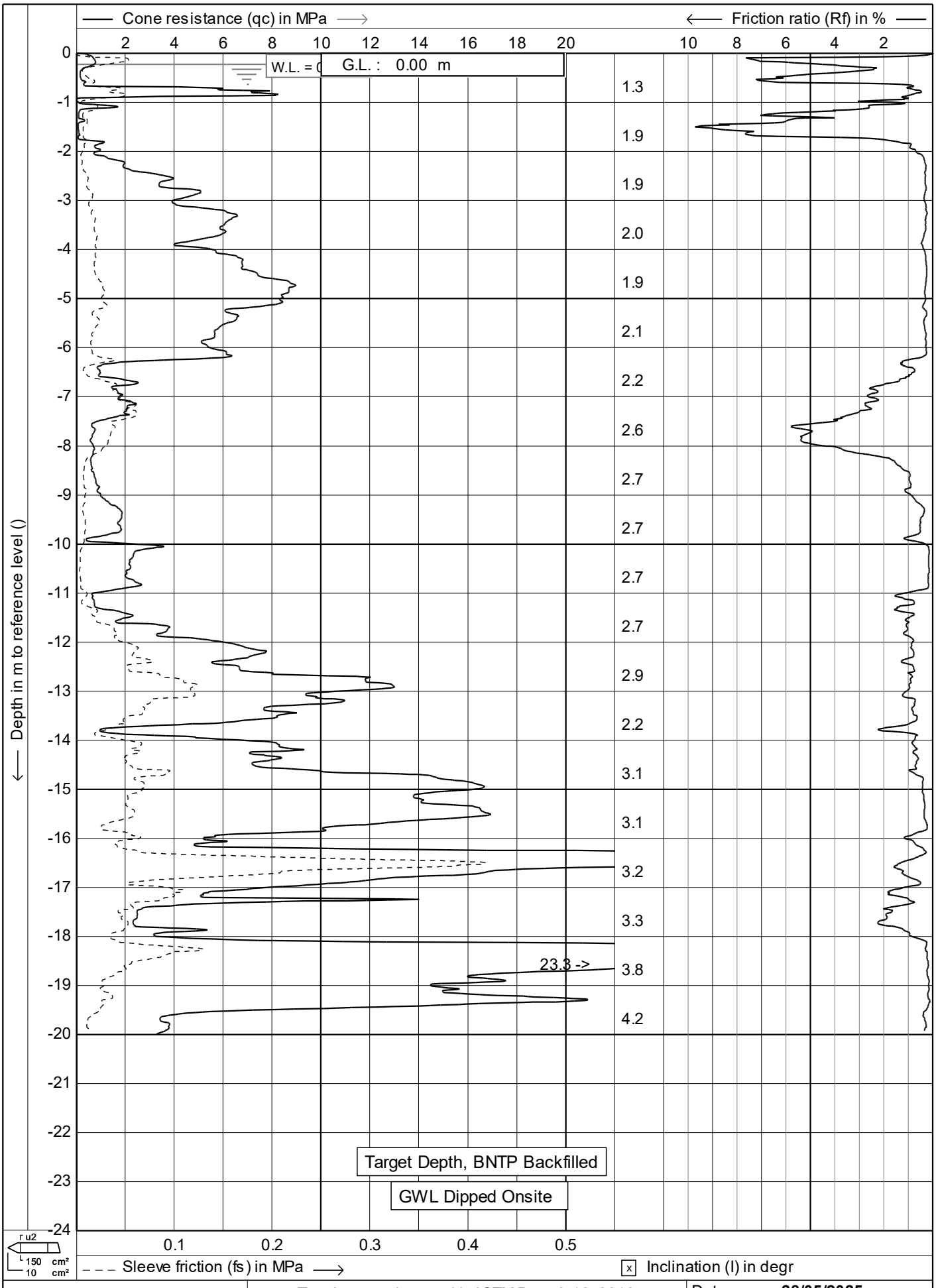
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT101** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

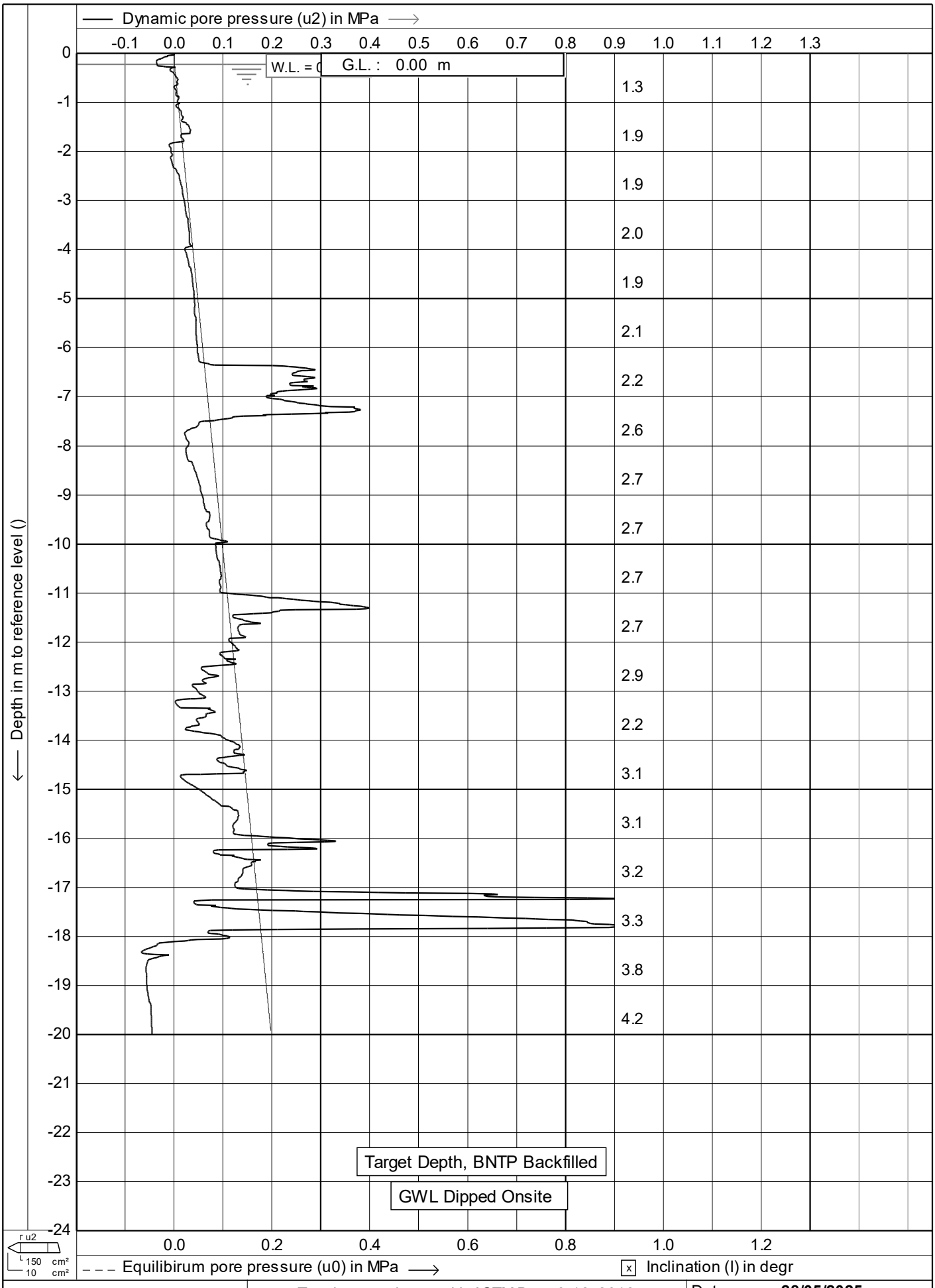
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT102** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

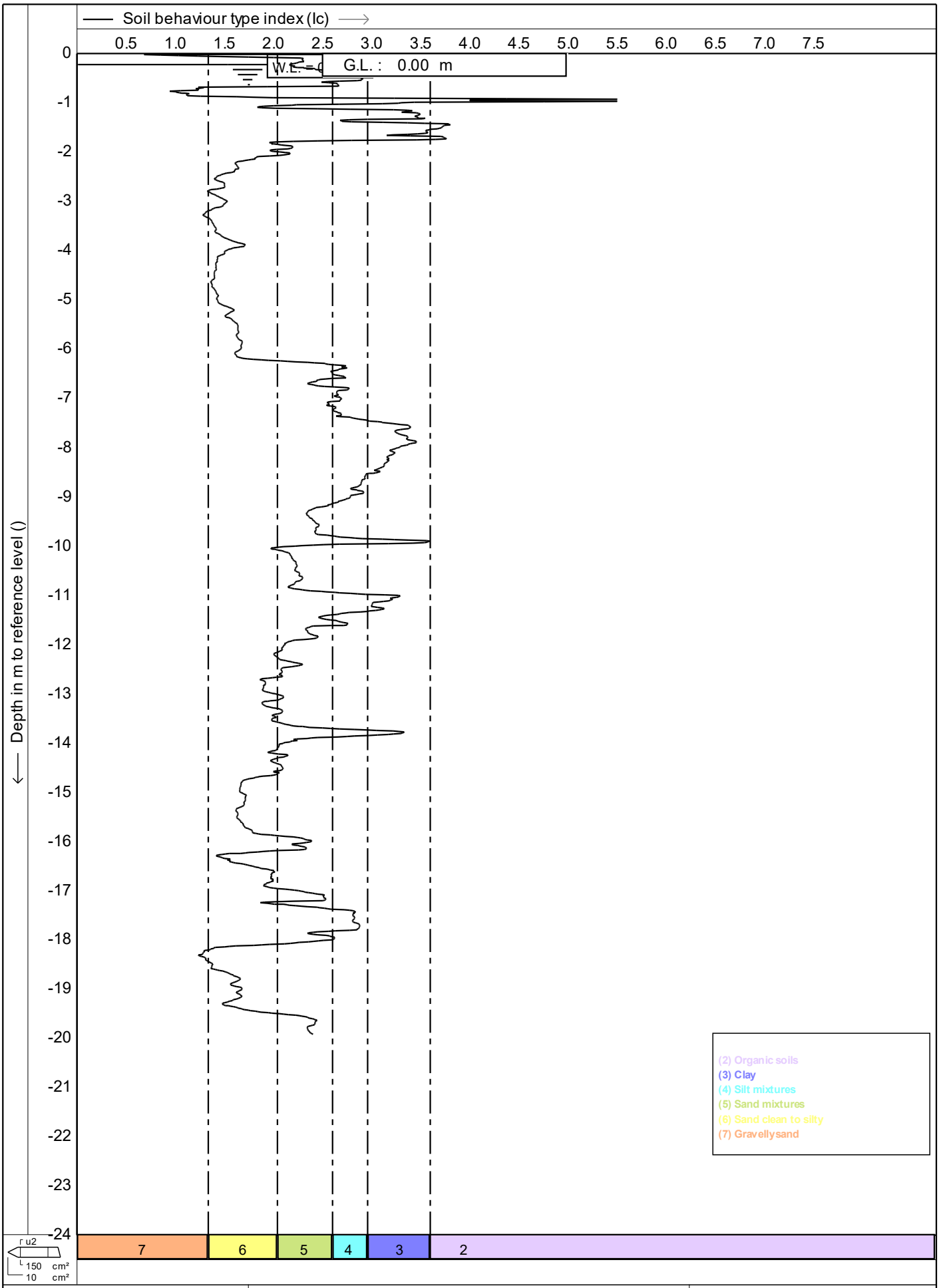
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT102** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

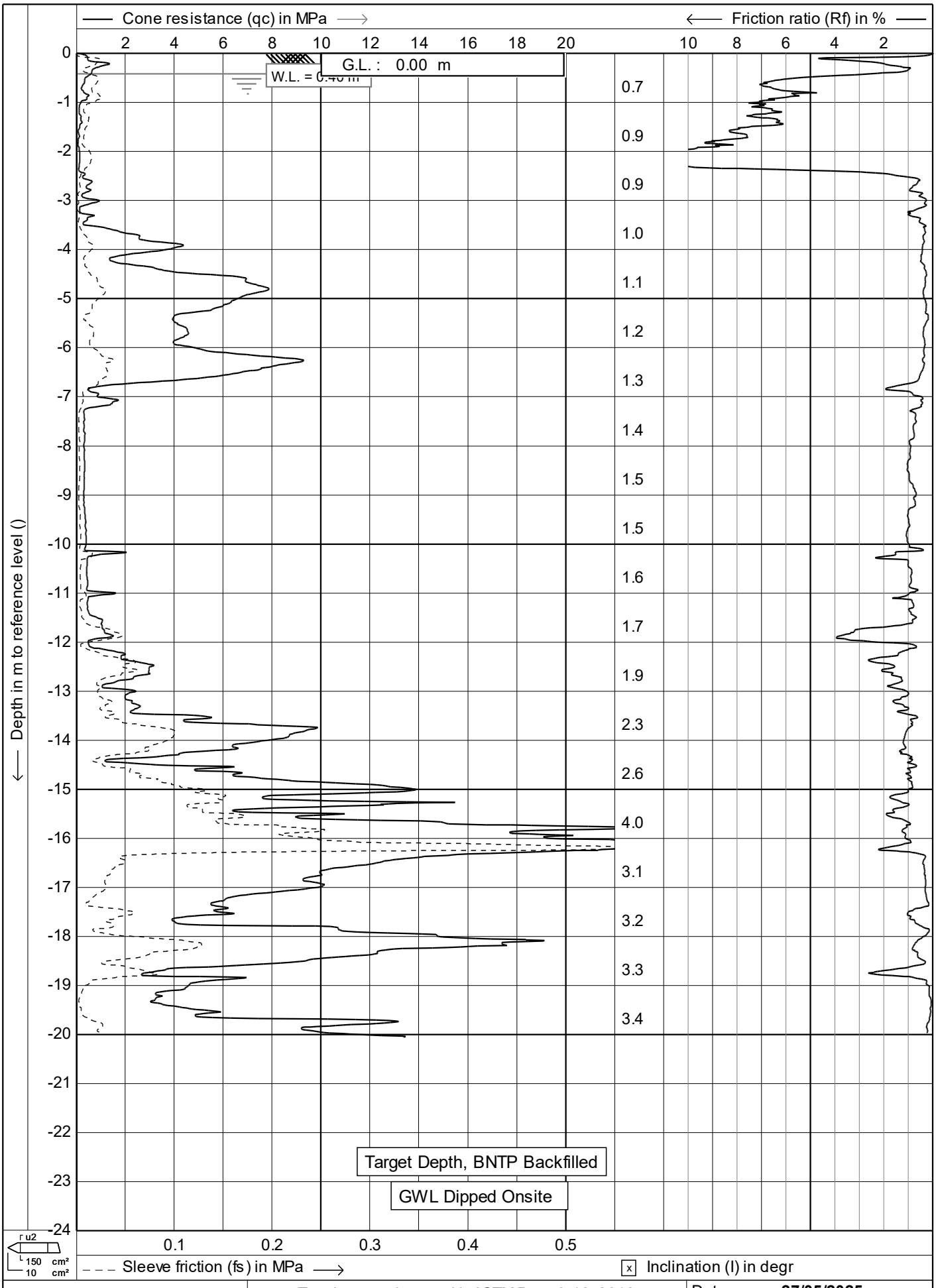
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT102** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

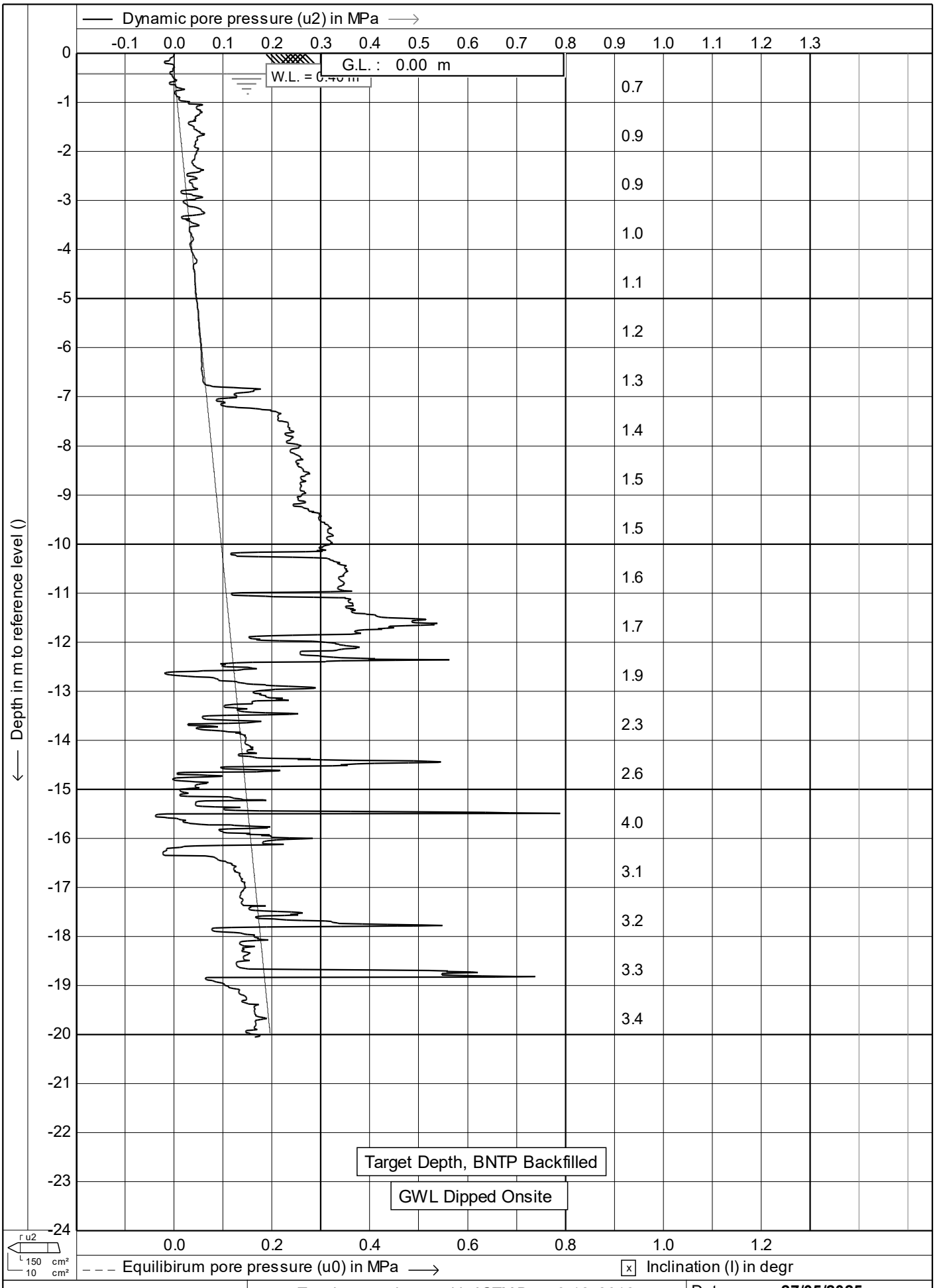
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT103** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

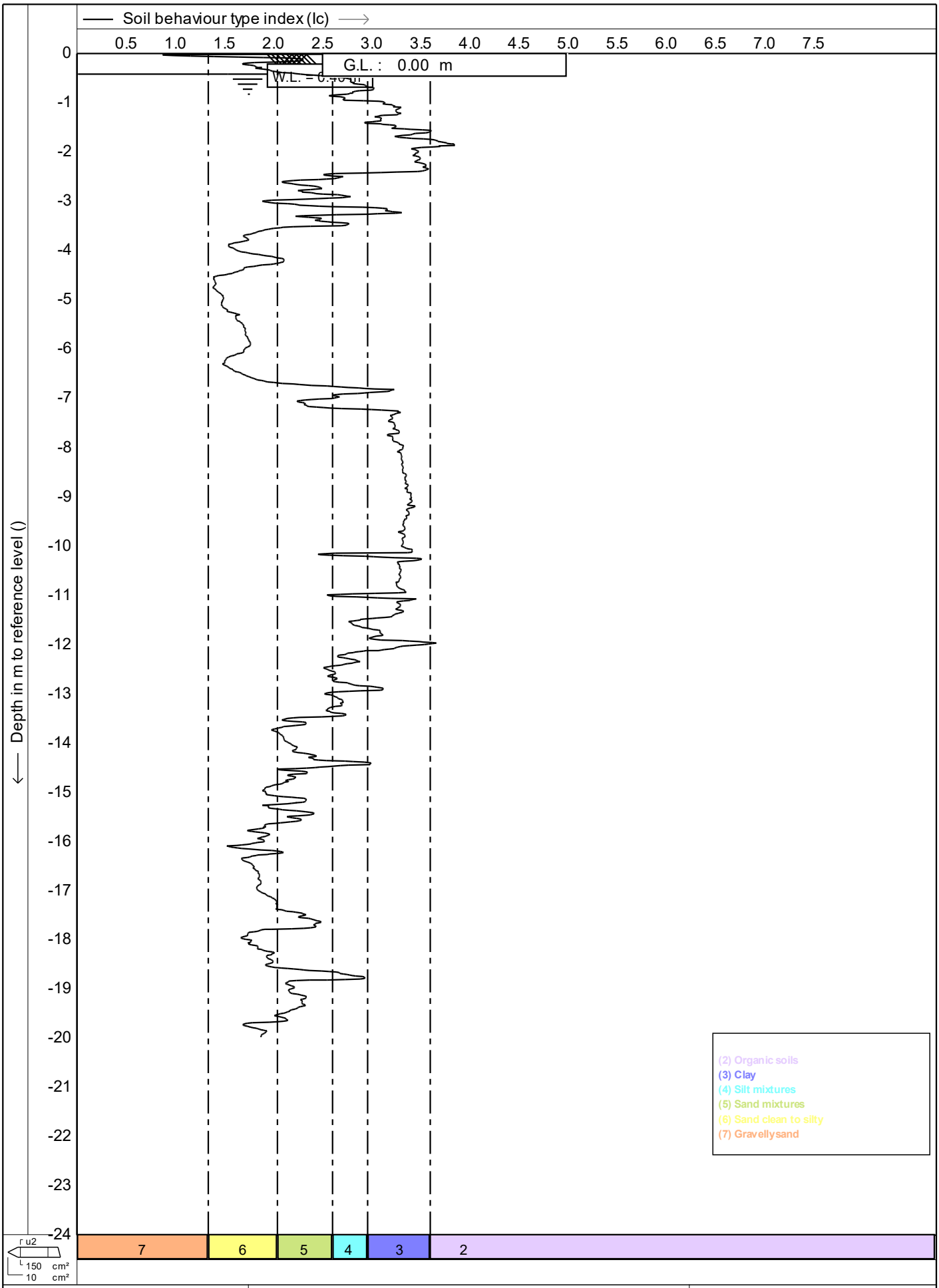
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT103** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

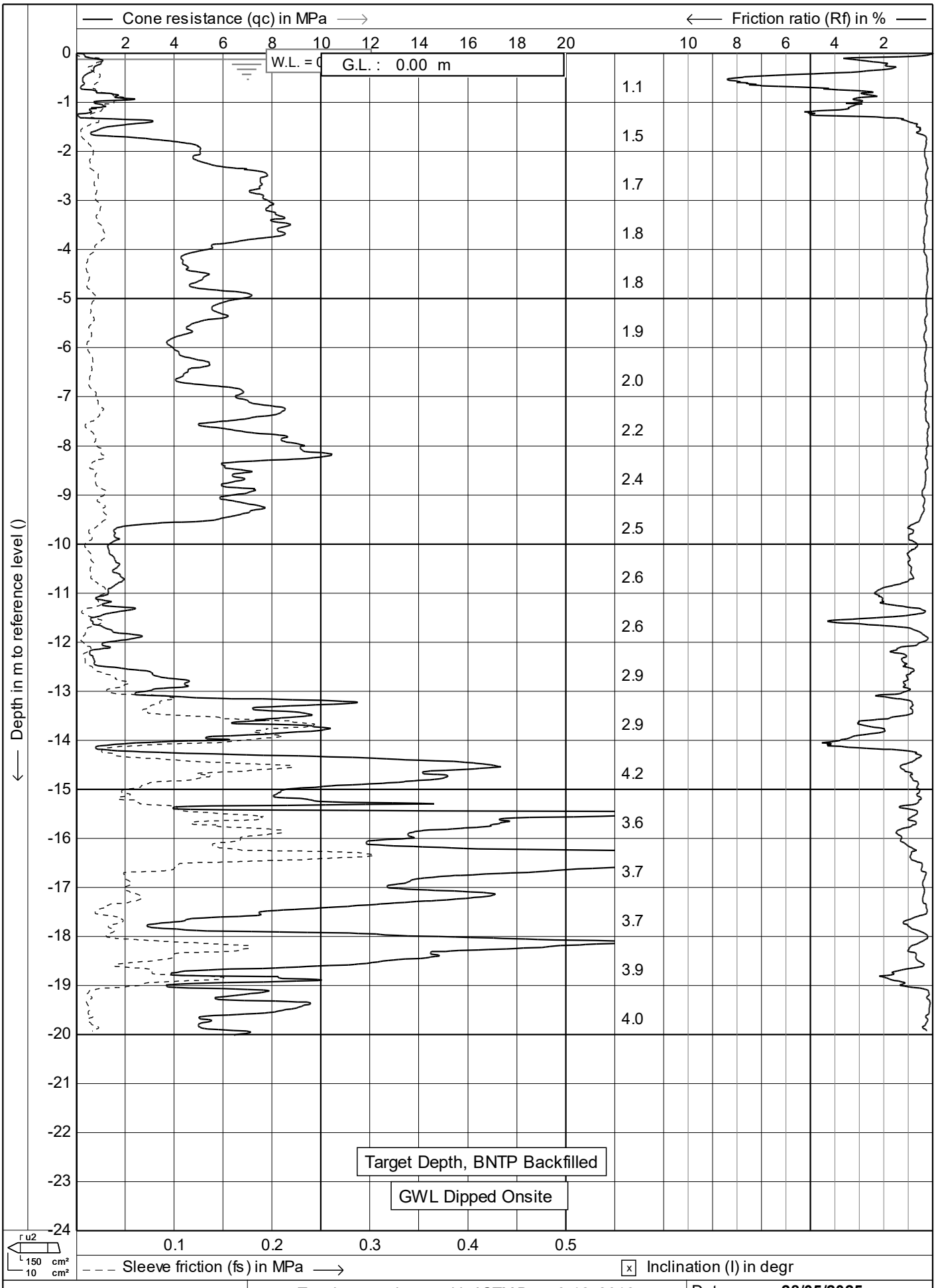
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT103** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

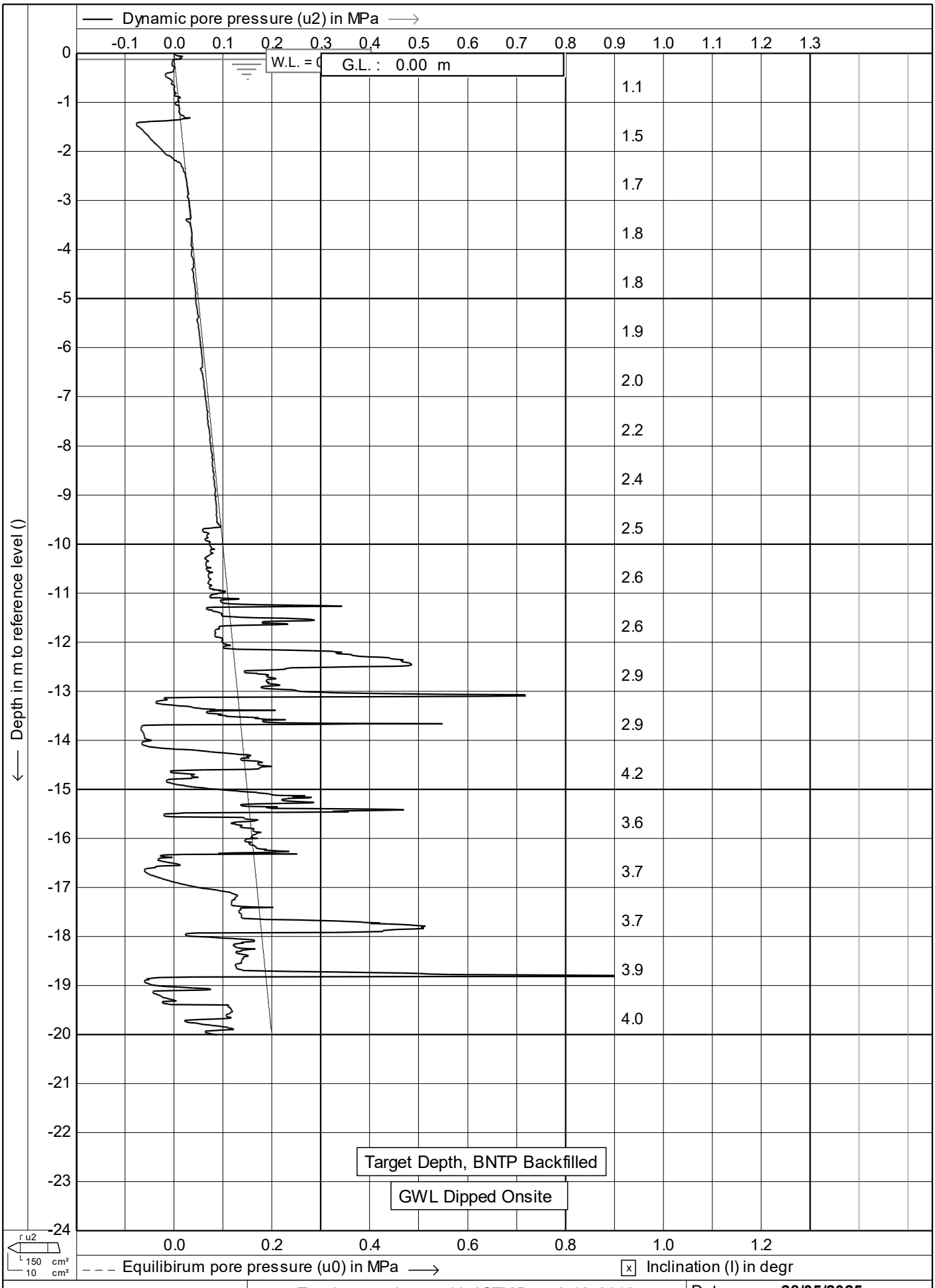
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT104** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

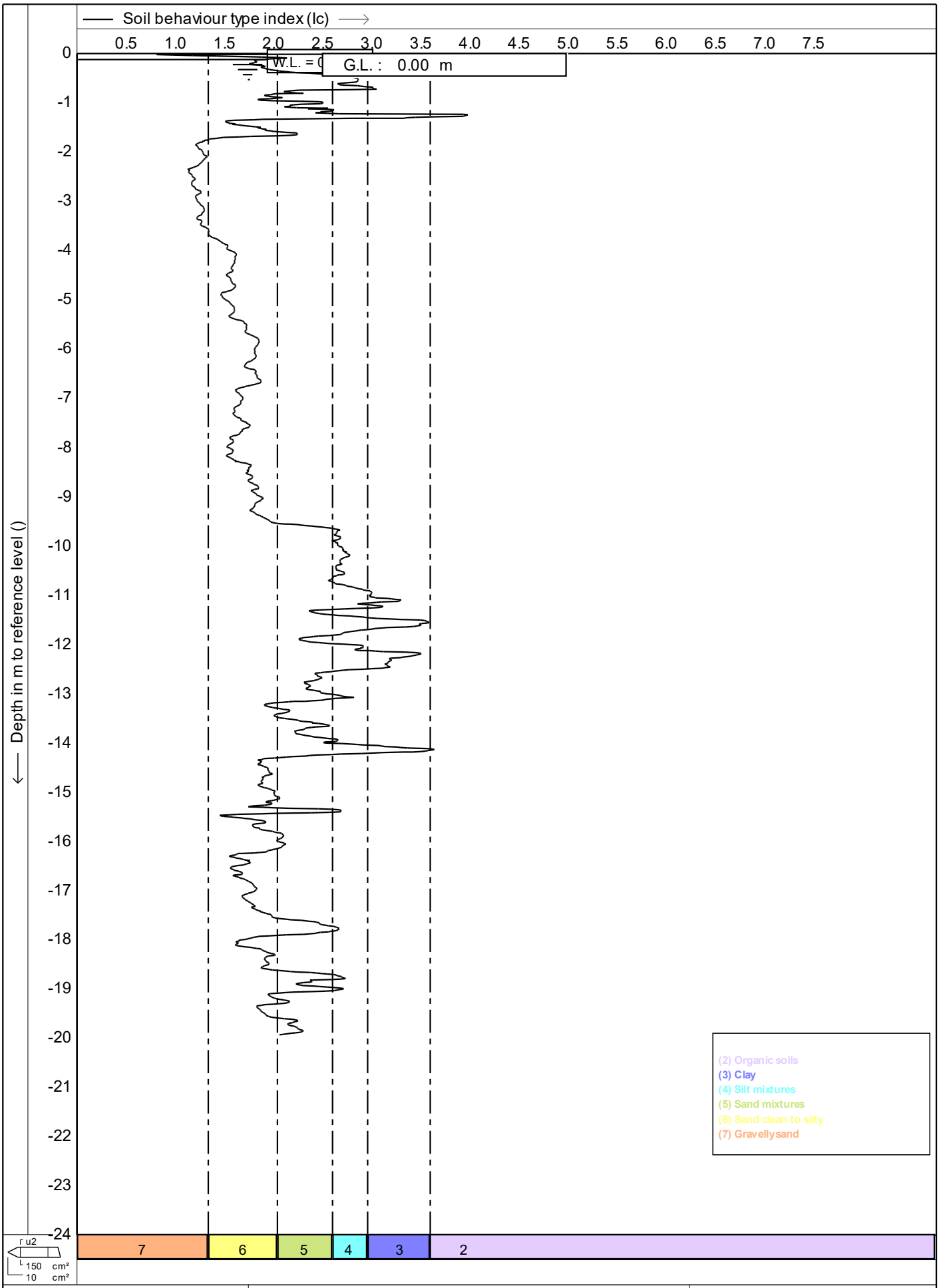
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **28/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT104** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

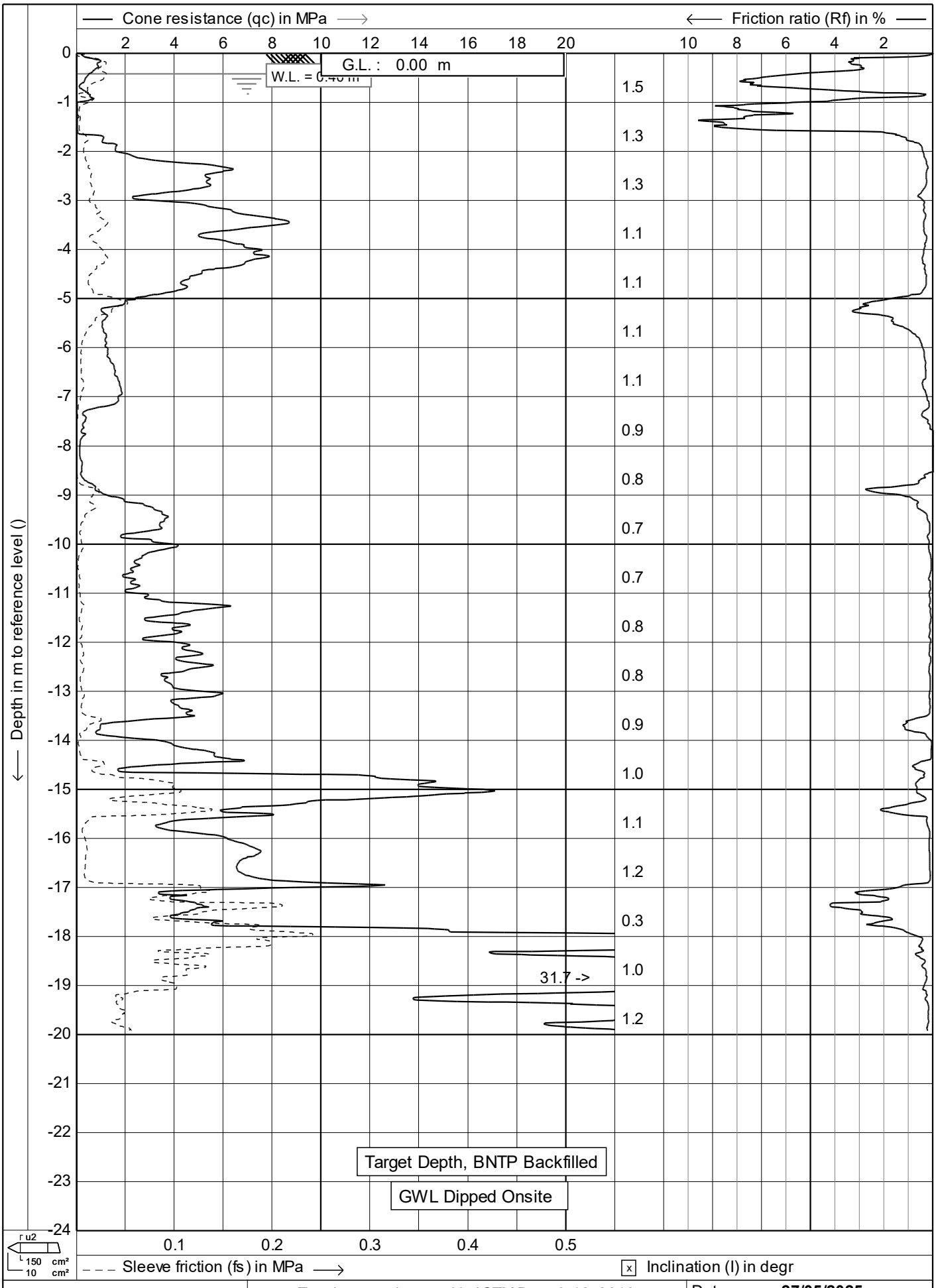
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT104** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

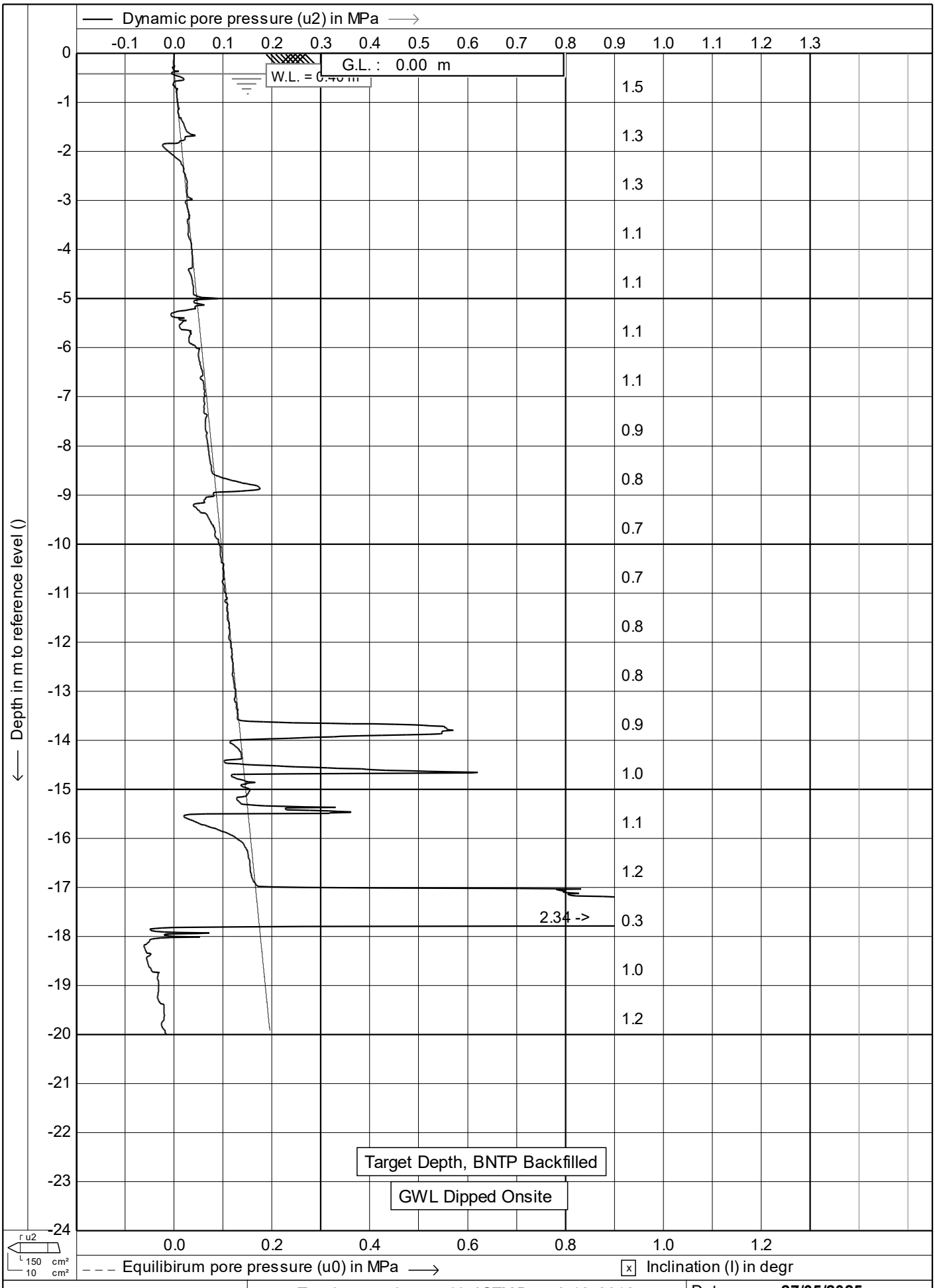
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT105** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT105** **2/14**

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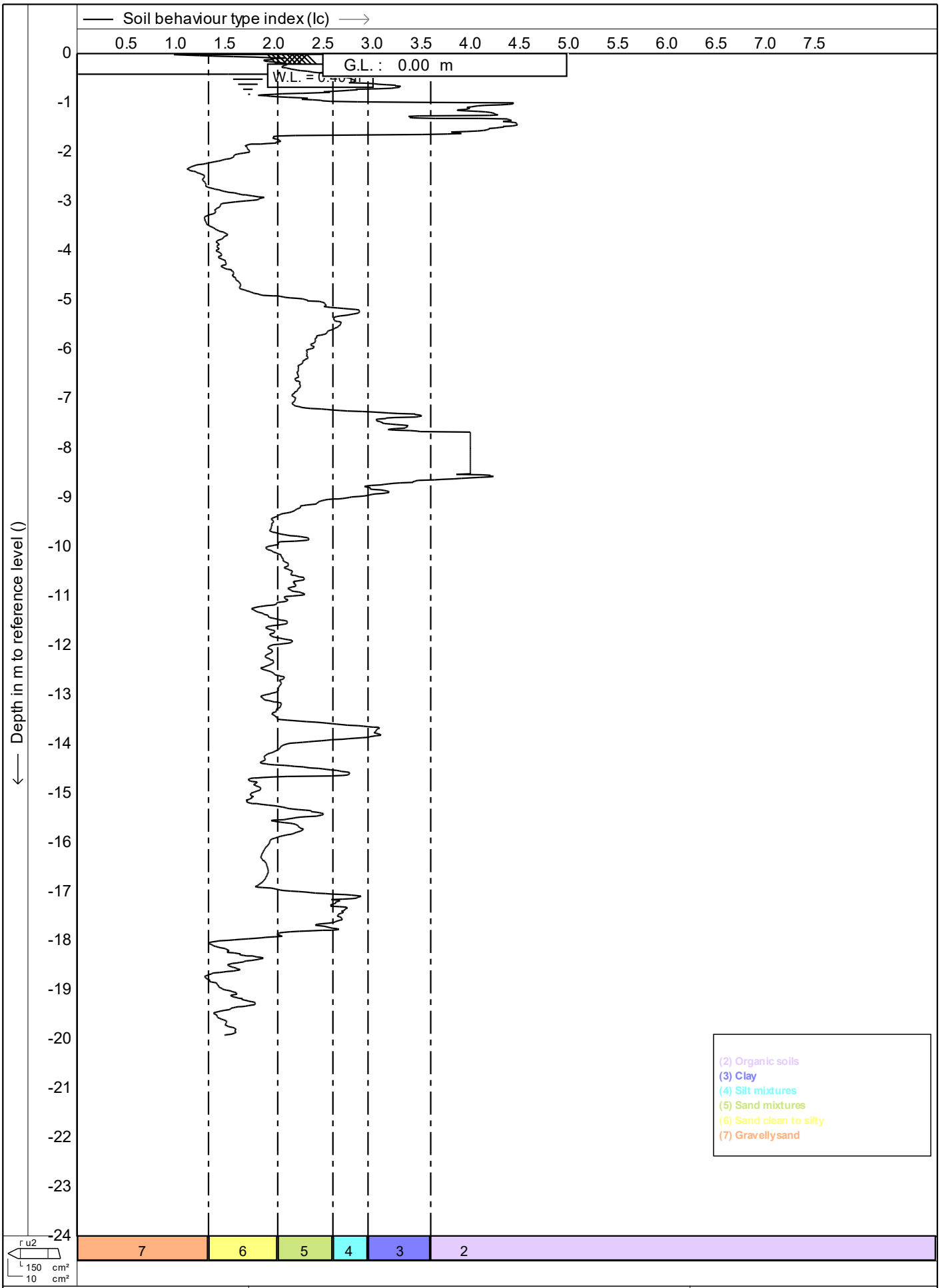


PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

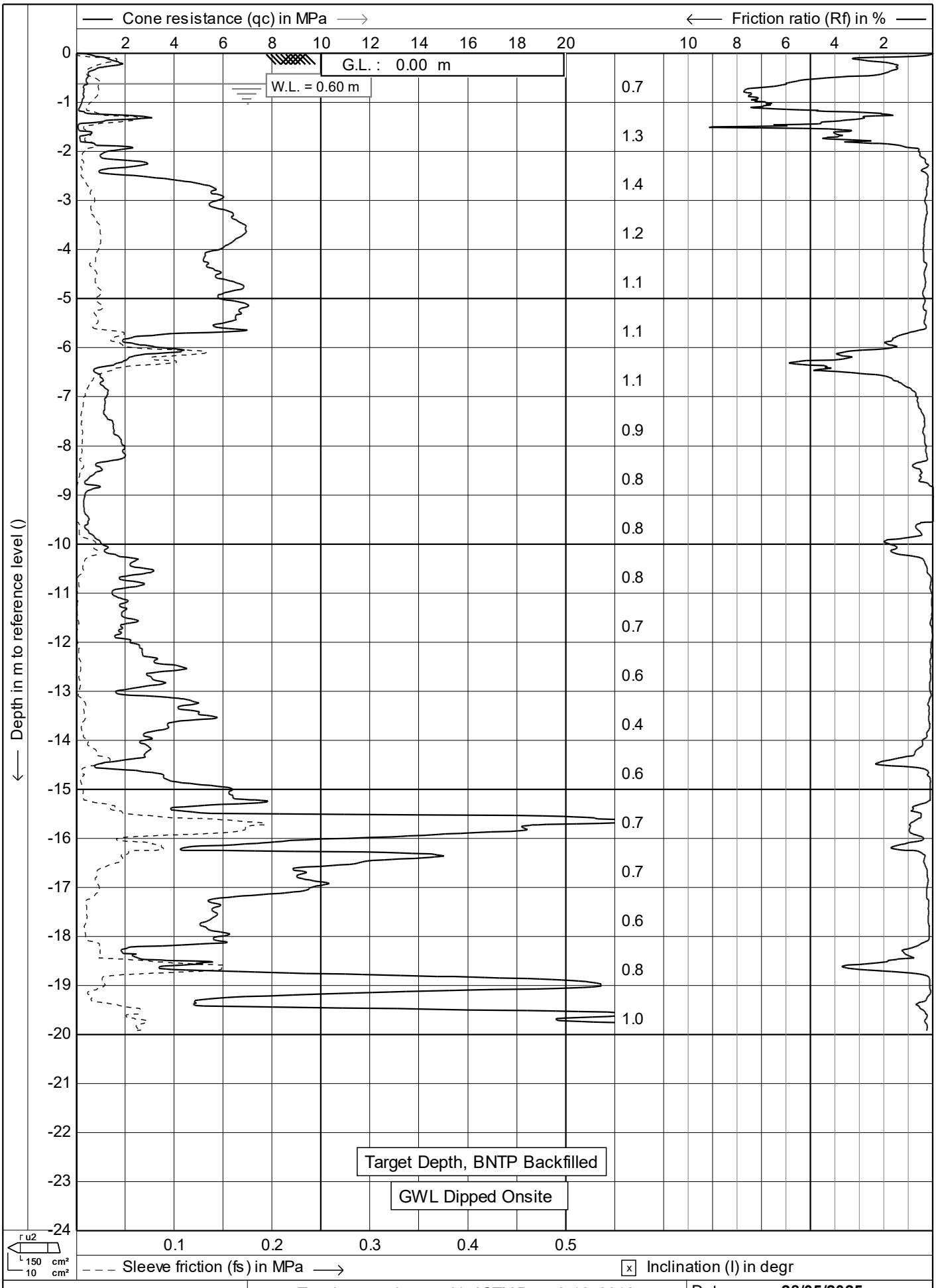
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT105** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

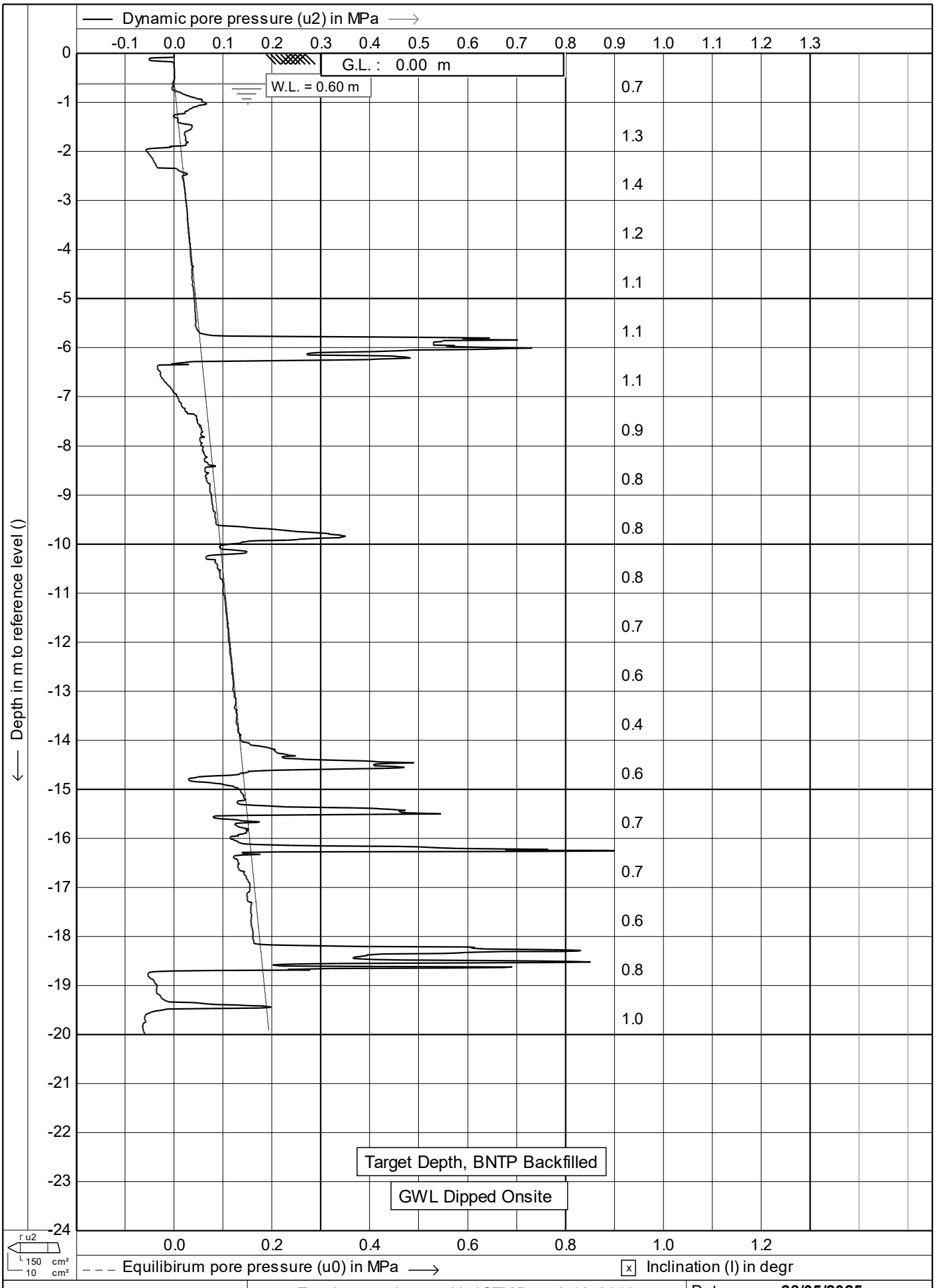
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT106** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

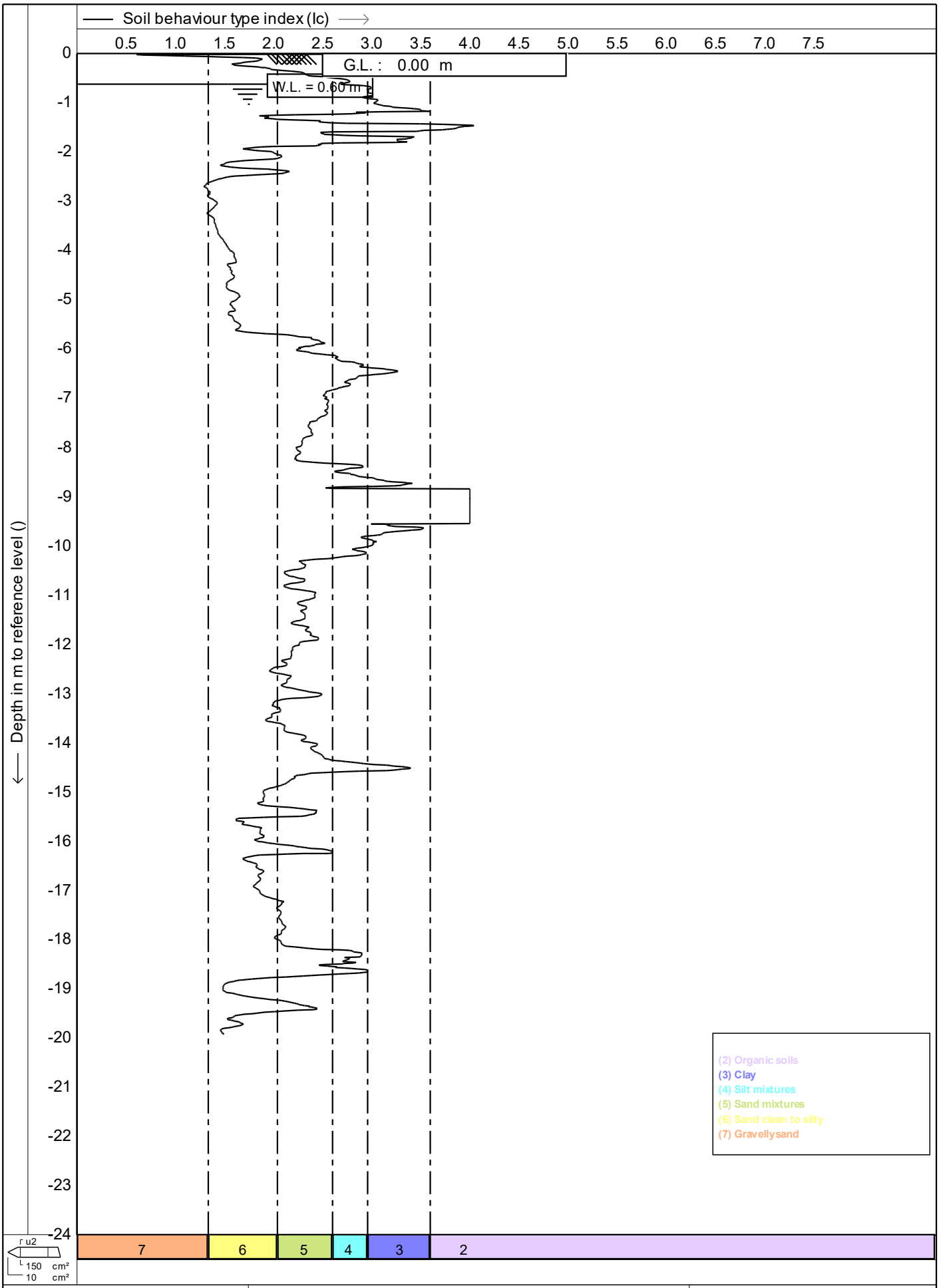
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT106** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

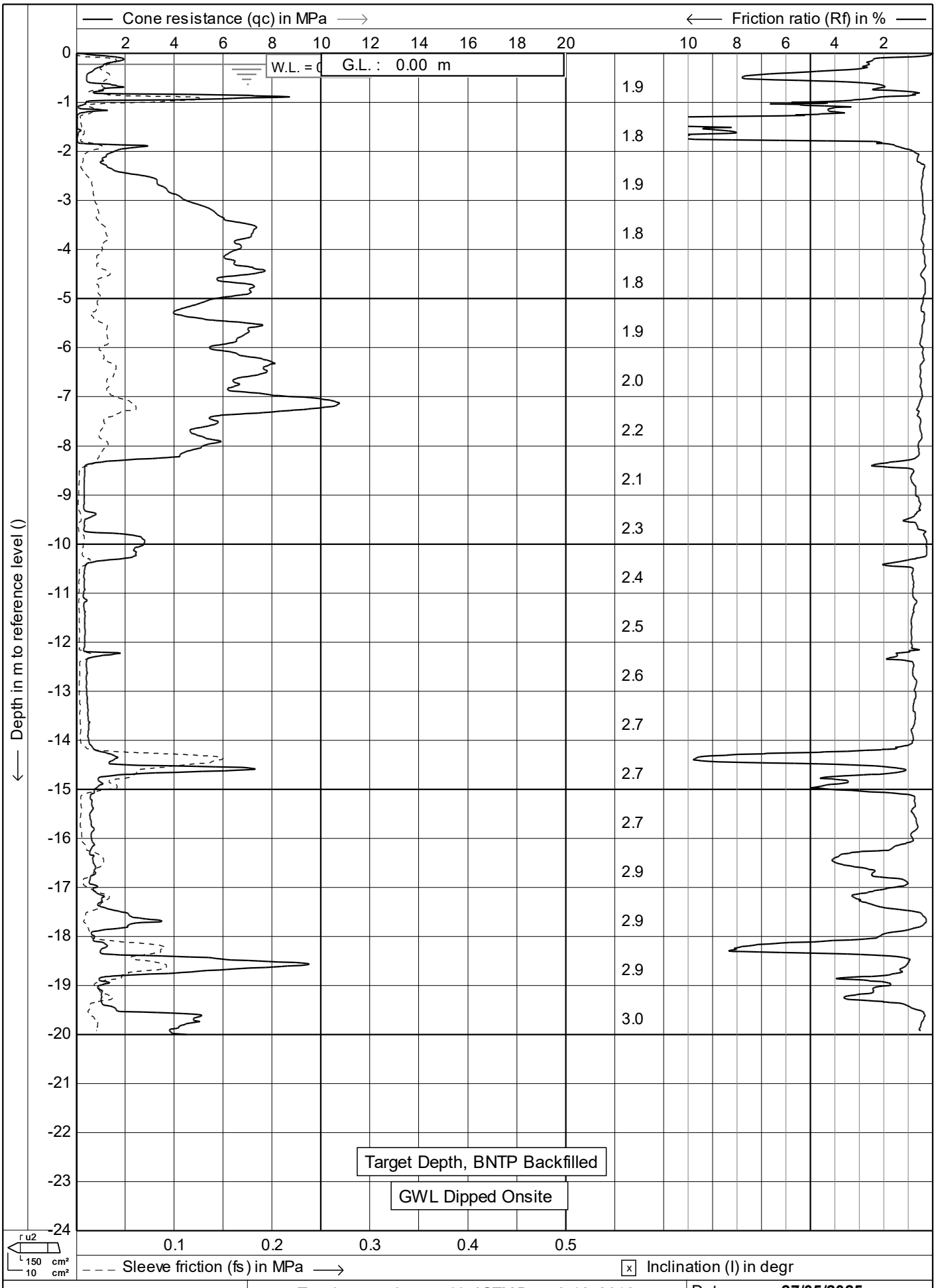
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT106** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

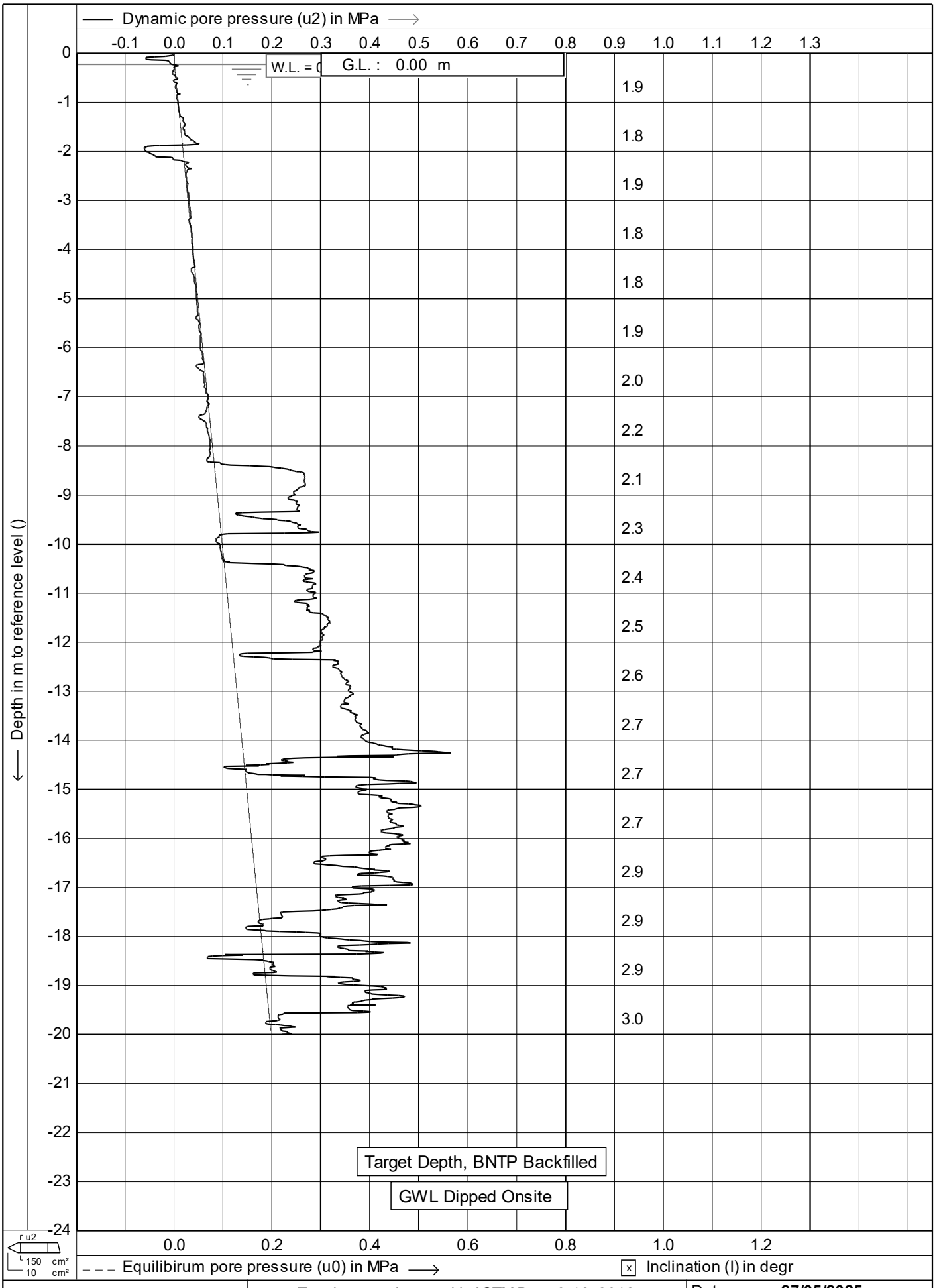
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT107** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

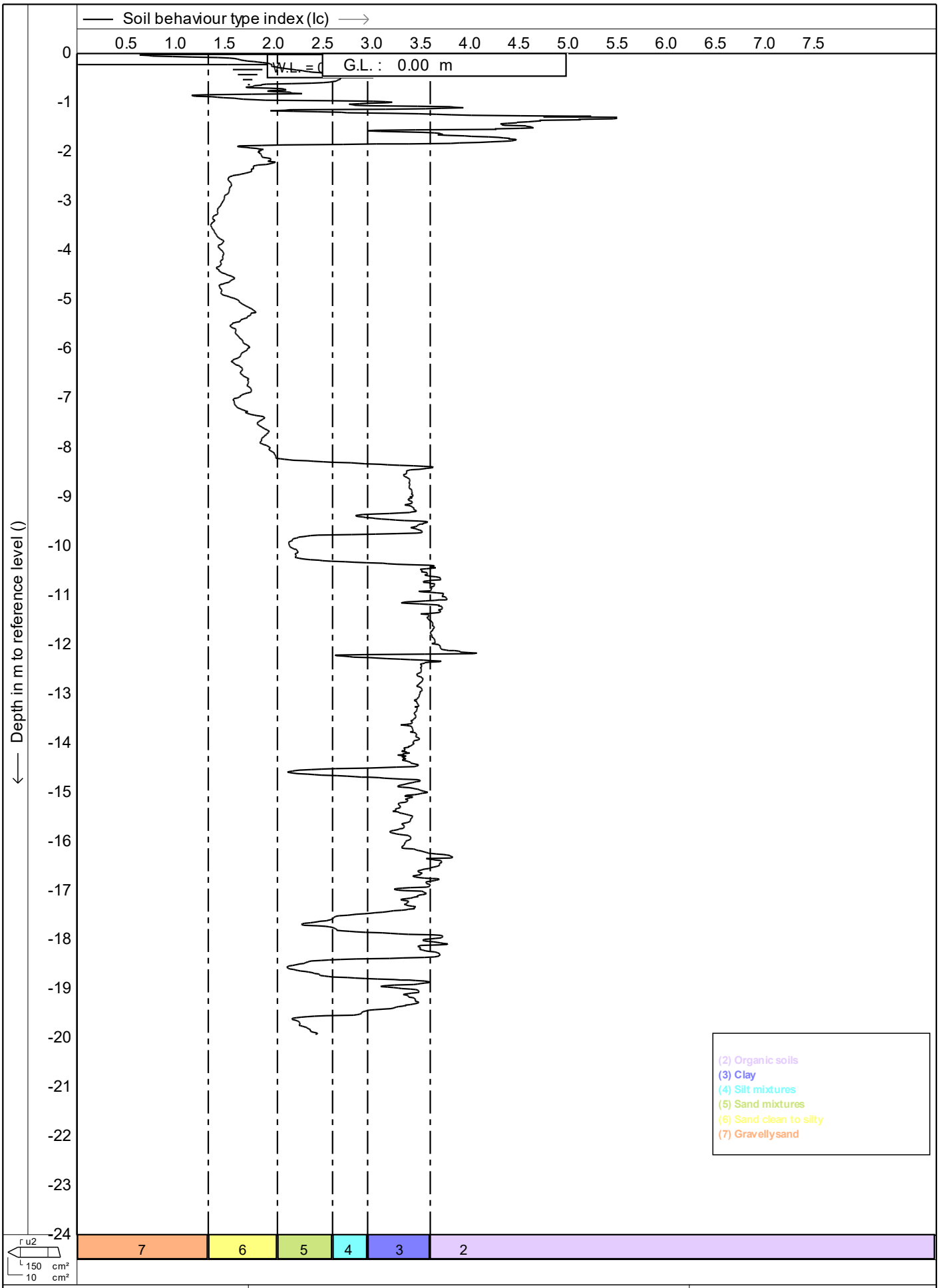
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT107** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

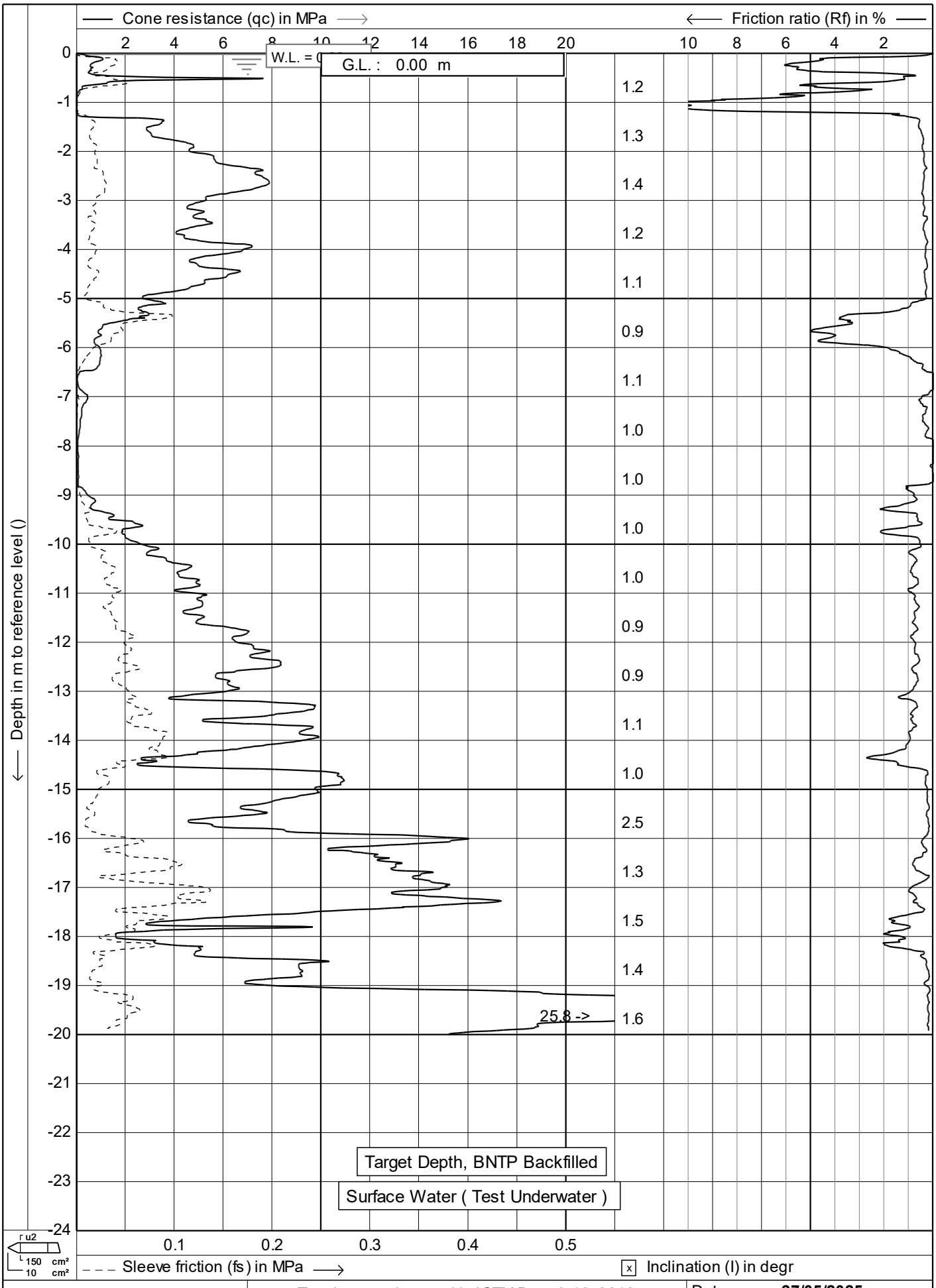
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT107** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

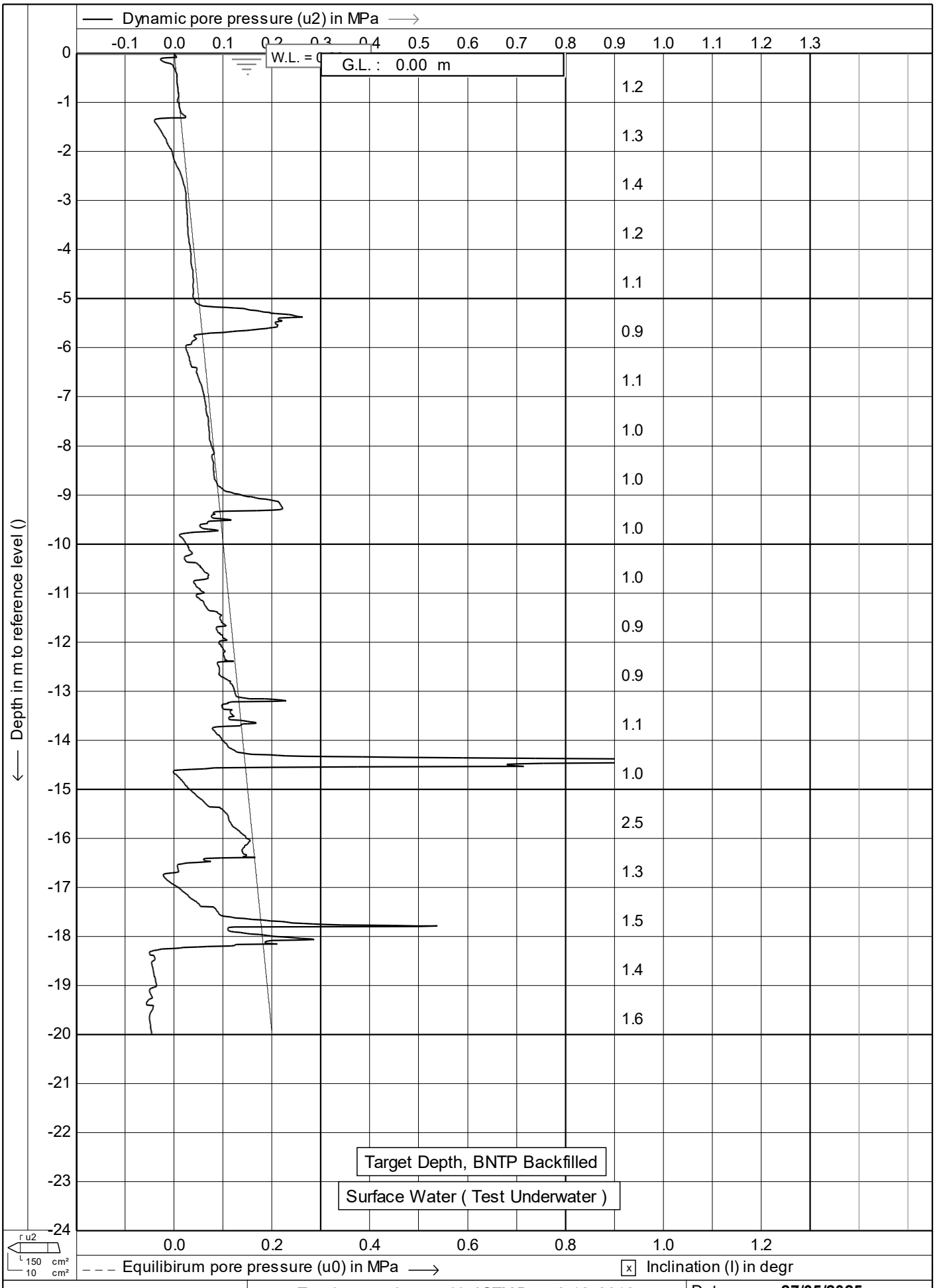
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT108** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

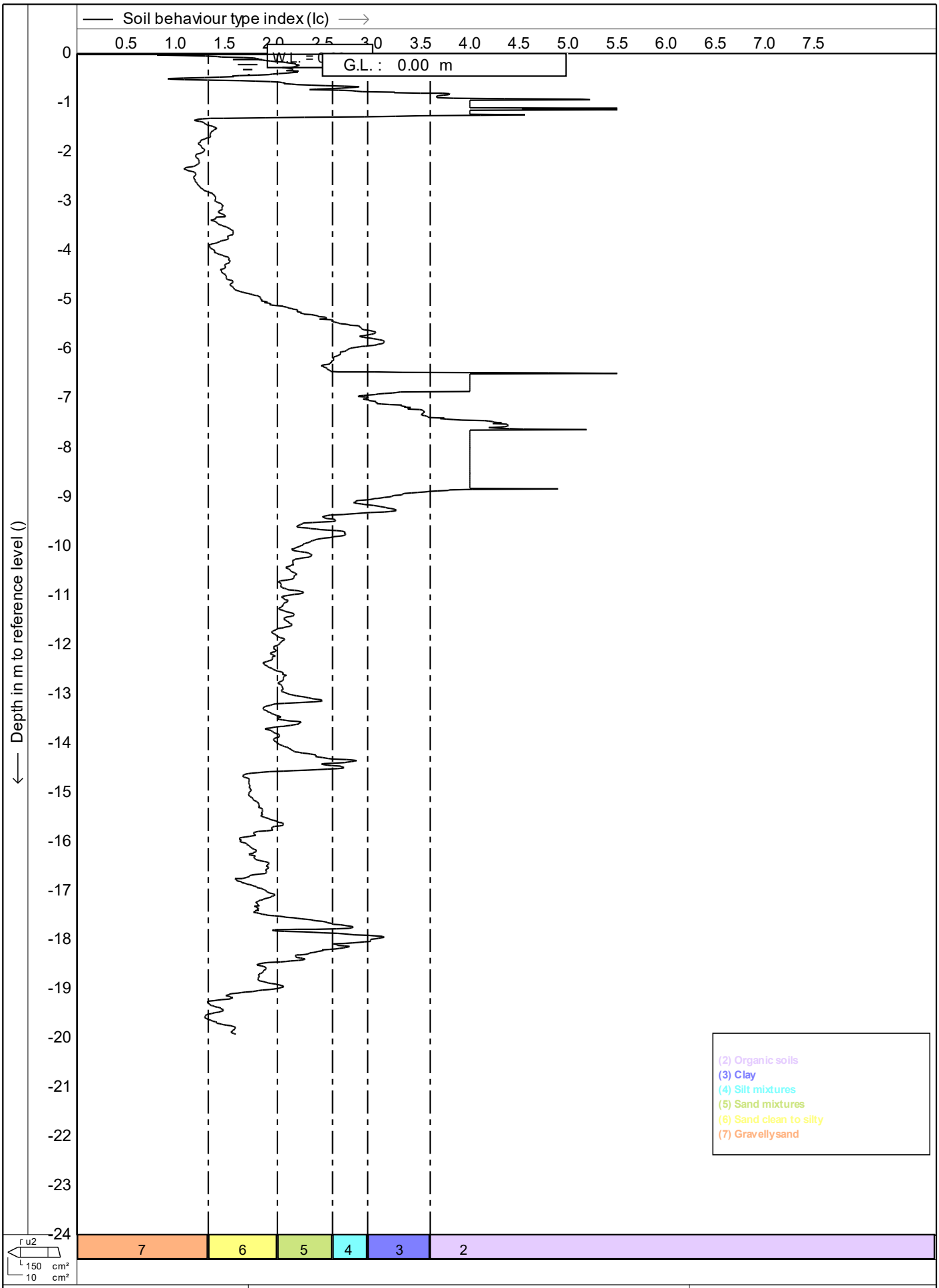
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT108** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

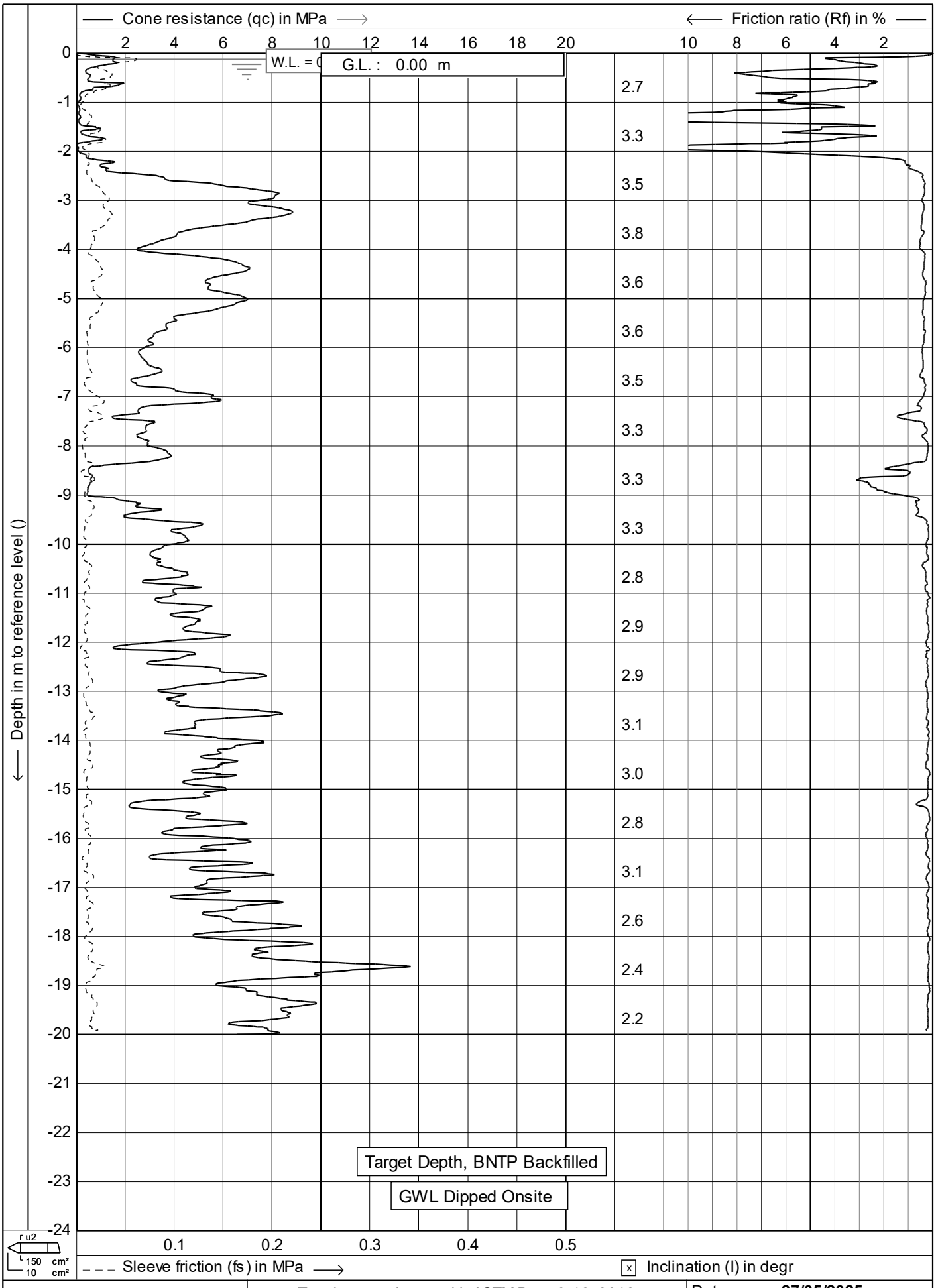
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT108** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

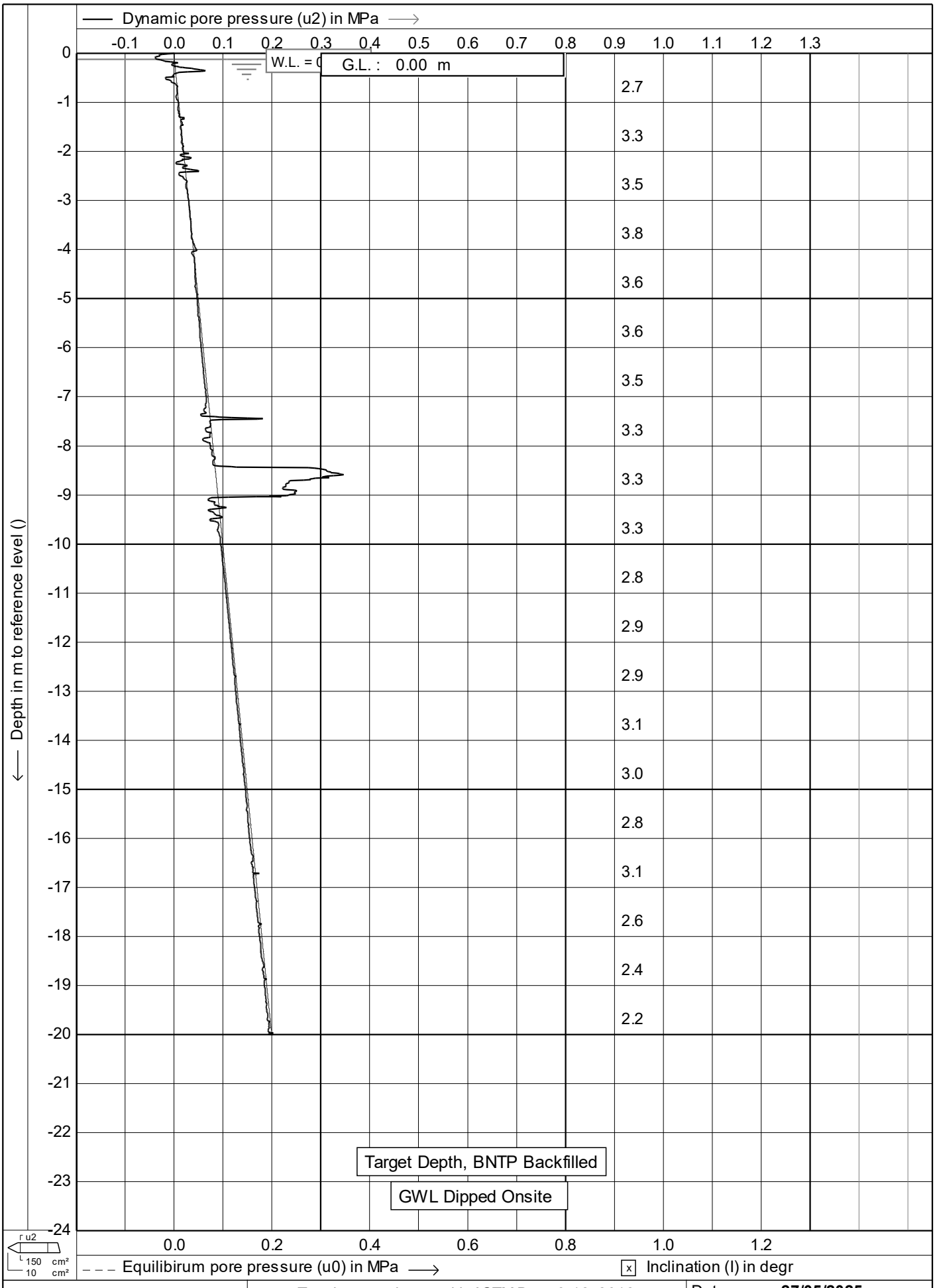
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT109** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

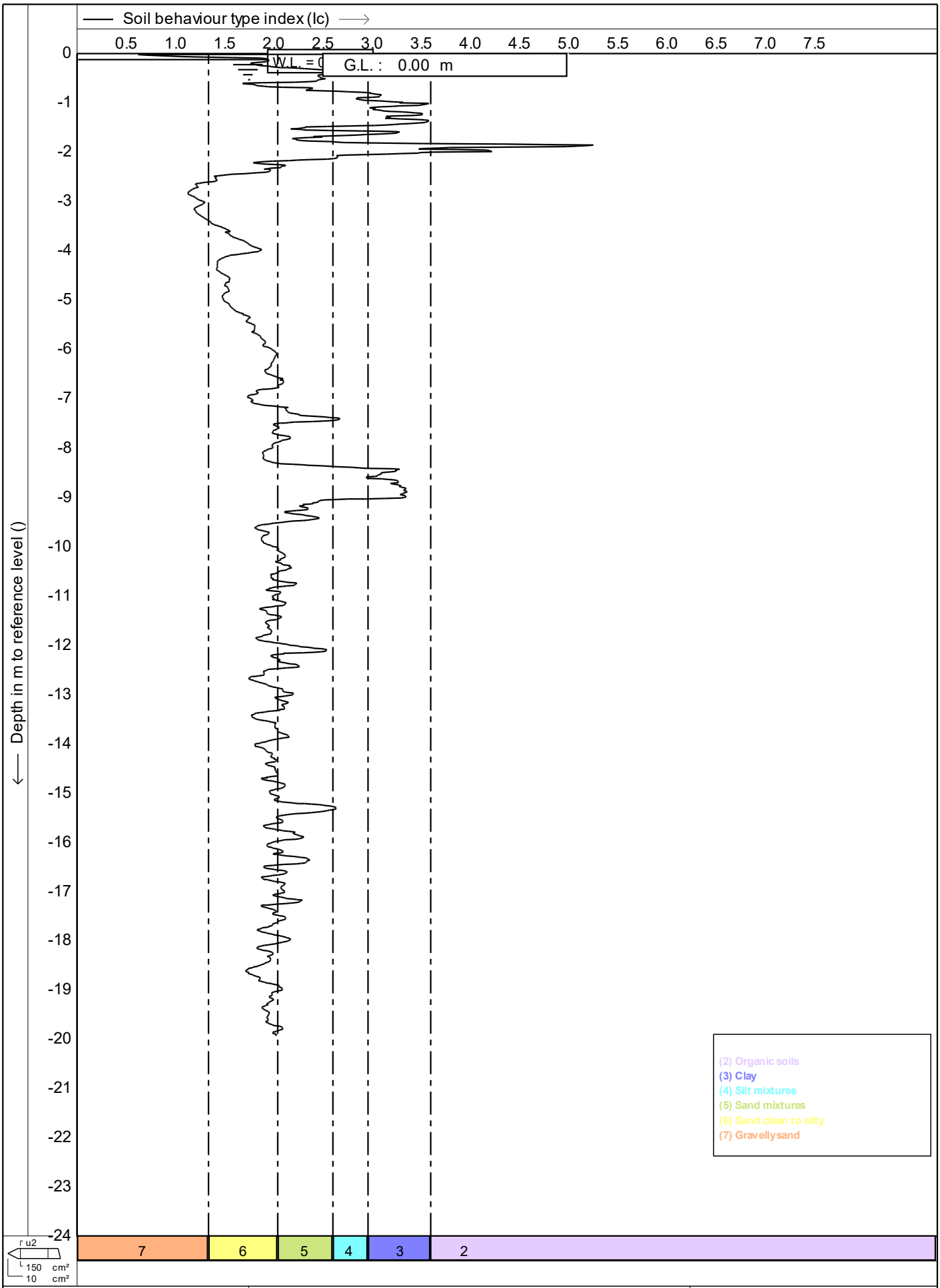
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT109** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

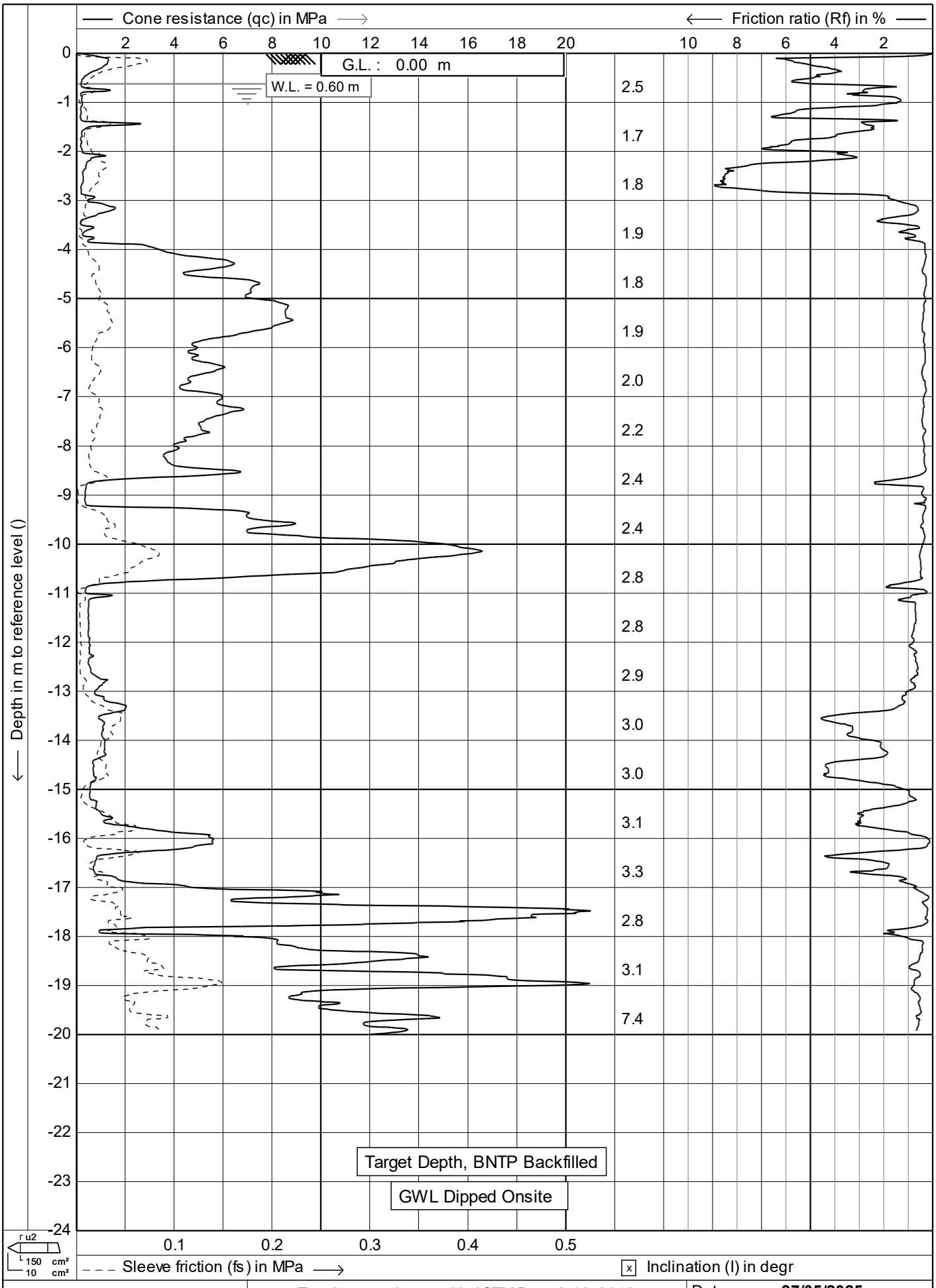
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT109** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

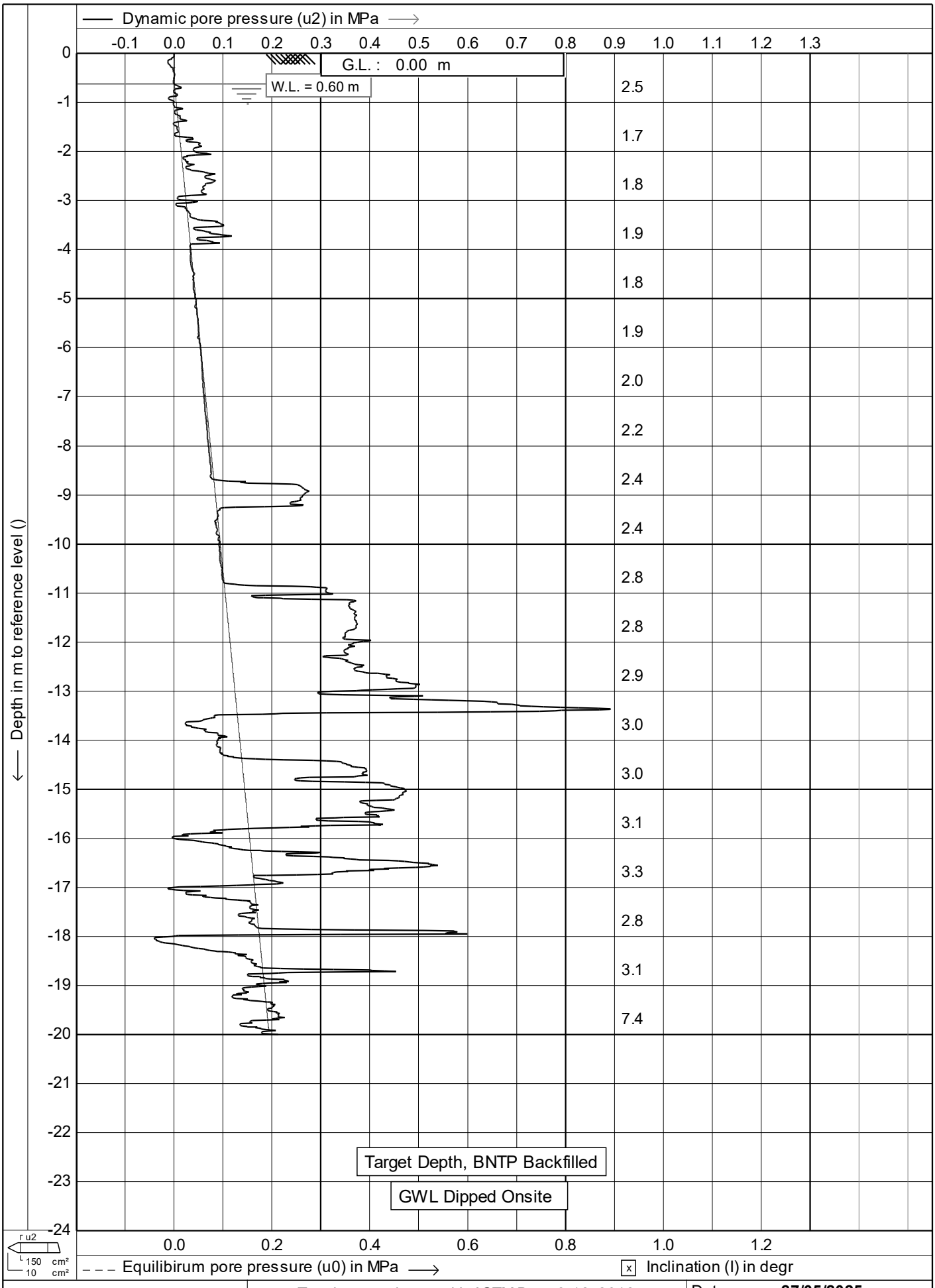
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT110** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

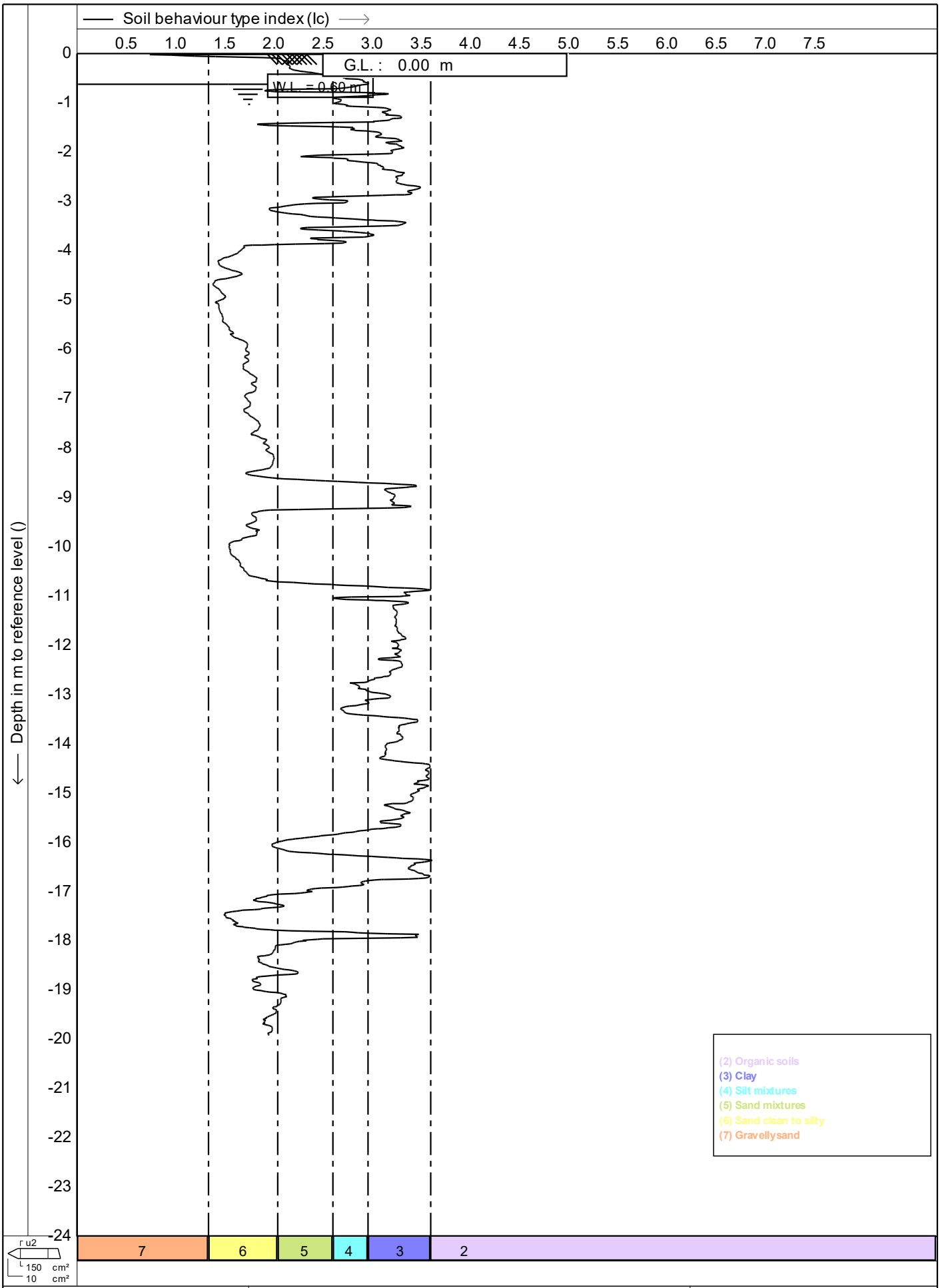
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT110** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

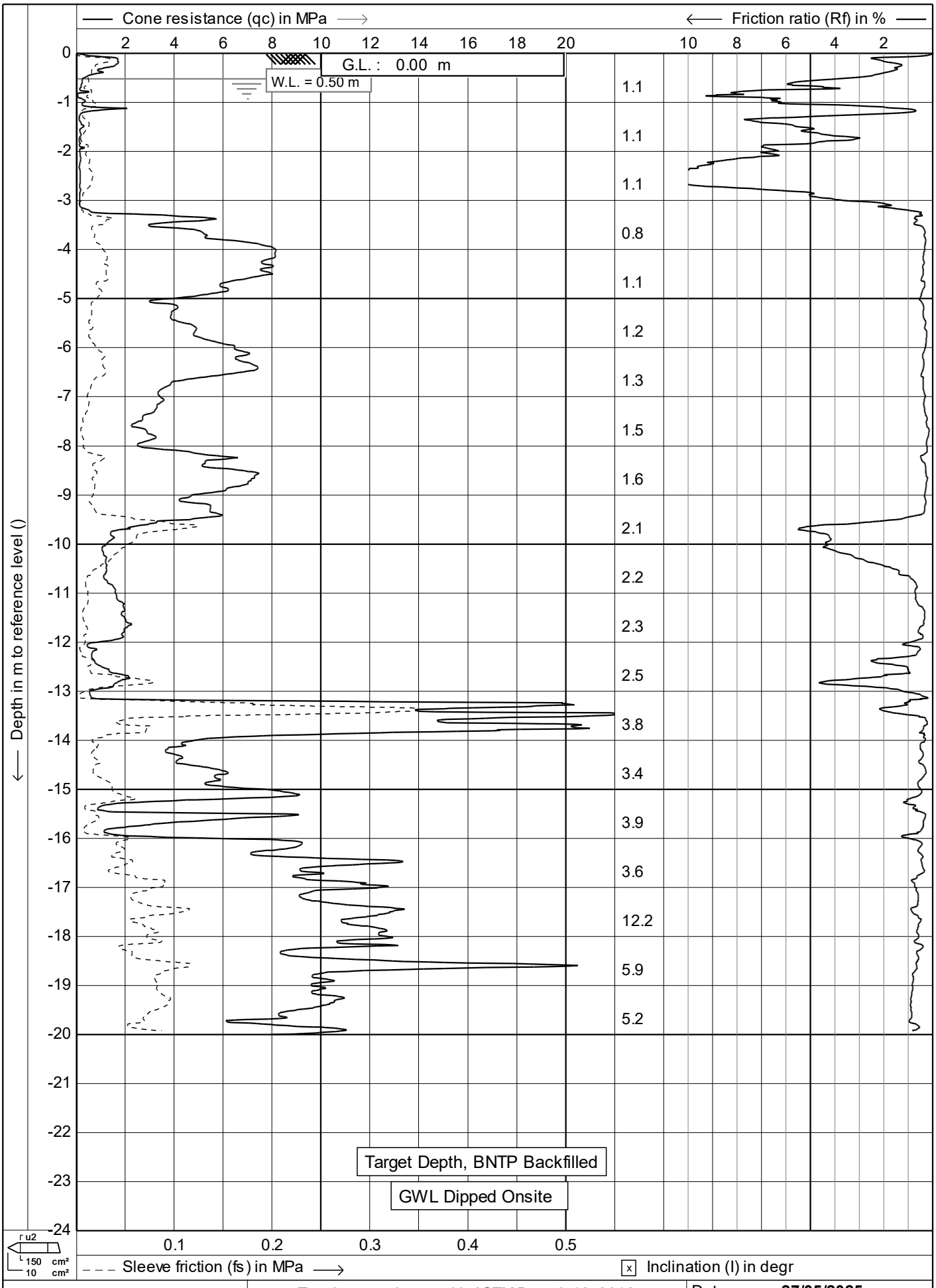
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT110** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

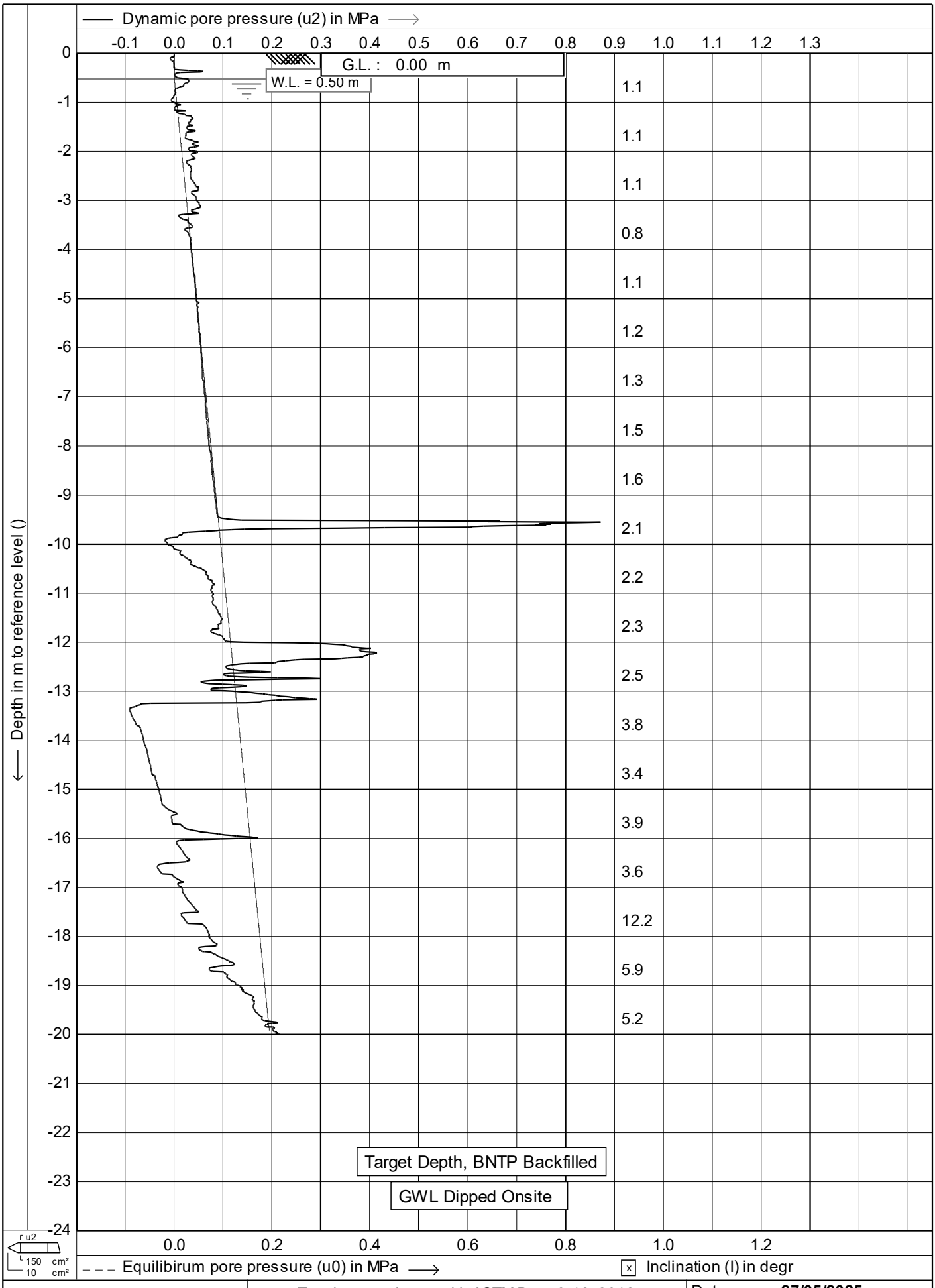
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT111** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

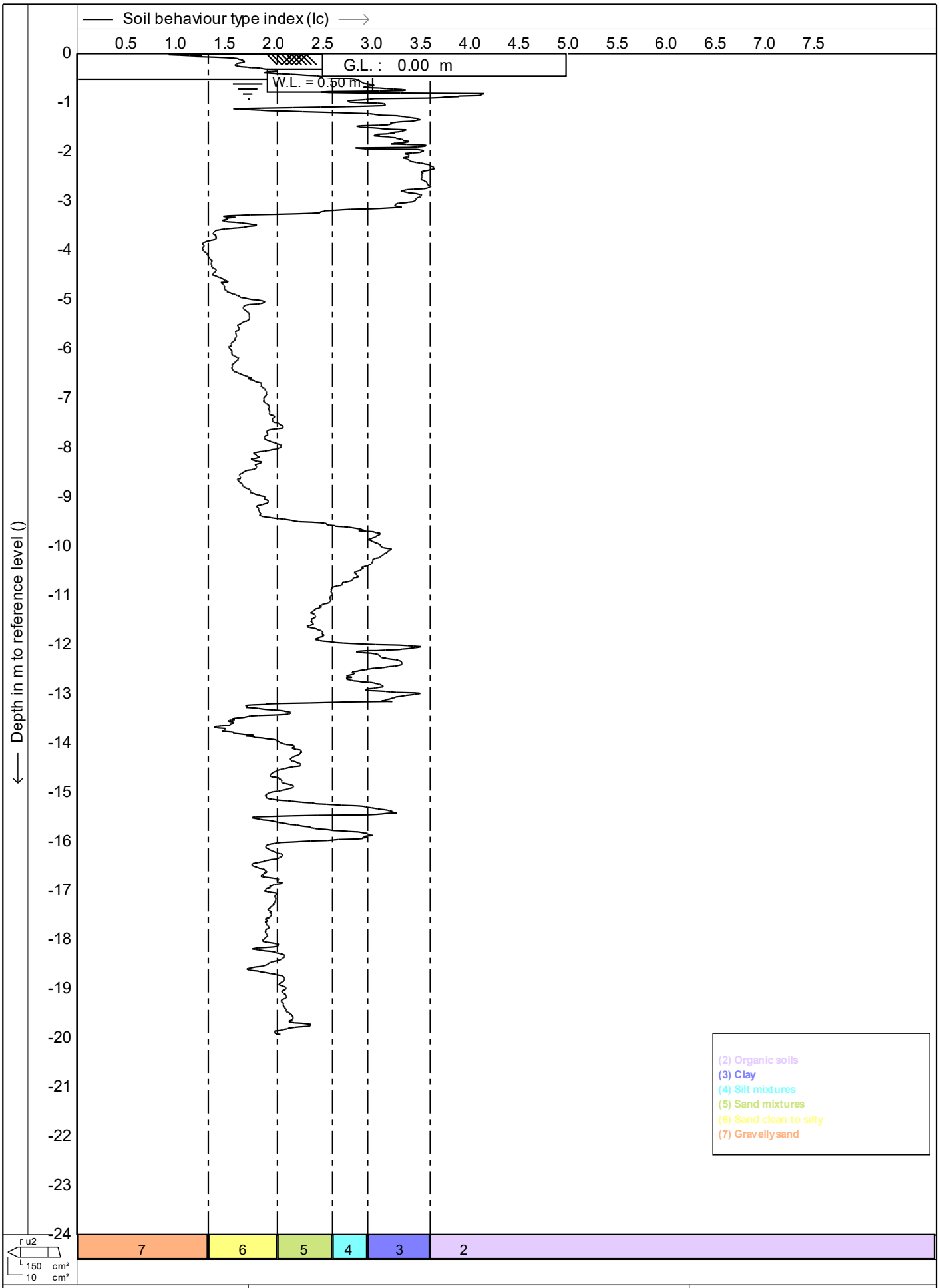
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT111** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

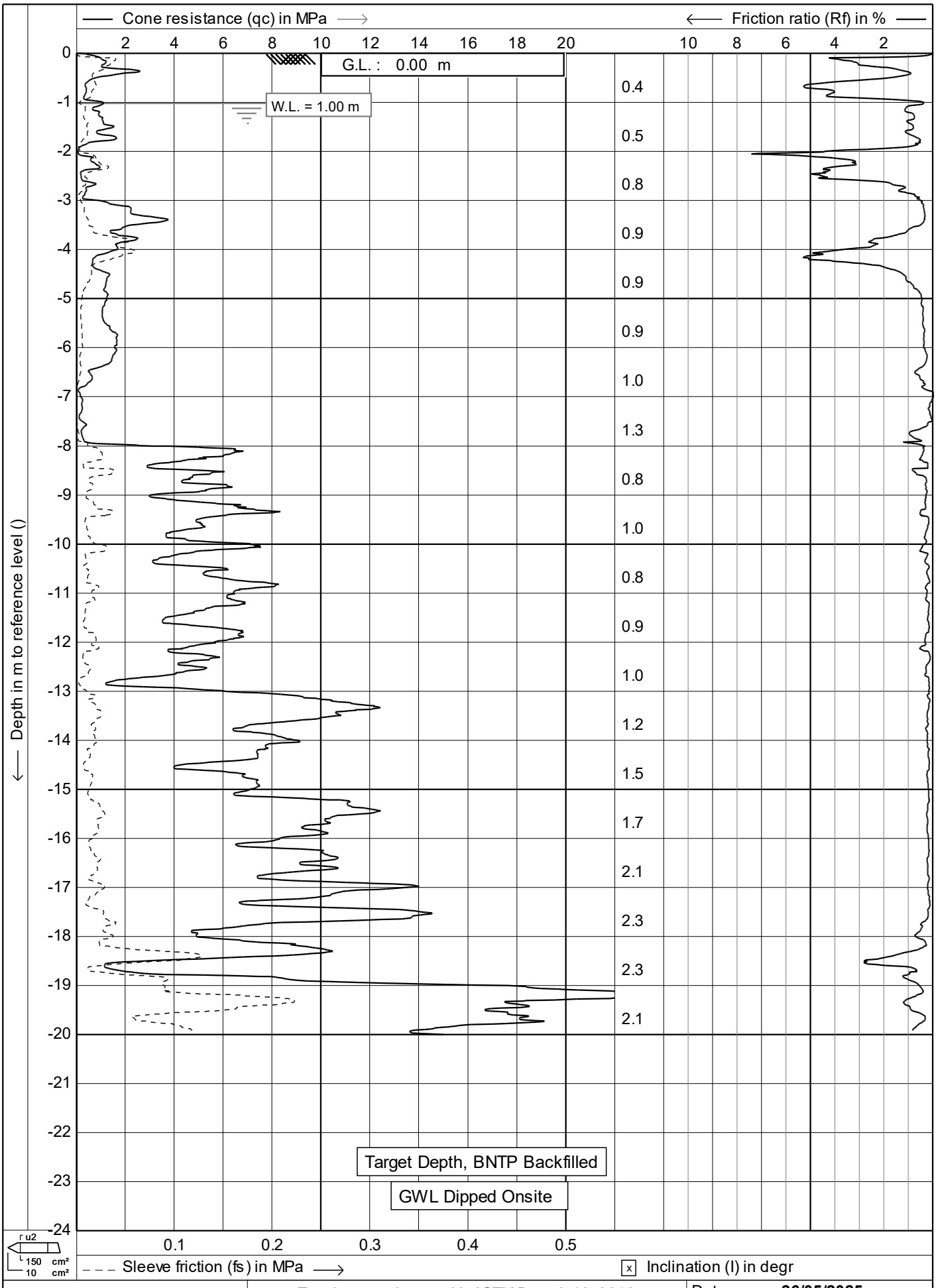
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **CPT111** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

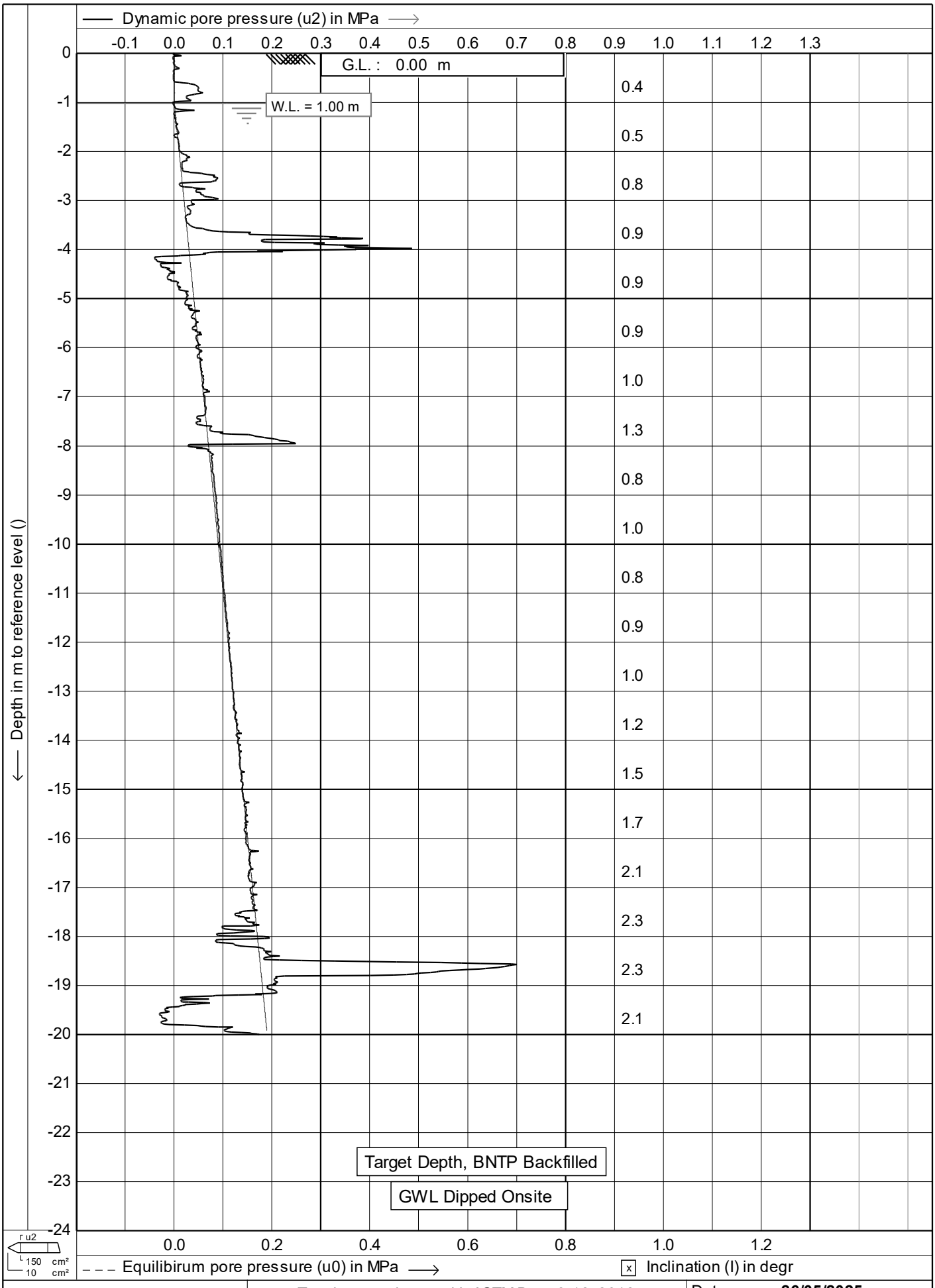
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT112** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

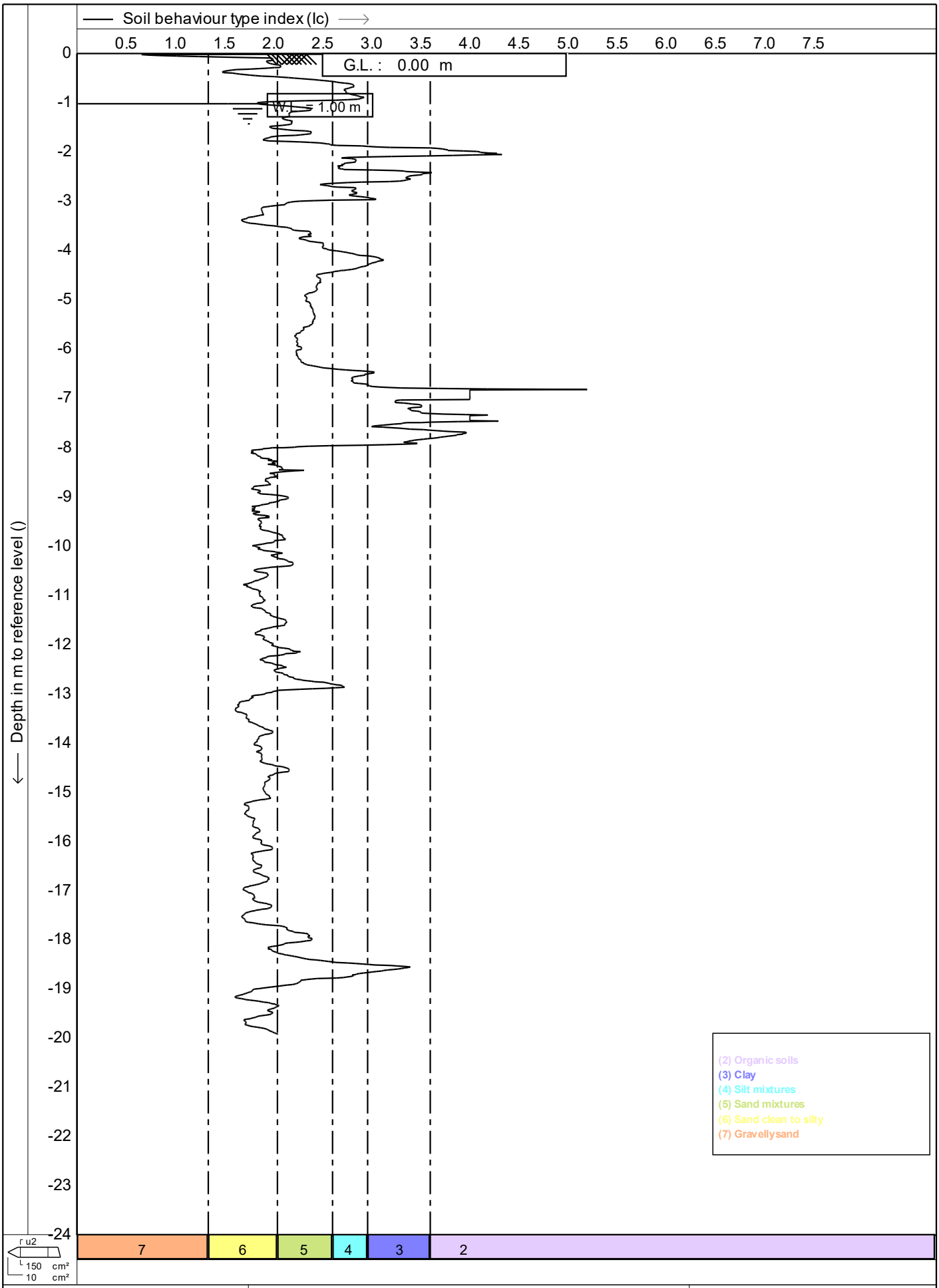
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT112** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

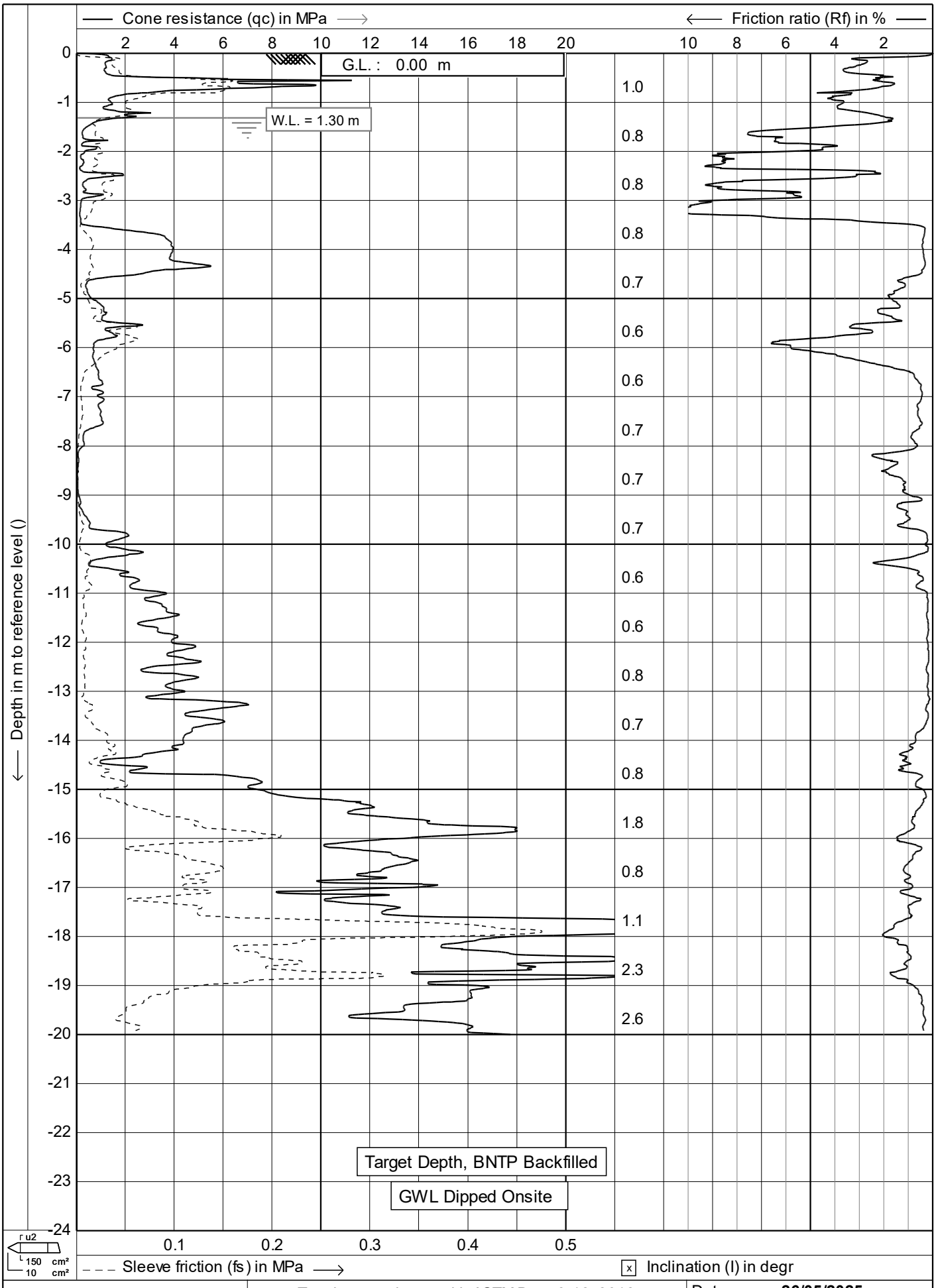
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT112** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

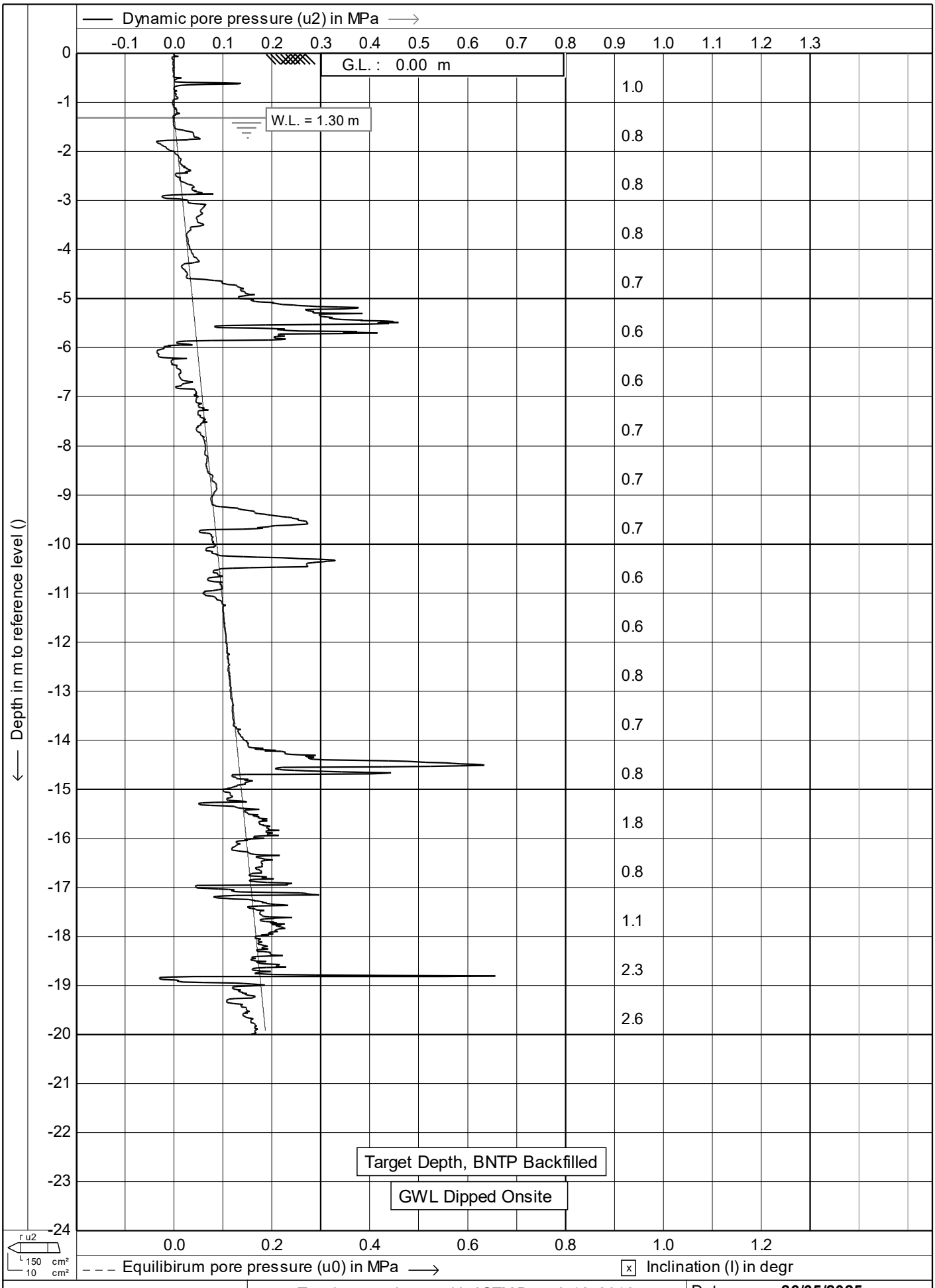
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT113** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

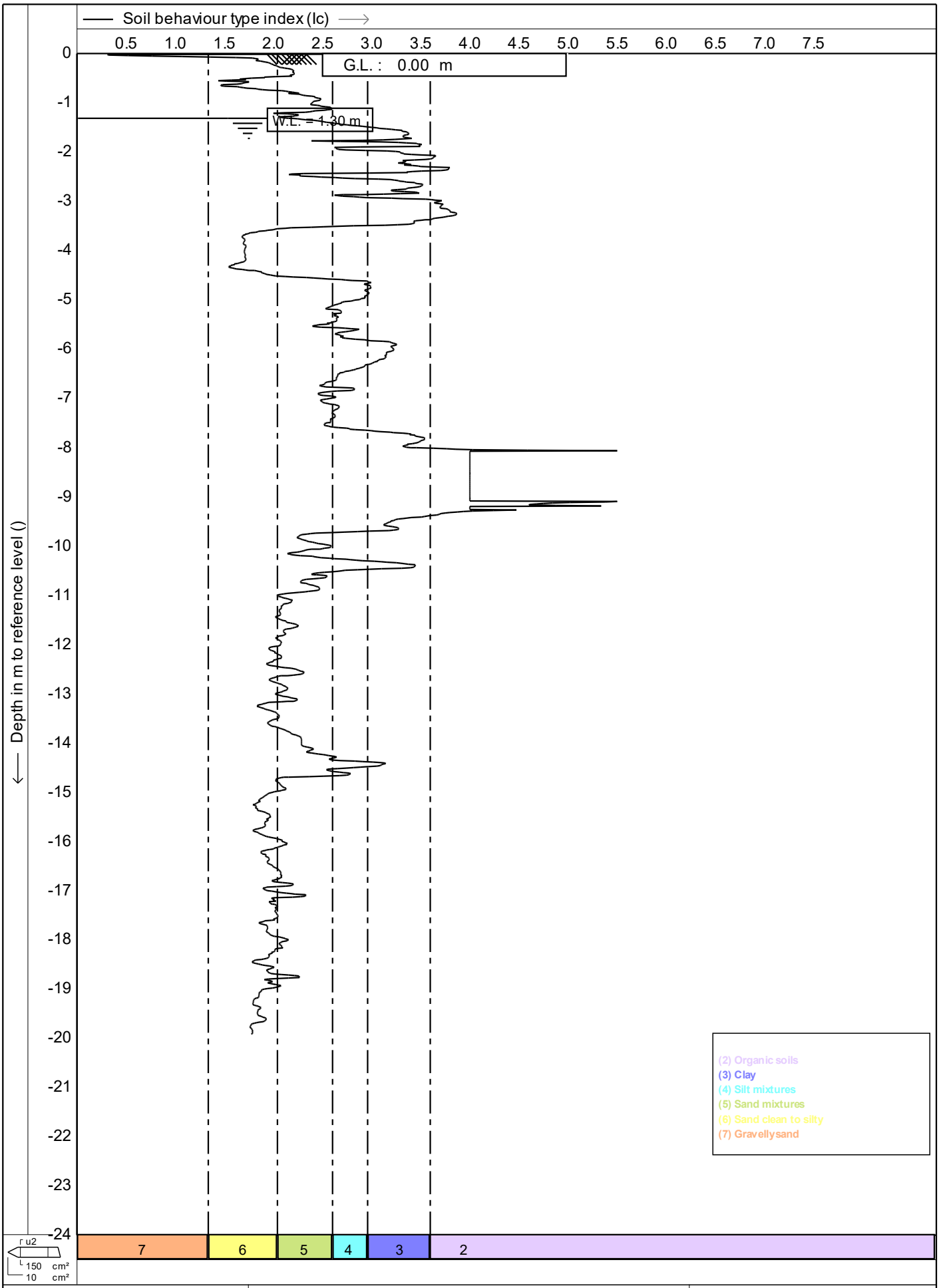
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT113** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

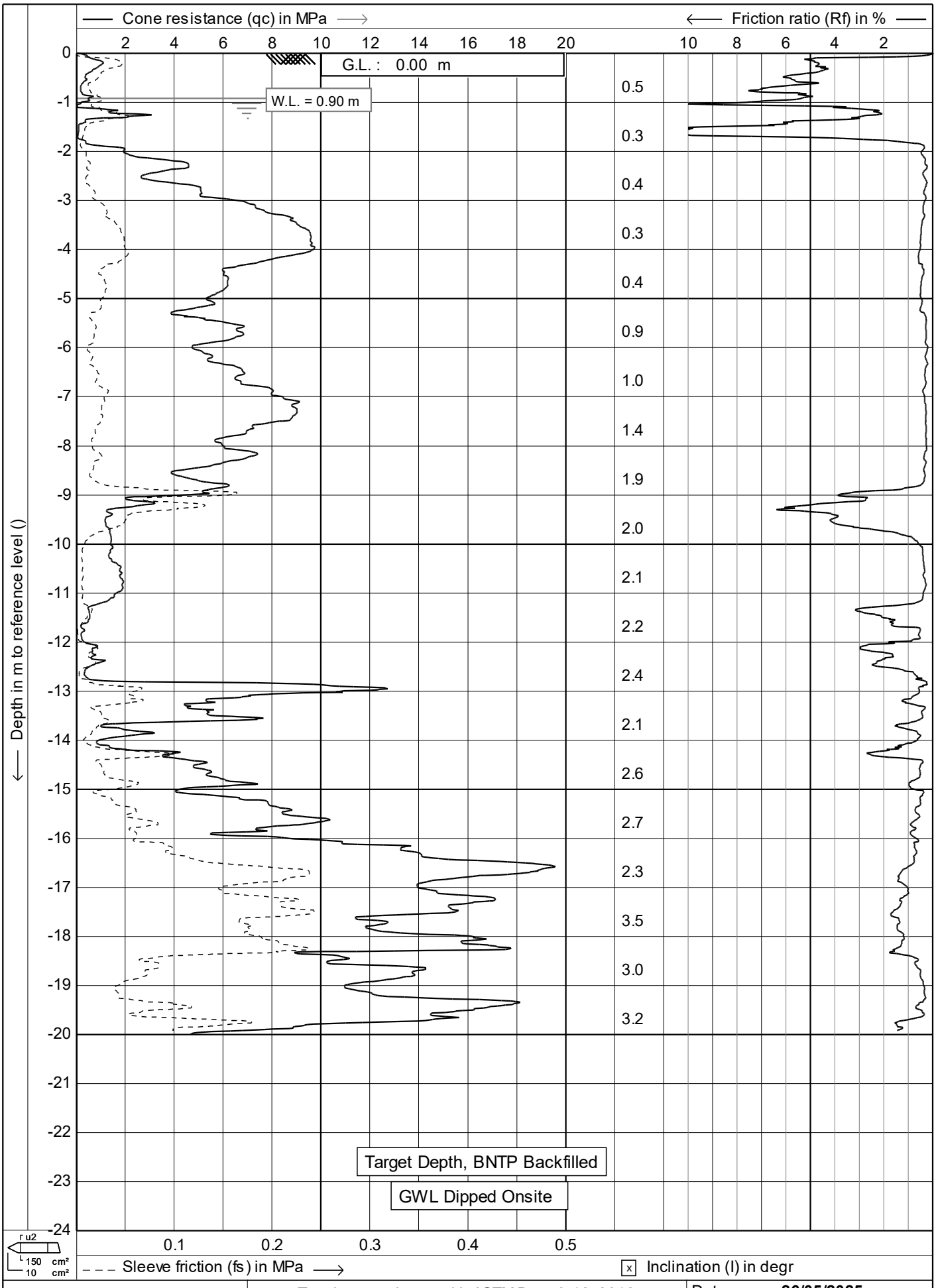
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT113** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

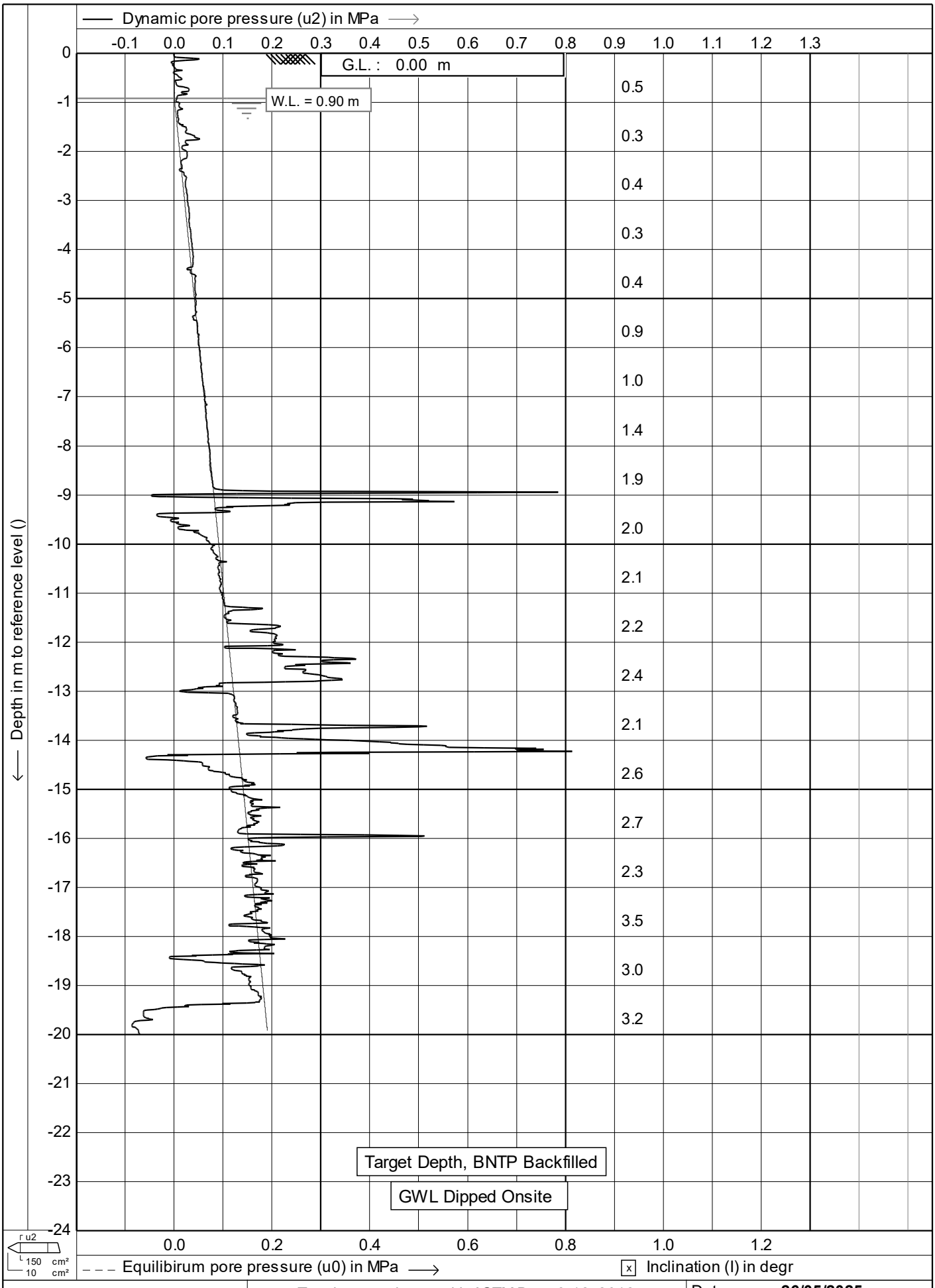
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT114** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

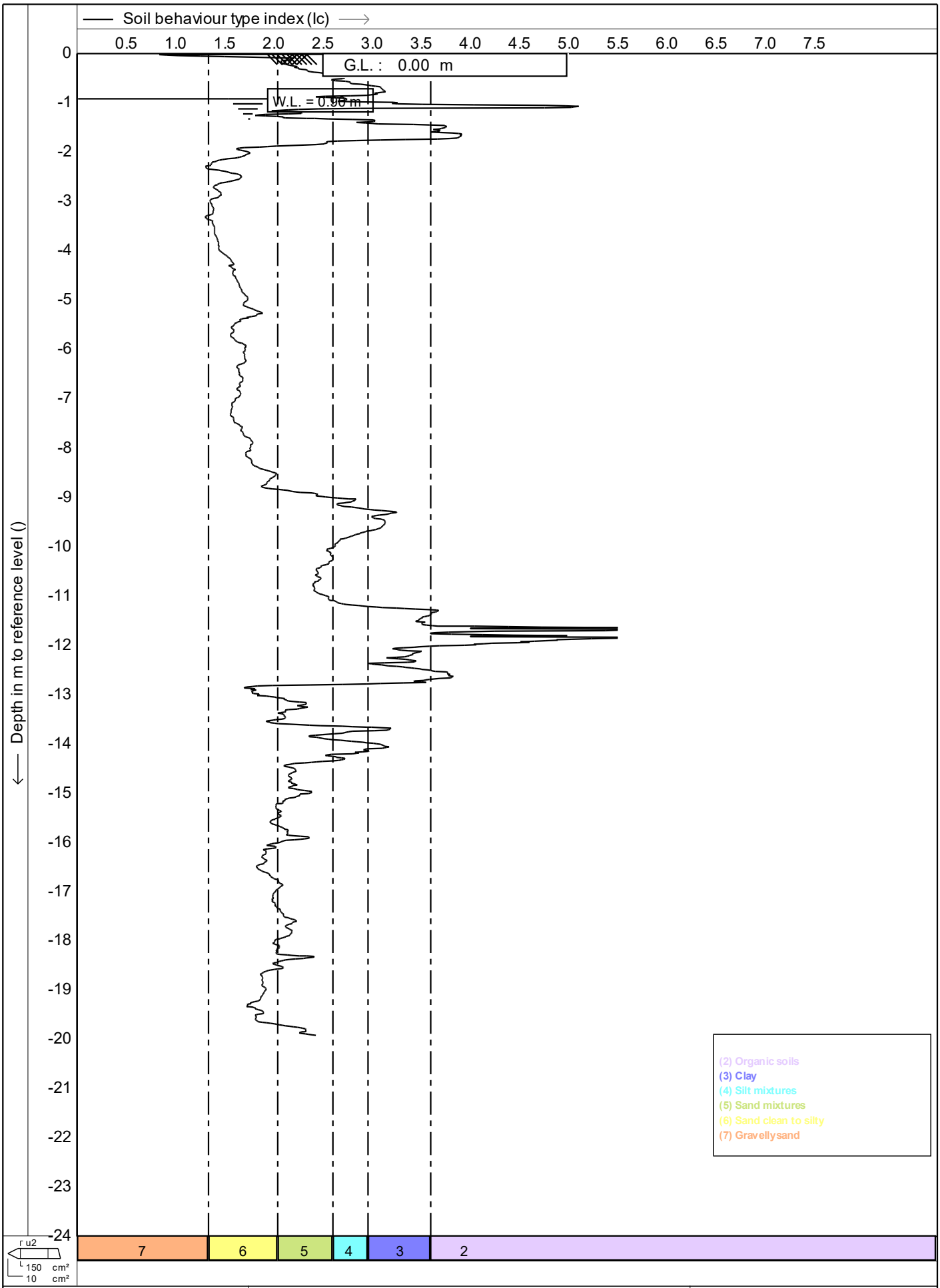
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **26/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT114** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

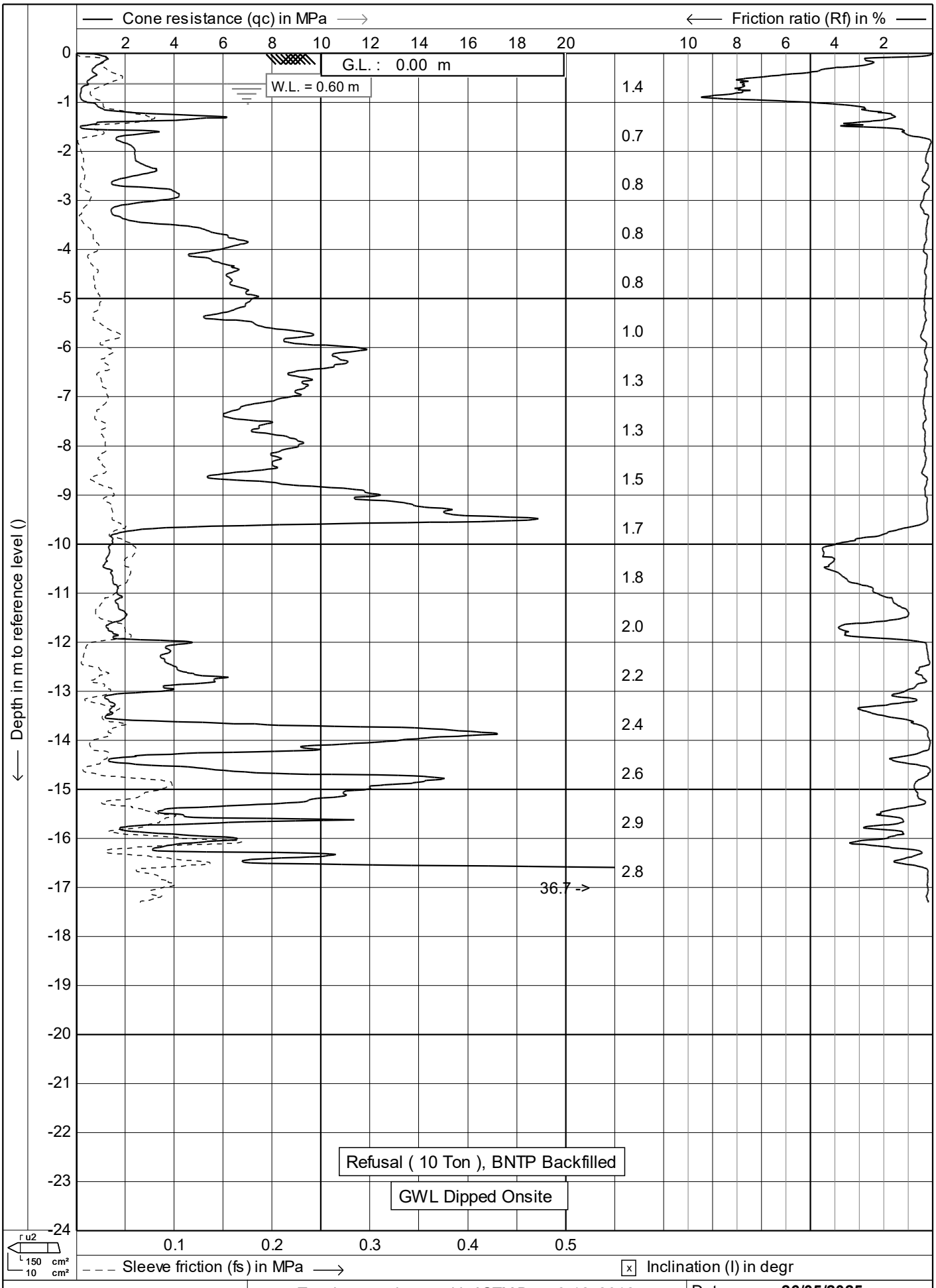
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT114** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

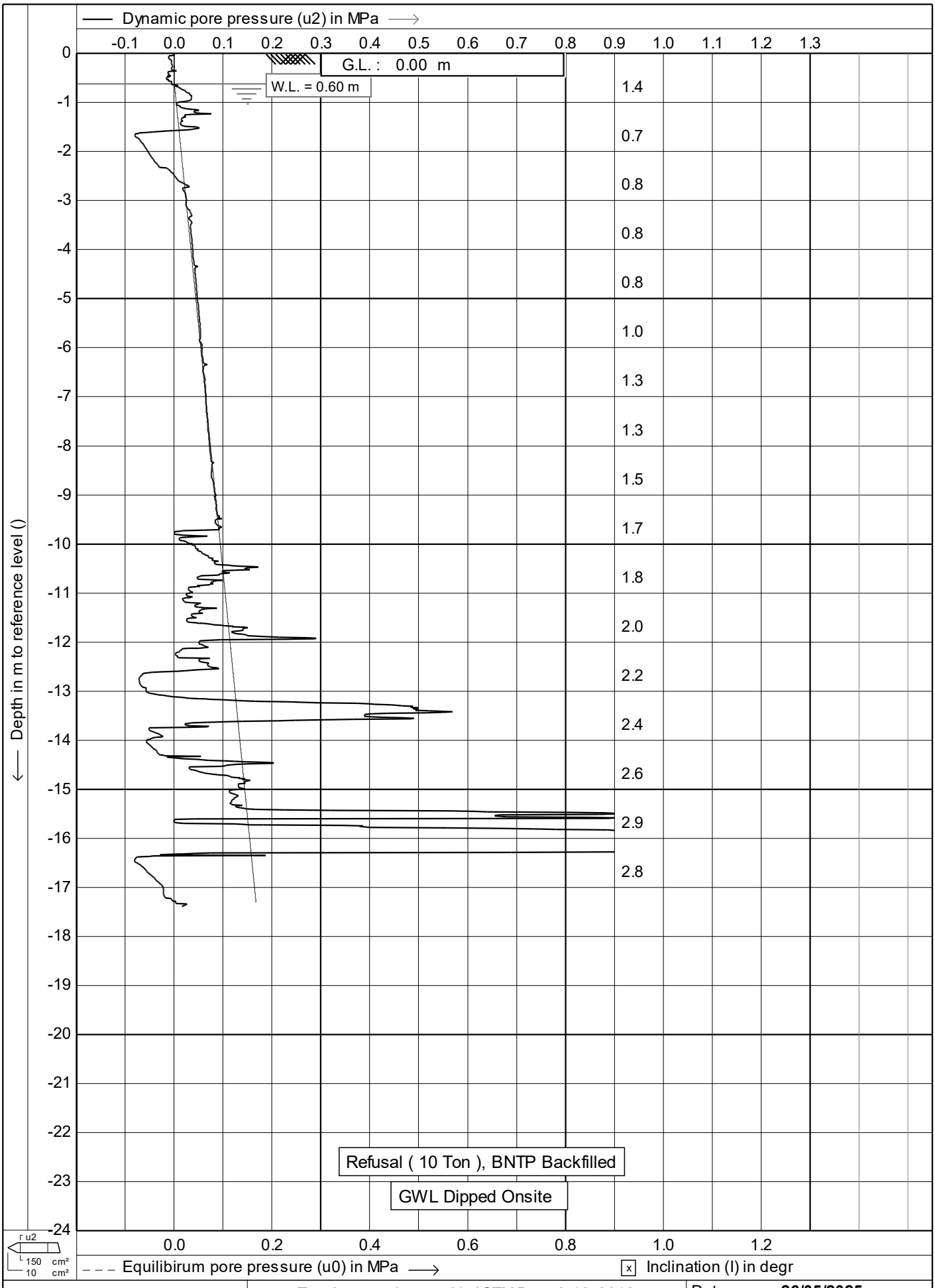
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT115** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

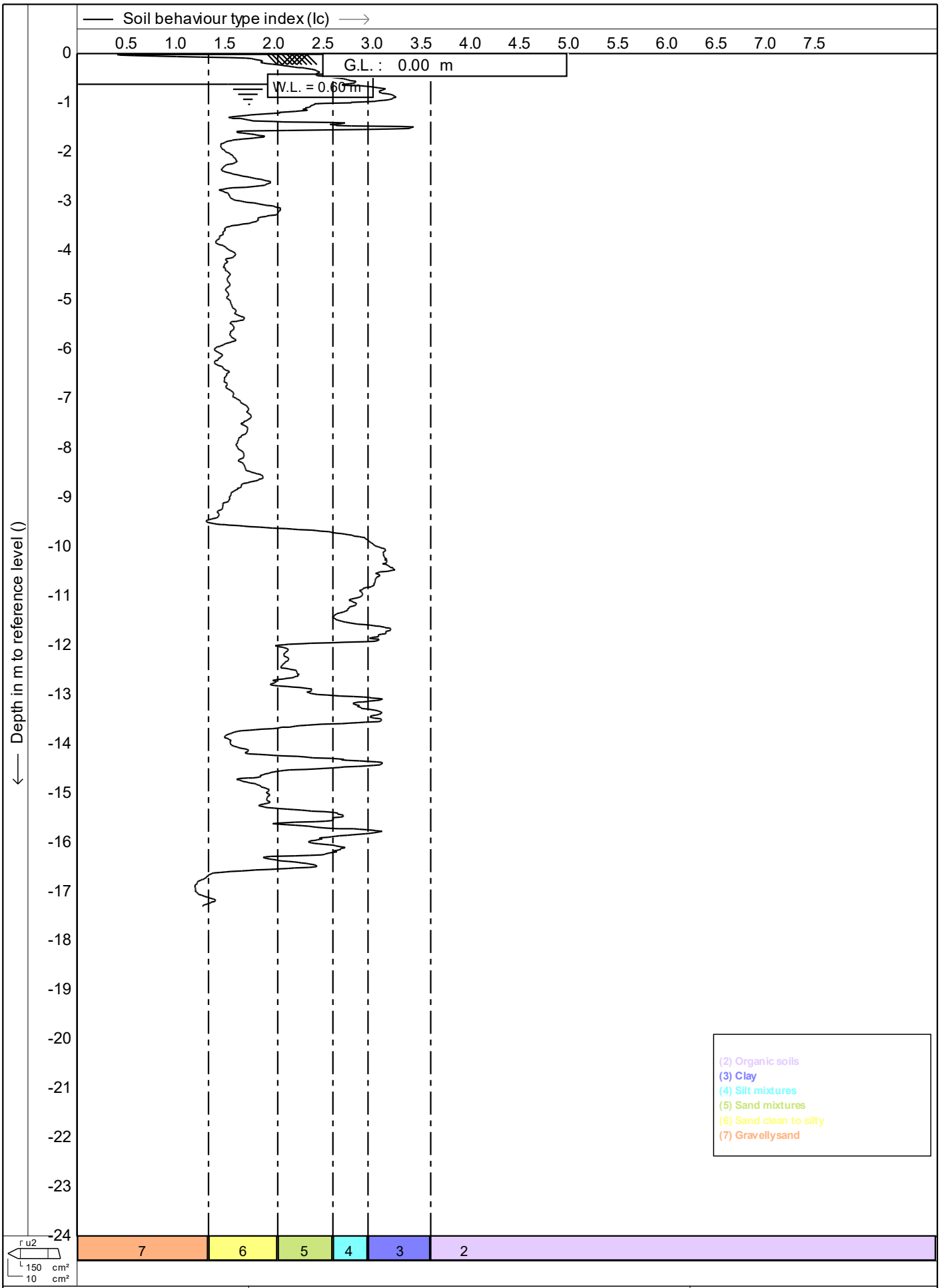
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **26/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT115** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

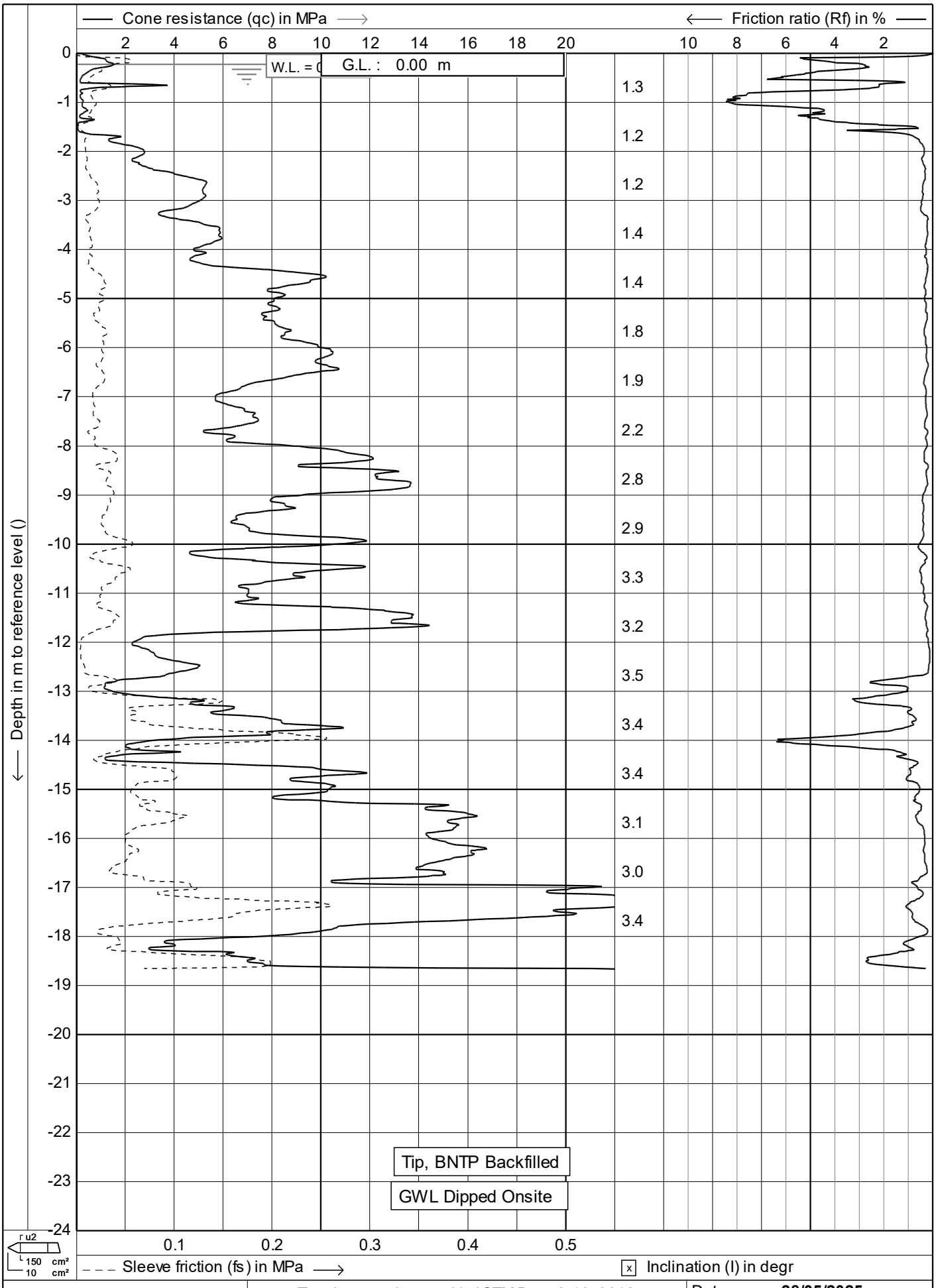
Date : **26/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT115** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

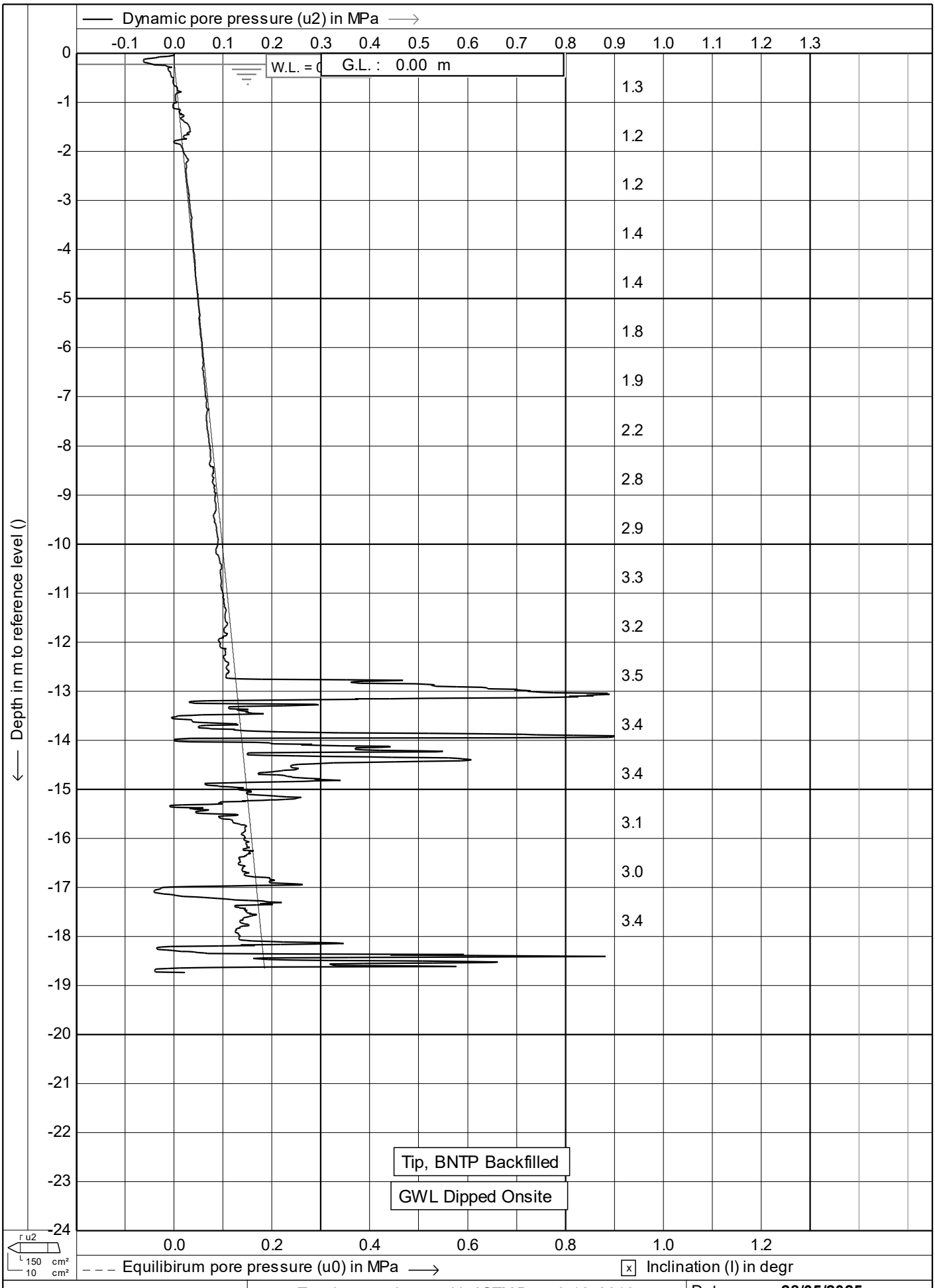
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT116** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

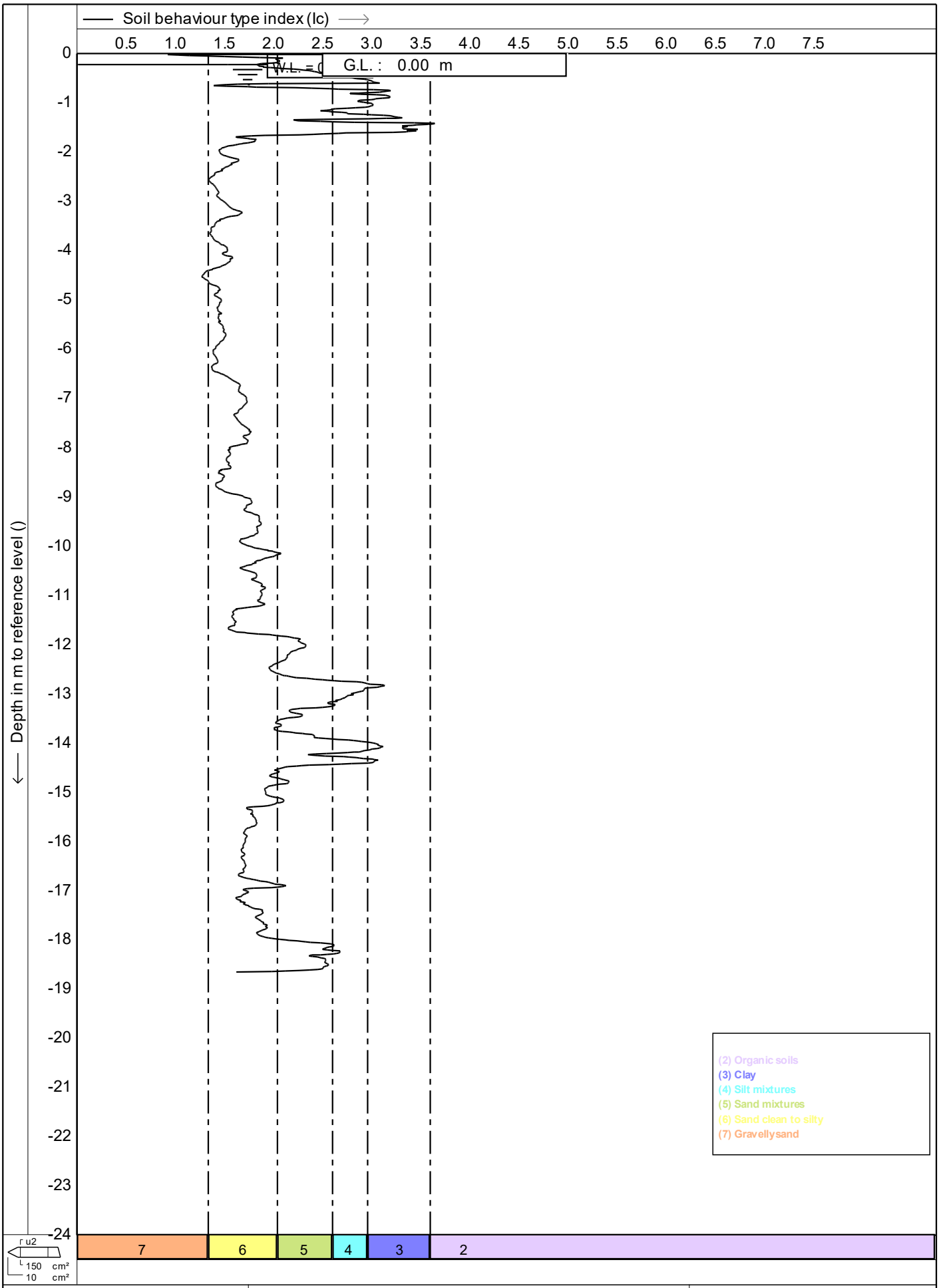
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT116** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

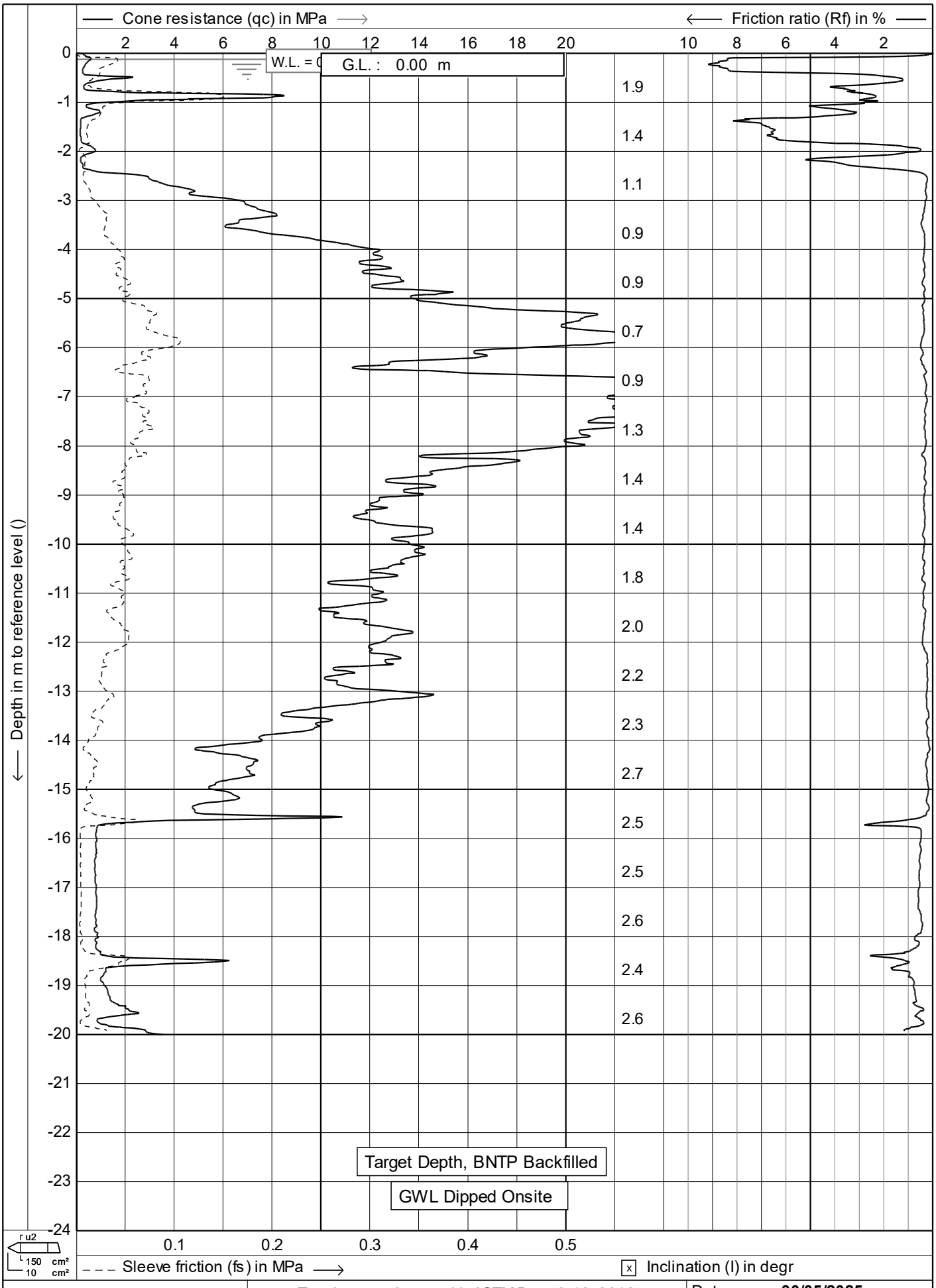
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **28/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT116** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

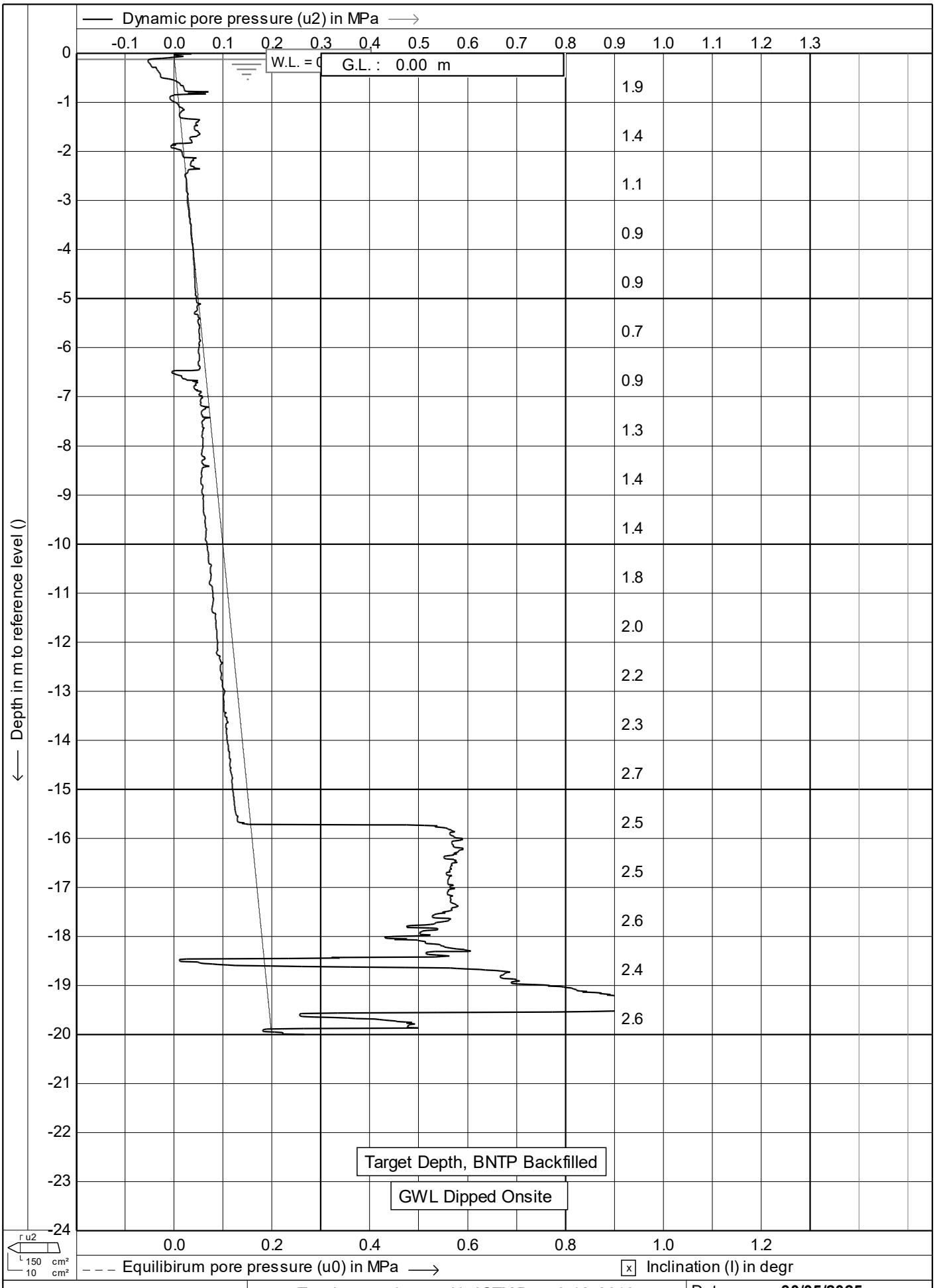
Date : **30/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT117** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

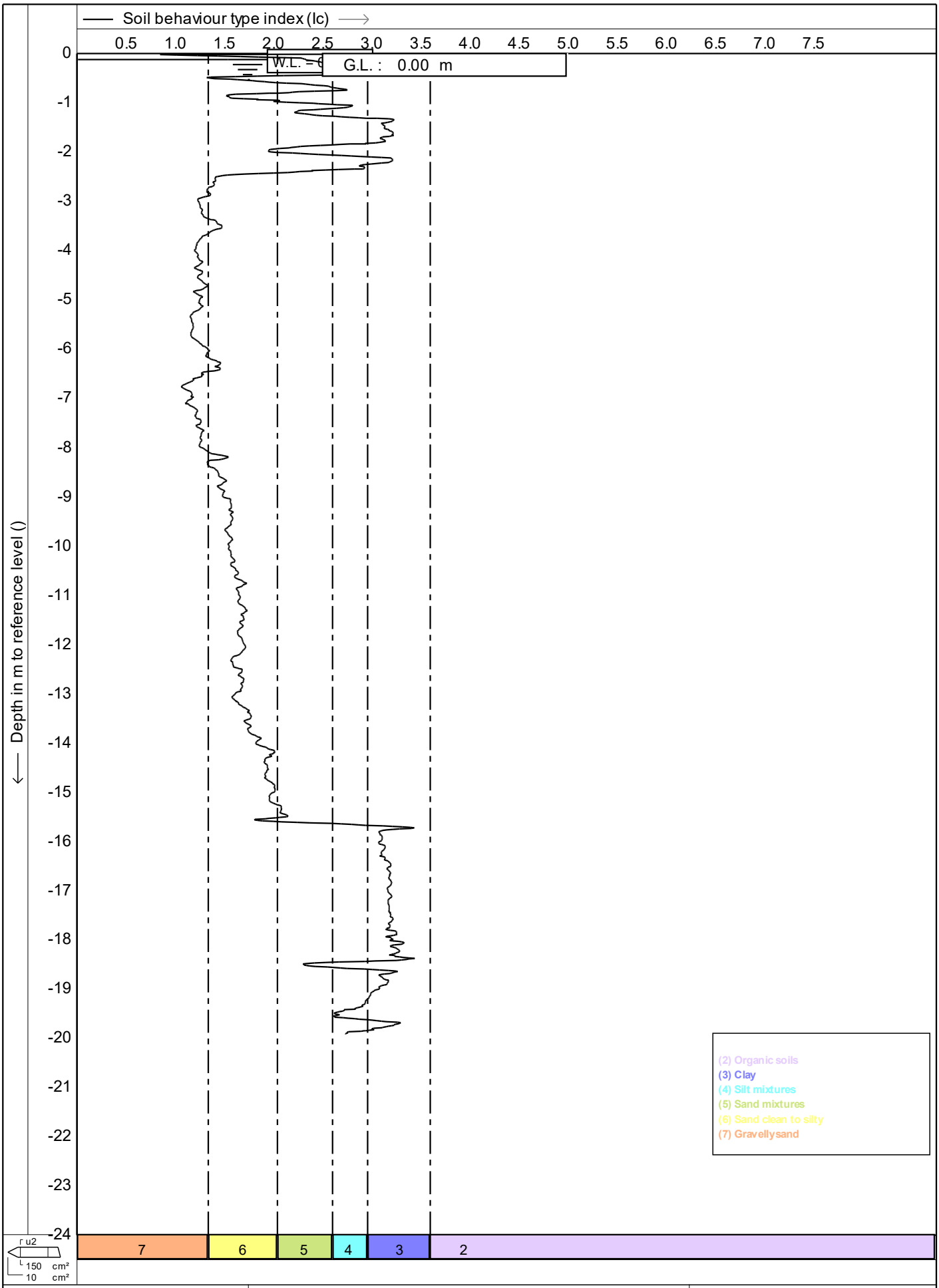
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **30/05/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO005**
CPT no.	: **CPT117** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

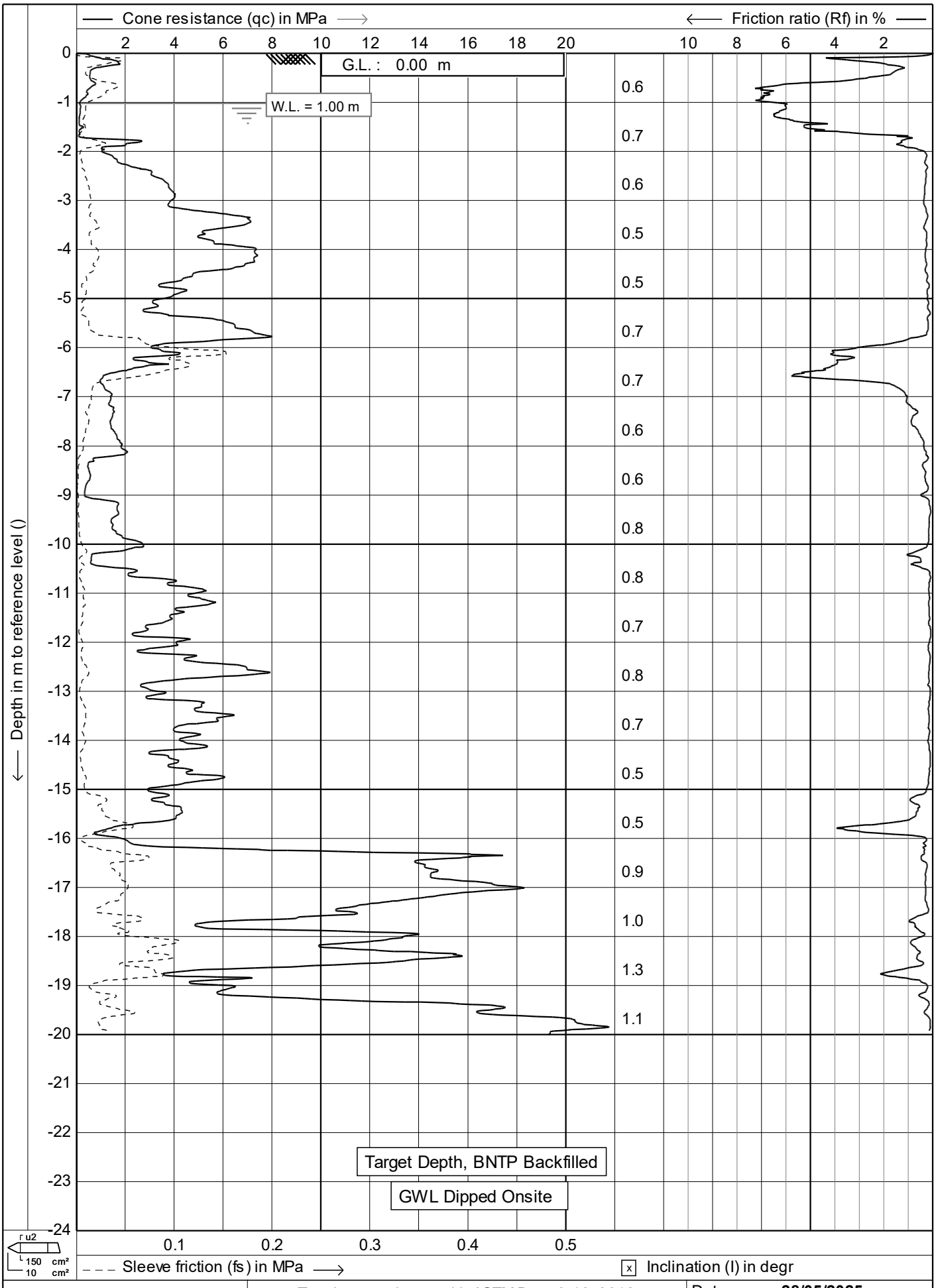
Date : **30/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT117** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

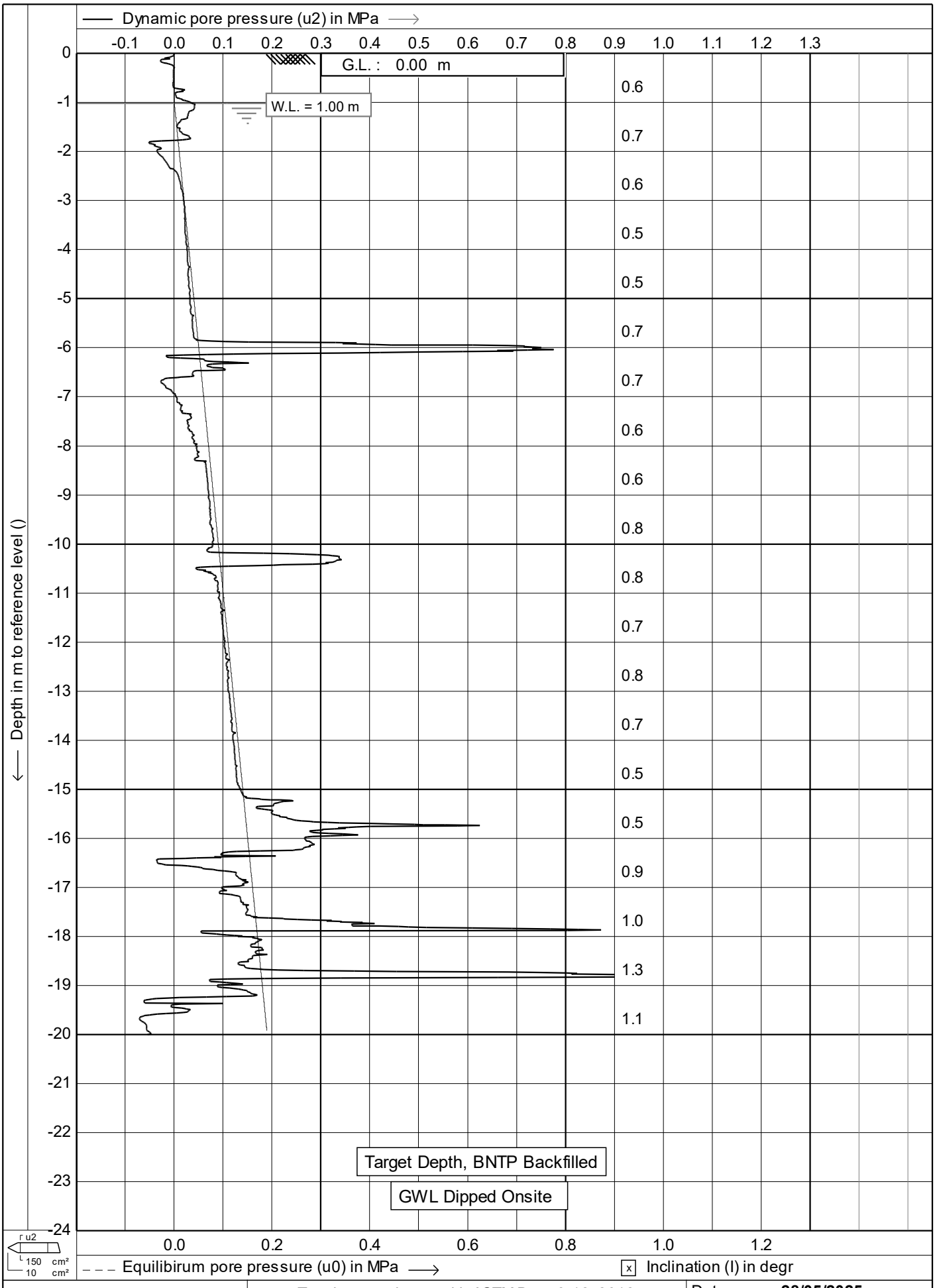
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT118** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

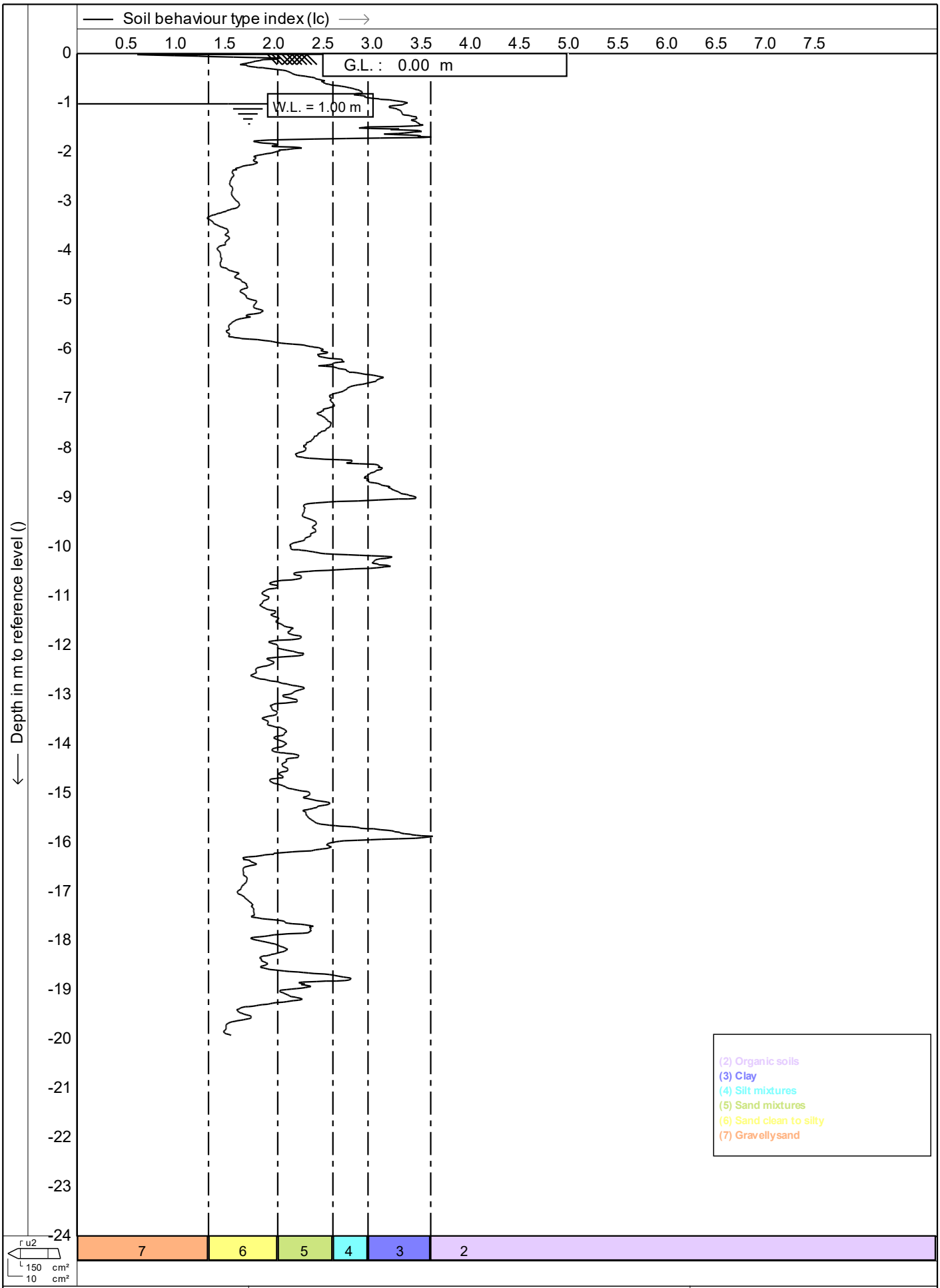
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT118** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

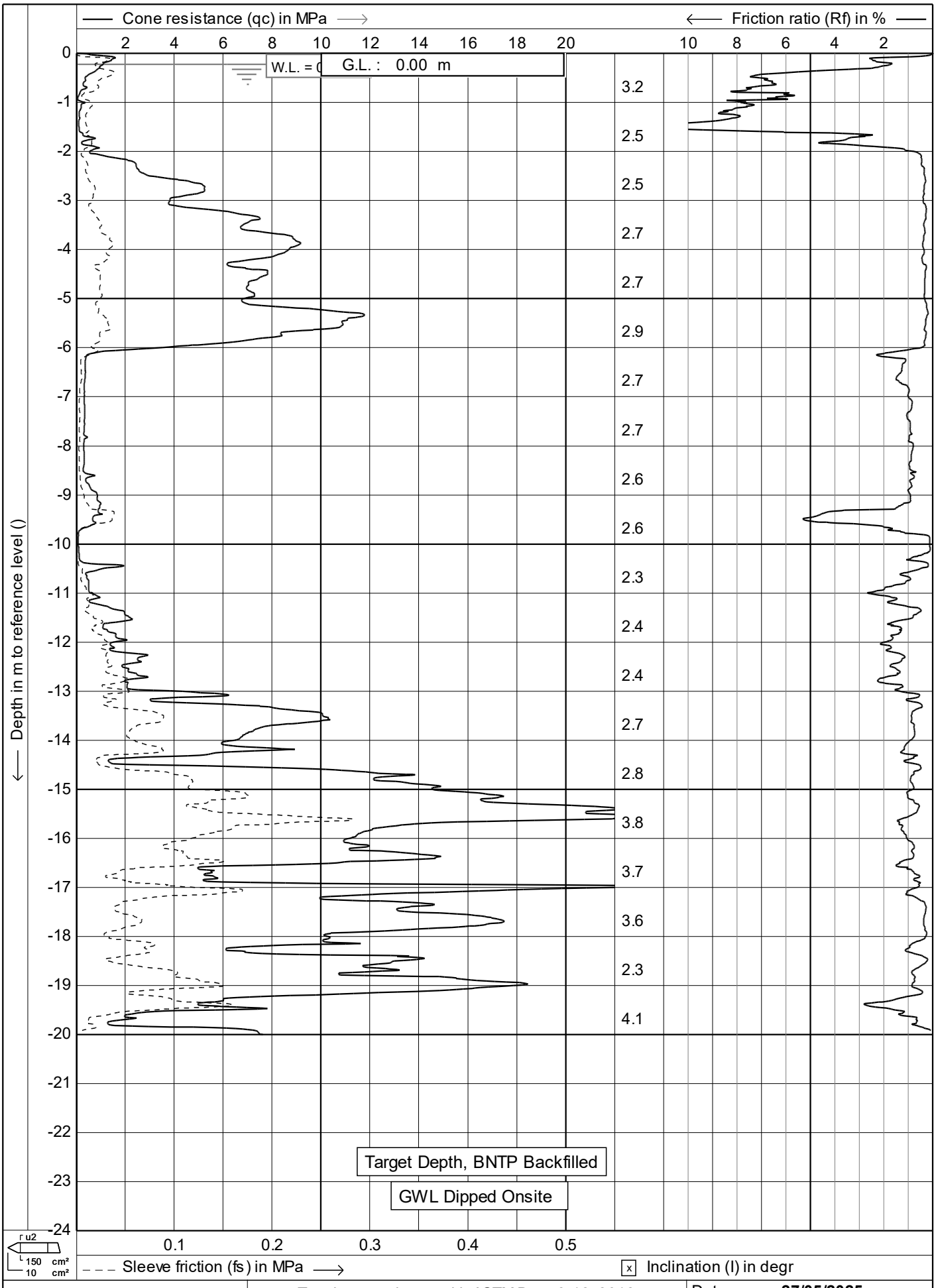
Date : **28/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT118** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

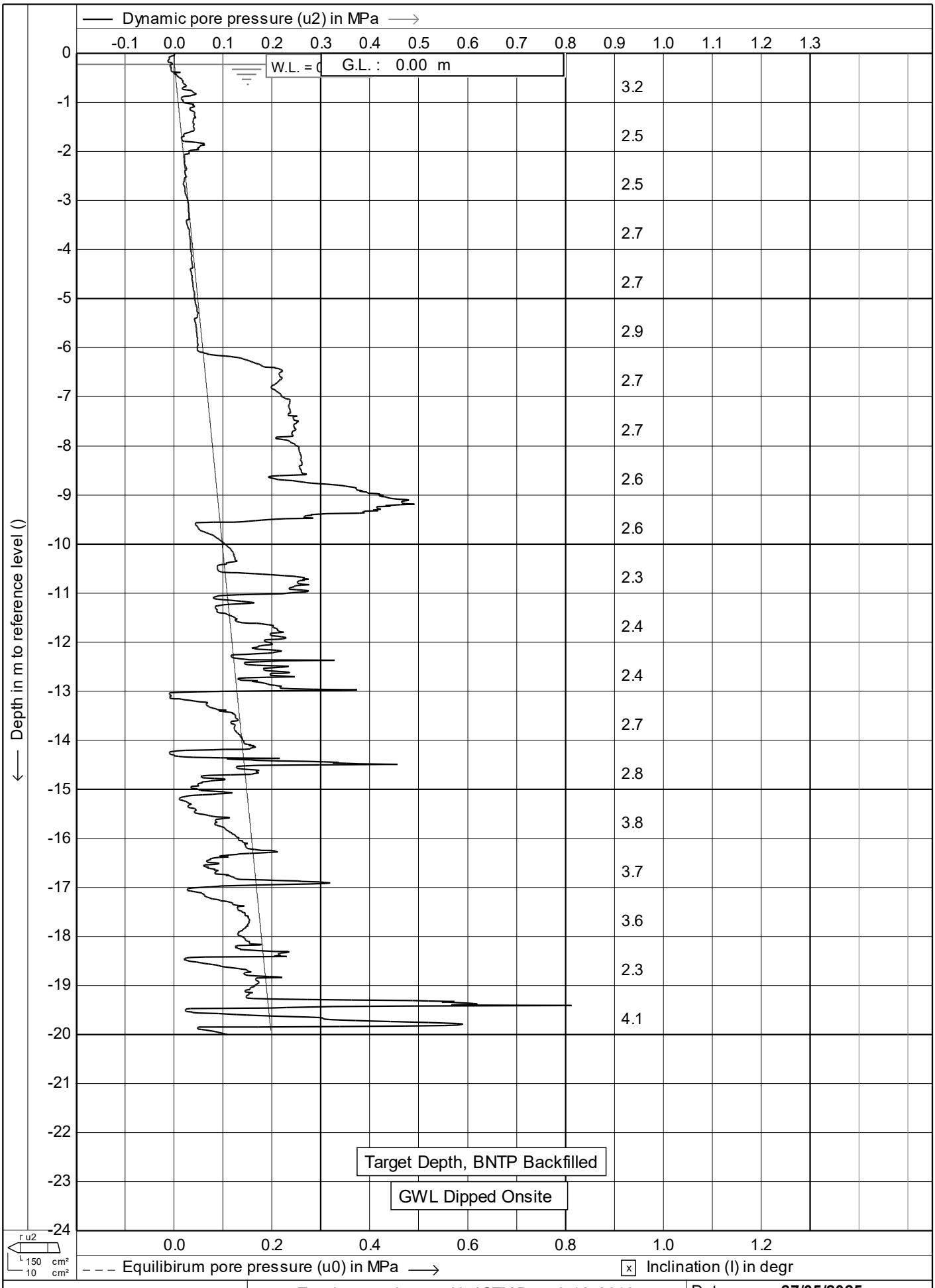
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT119** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

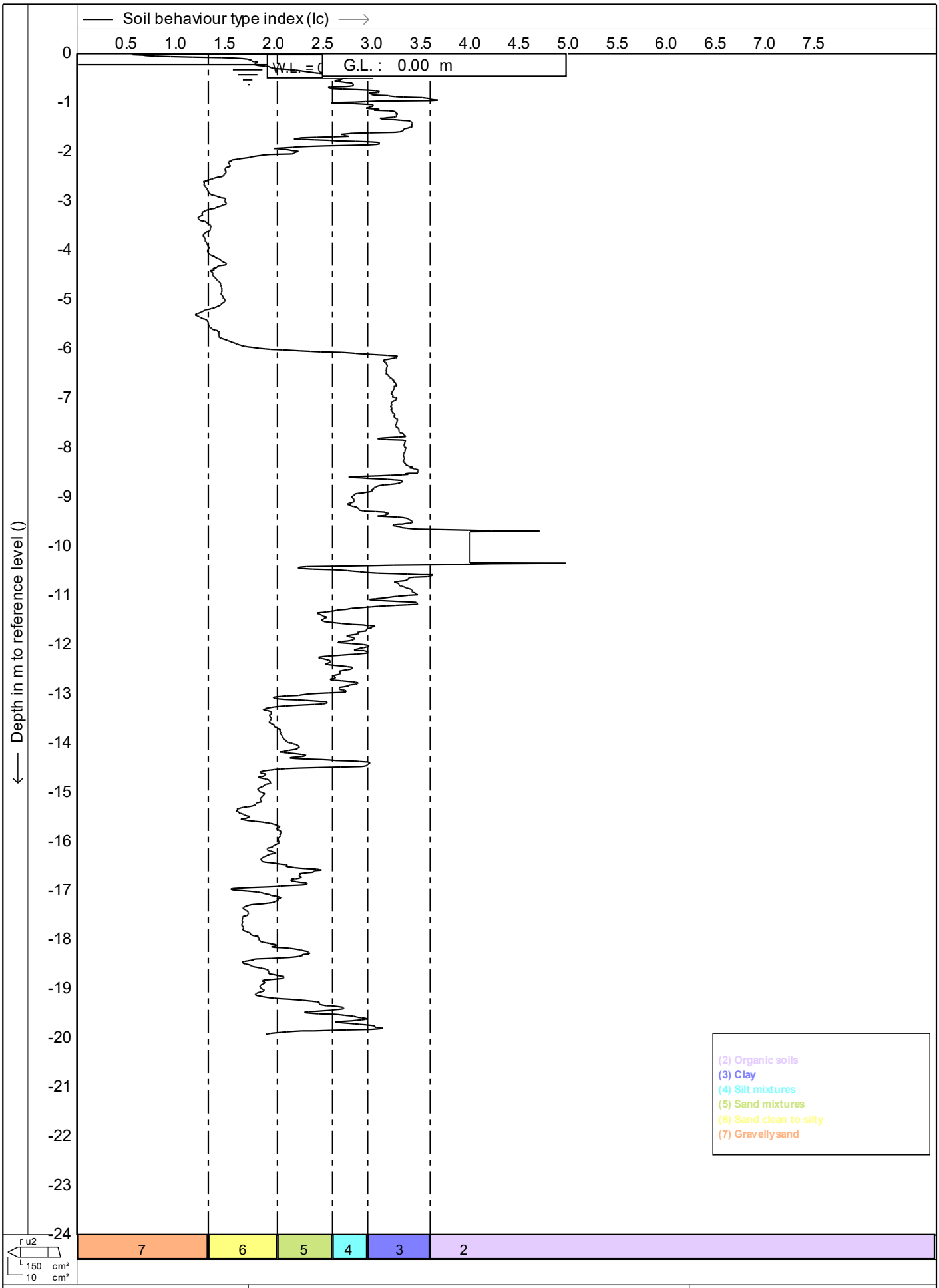
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT119** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

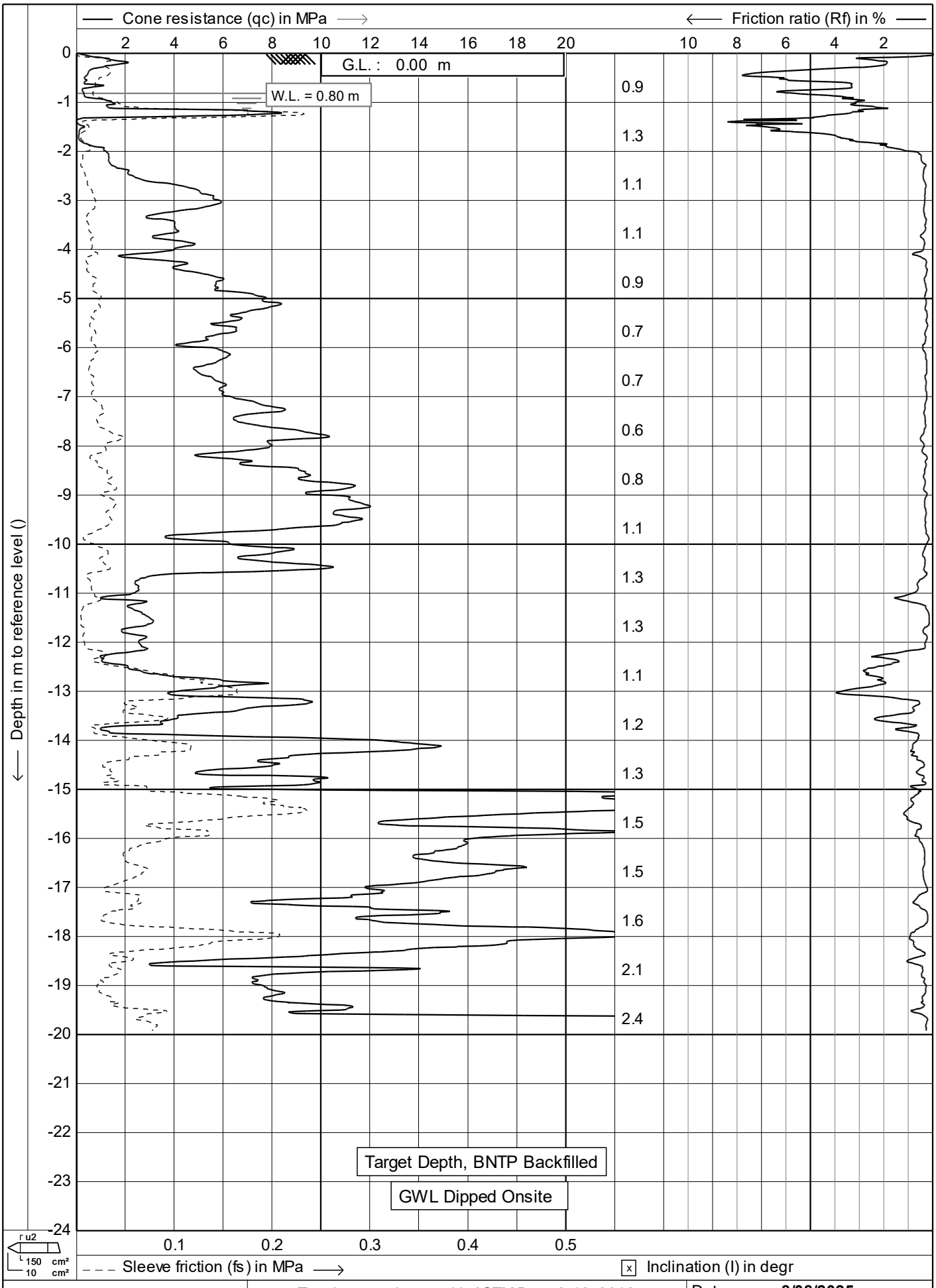
Date : **27/05/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO005**

CPT no. : **CPT119** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

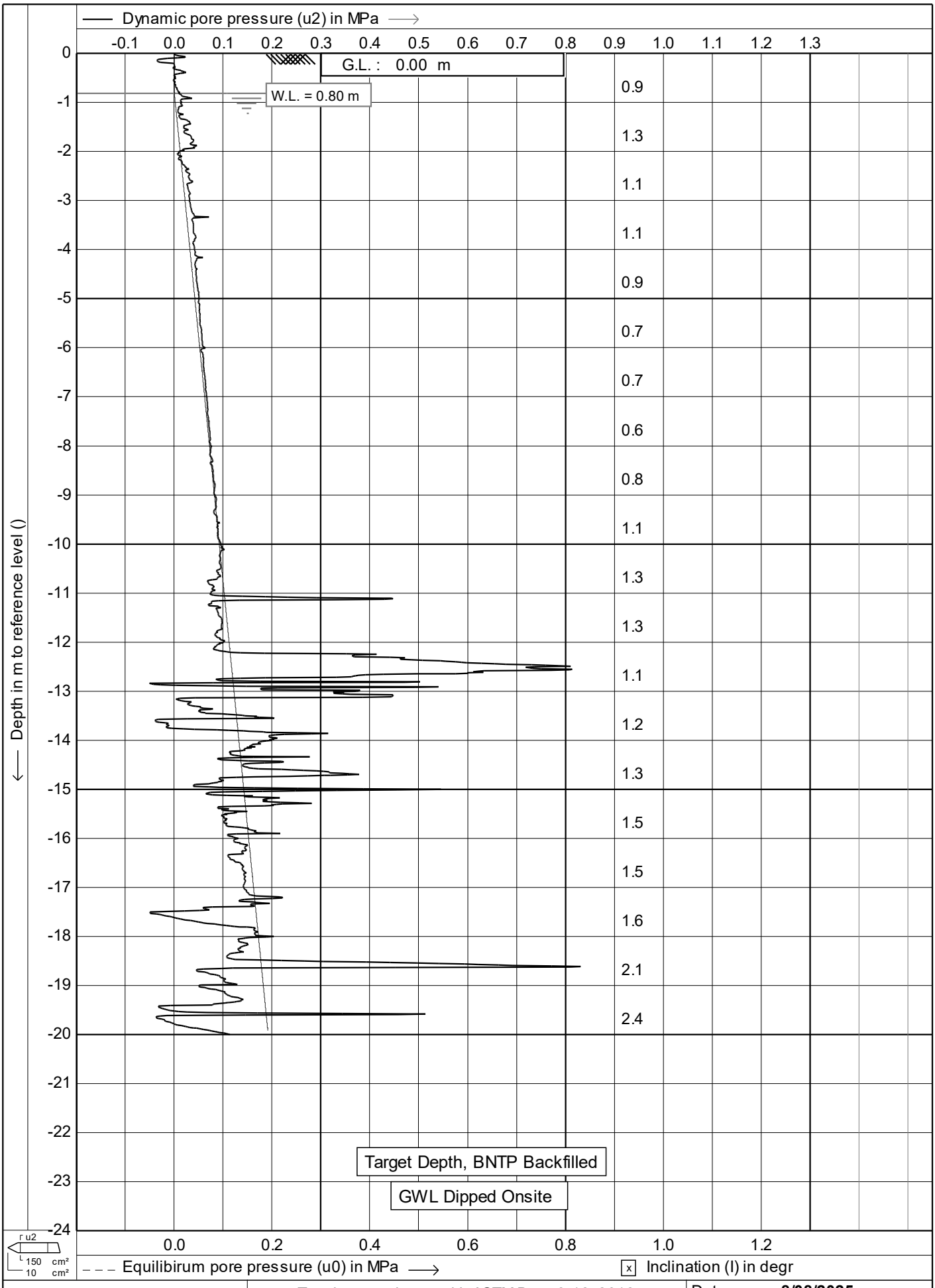
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT120** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

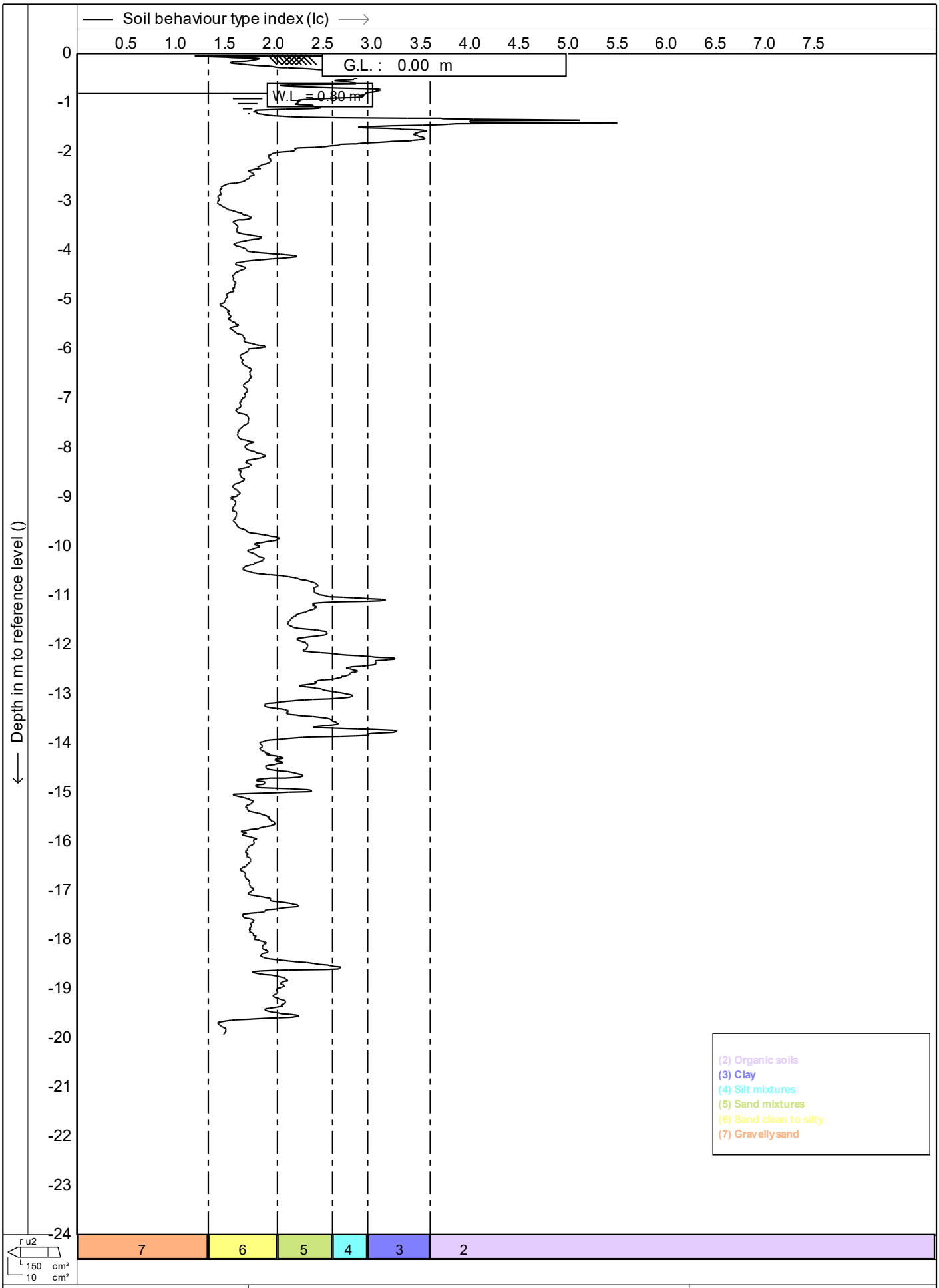
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT120** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

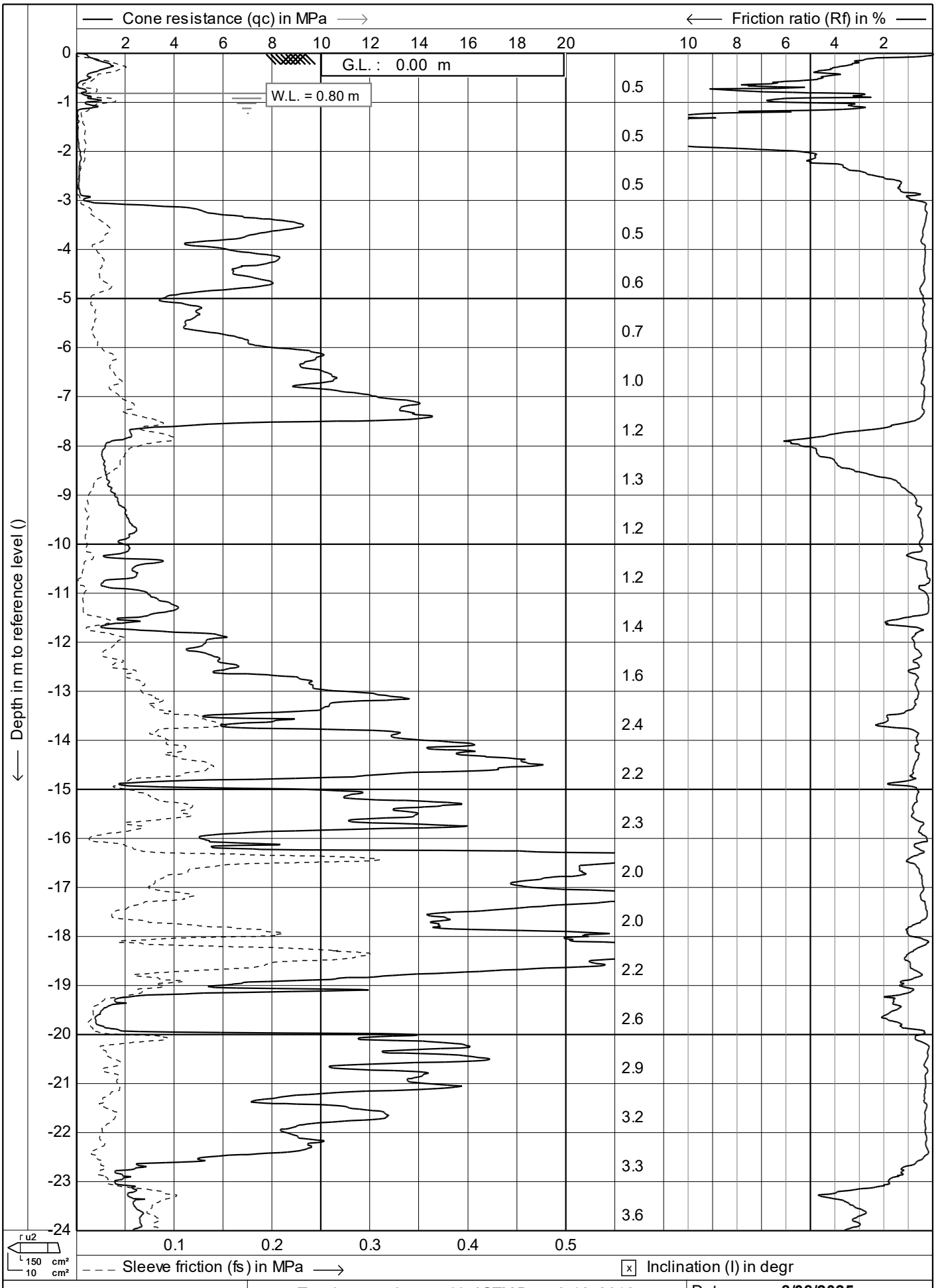
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT120** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

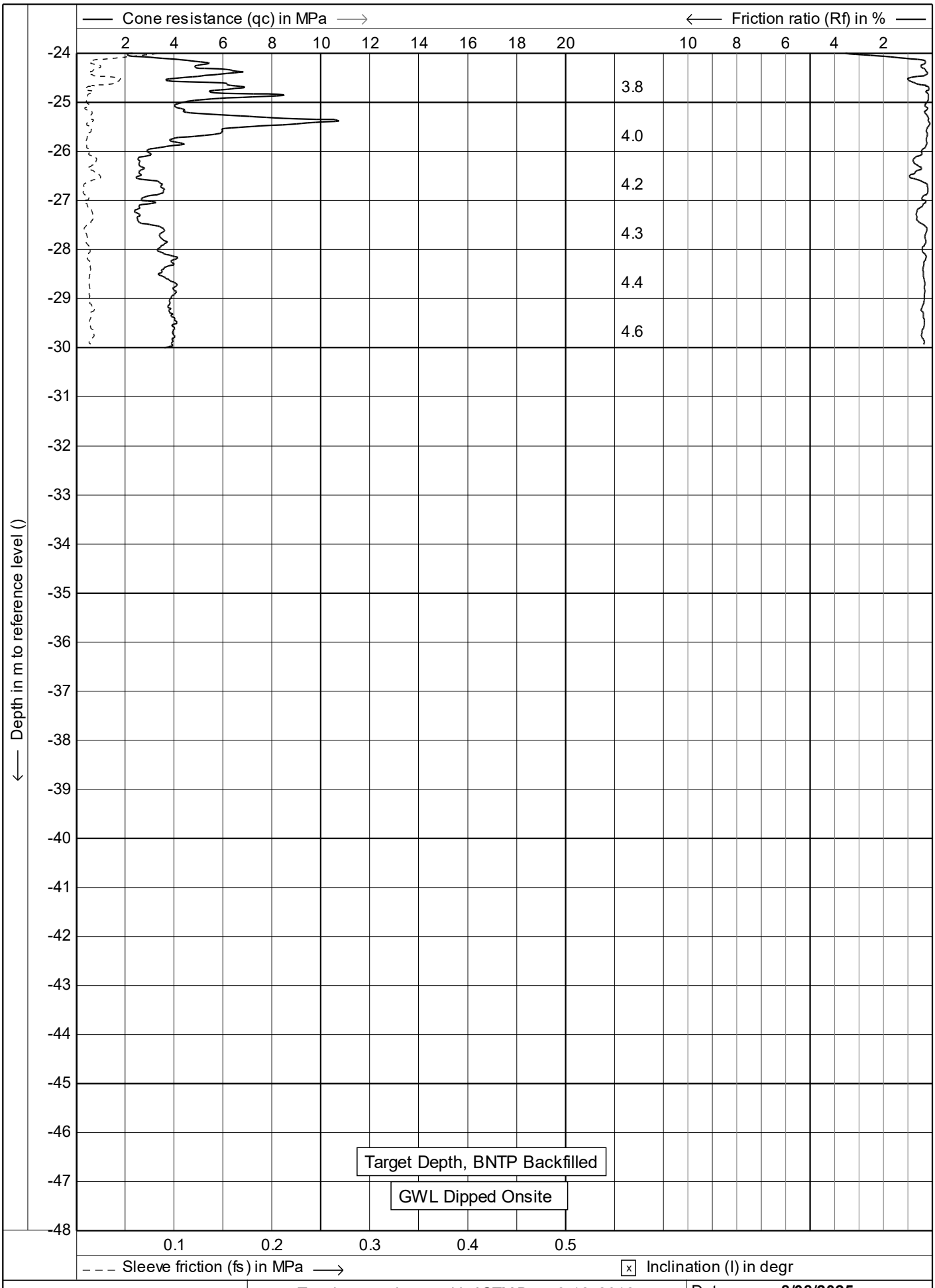
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT121** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

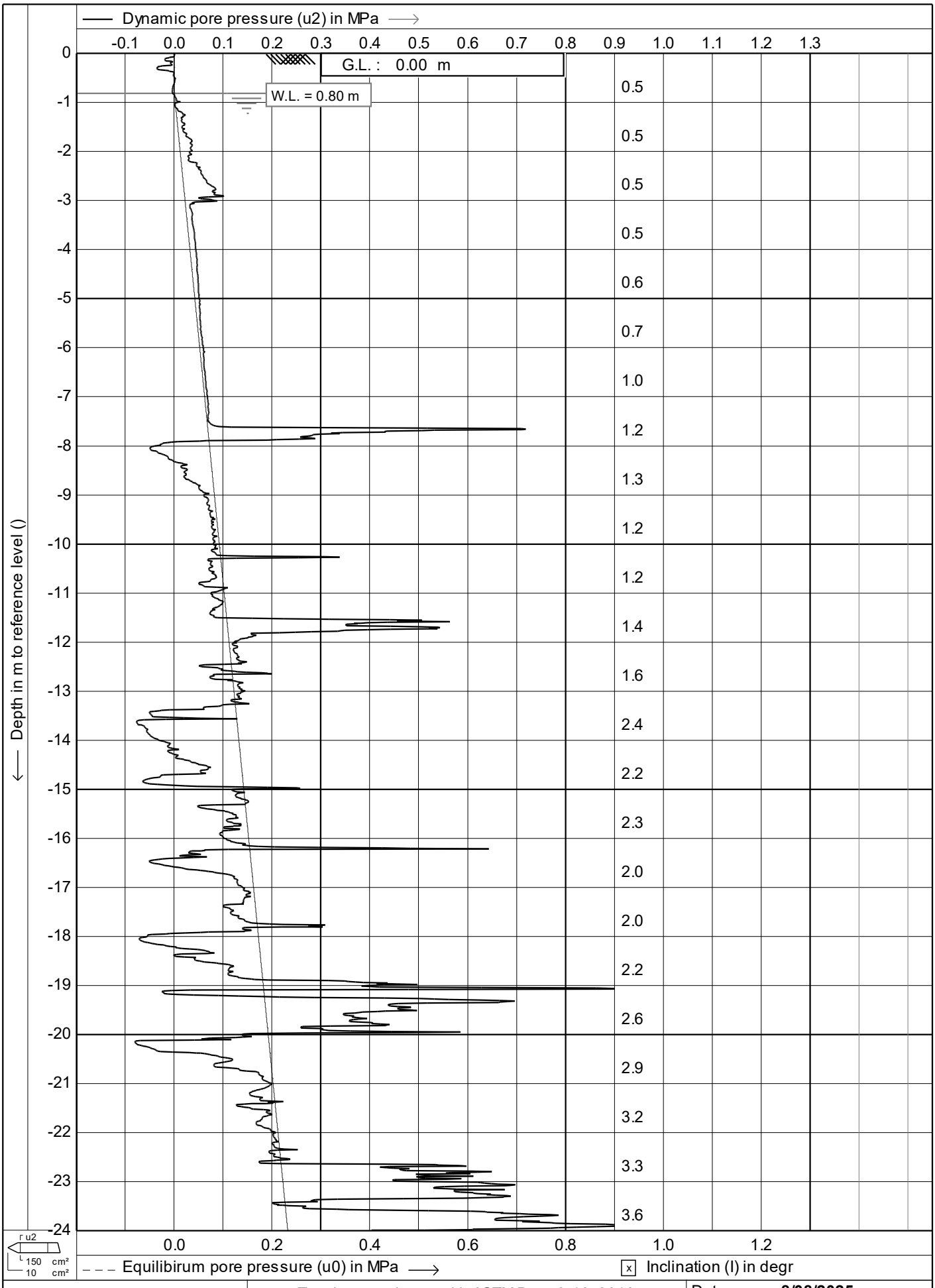
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT121** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

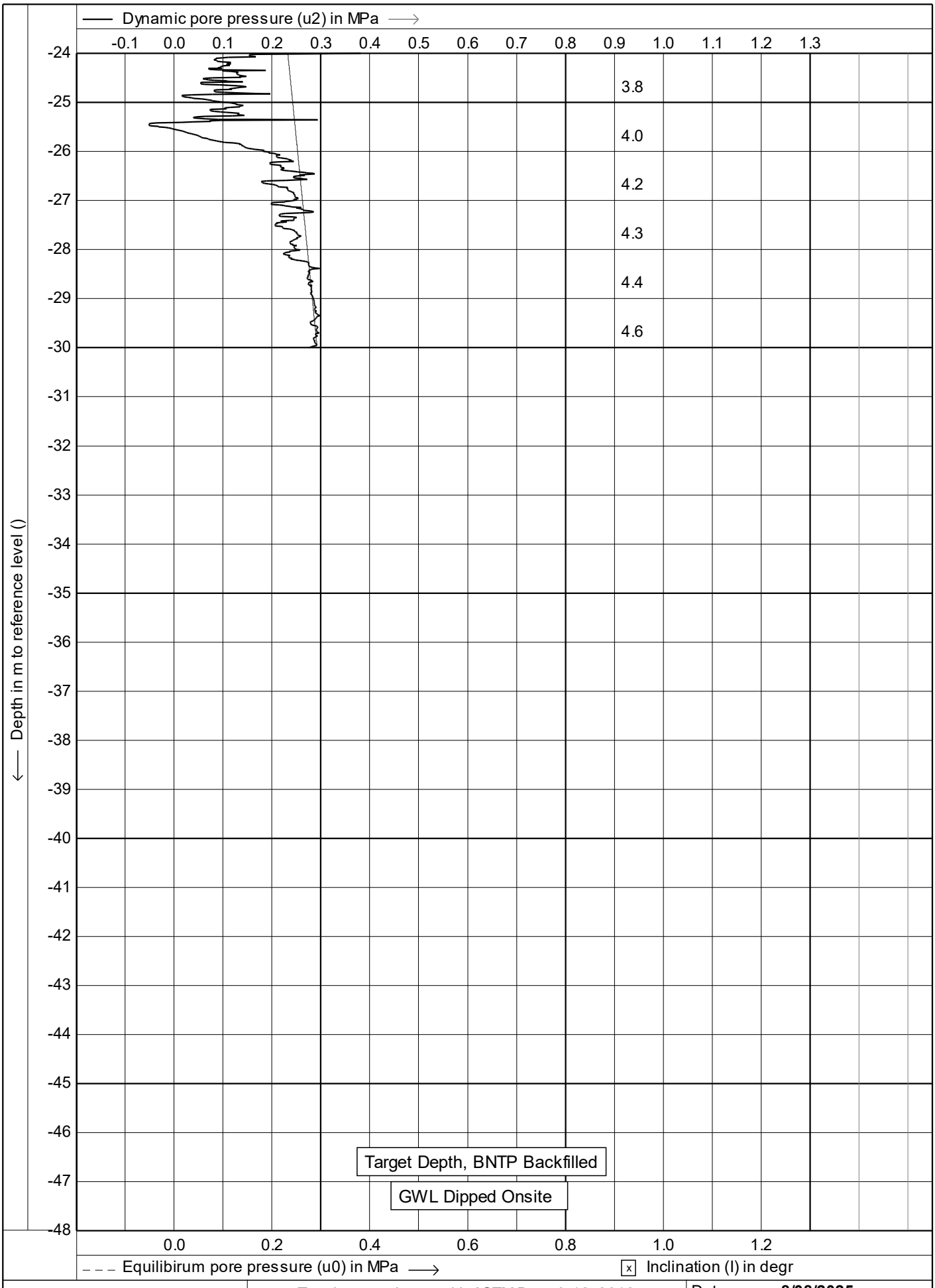
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT121** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

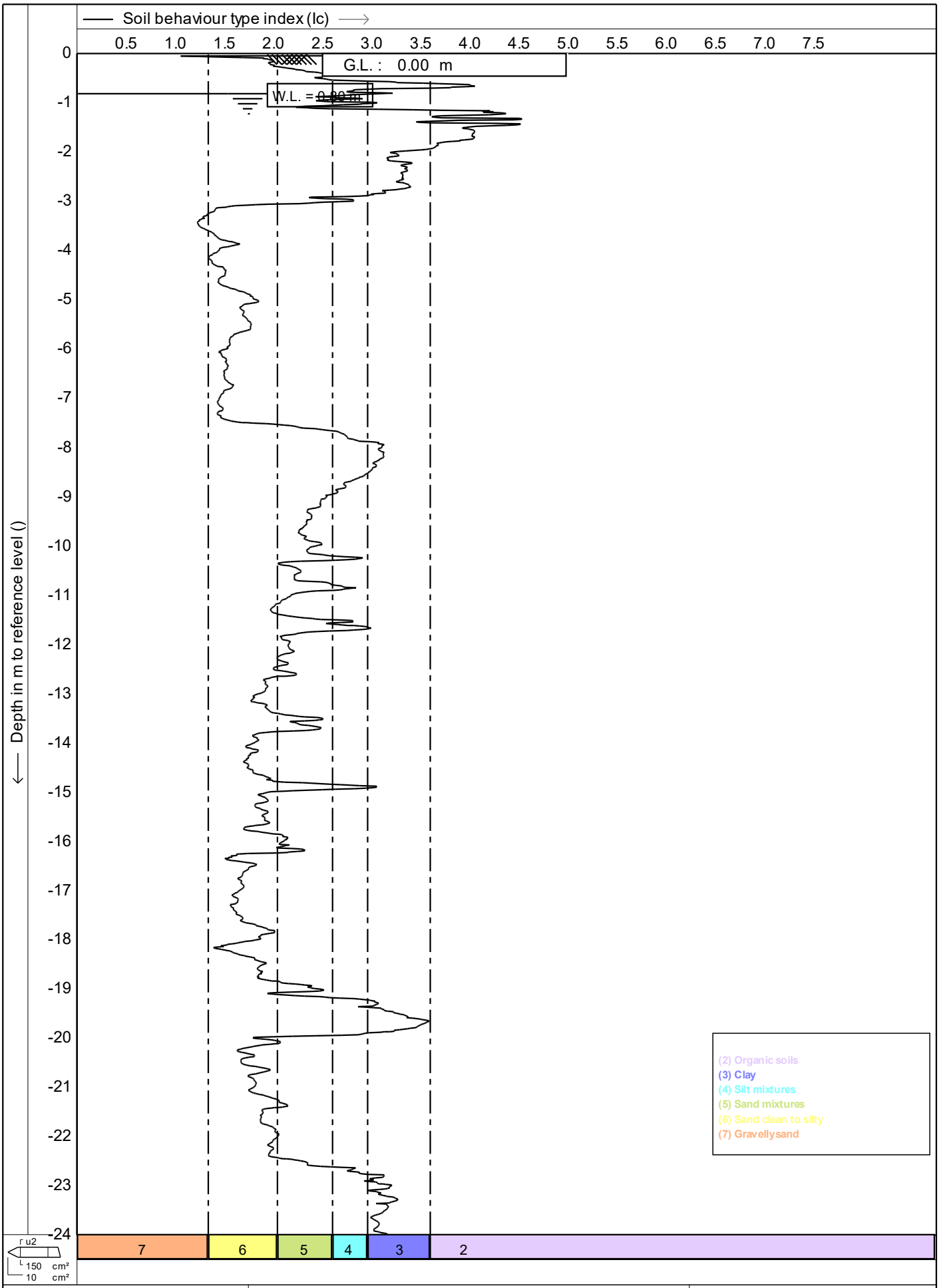
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **8/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT121** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

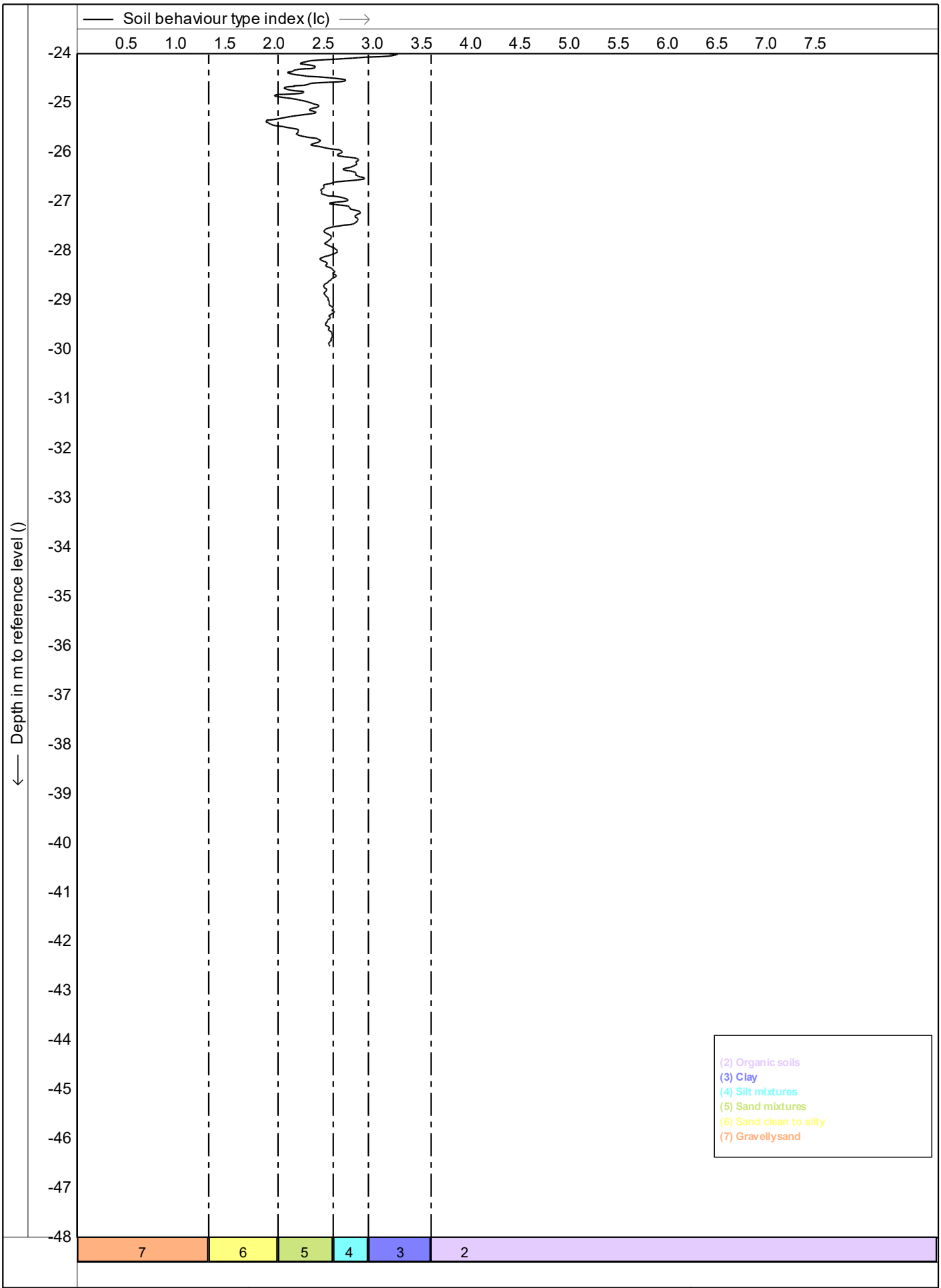
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT121** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

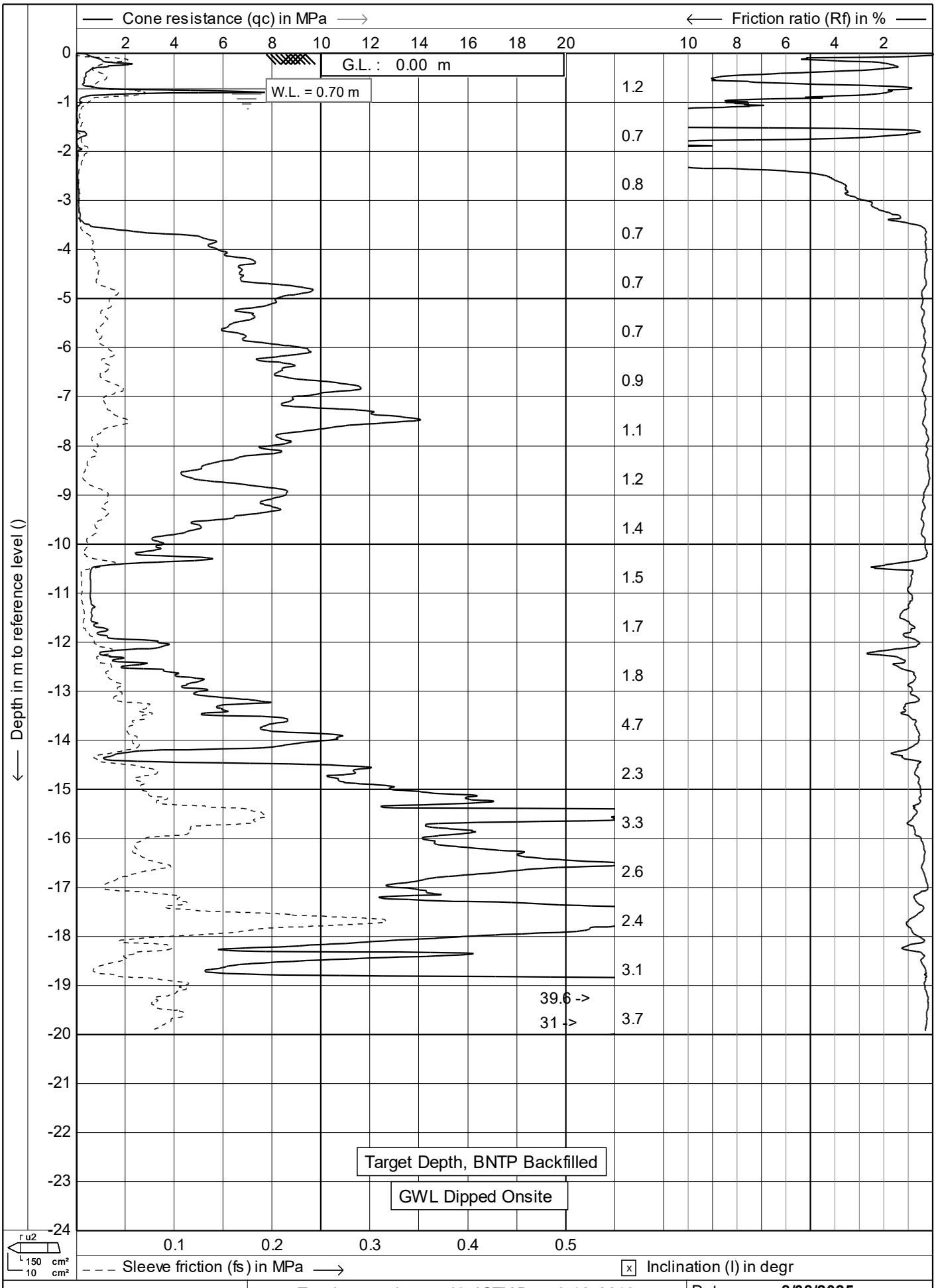
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

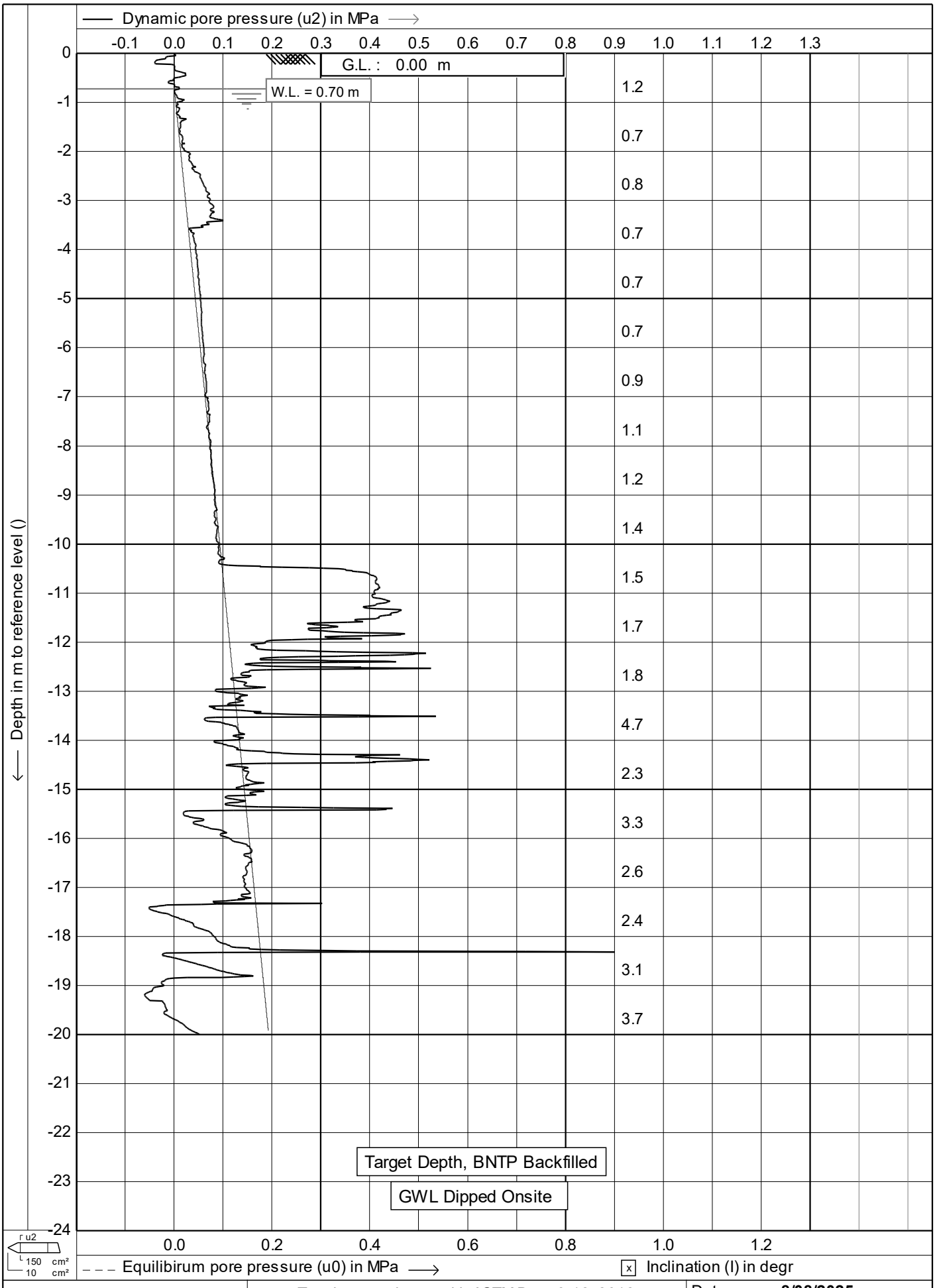
CPT no. : **CPT121** **18/28**

1.49



PERRY GEOTECH	Test in accordance with ASTM D5778-12 :2012	Date : **8/08/2025**
	Project : **Site Investigations**	Cone no. : **C10CFIIP.C13081**
	Location: **Bell Rd - Papamoa**	Project no. : **05EGO020**
	Position: **0, 0**	CPT no. : **CPT122** 1/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

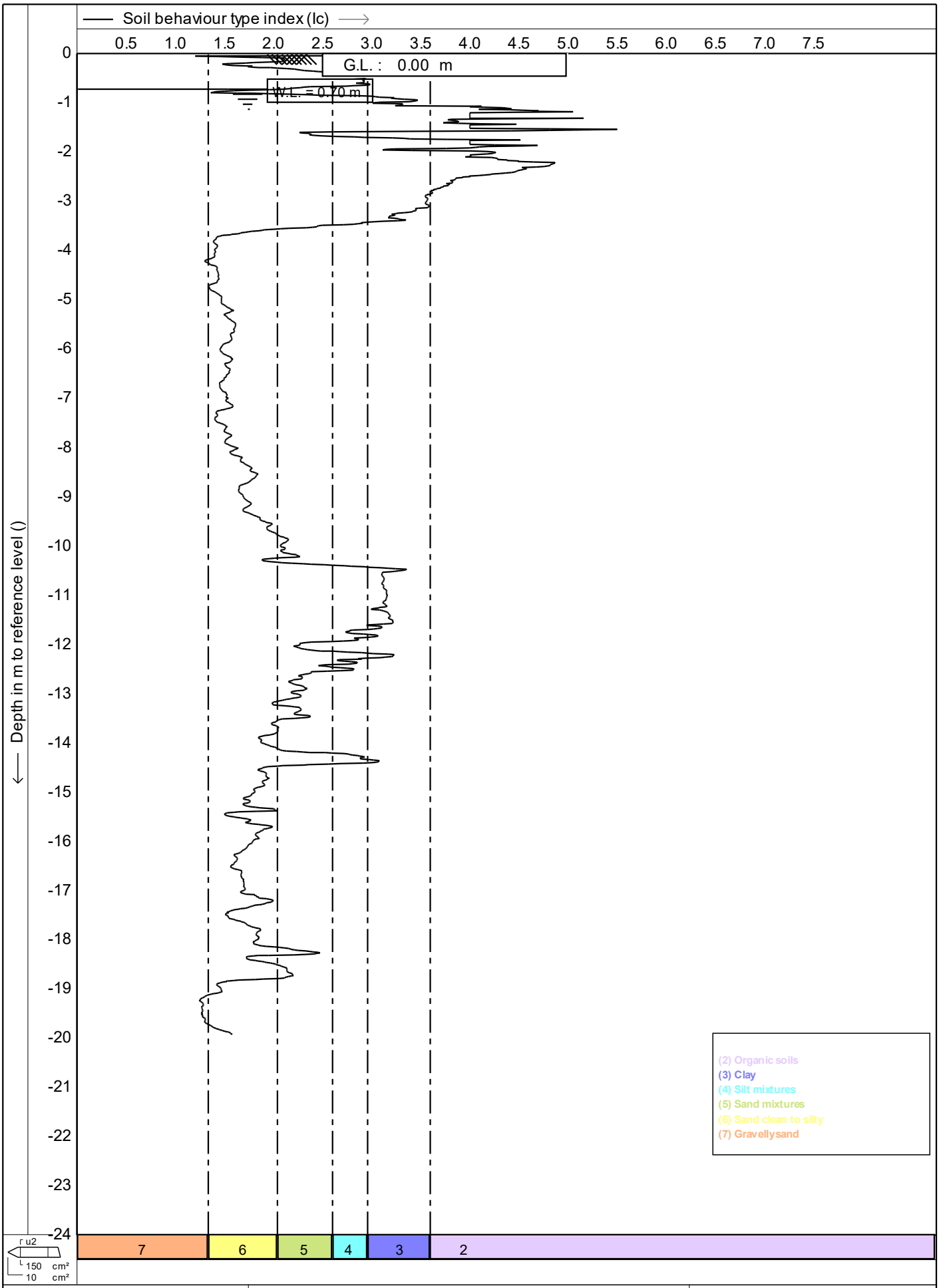
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT122** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

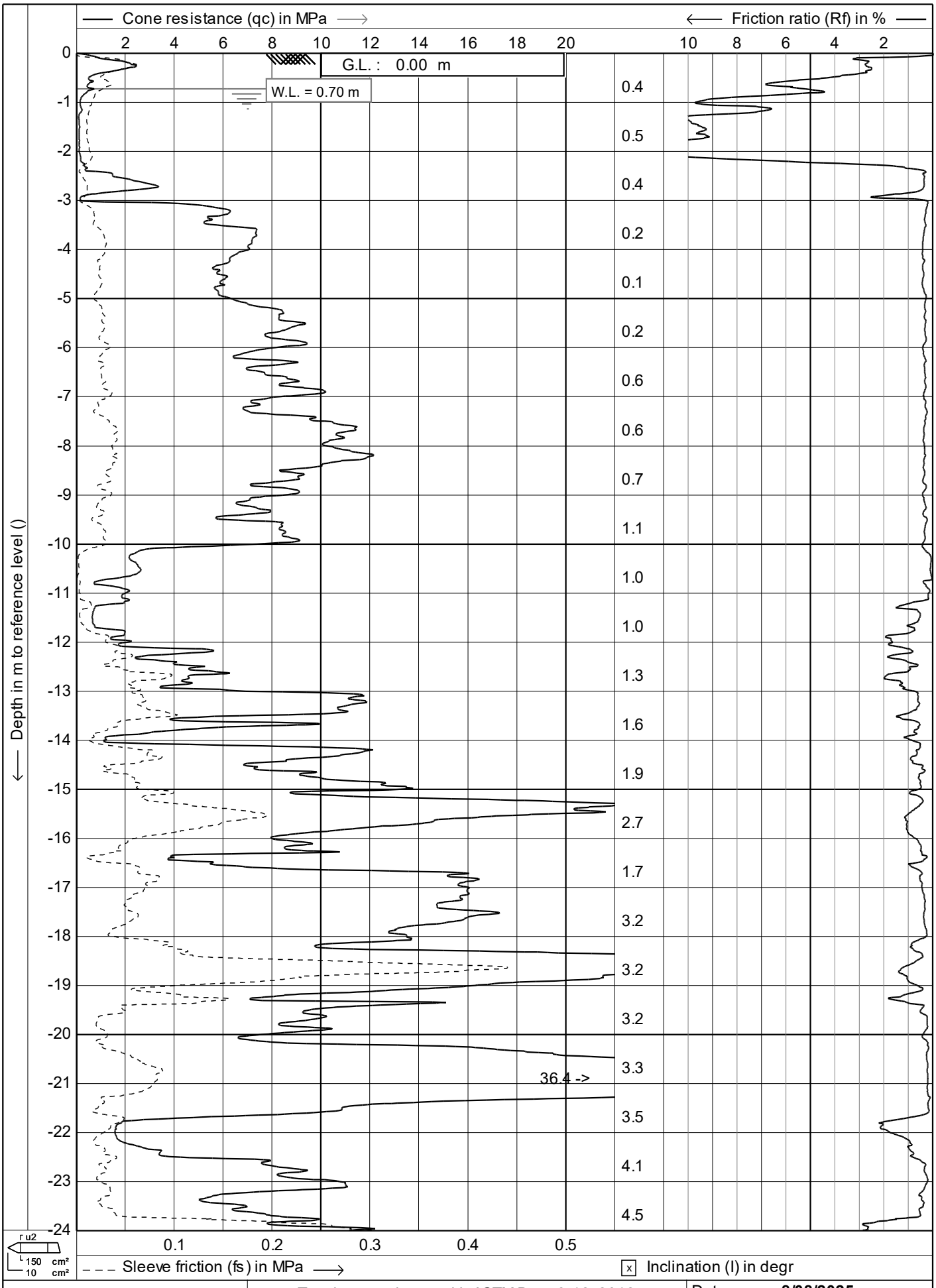
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT122** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

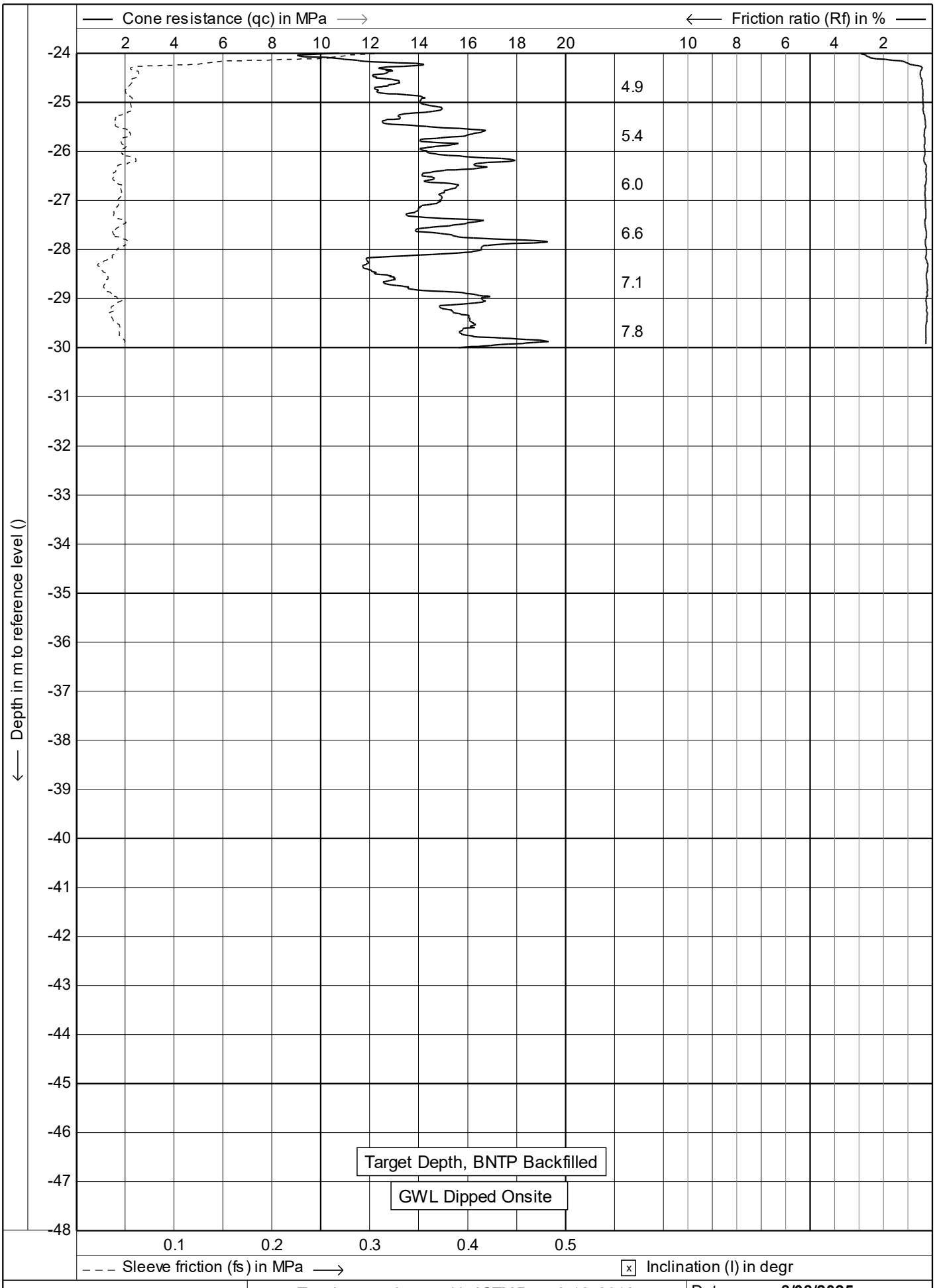
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT123** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

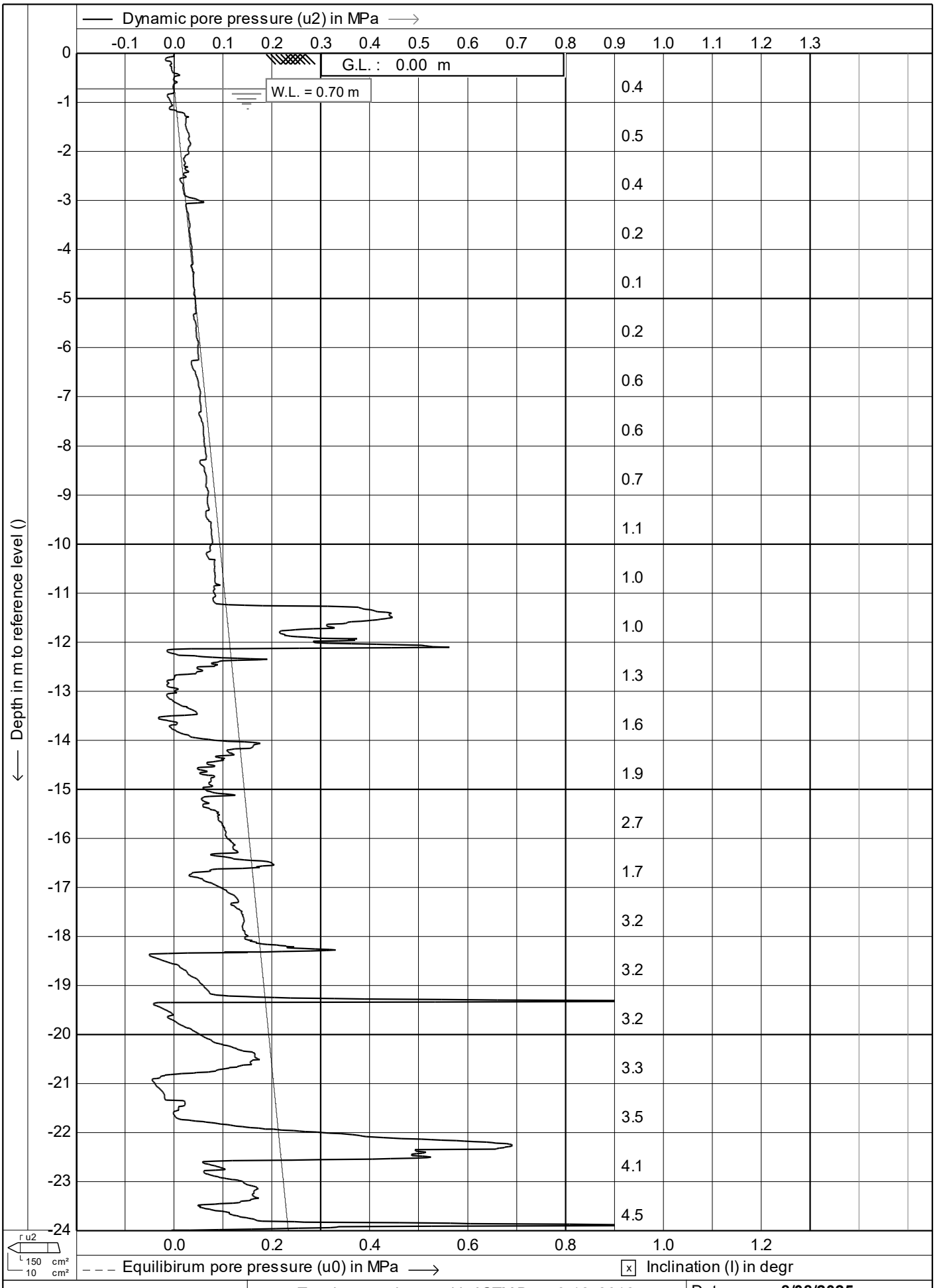
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT123** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

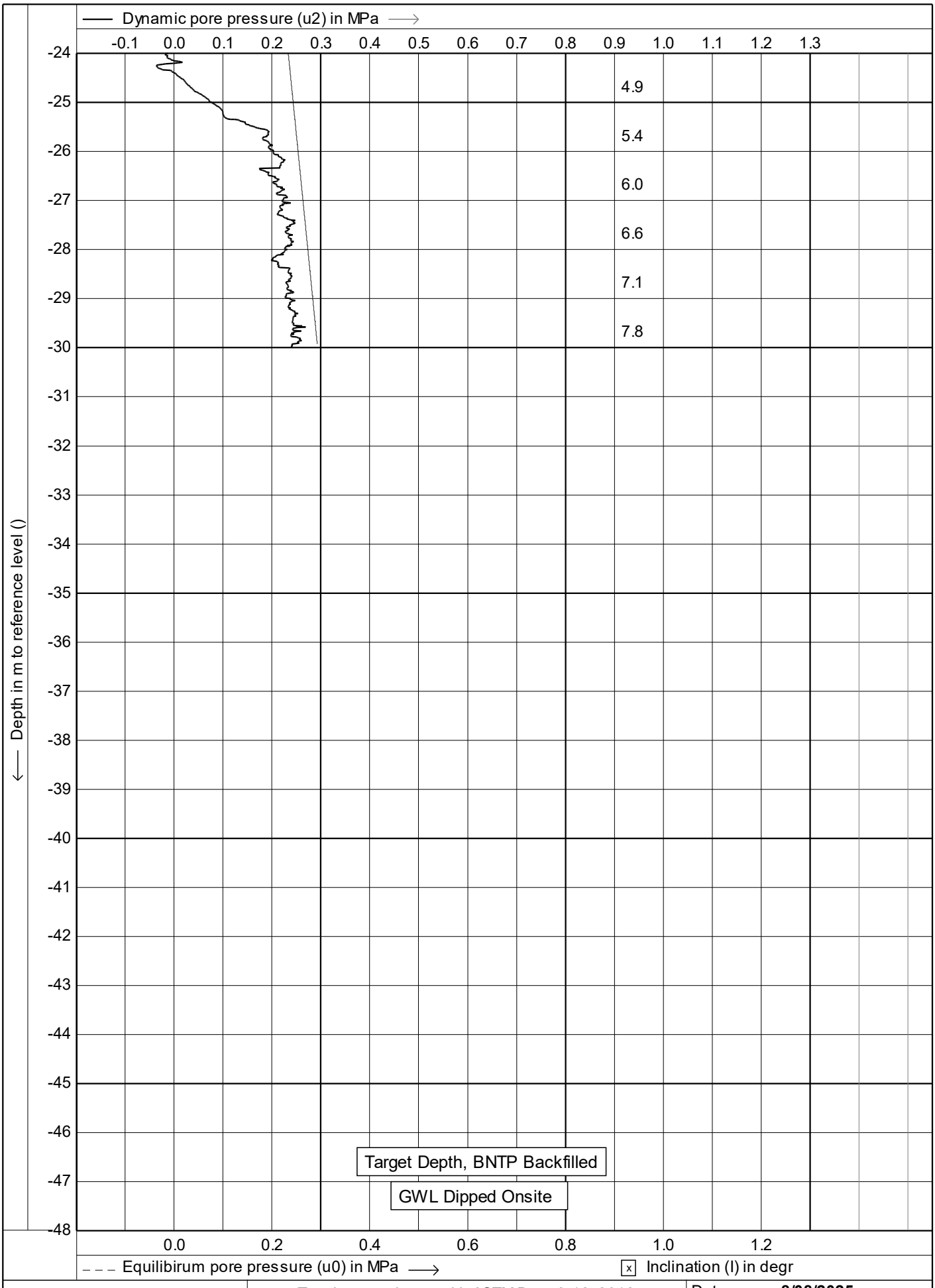
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **8/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT123** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

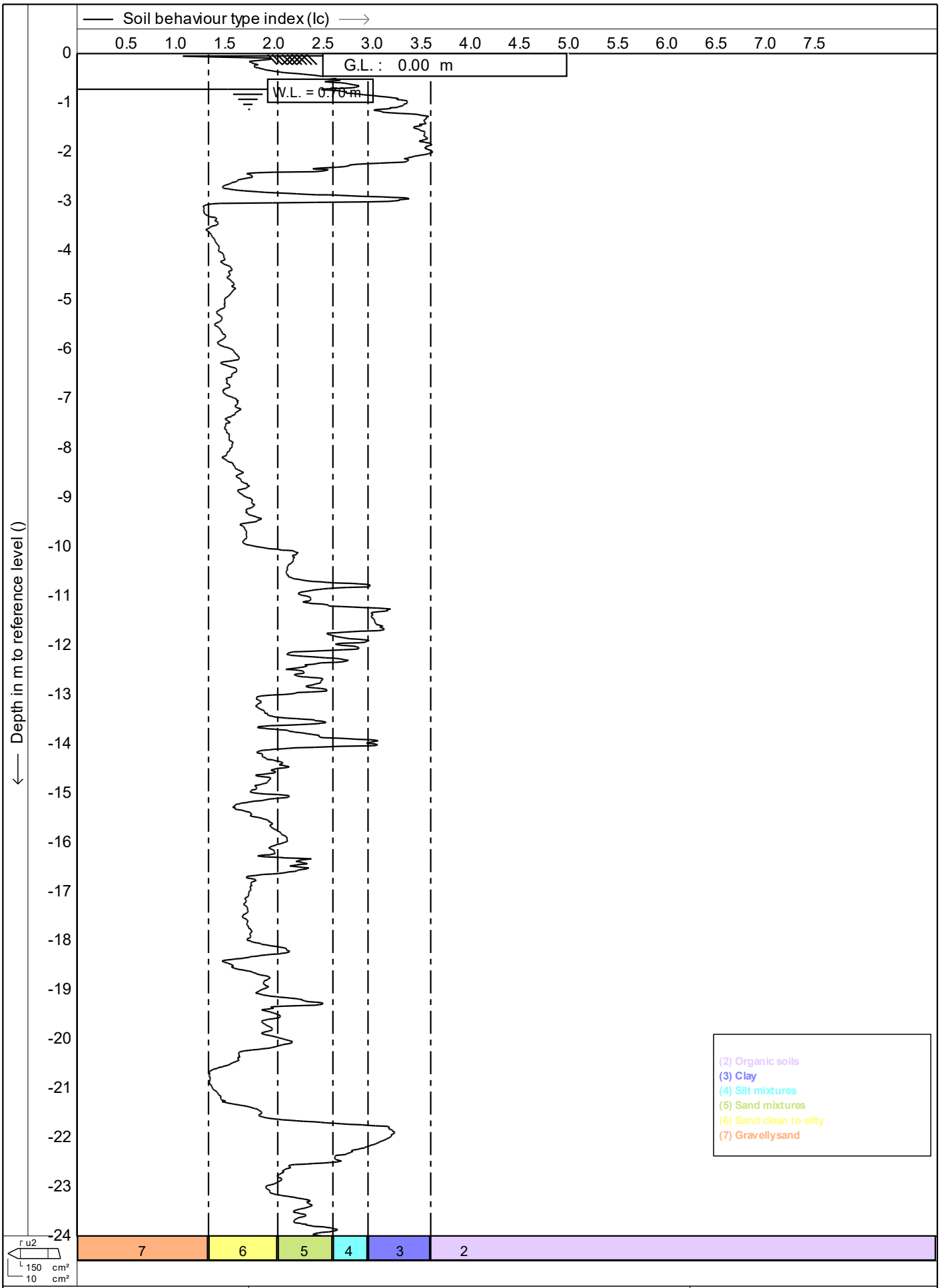
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **8/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT123** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

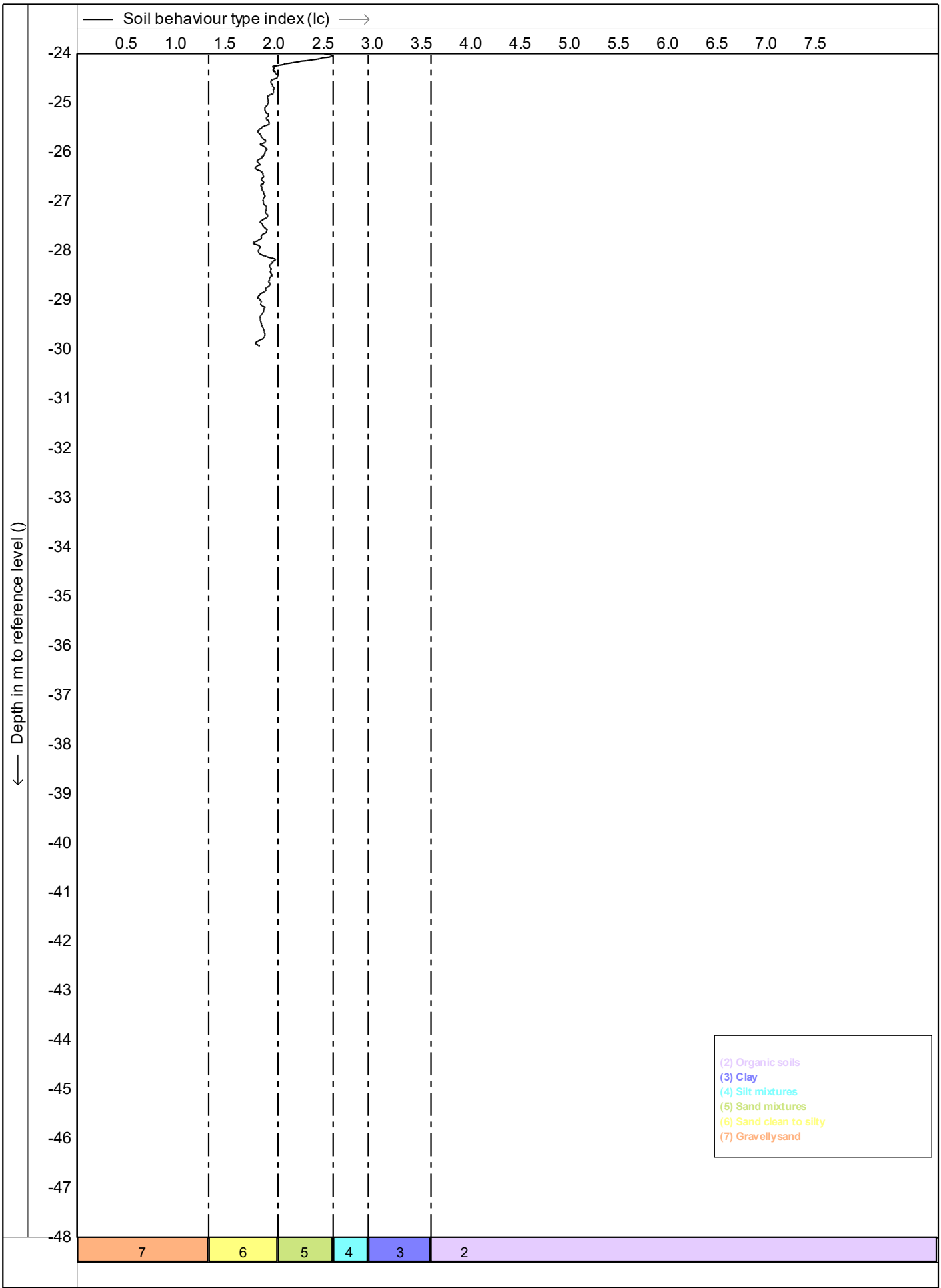
Date : **8/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT123** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

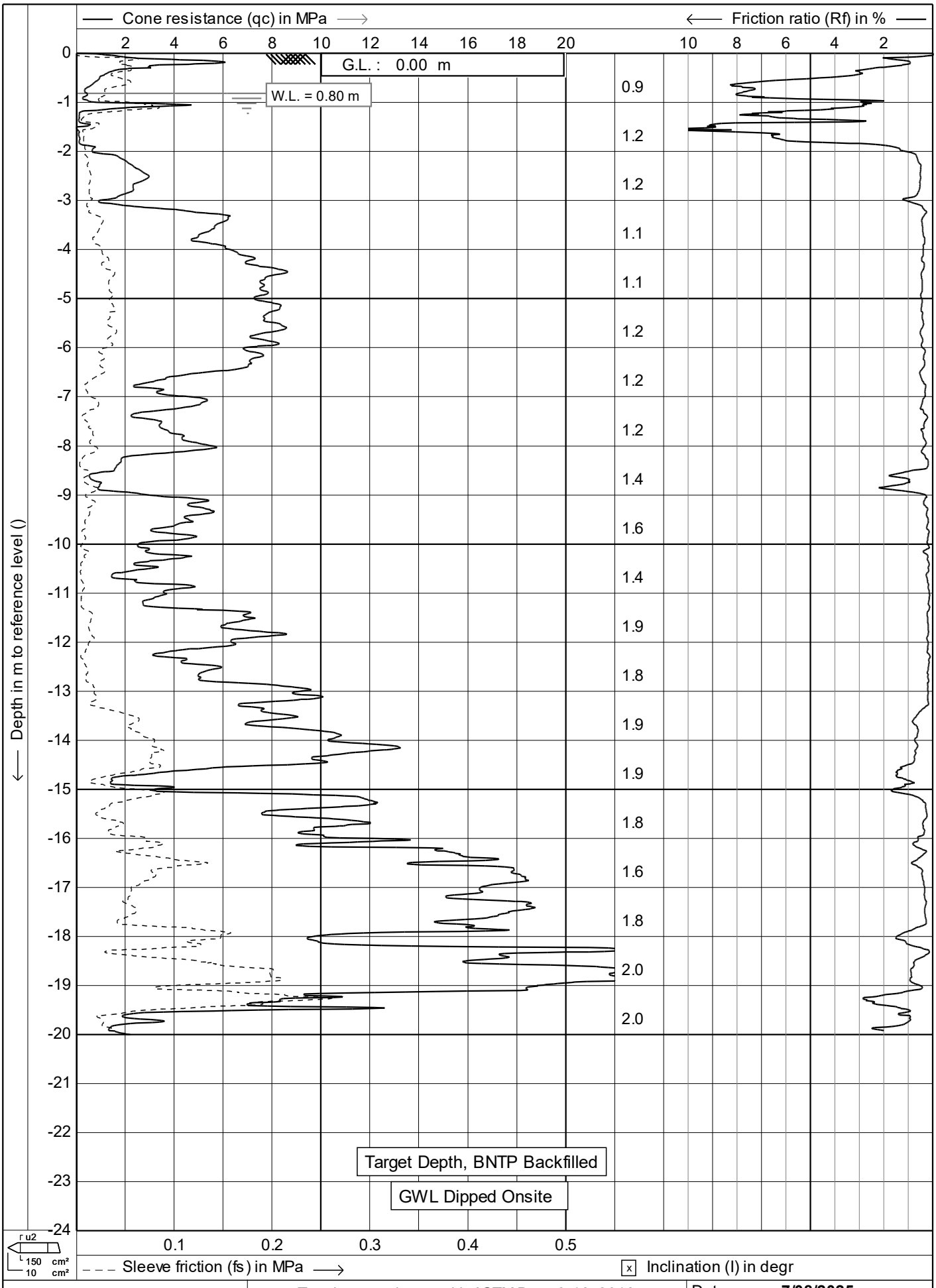
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **8/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT123** **18/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

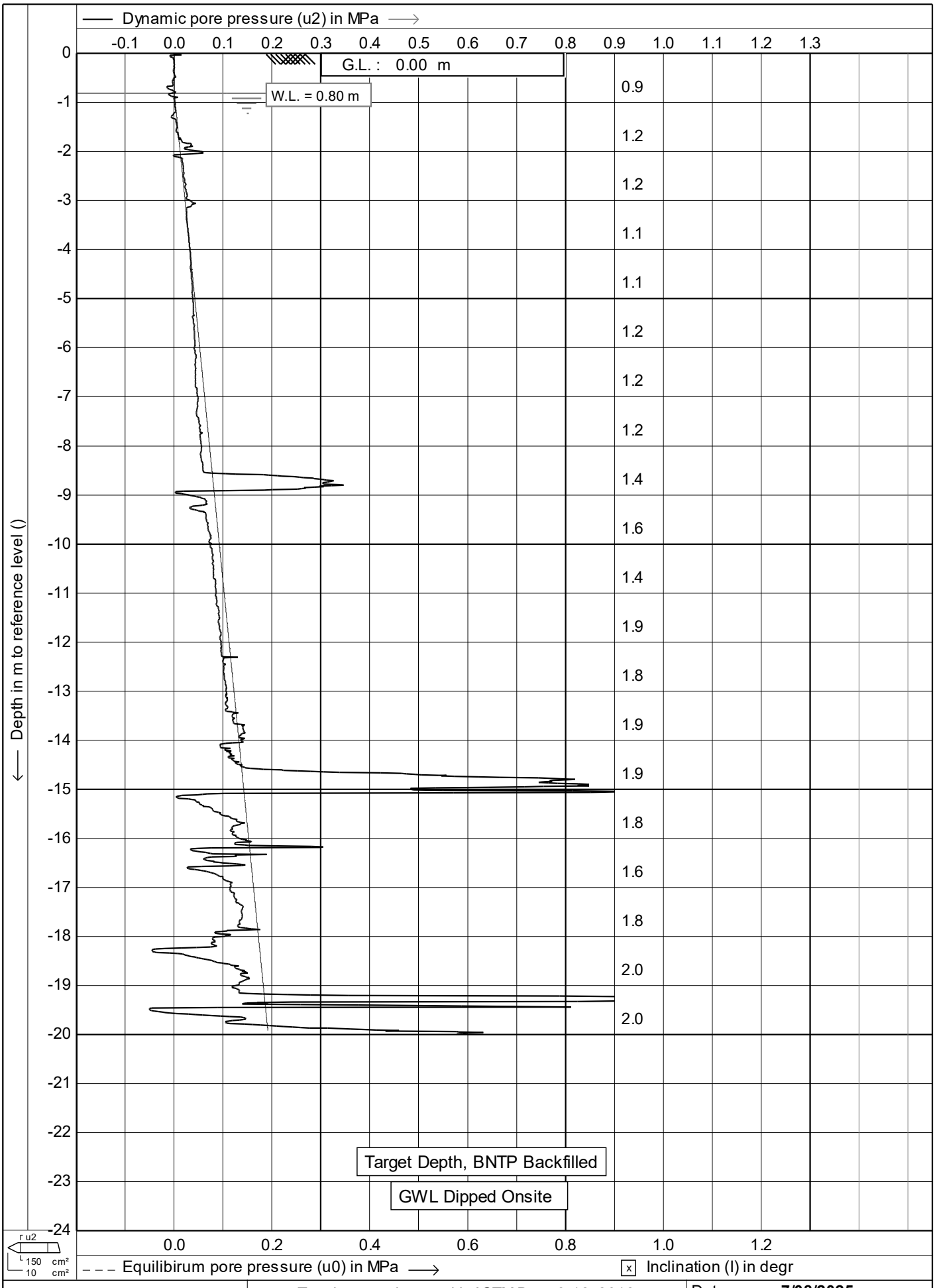
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

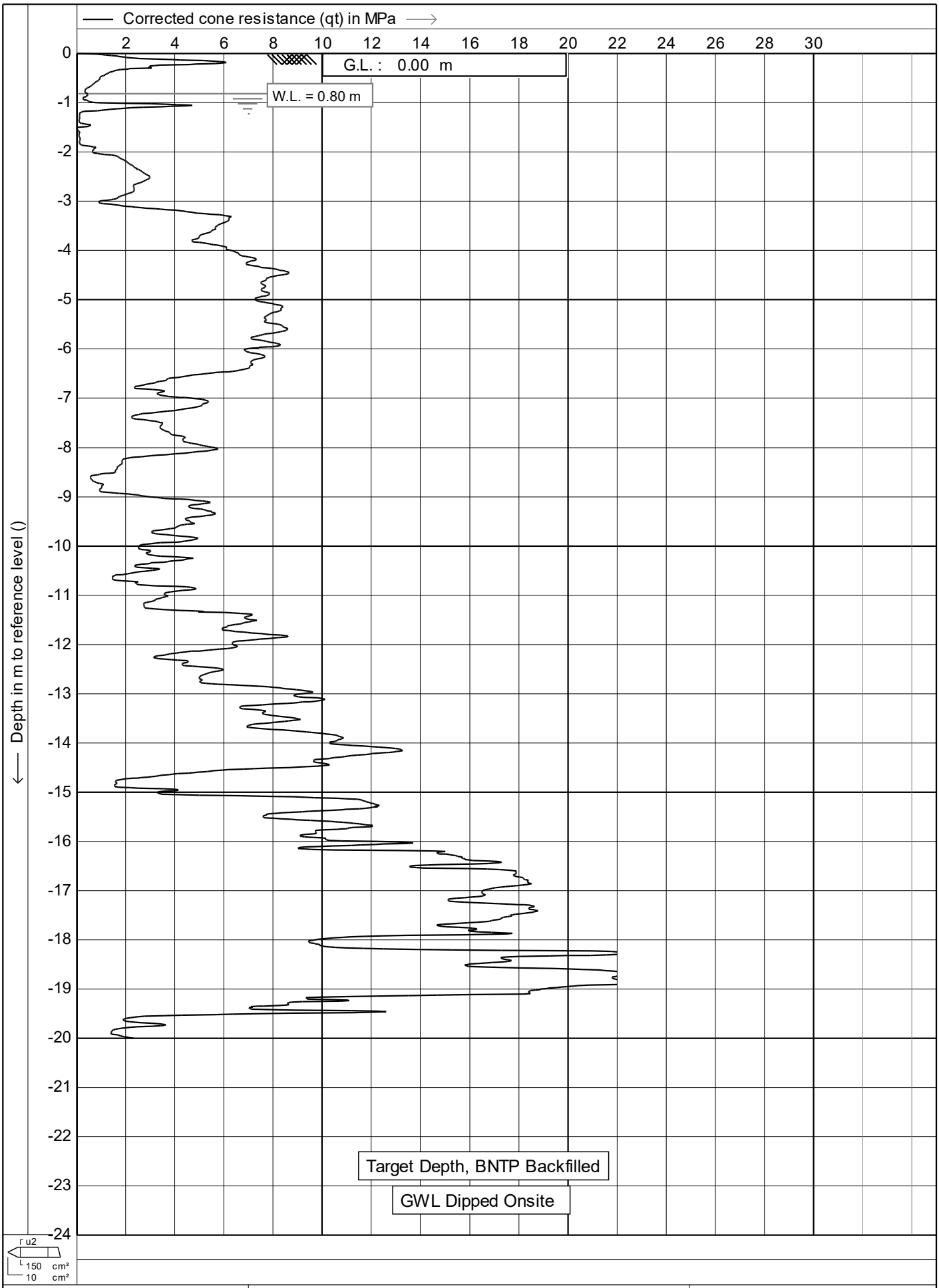
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

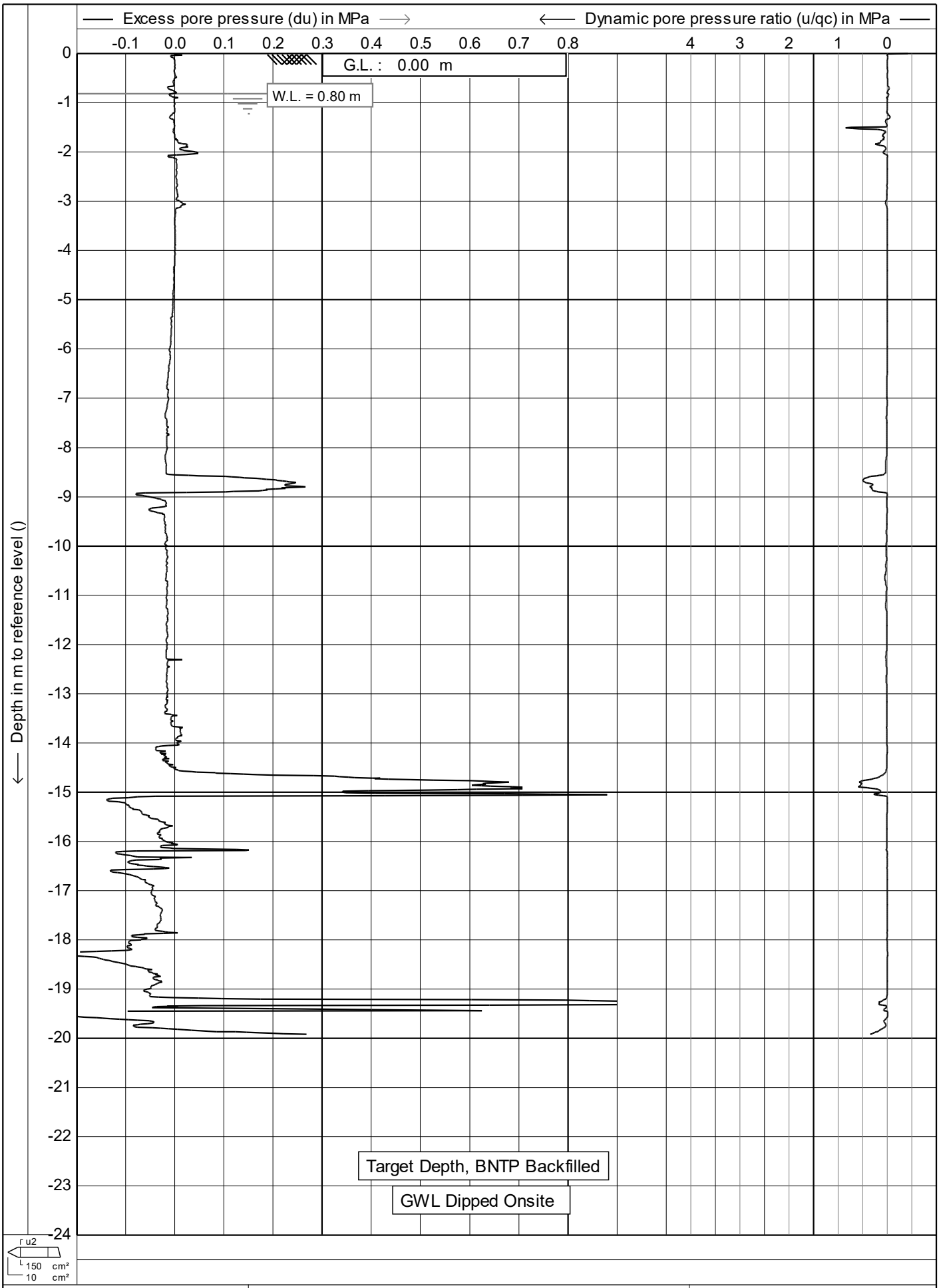
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **3/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

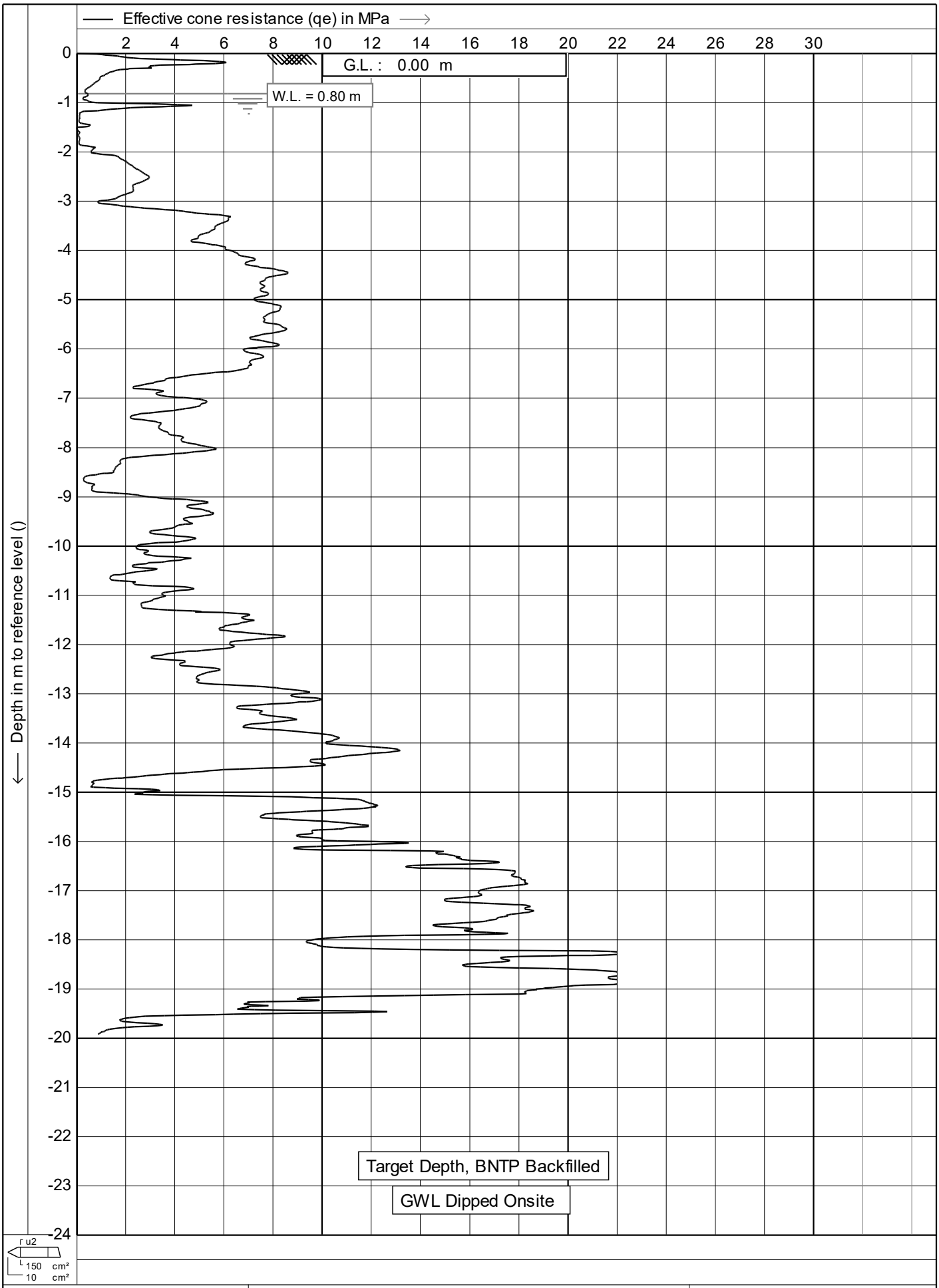
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **4/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

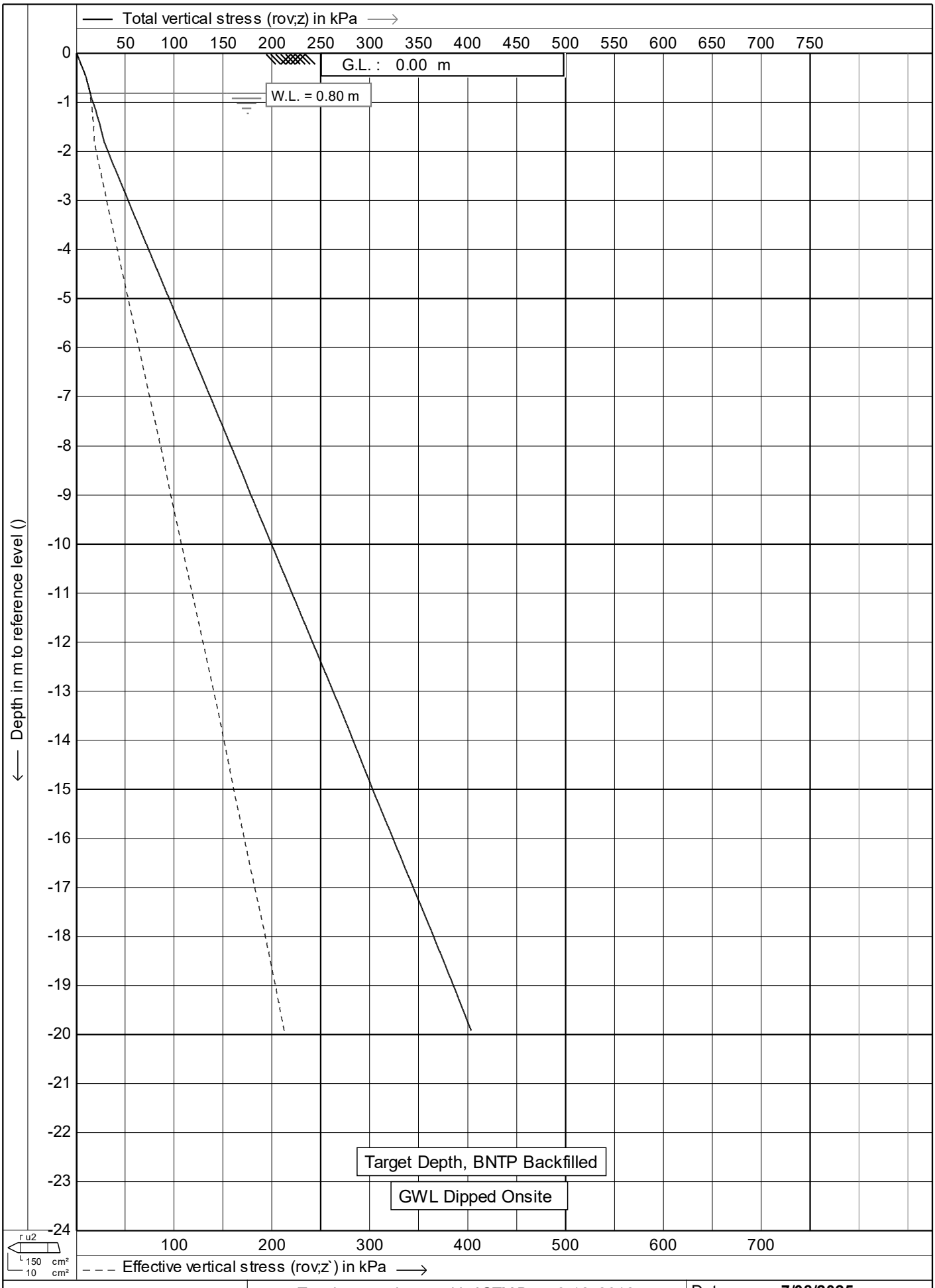
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

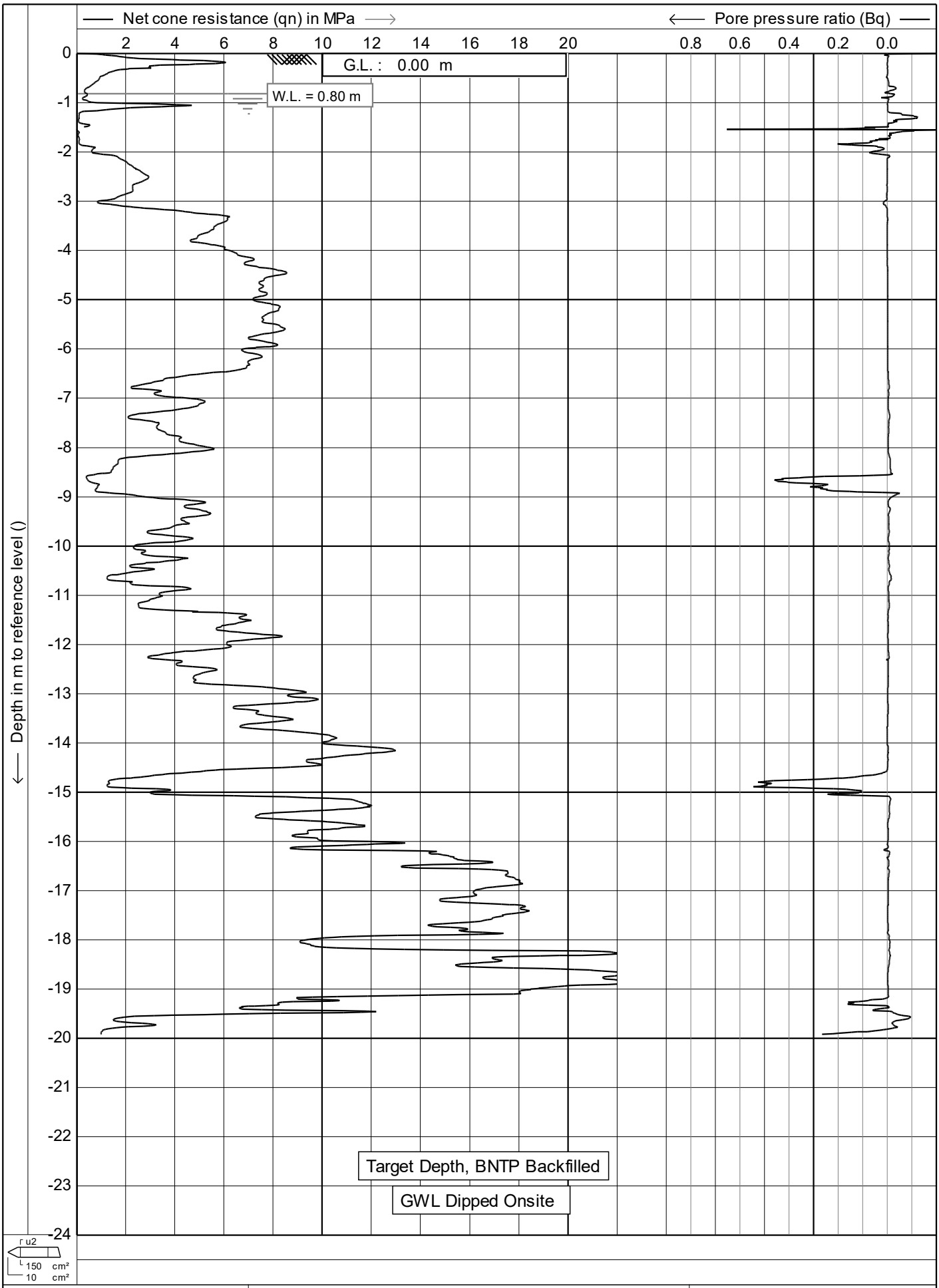
CPT no. : **CPT124** **5/14**

1.49



PERRY GEOTECH	Test in accordance with ASTM D5778-12 :2012	Date : **7/08/2025**
	Project : **Site Investigations**	Cone no. : **C10CFIIP.C13081**
	Location: **Bell Rd - Papamoa**	Project no. : **05EGO020**
	Position: **0, 0**	CPT no. : **CPT124** 6/14

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

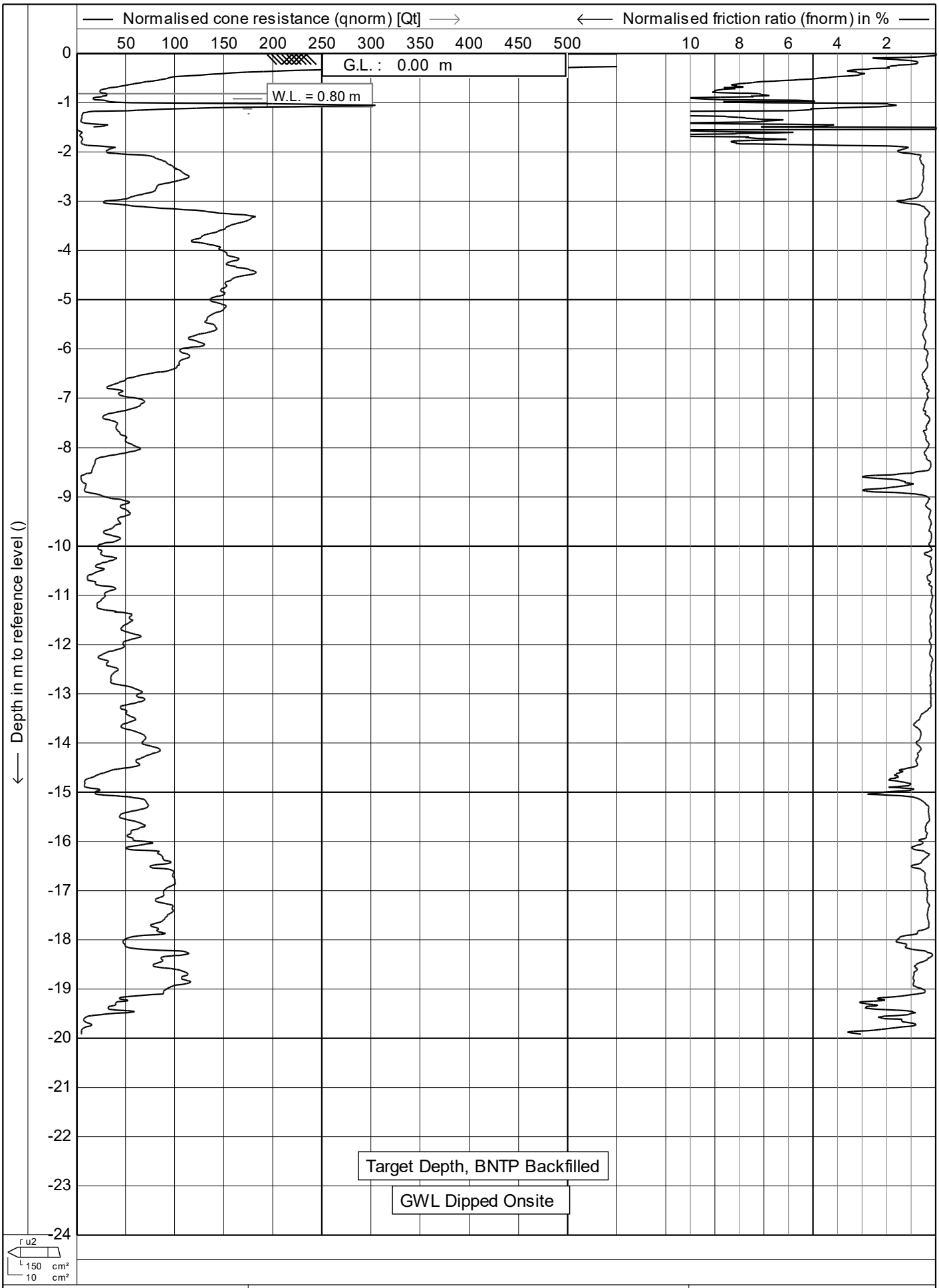
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT124** **7/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

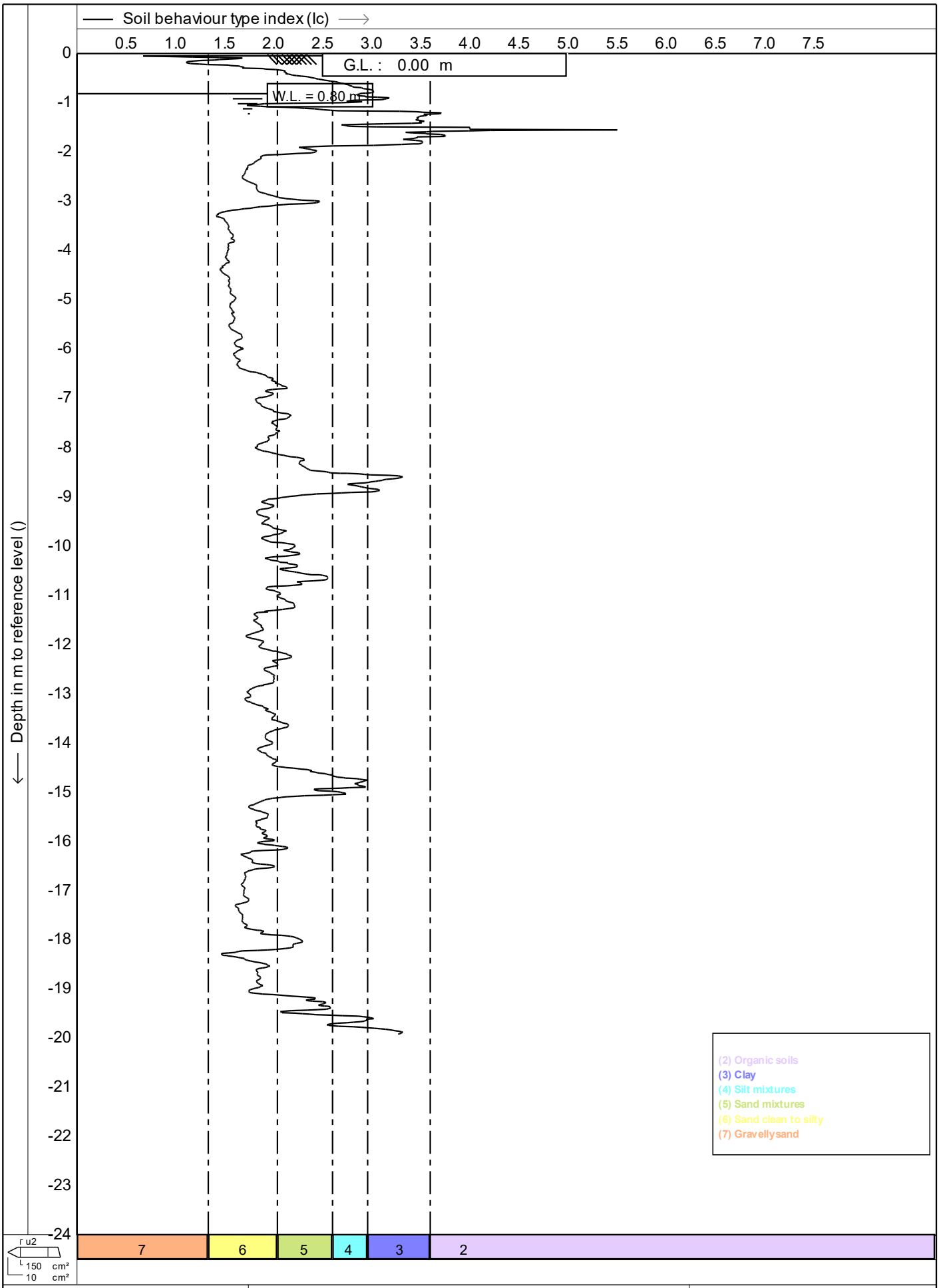
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT124** **8/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

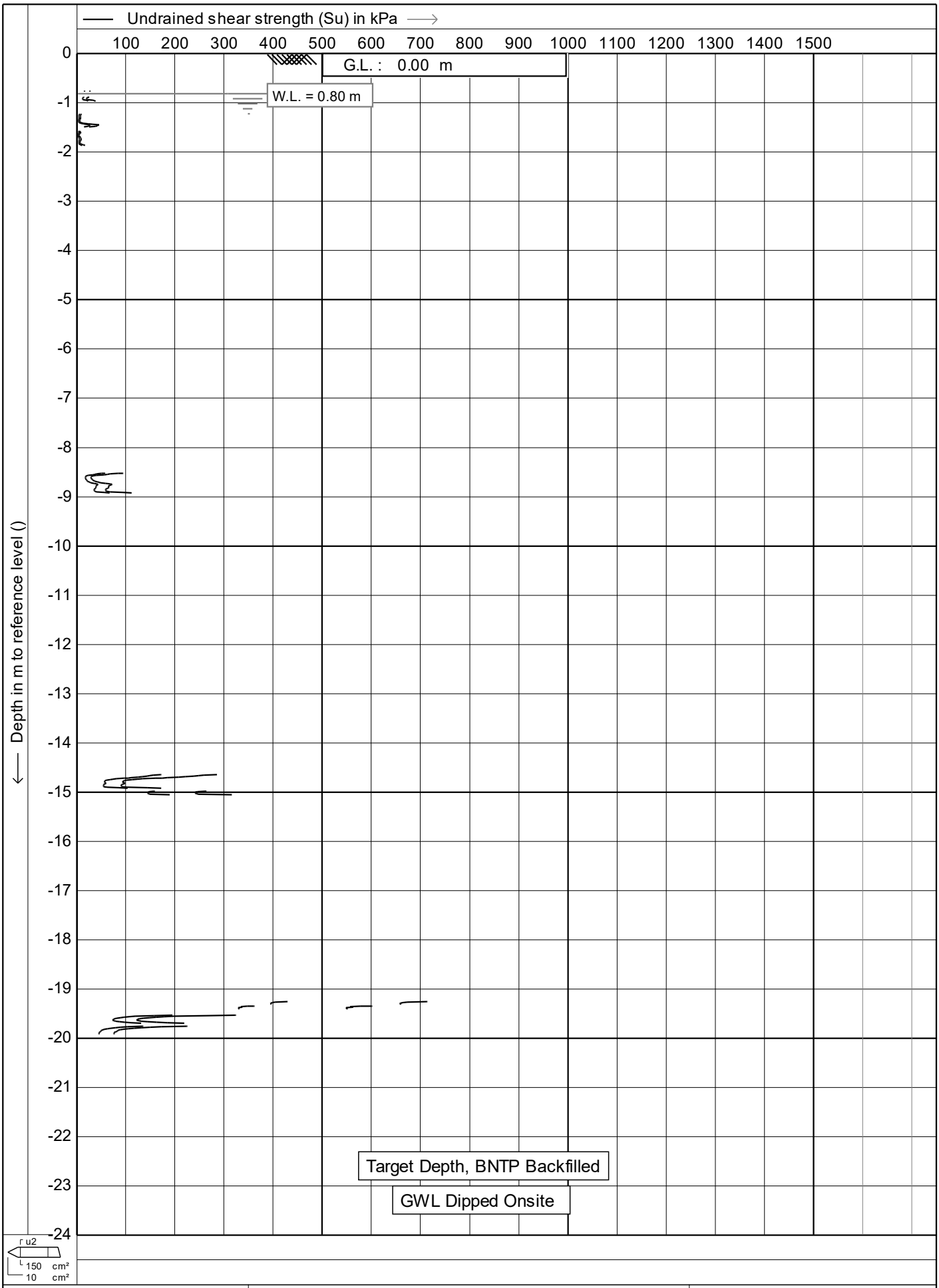
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

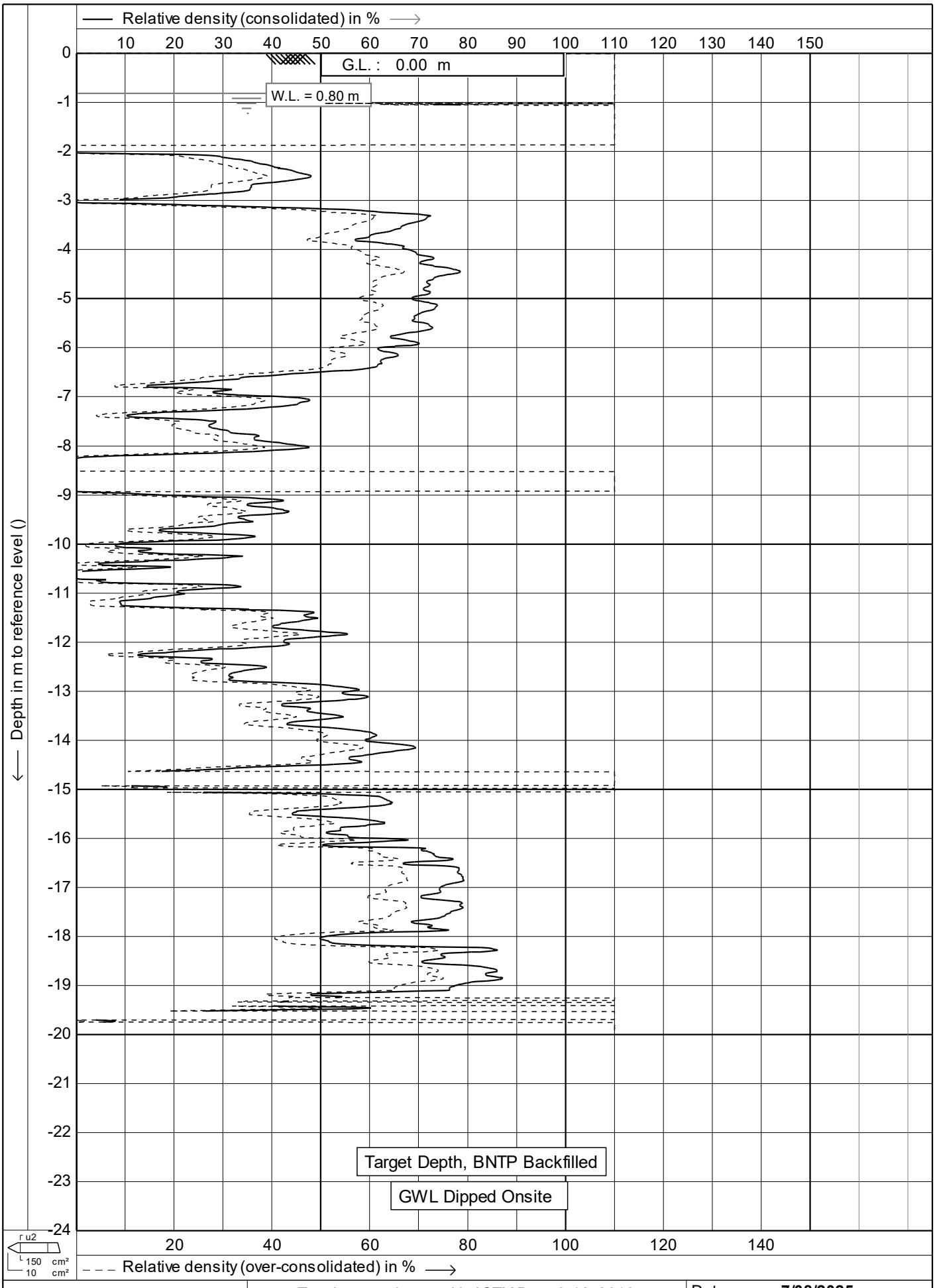
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **10/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

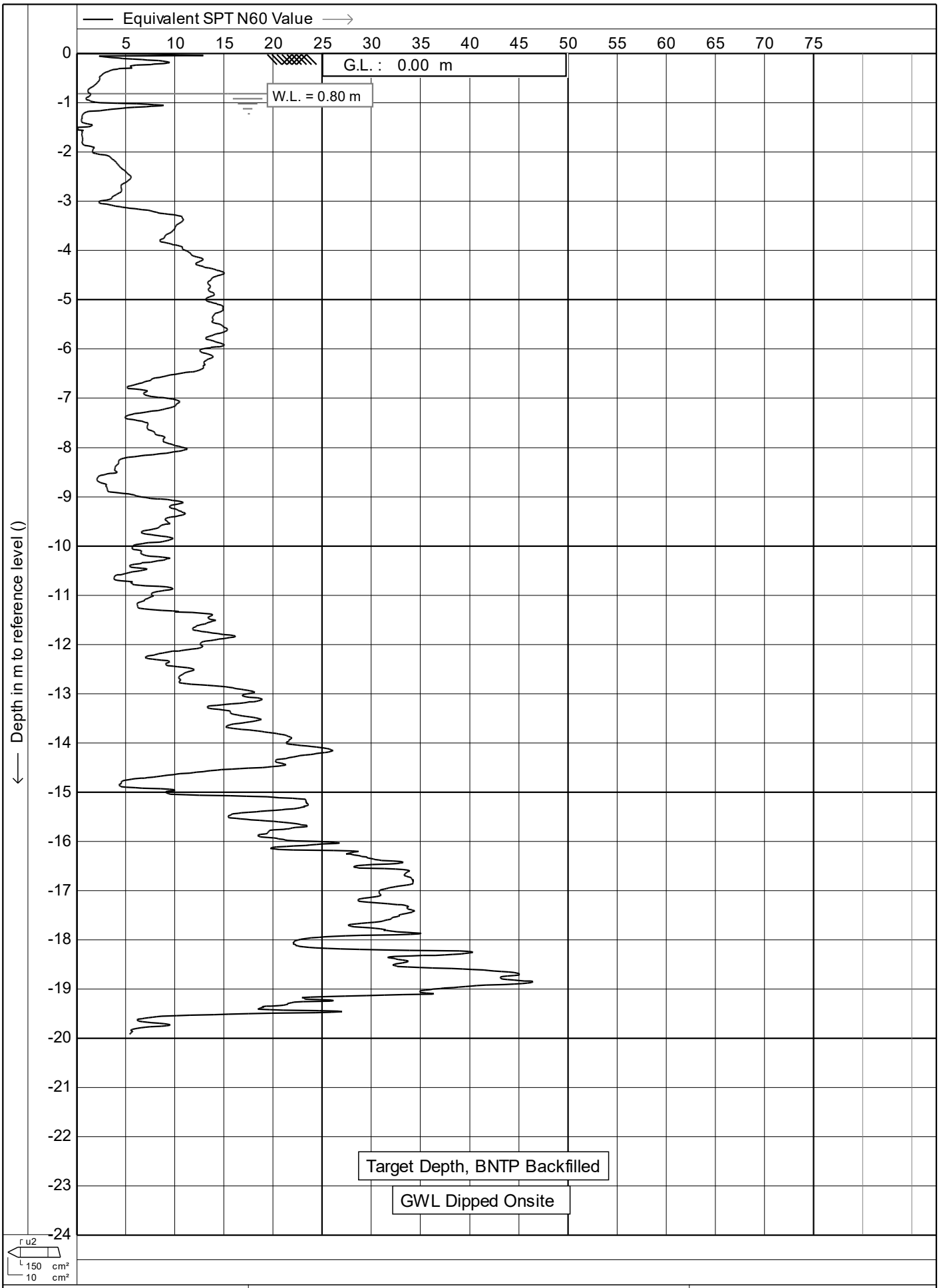
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **11/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

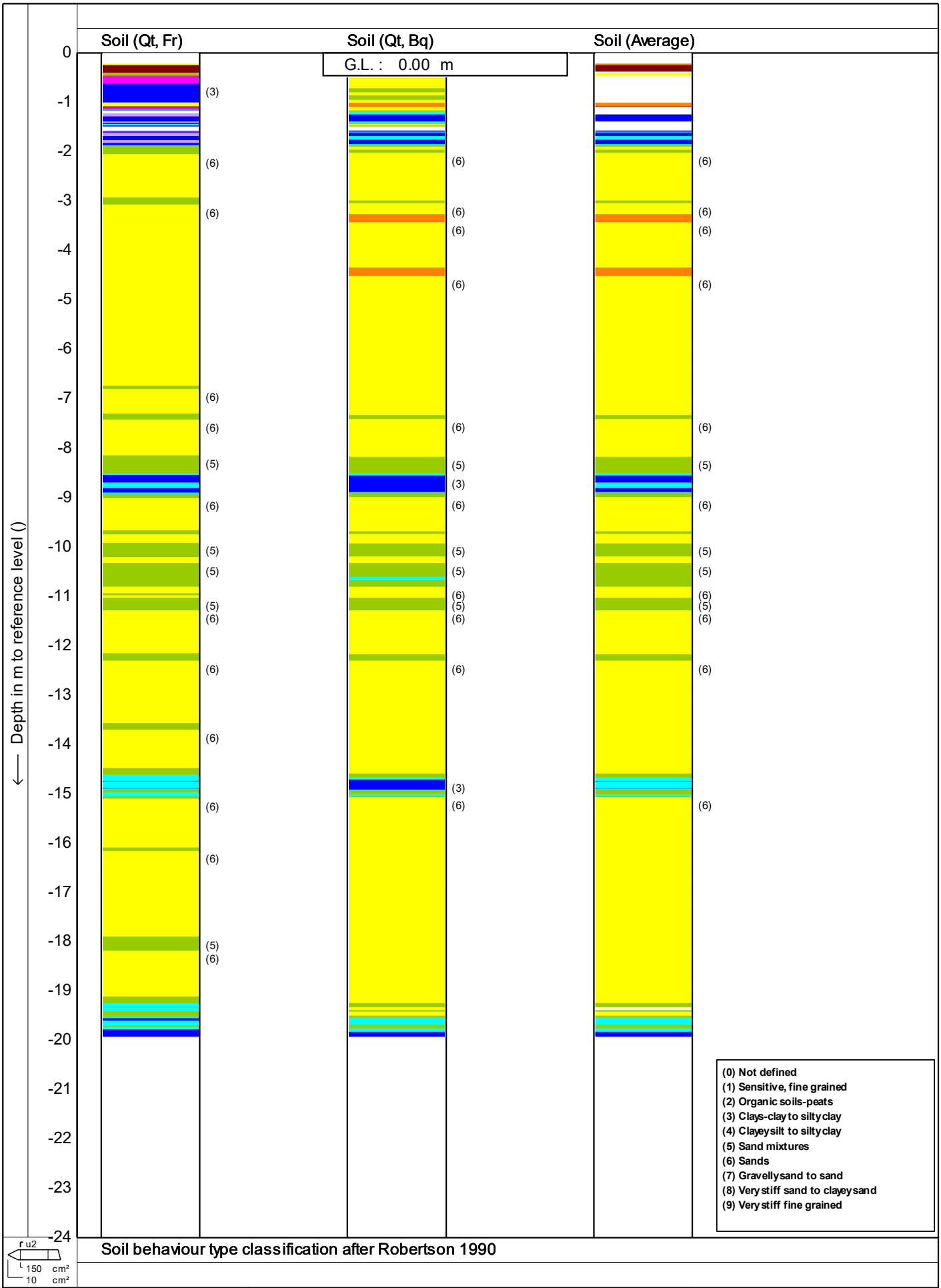
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **12/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

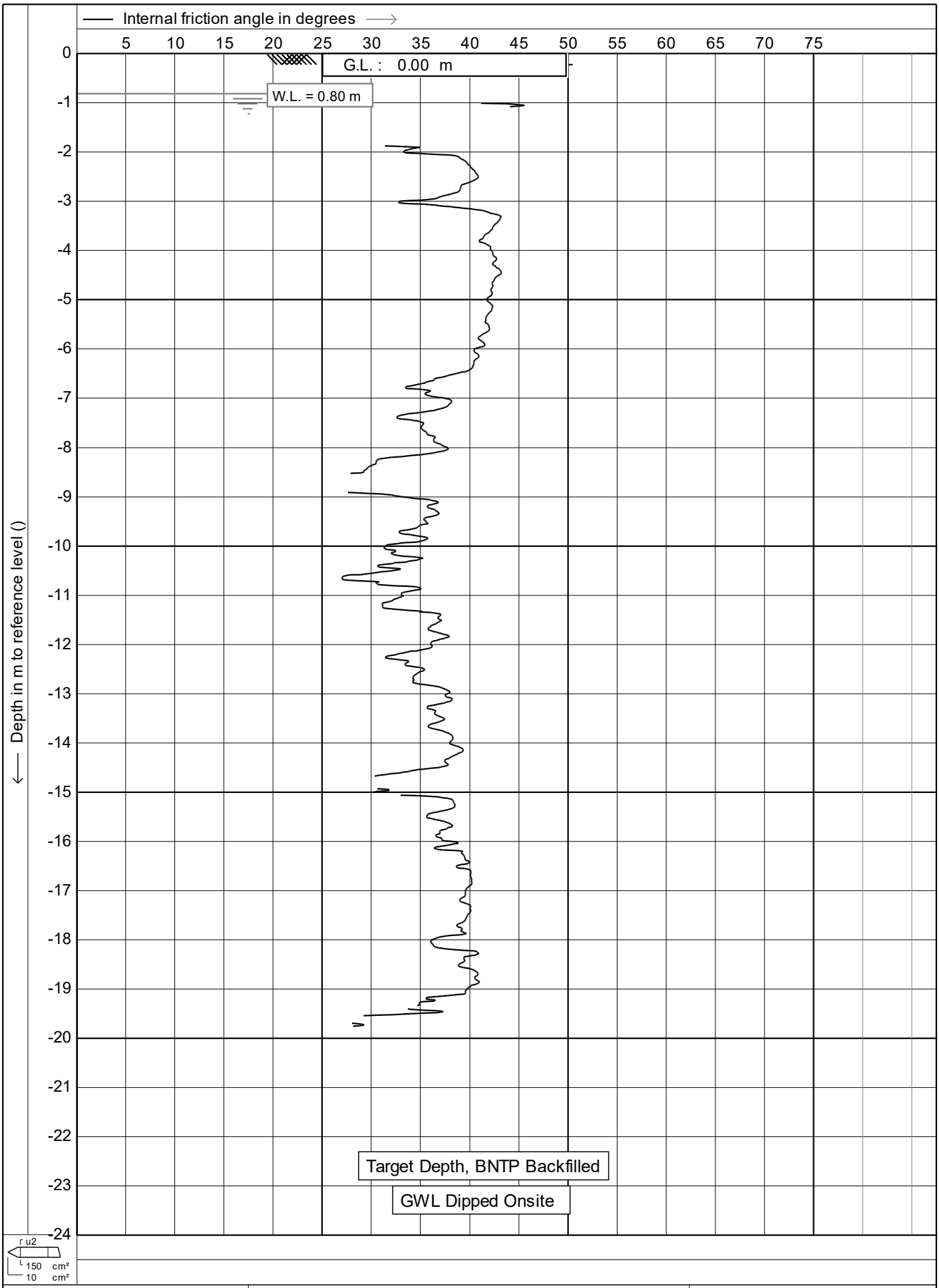
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **13/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

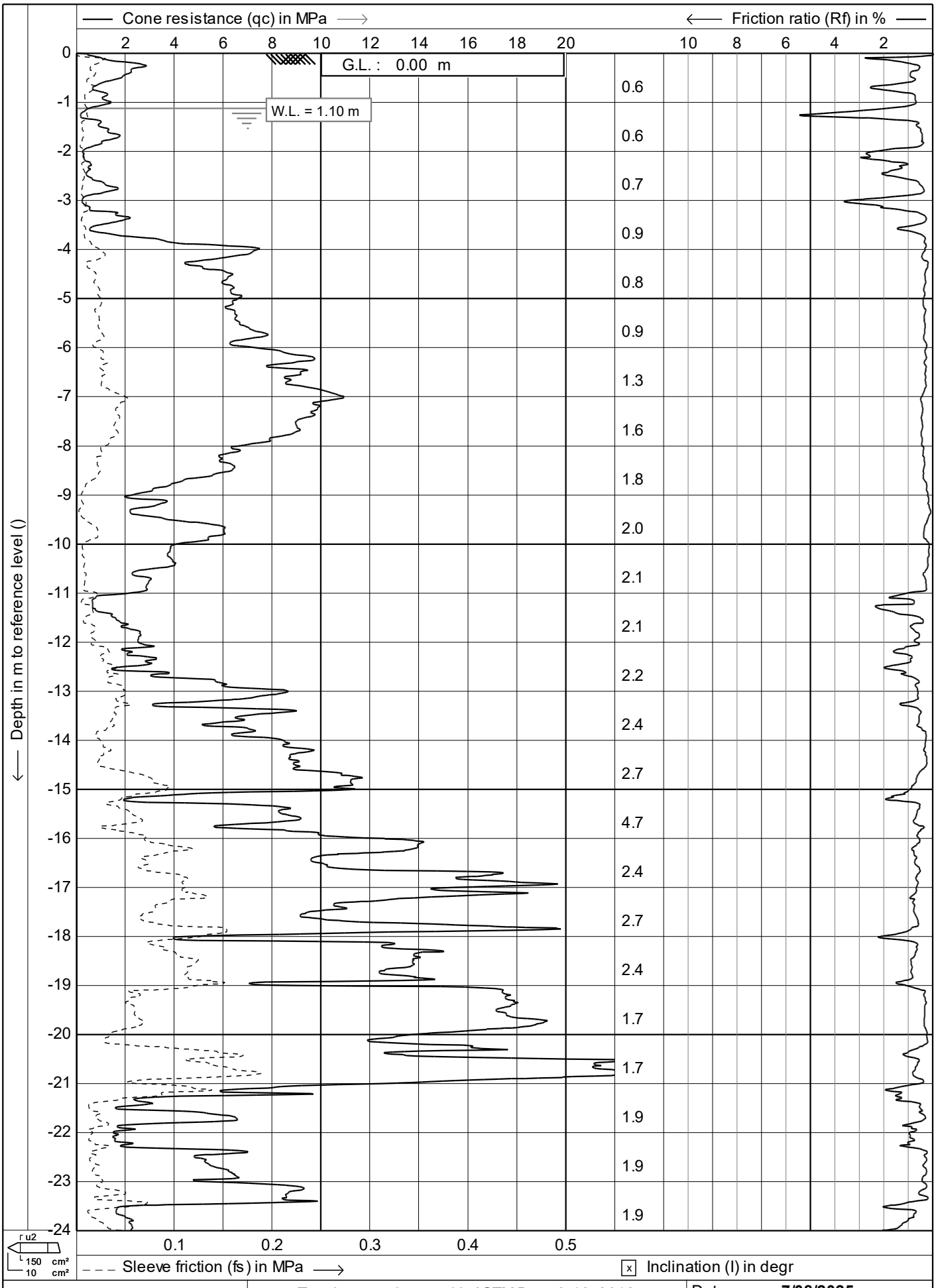
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT124** **14/14**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

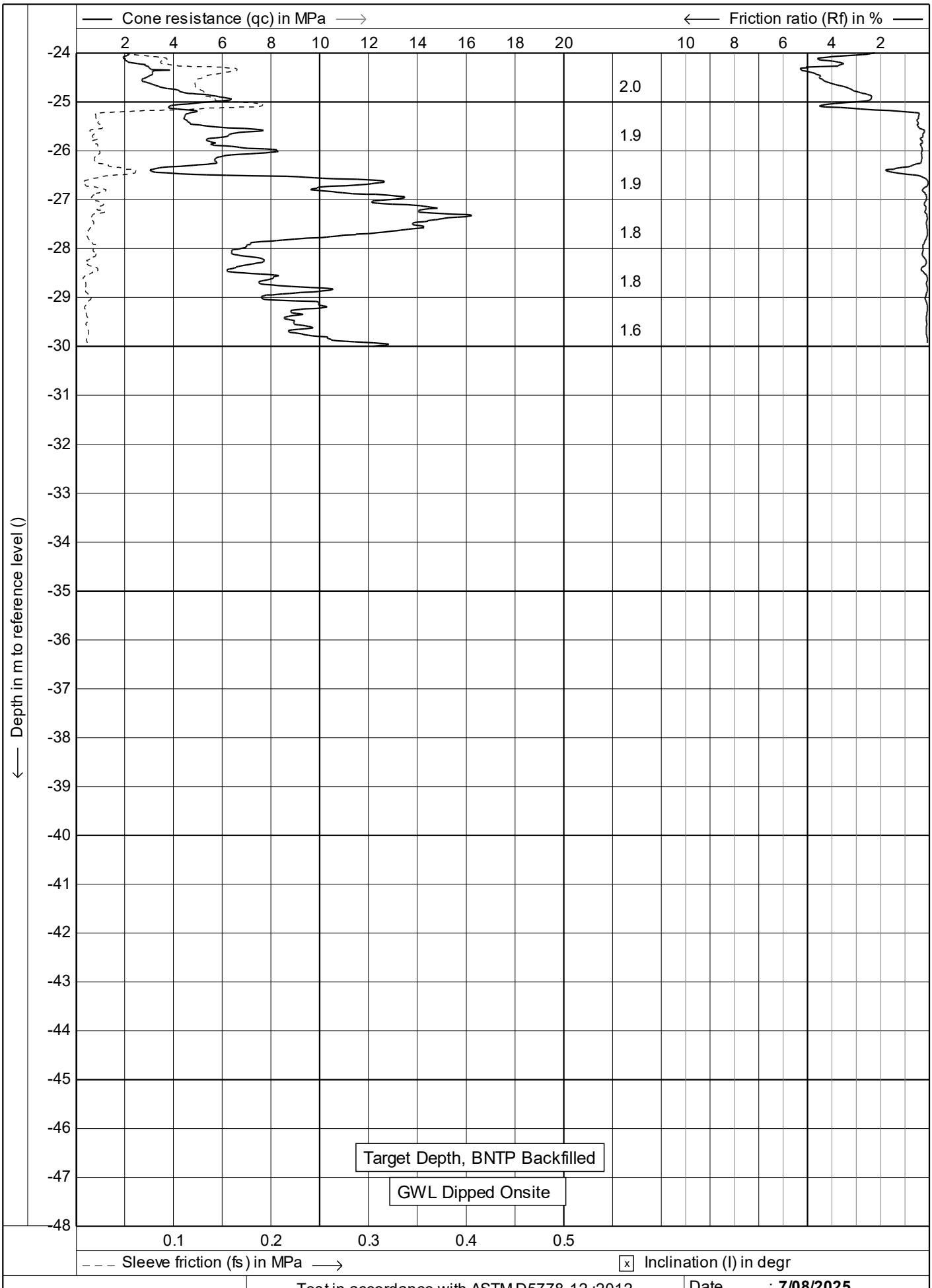
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** 1/28

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

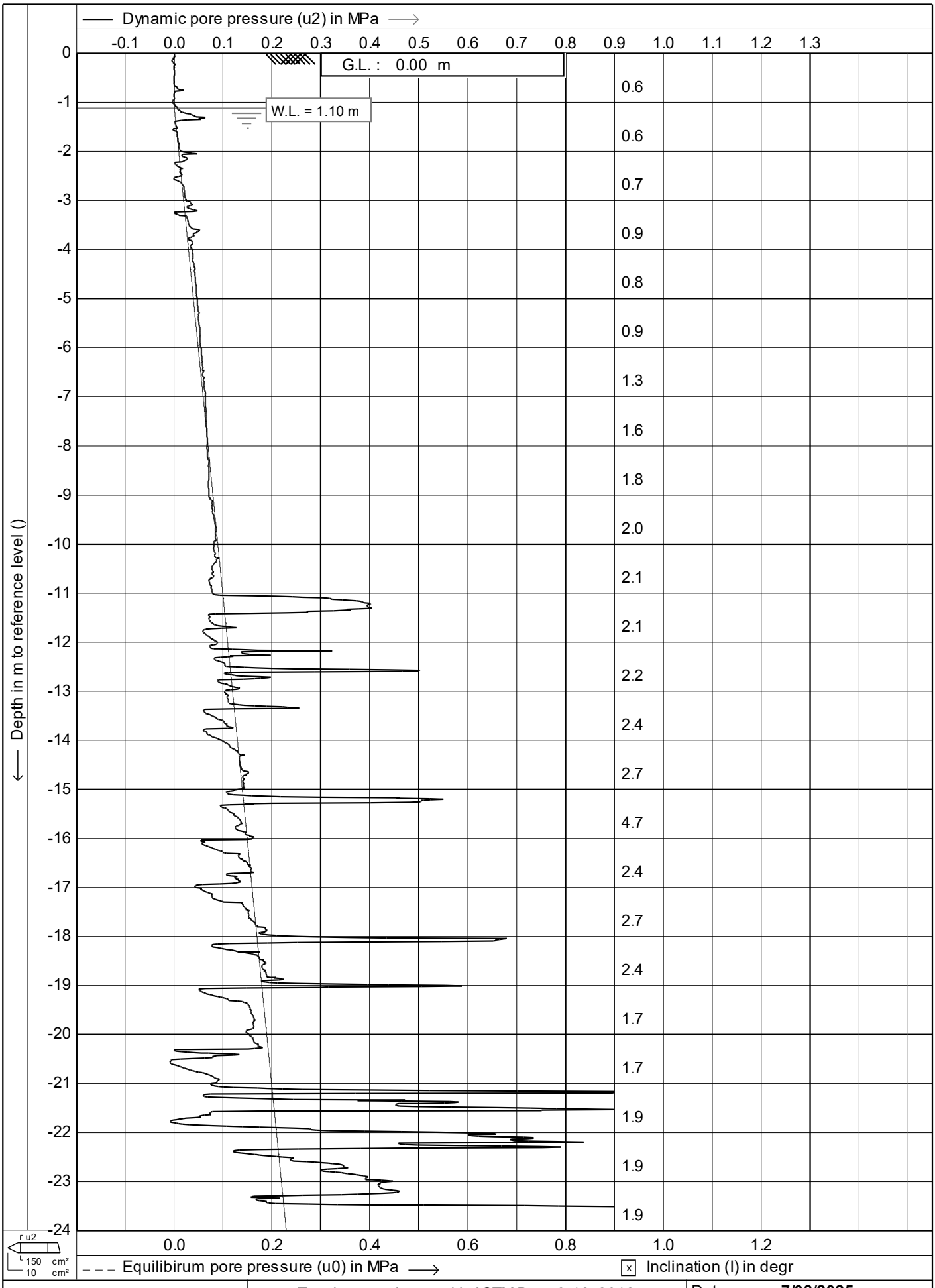
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

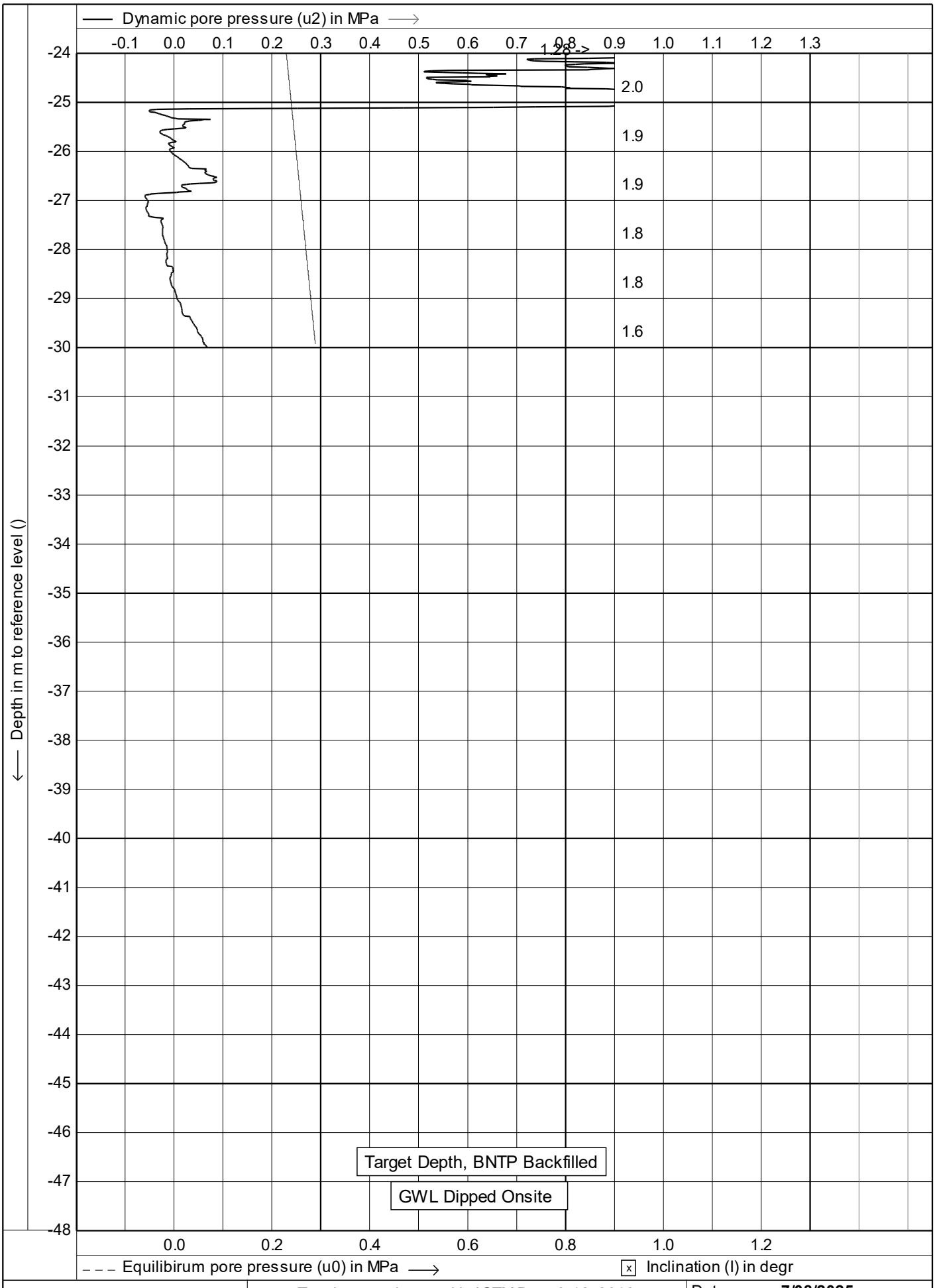
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

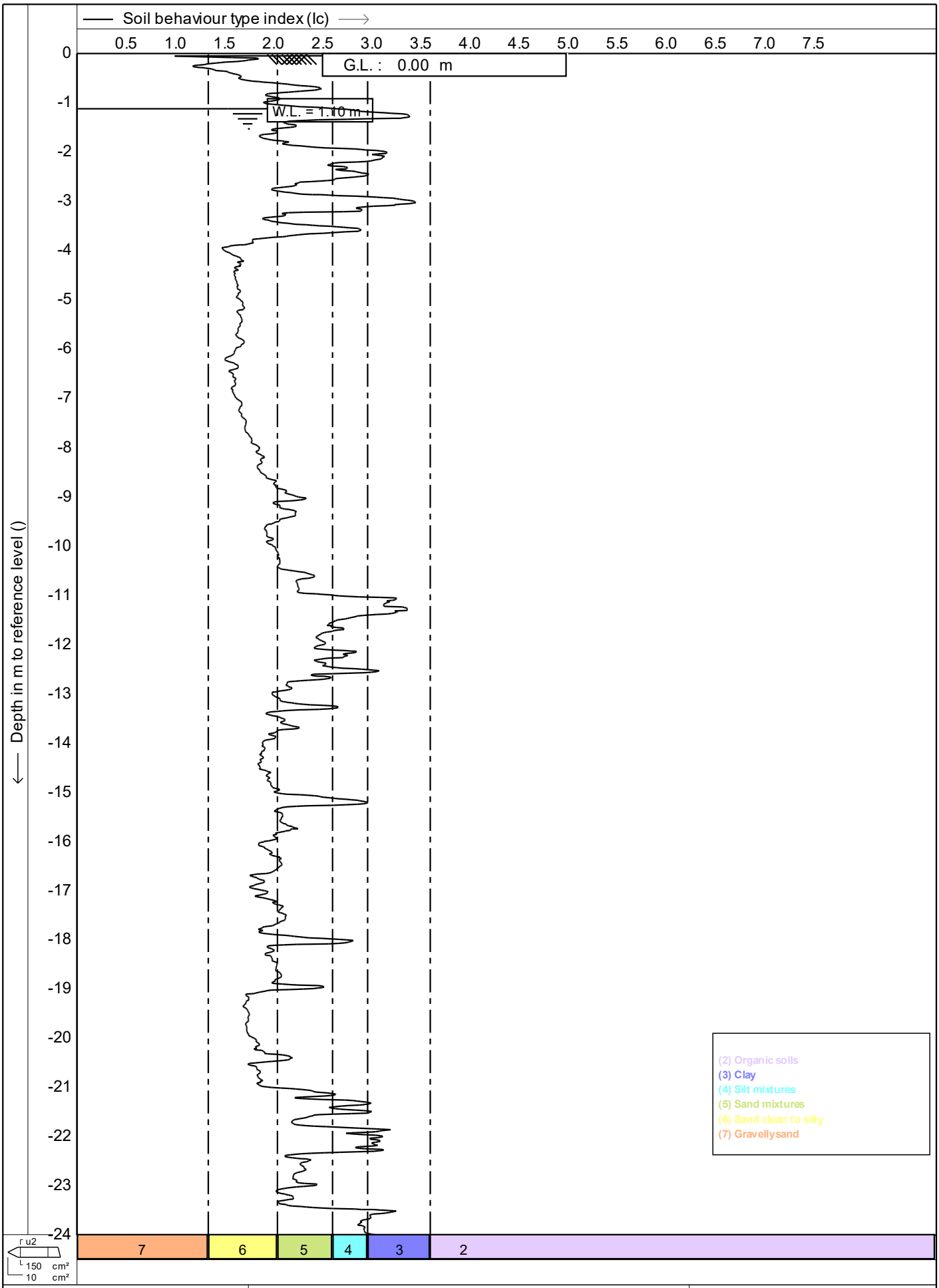
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

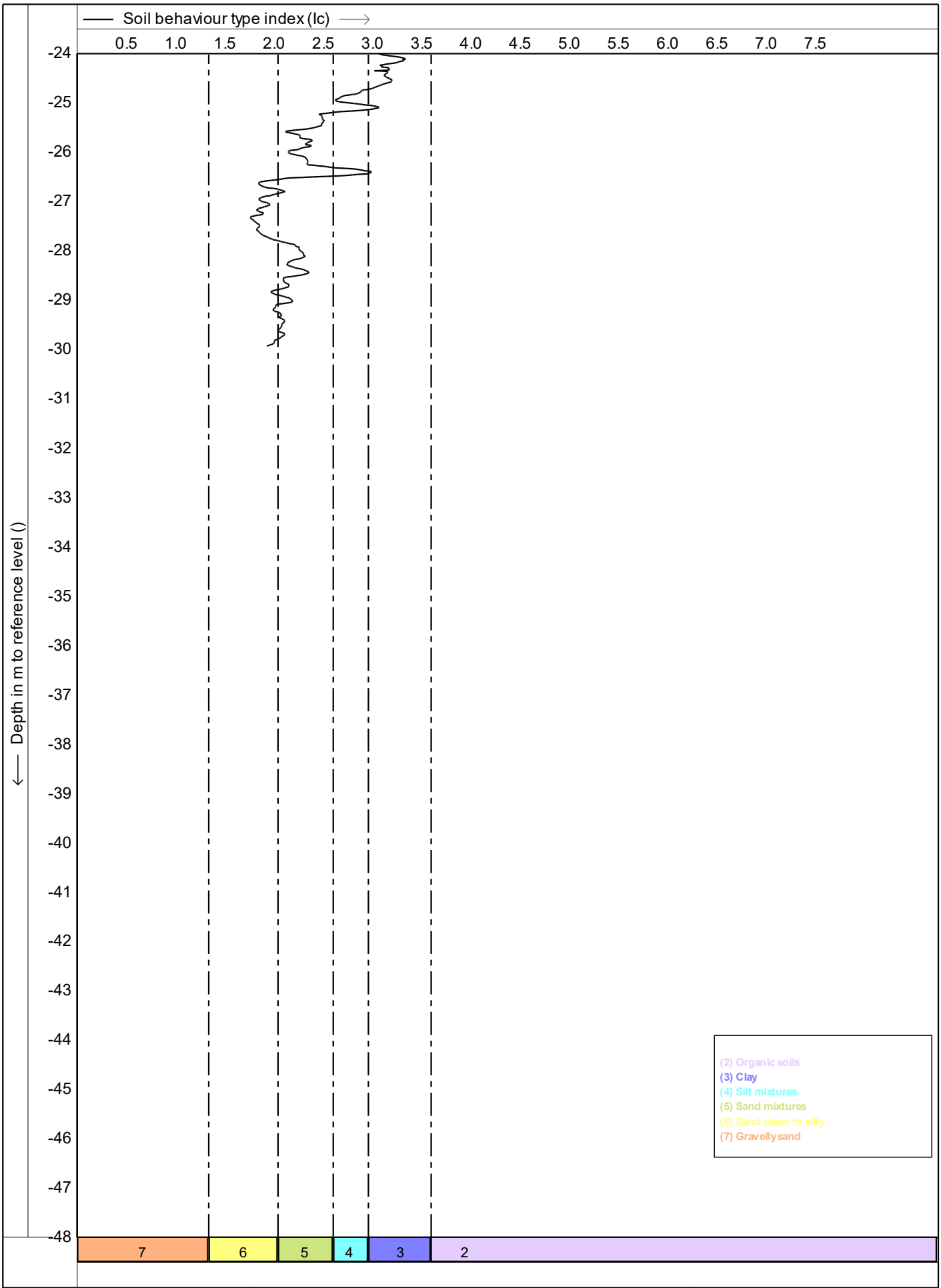
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

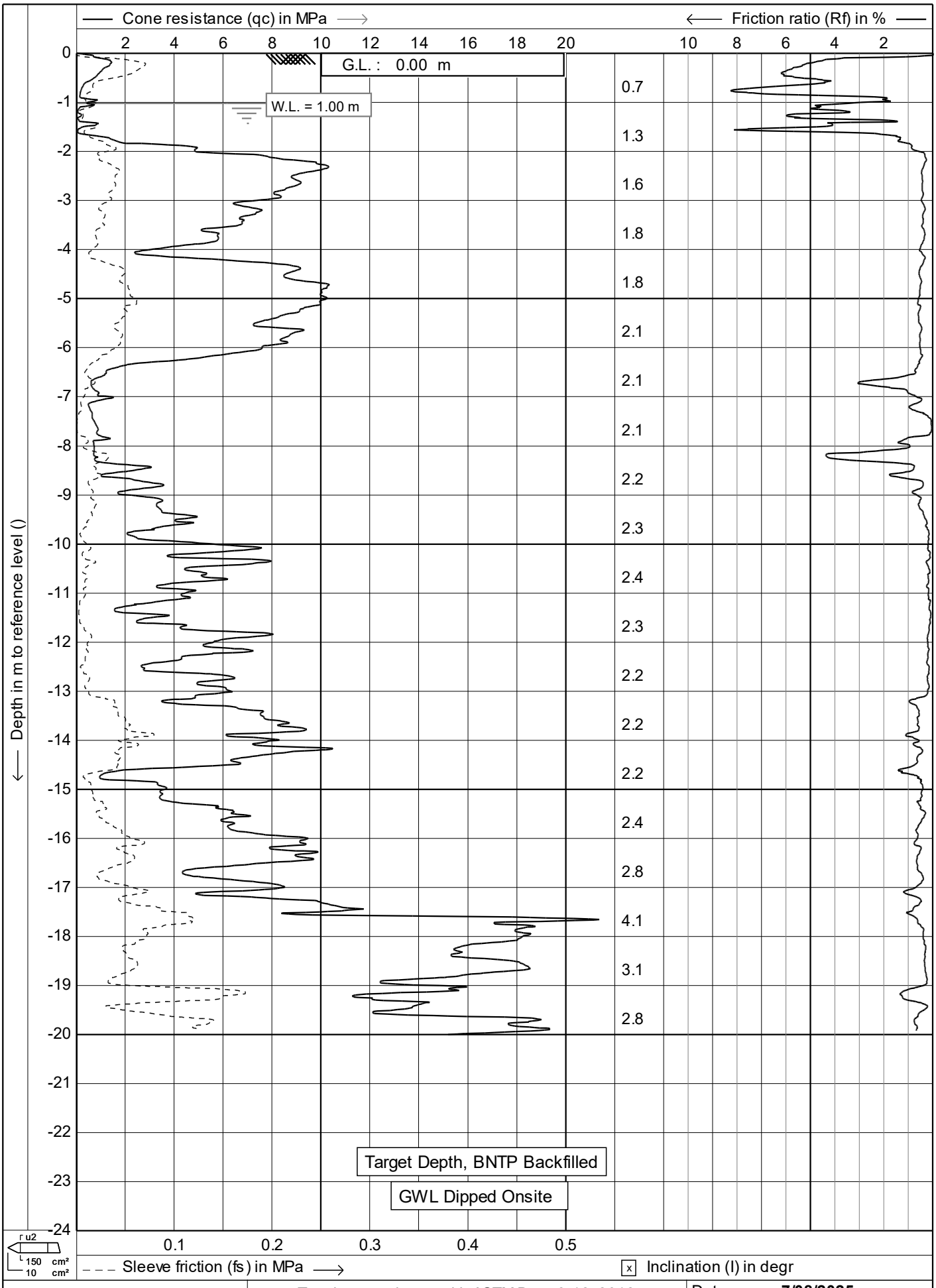
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT125** **18/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

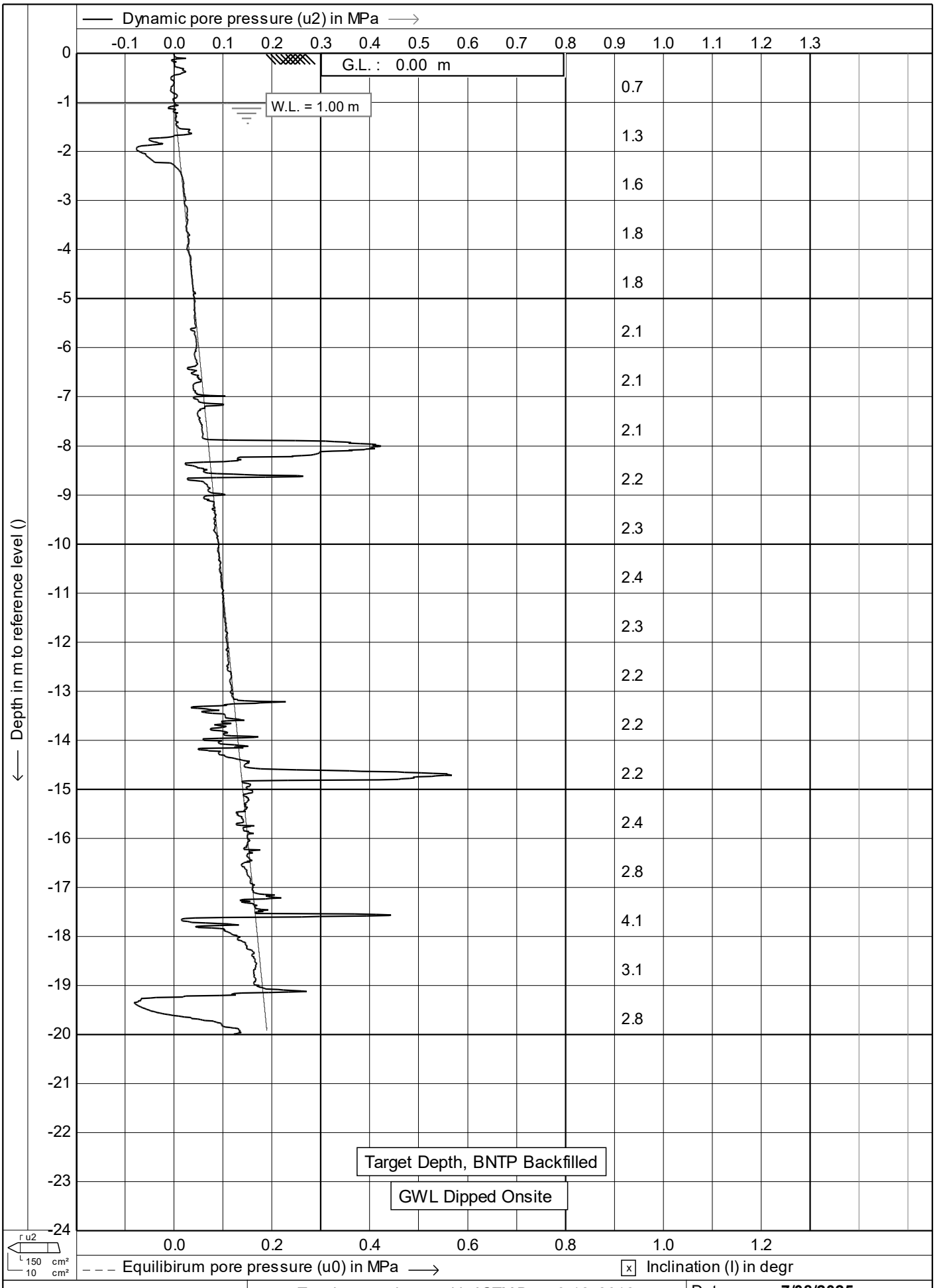
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT126** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

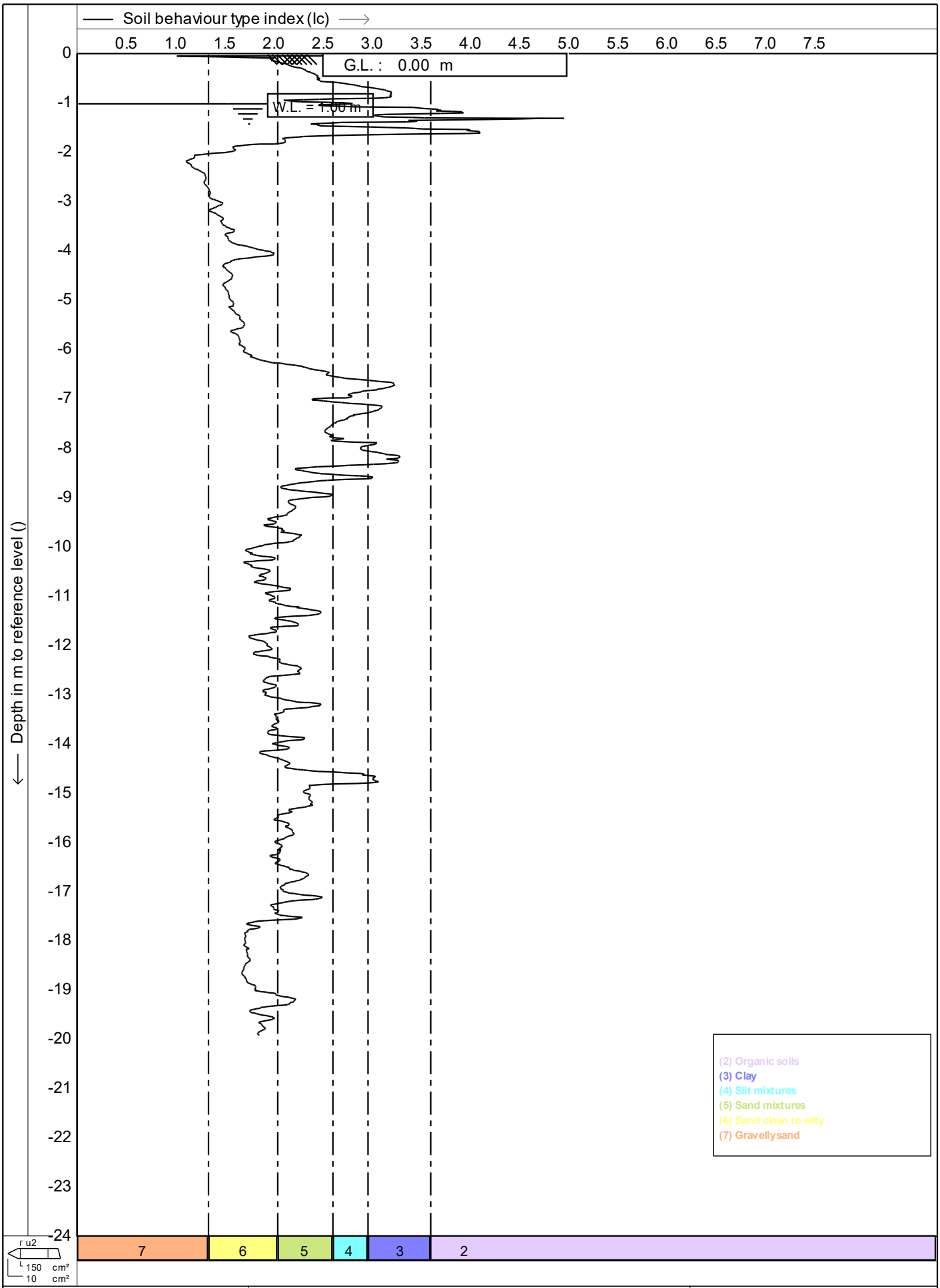
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT126** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

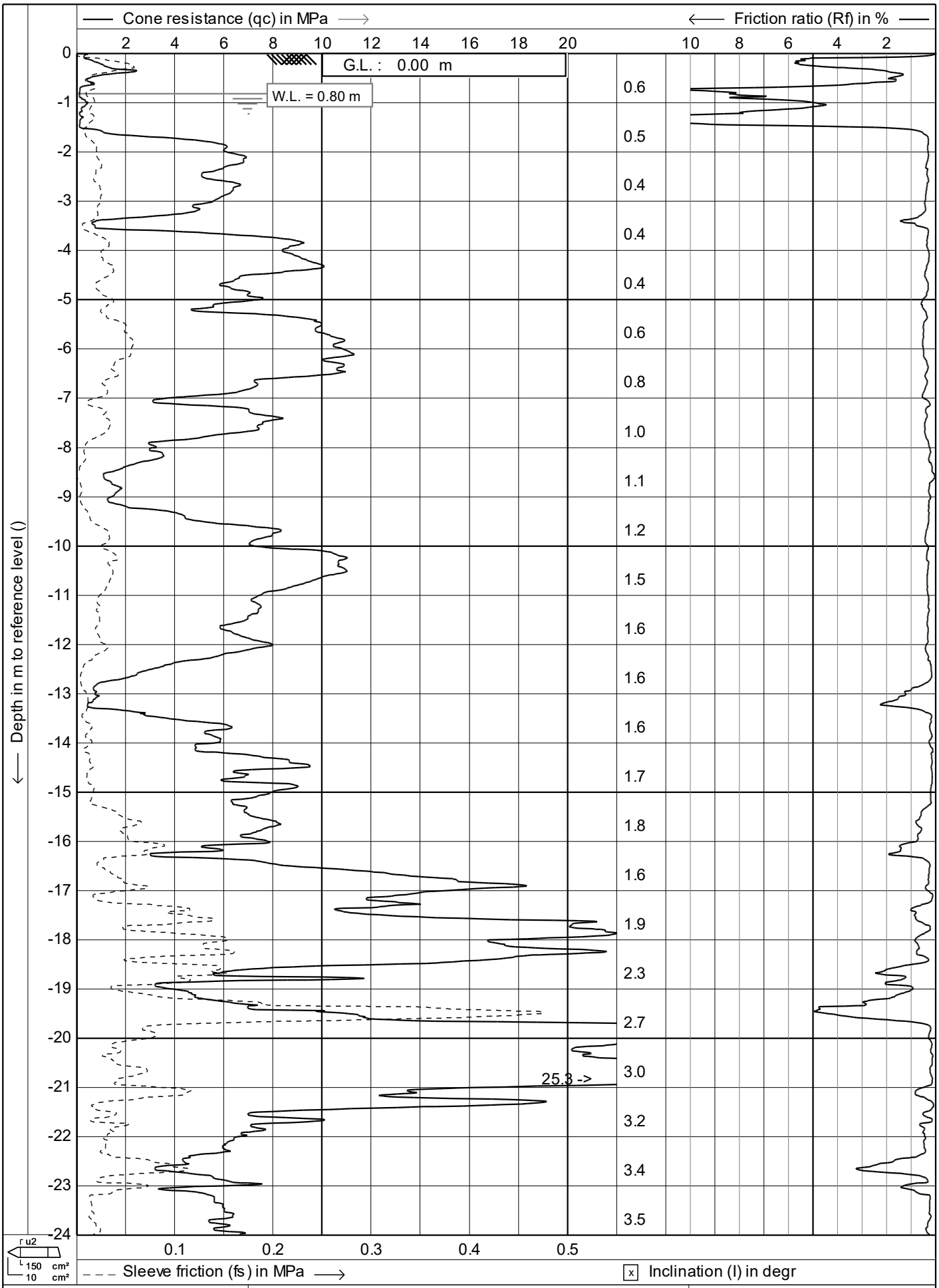
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT126** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

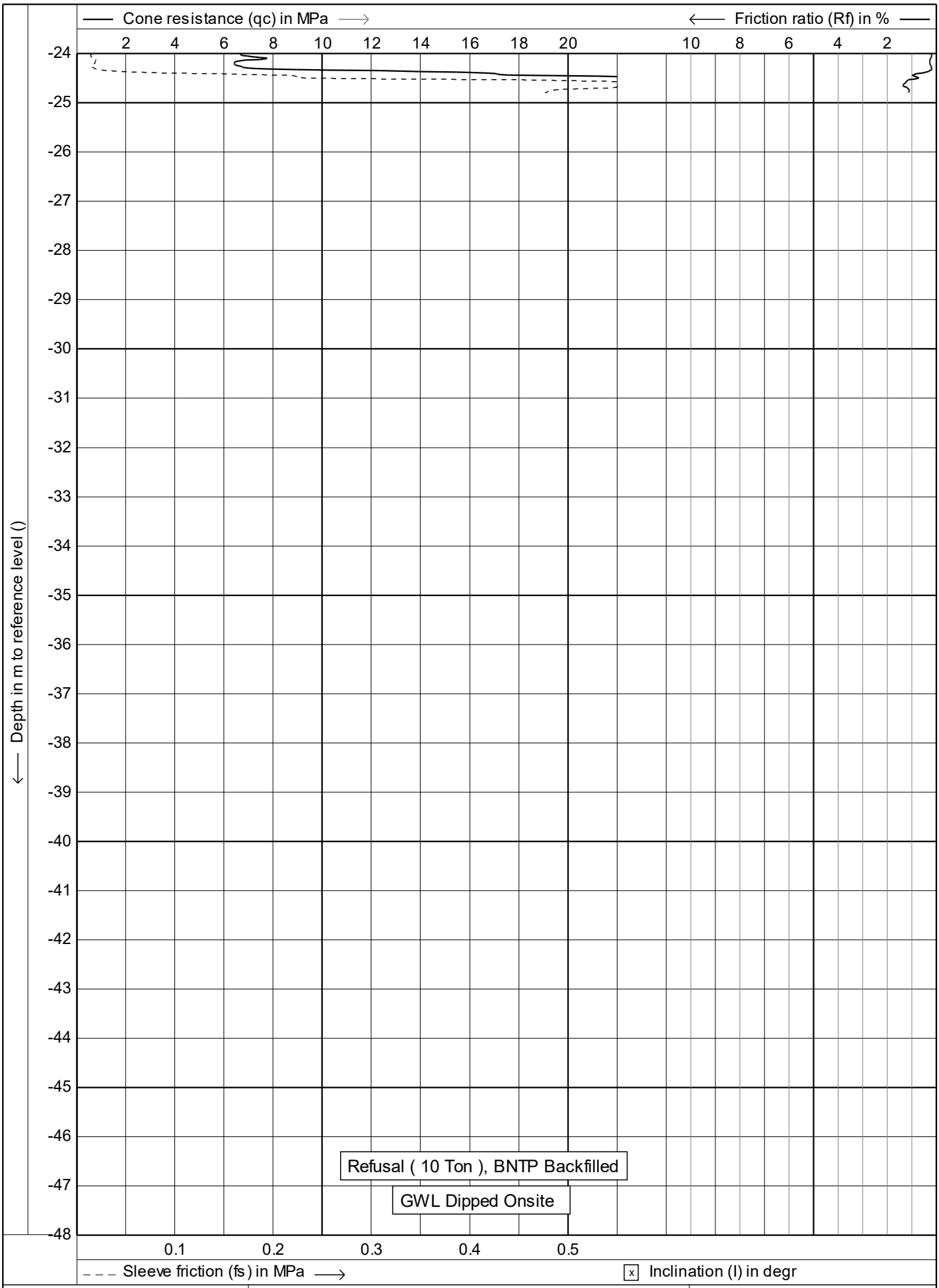
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT127** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

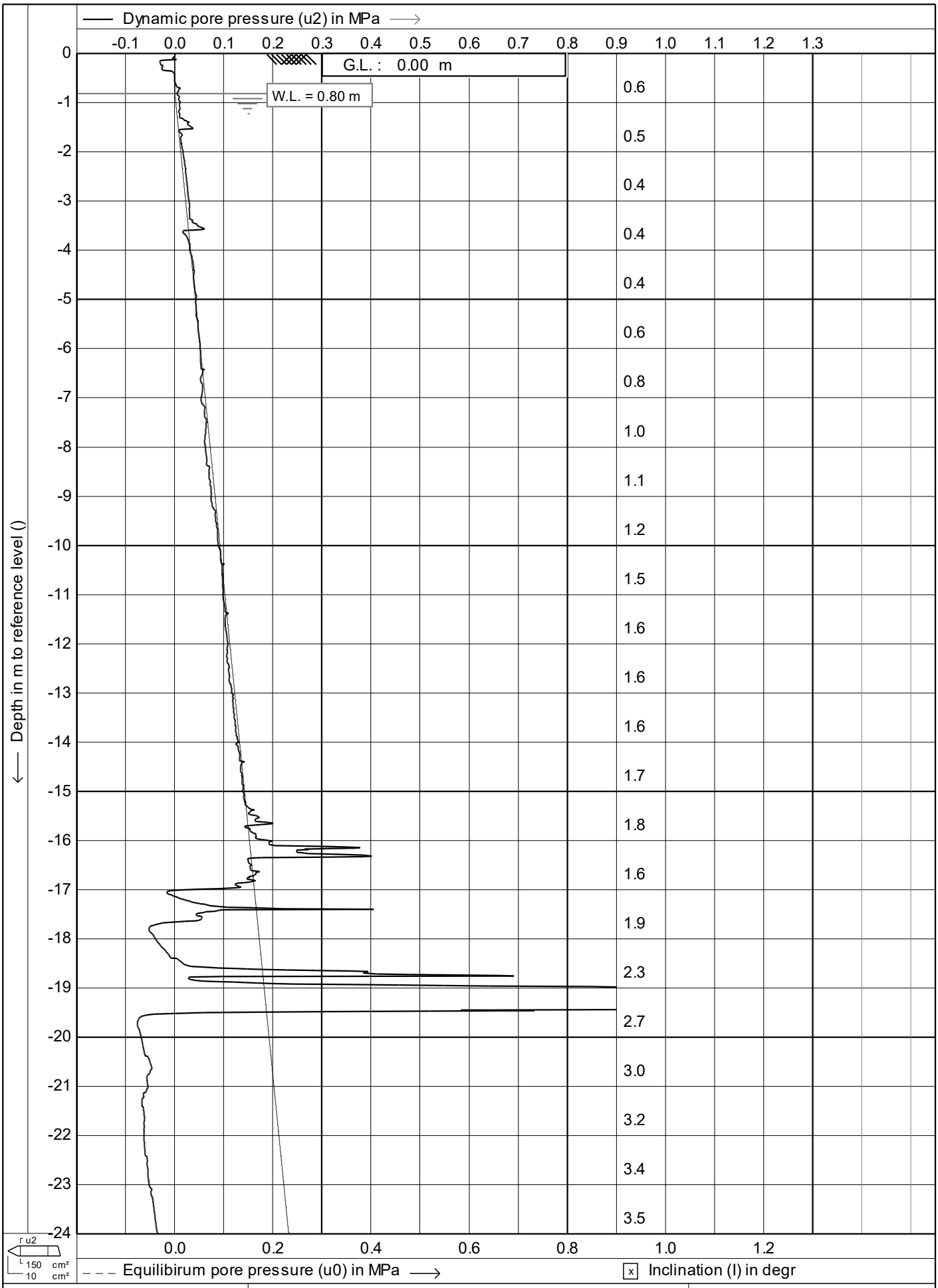
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT127** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

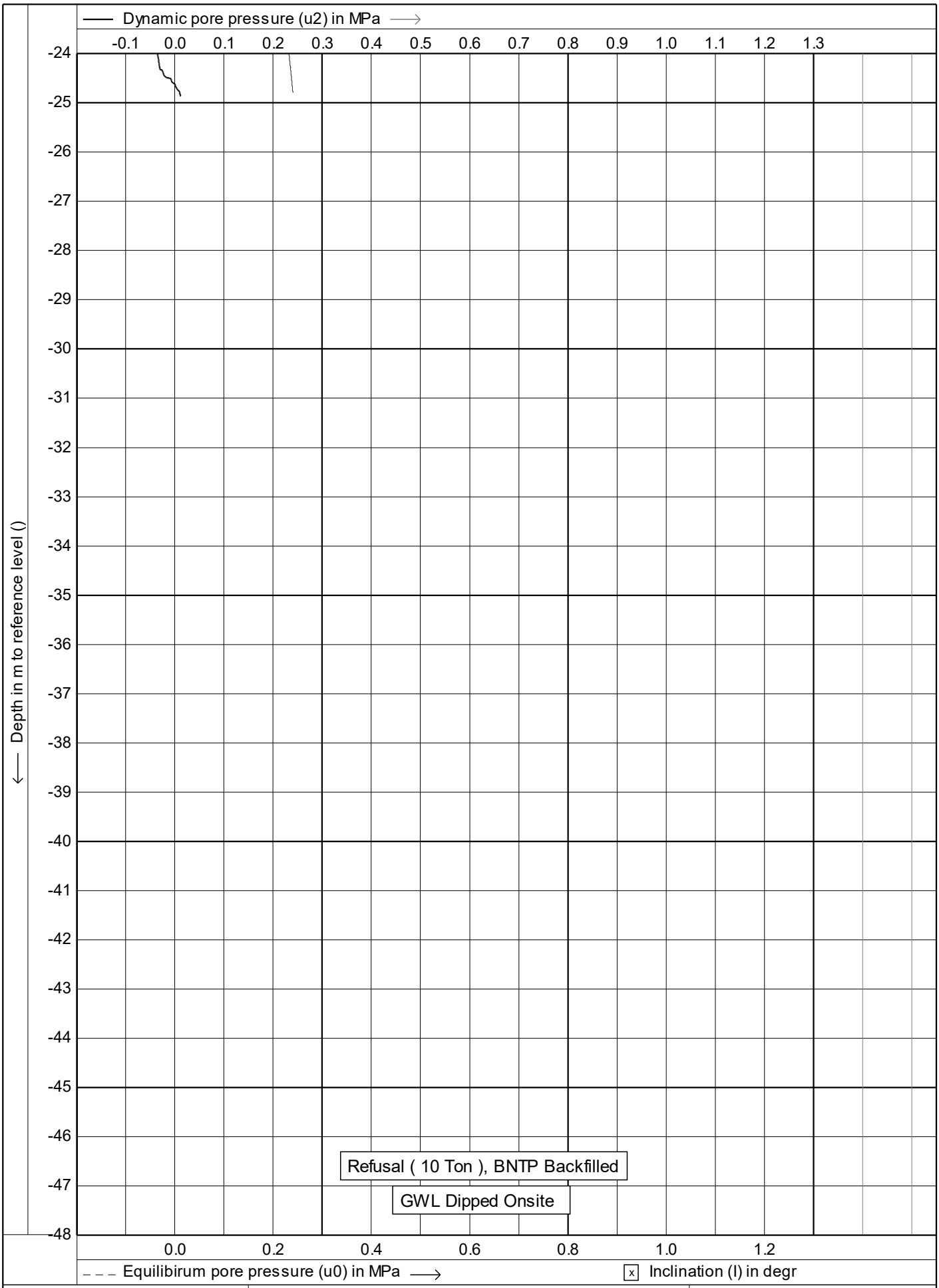
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT127** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

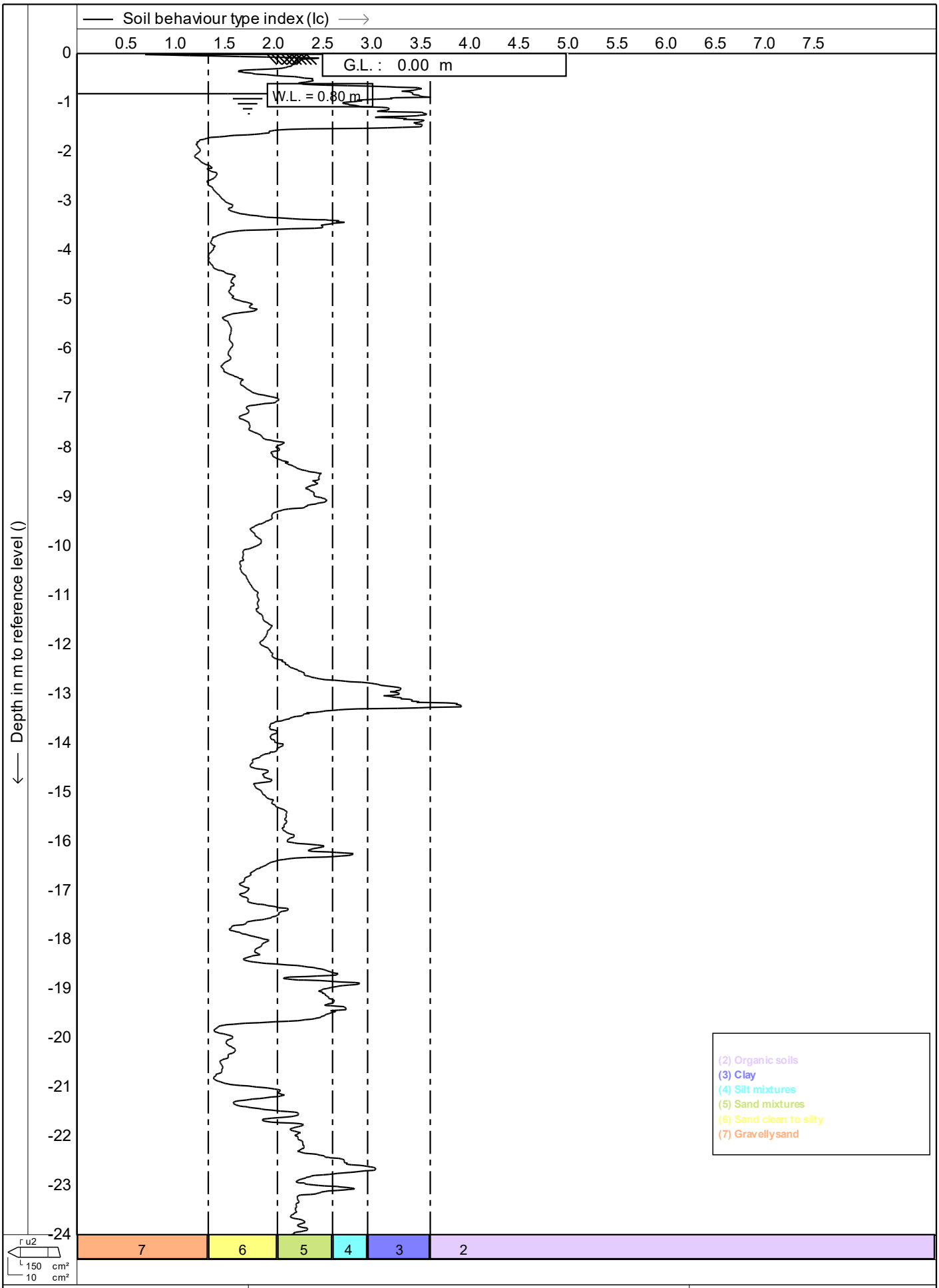
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT127** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

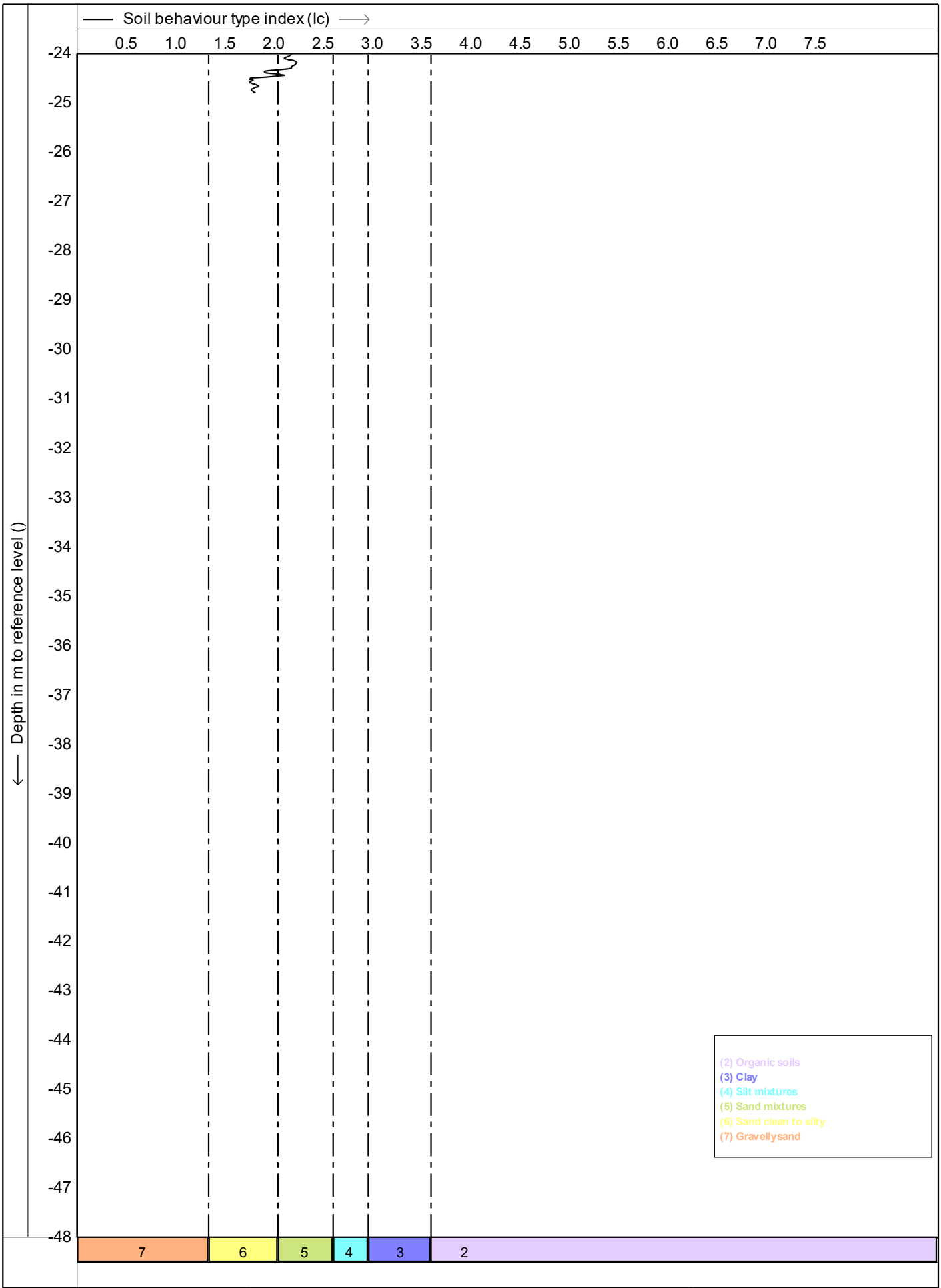
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT127** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

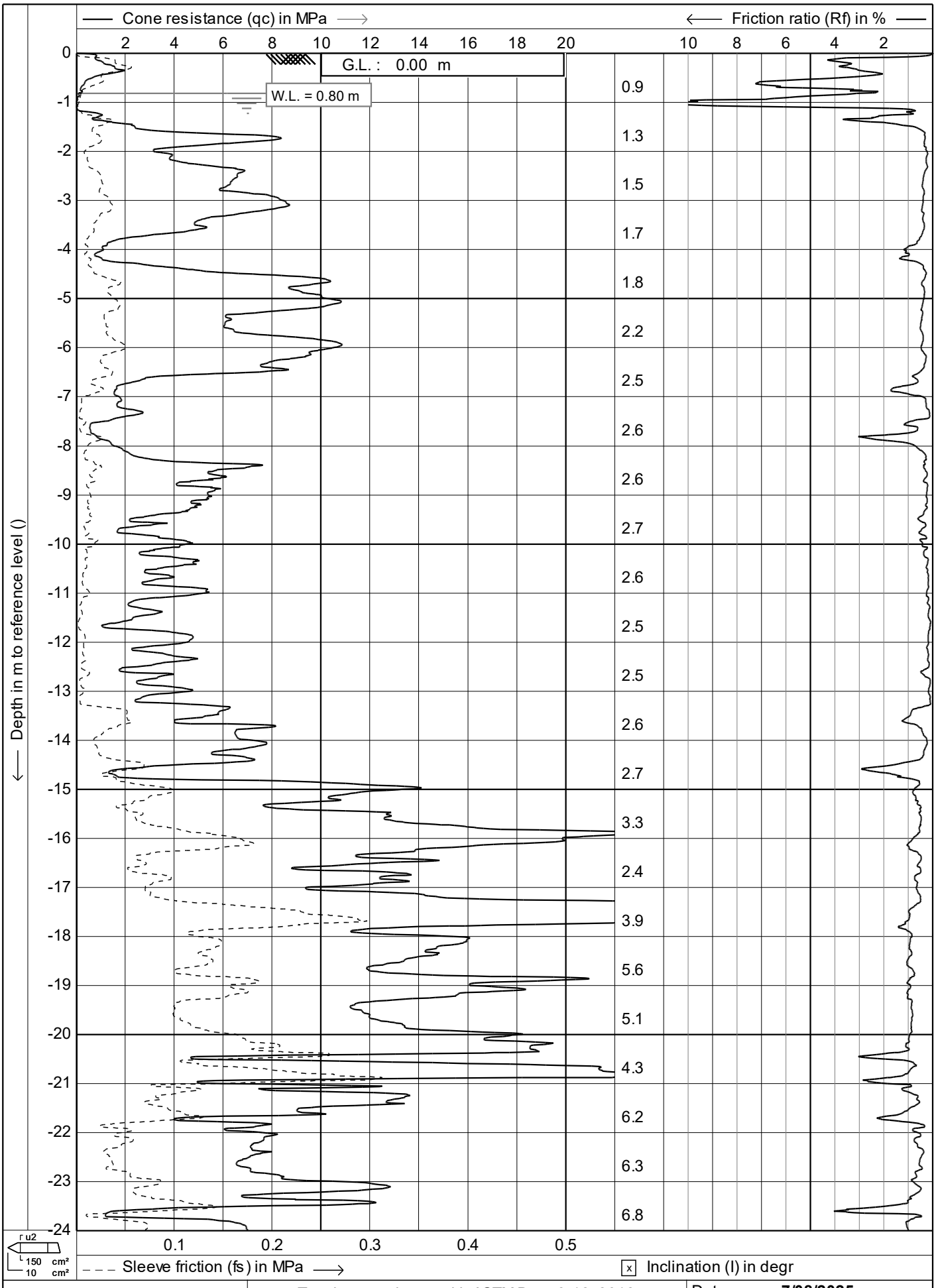
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

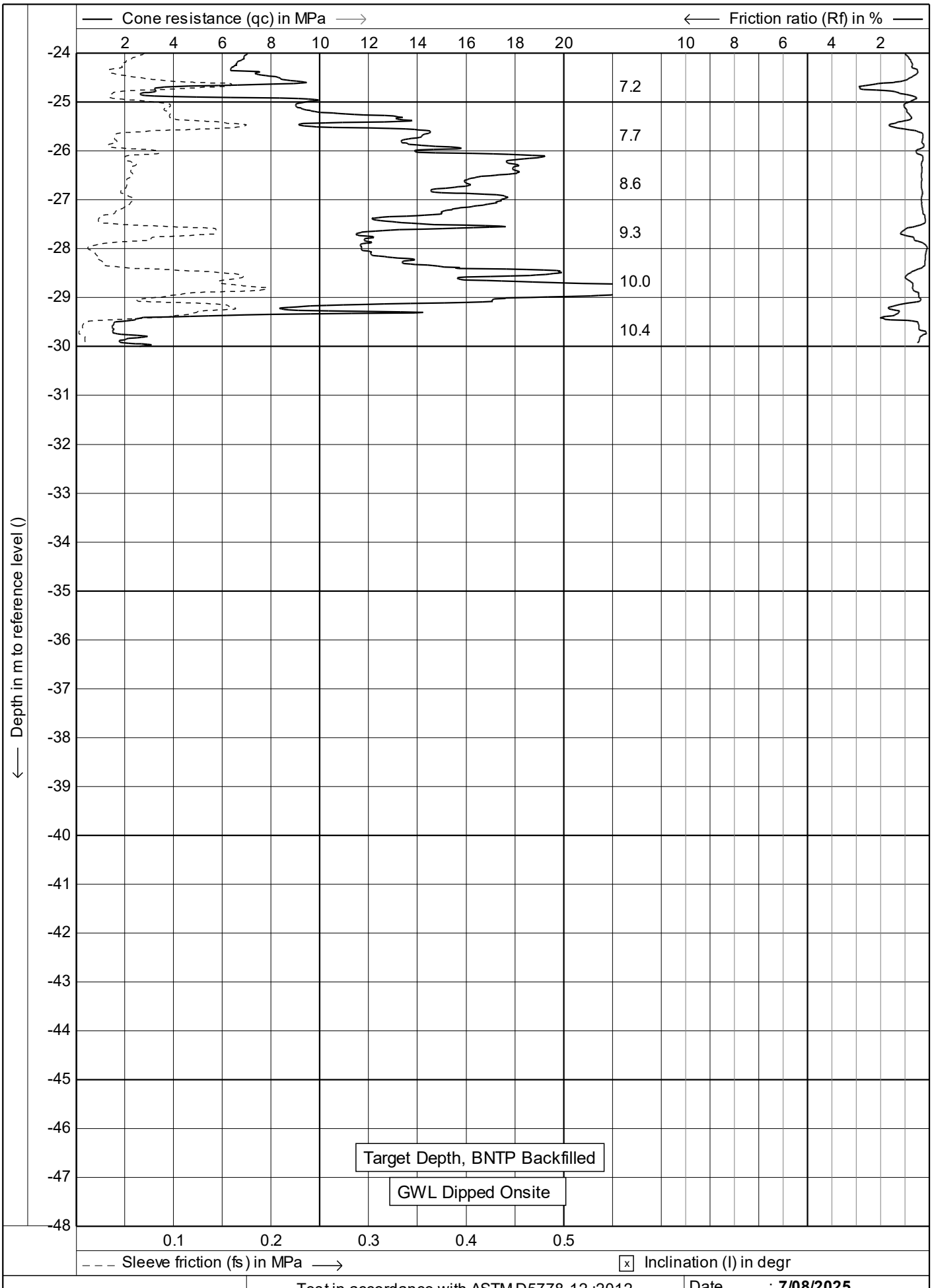
CPT no. : **CPT127** **18/28**

1.49



PERRY GEOTECH	Test in accordance with ASTM D5778-12 :2012	Date : **7/08/2025**
	Project : **Site Investigations**	Cone no. : **C10CFIIP.C13081**
	Location: **Bell Rd - Papamoa**	Project no. : **05EGO020**
	Position: **0, 0**	CPT no. : **CPT128** 1/28

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

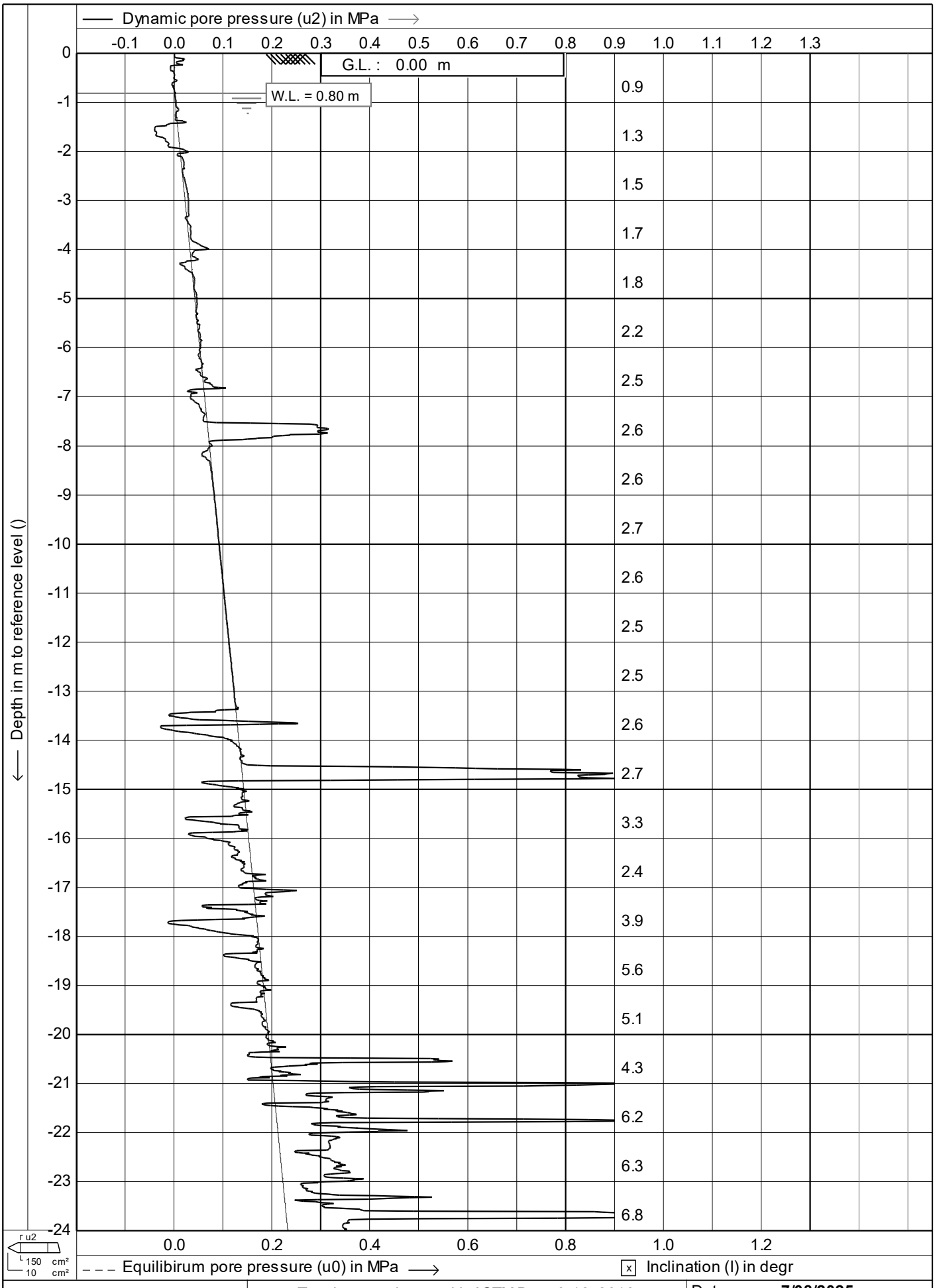
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT128** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

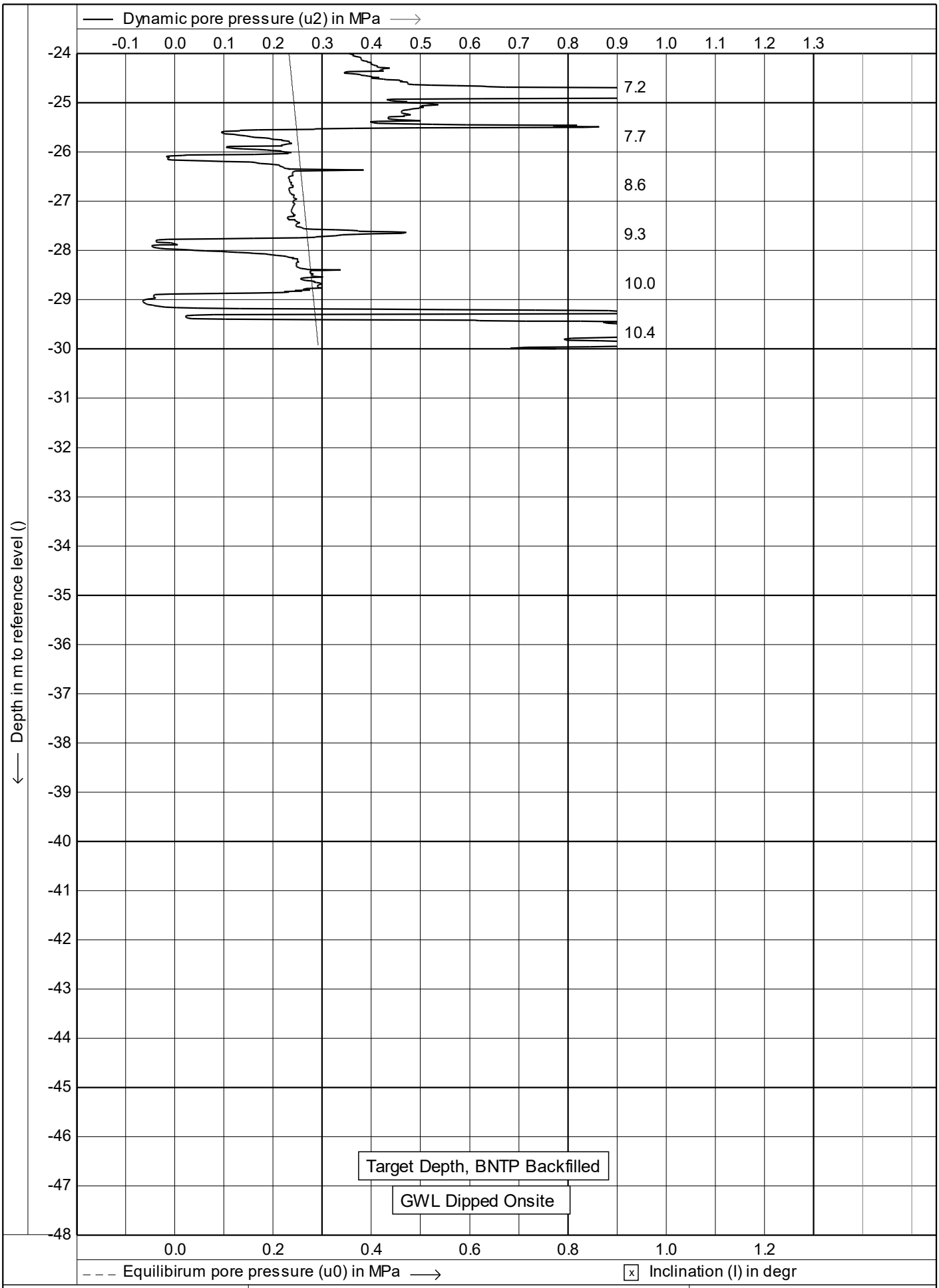
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT128** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

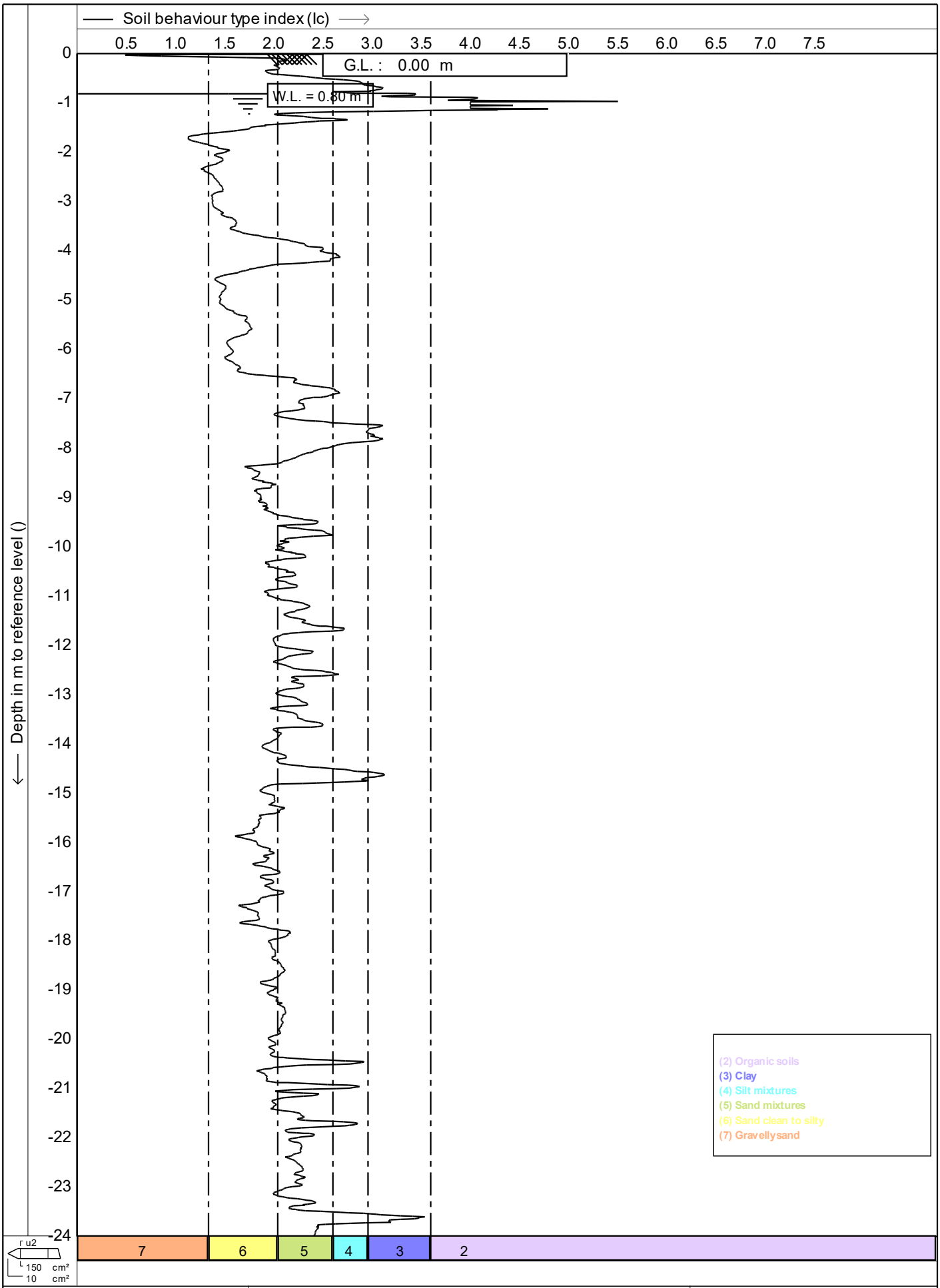
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT128** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

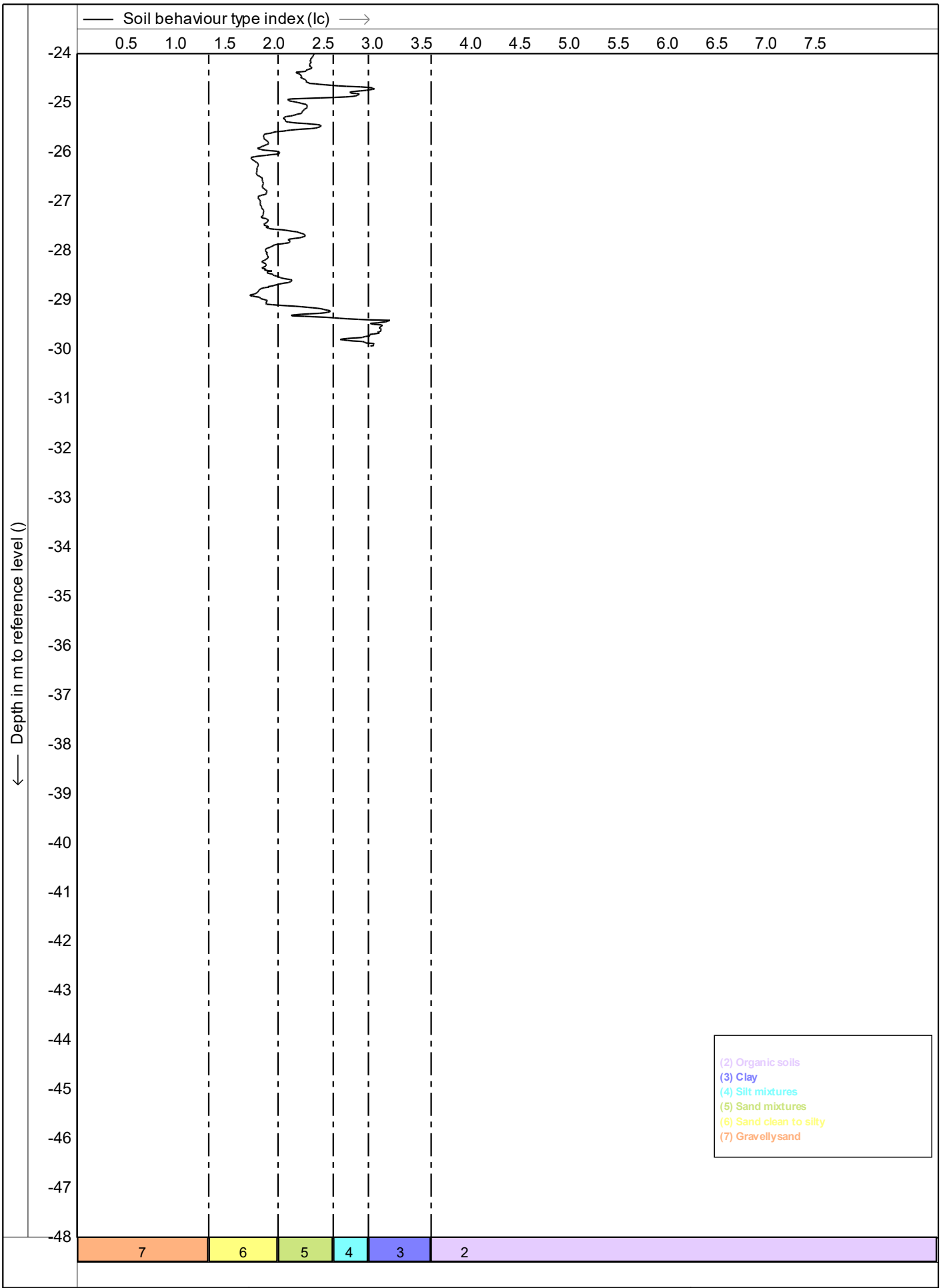
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT128** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

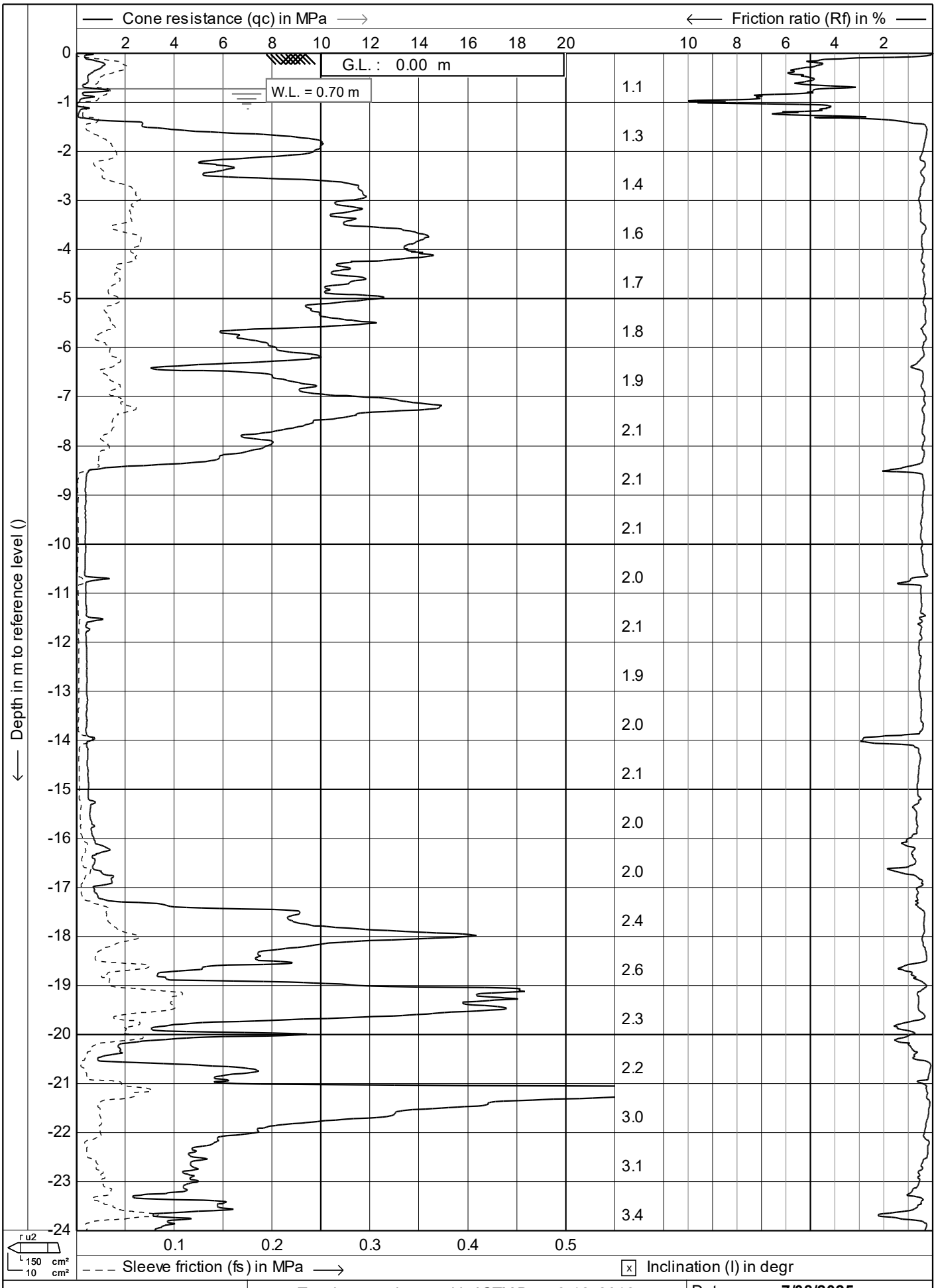
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT128** **18/28**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

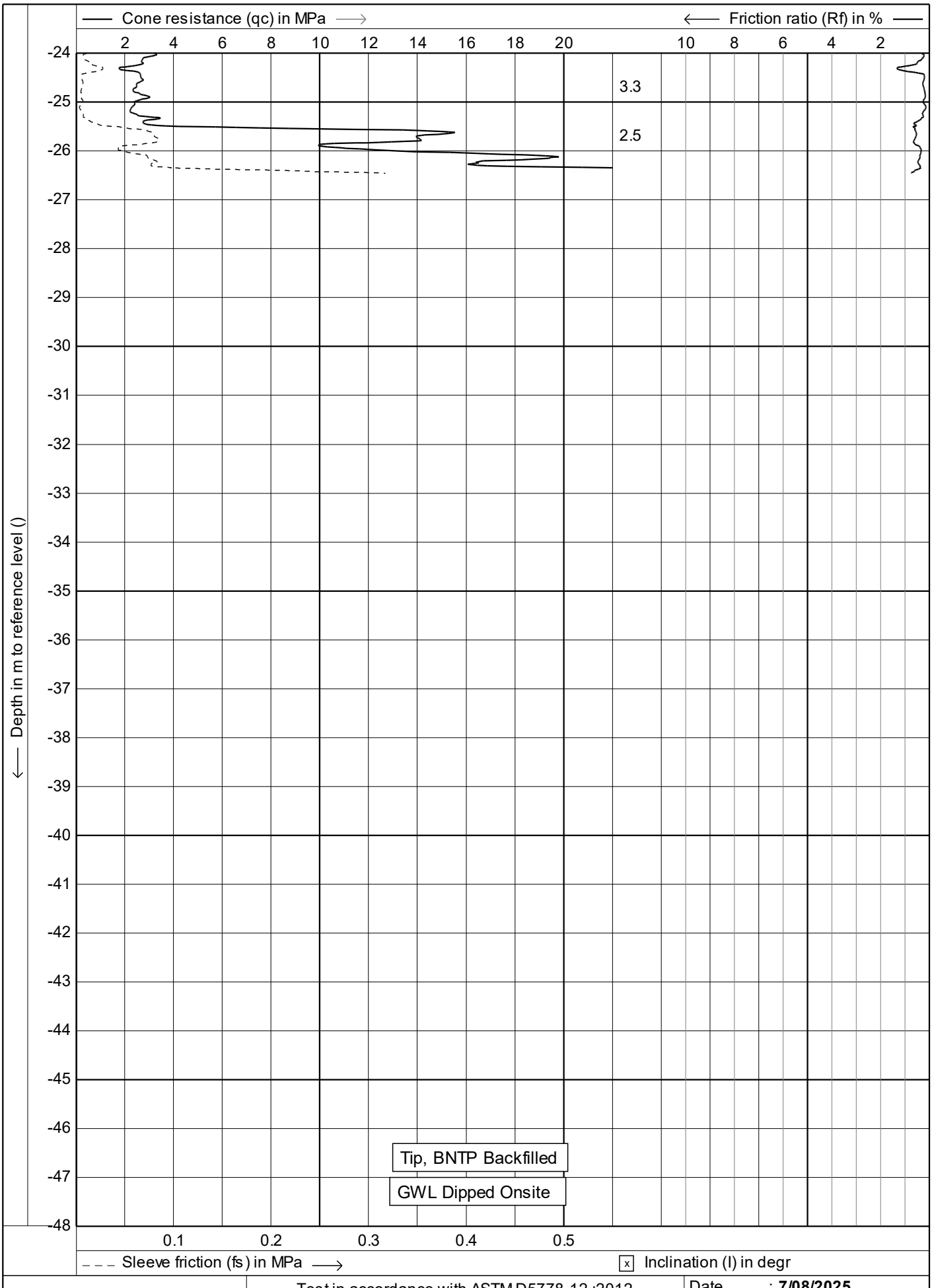
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT129** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

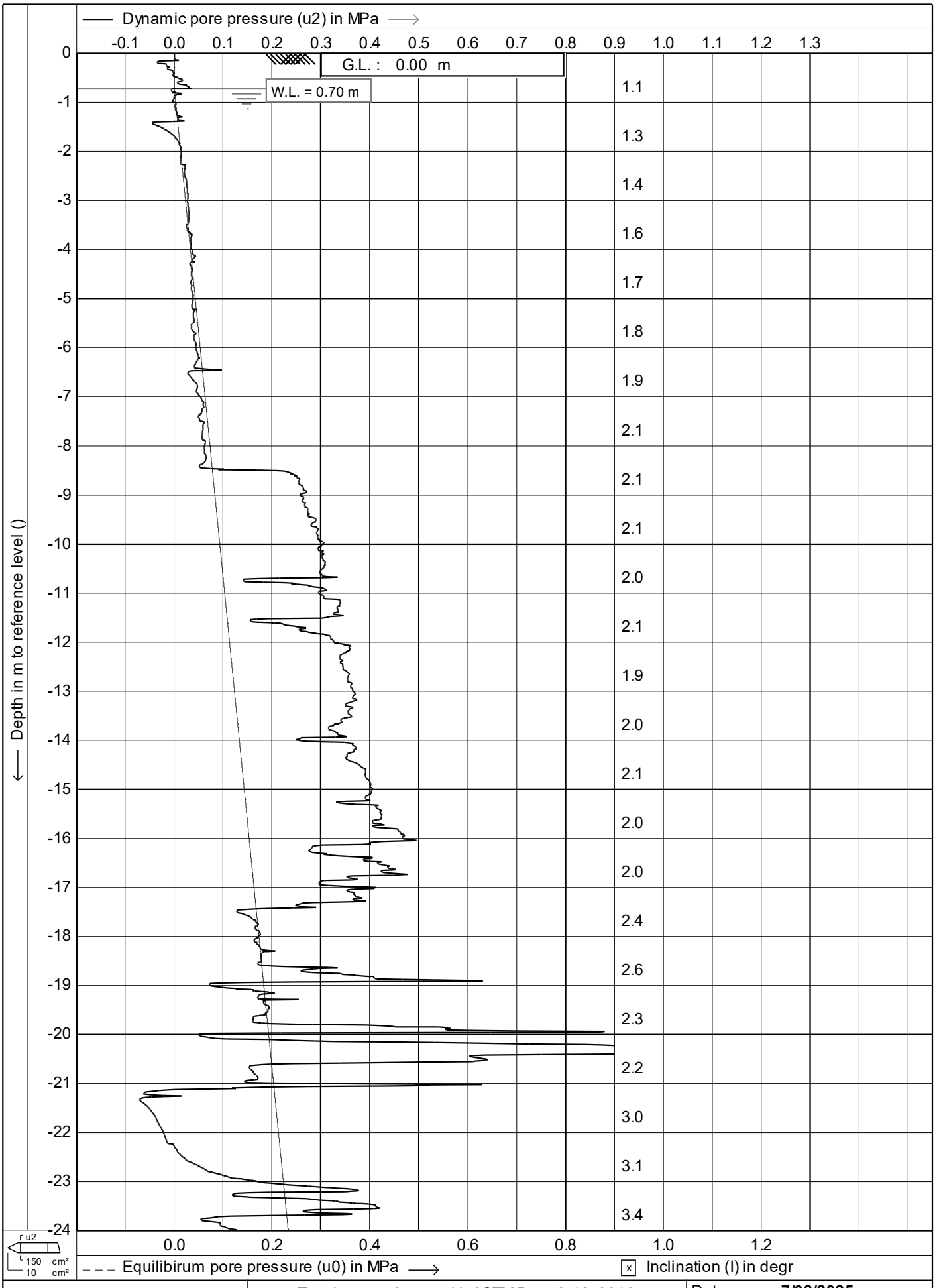
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT129** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

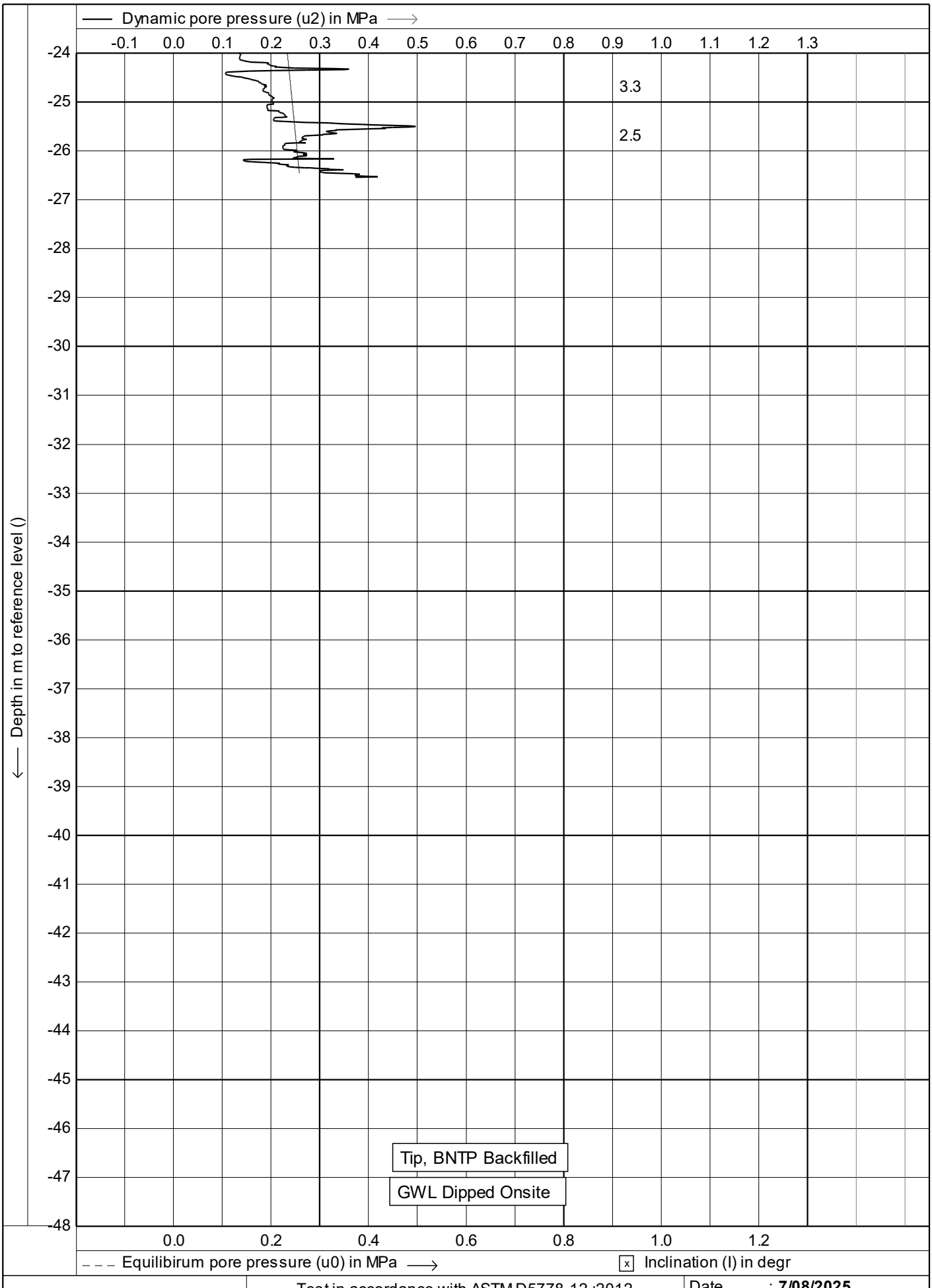
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT129** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

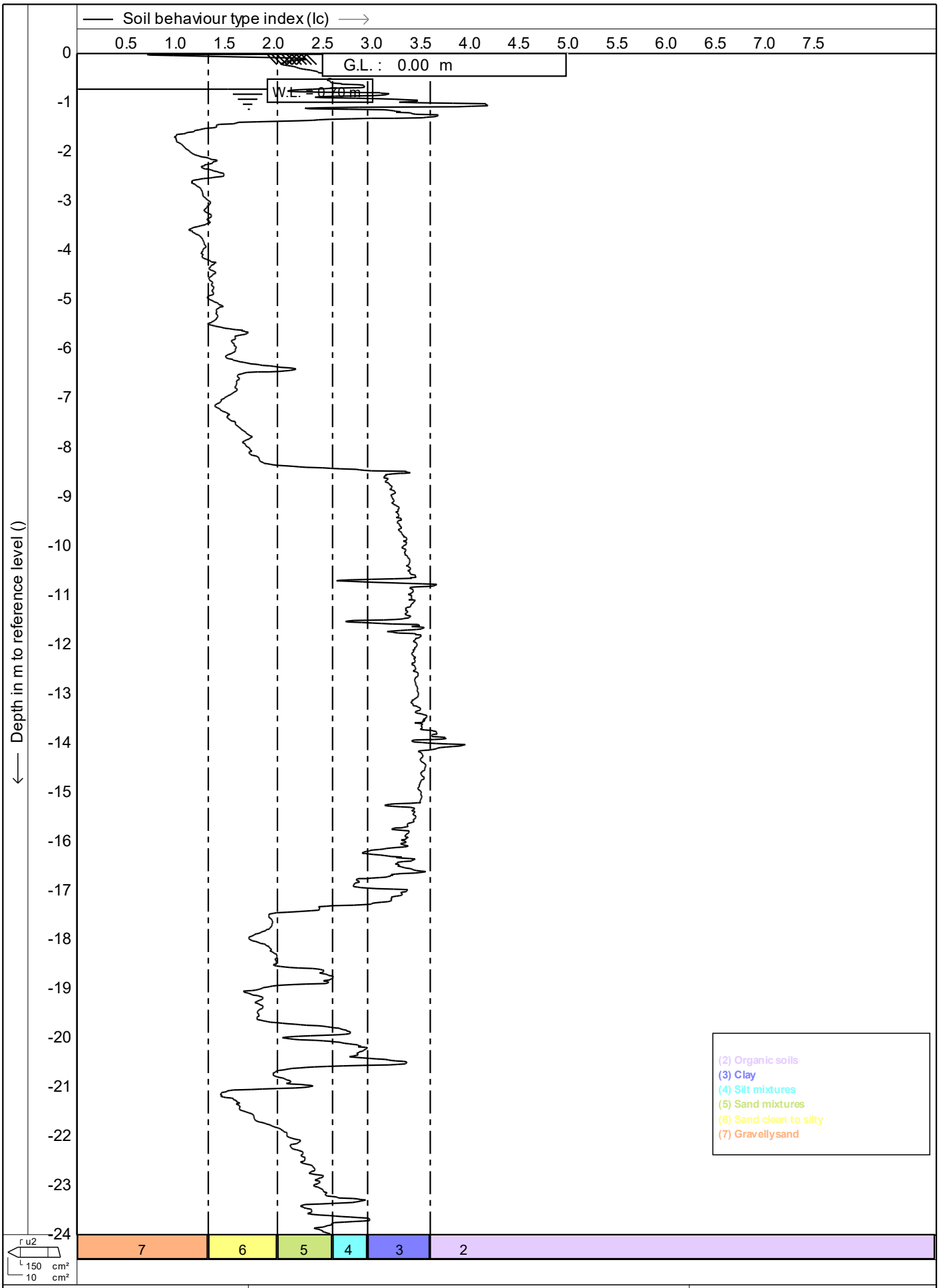
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT129** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

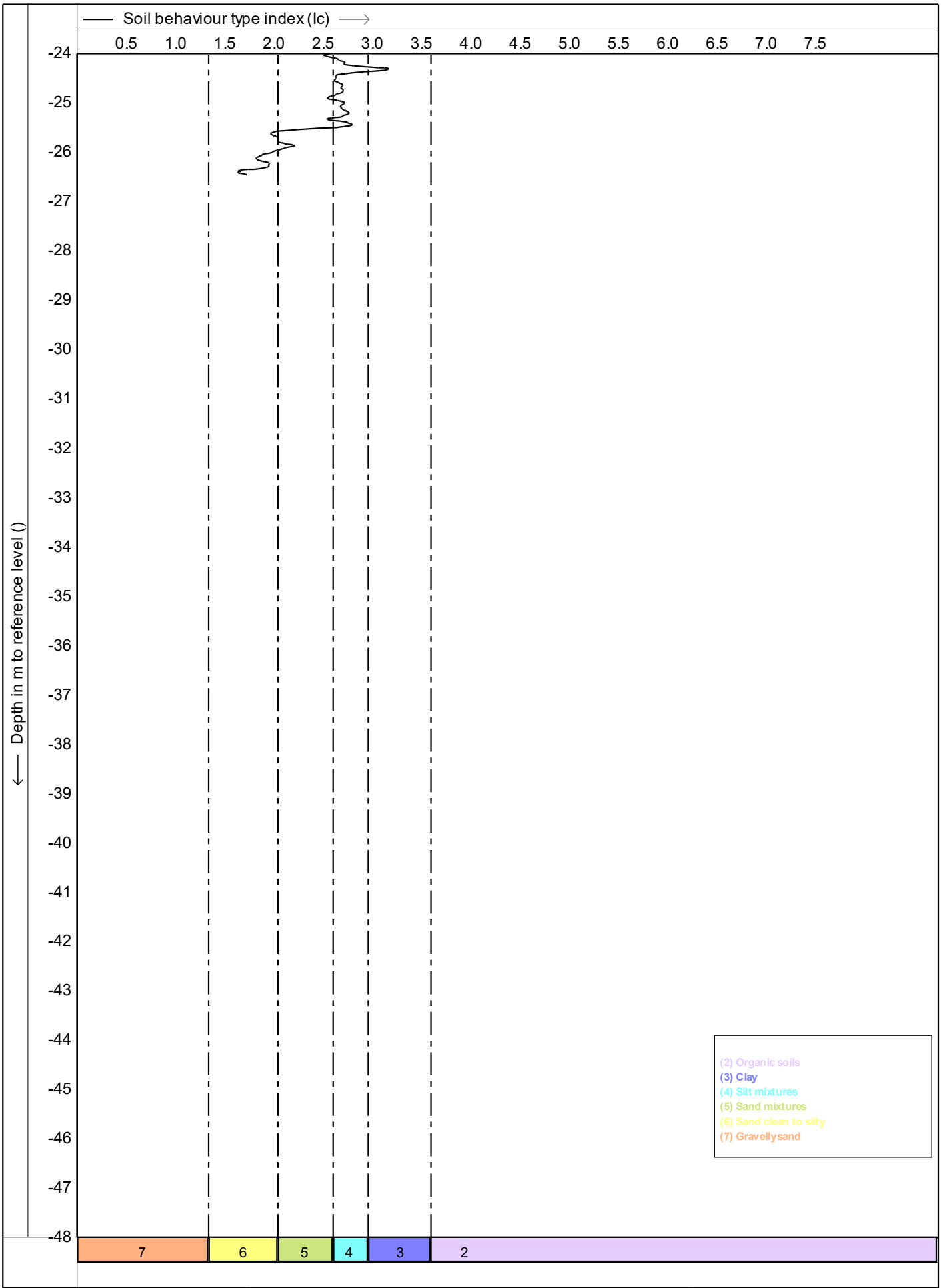
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT129** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

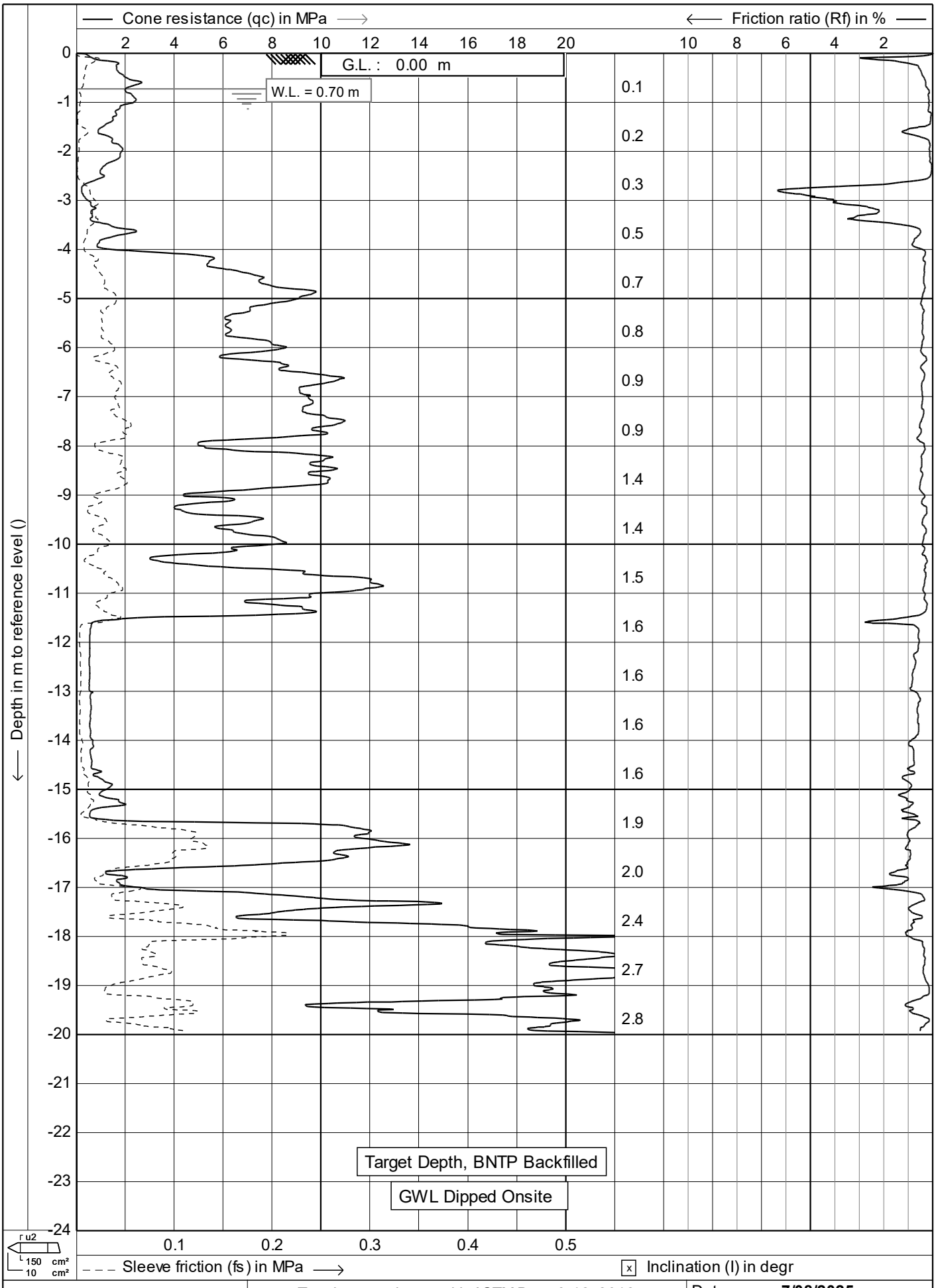
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT129** **18/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

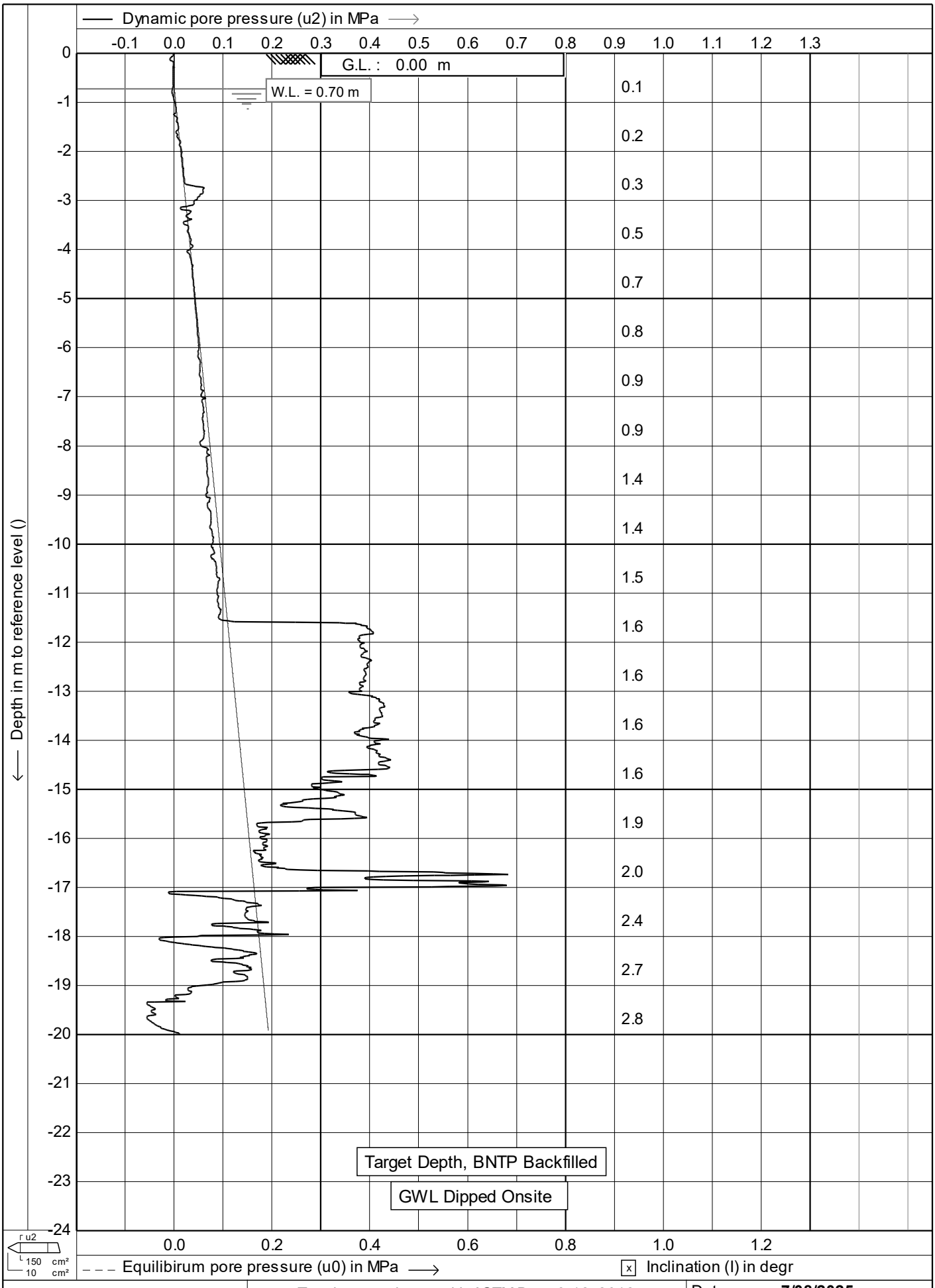
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT130** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

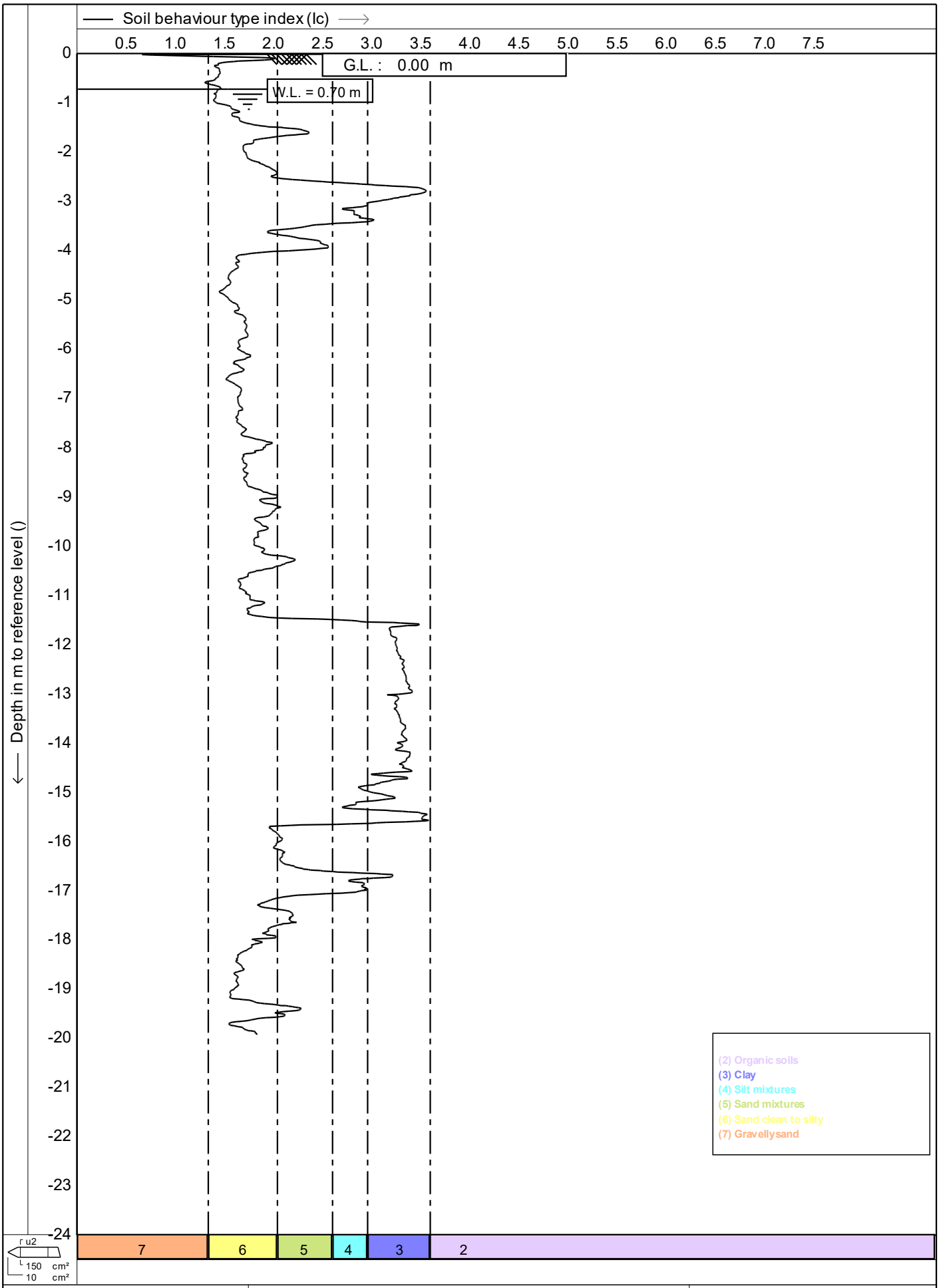
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT130** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

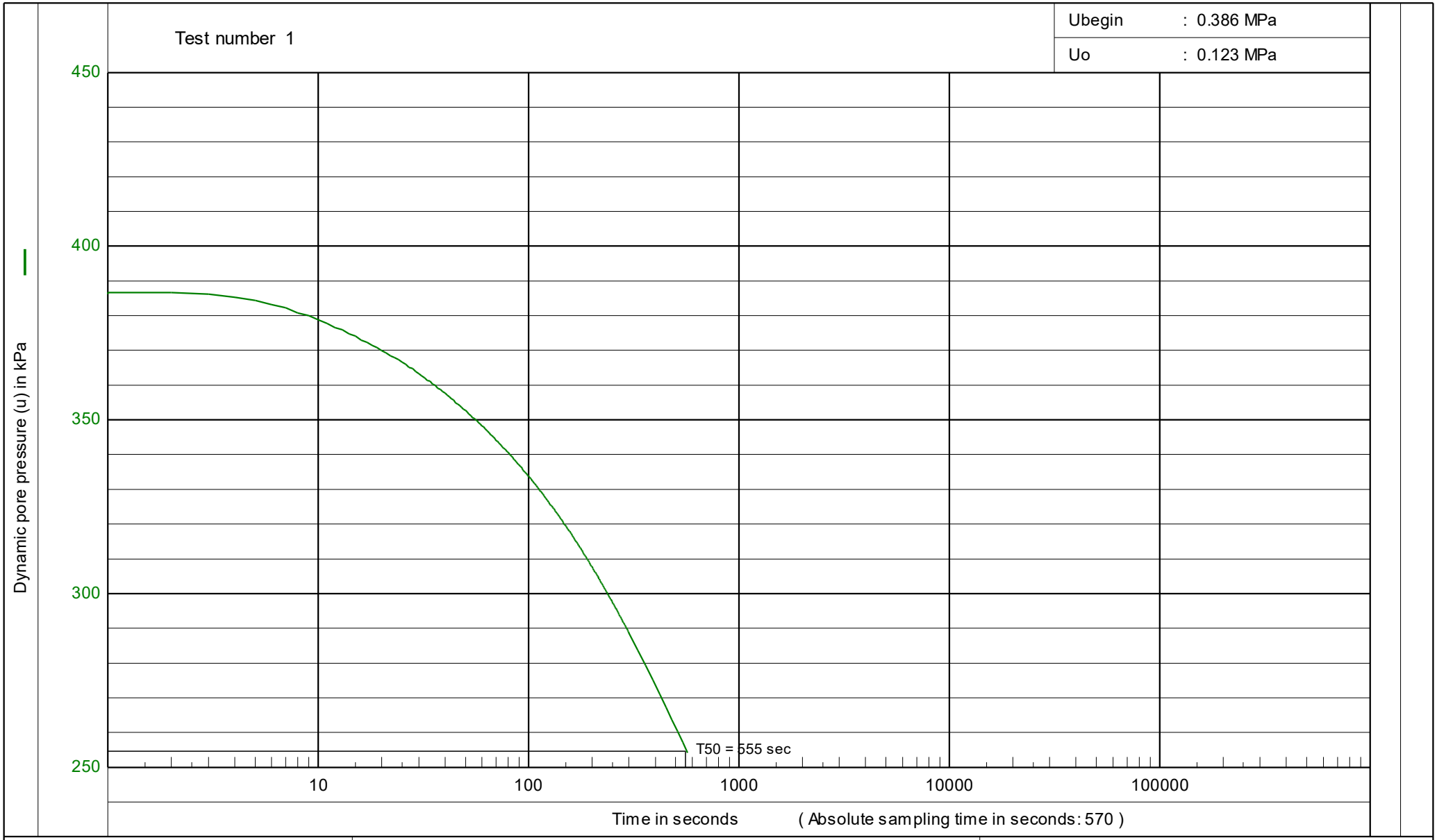
Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT130** **9/14**

1.49

Test number 1

Ubegin	: 0.386 MPa
Uo	: 0.123 MPa



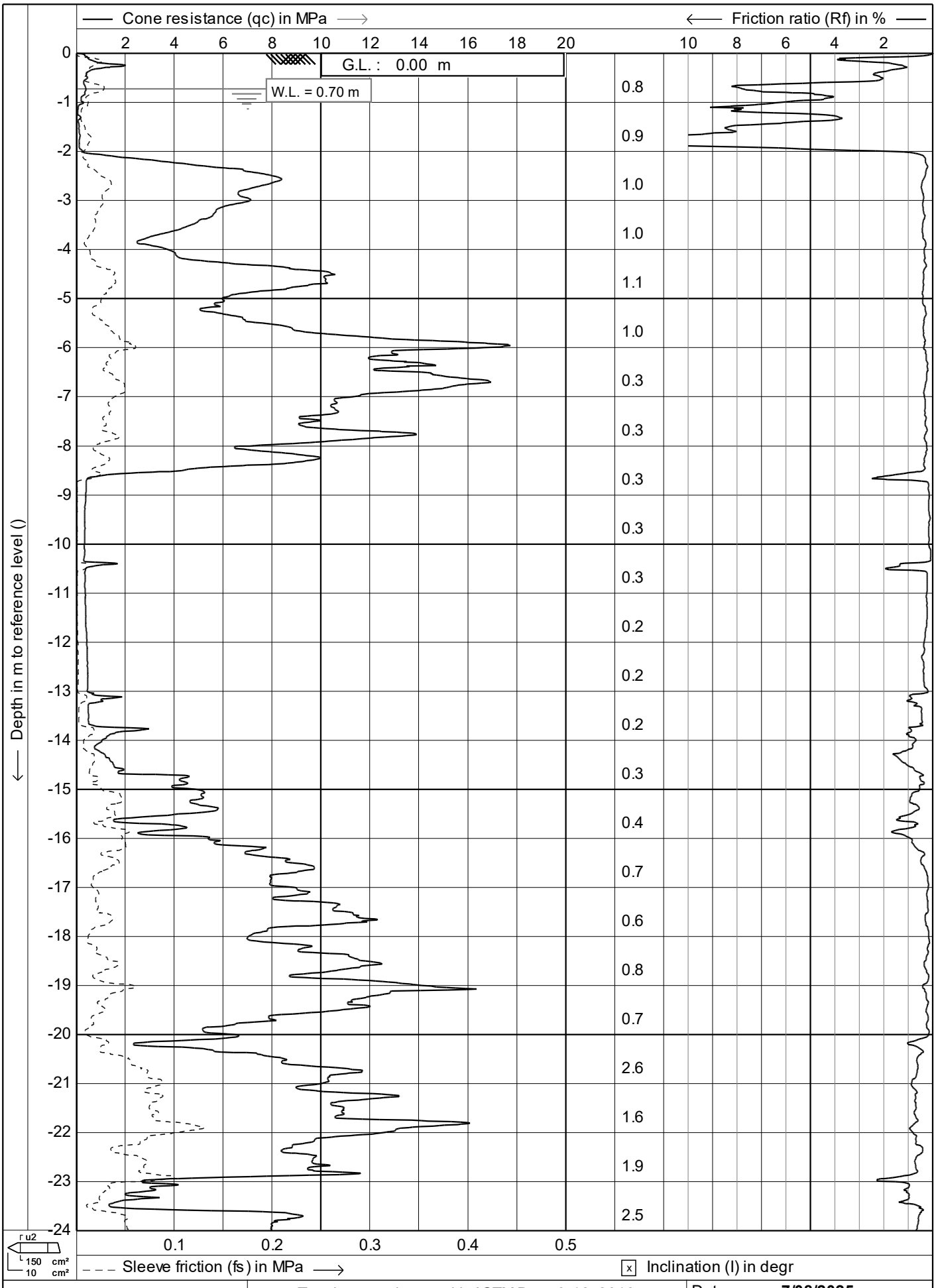
PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : Site Investigations

Location : Bell Rd - Papamoa

Date	: 7/08/2025	
Project no.	: 05EGO020	
CPT no.	: CPT130	
Test depth	: 13.00	[m] - G.L.
Water level	: 0.70	[m] - G.L.



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

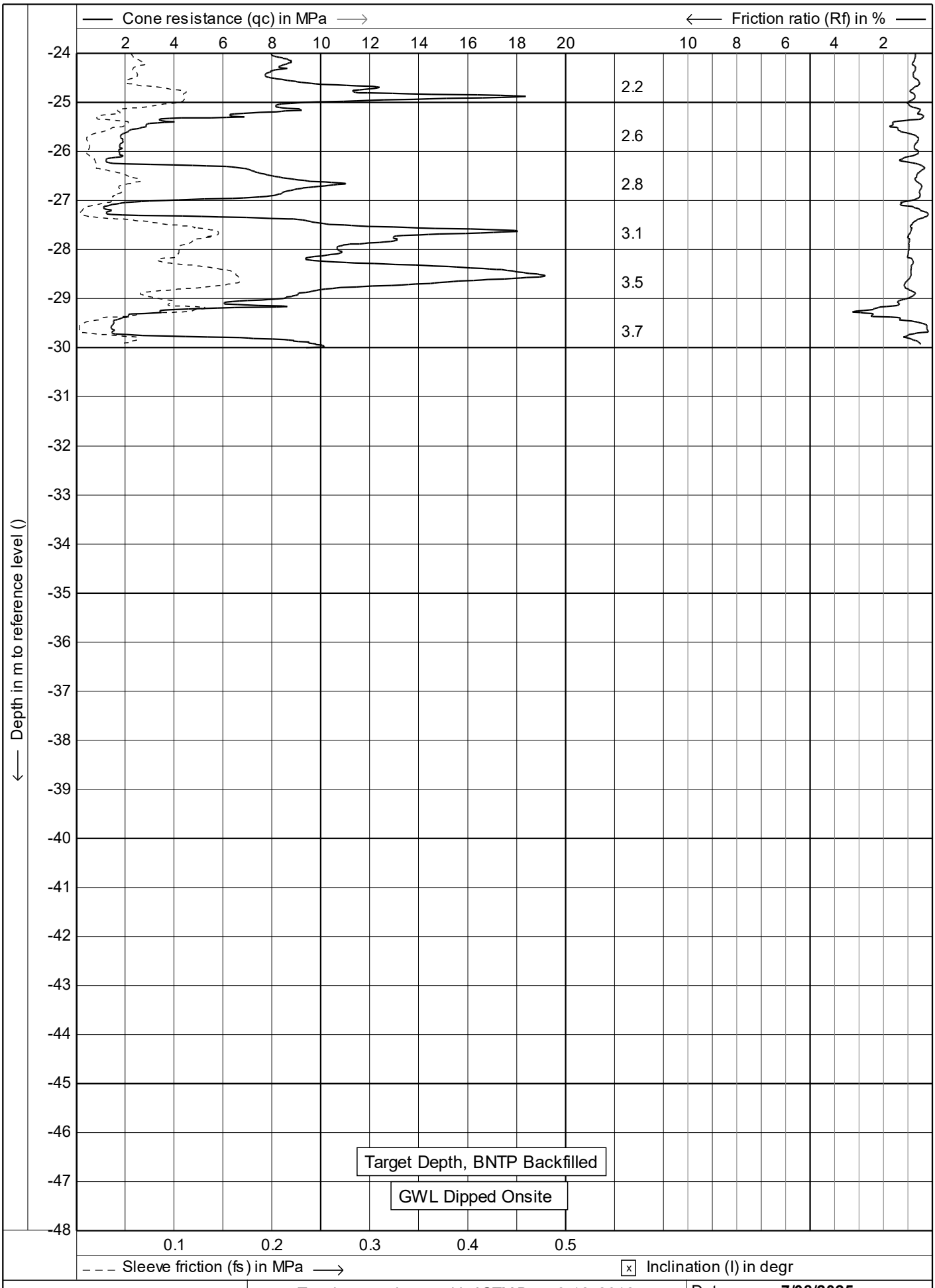
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT131** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

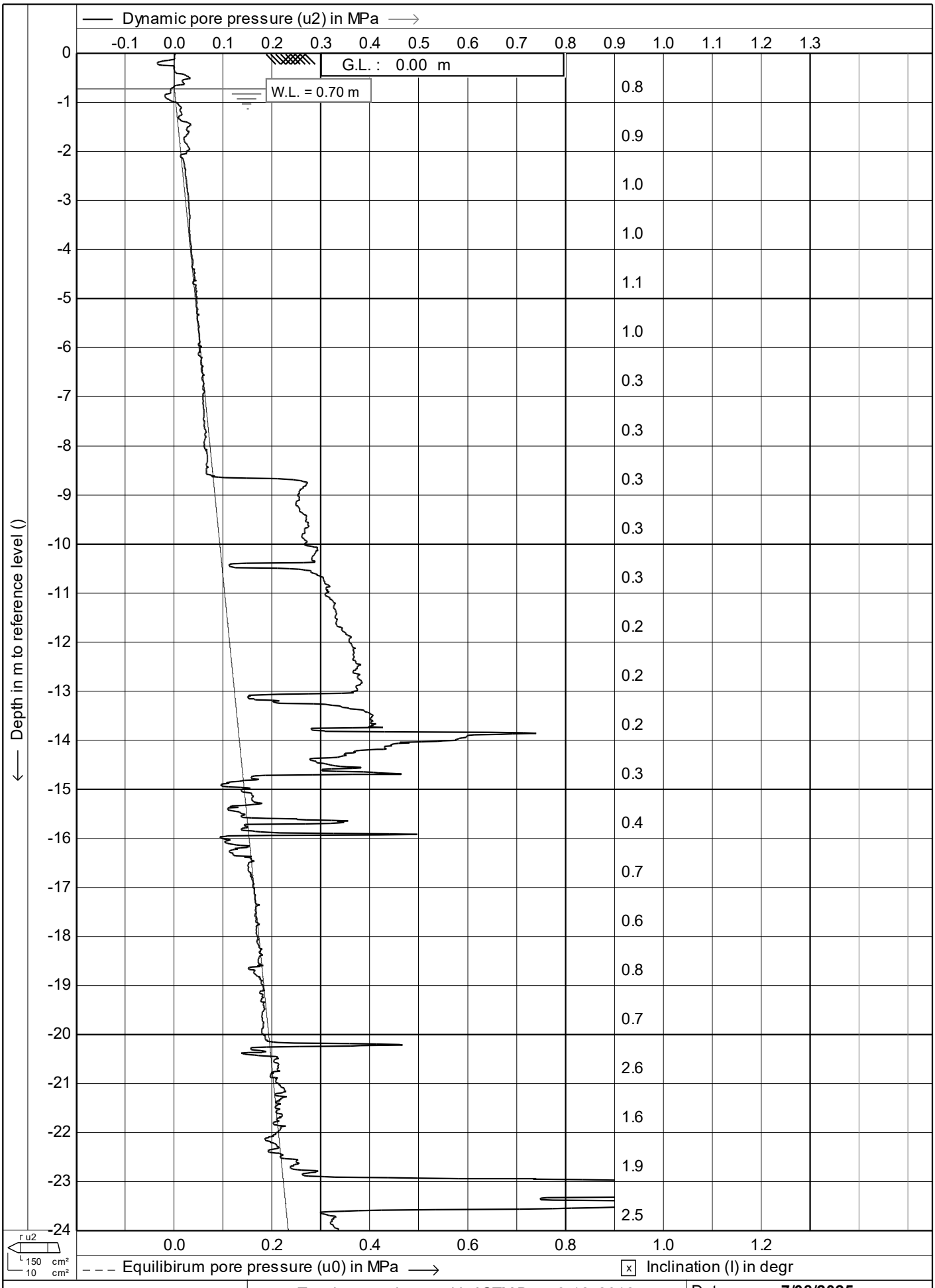
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT131** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

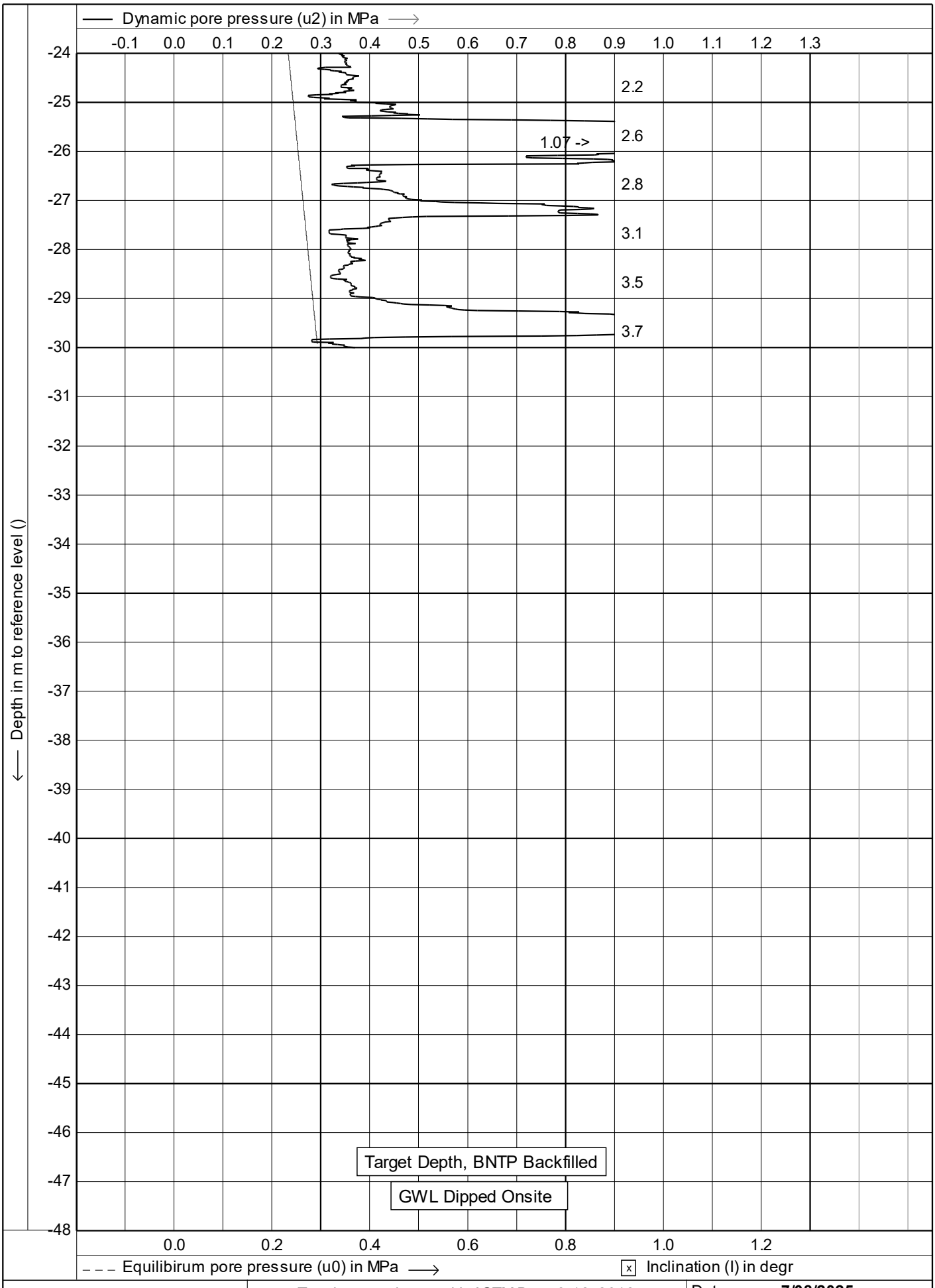
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT131** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

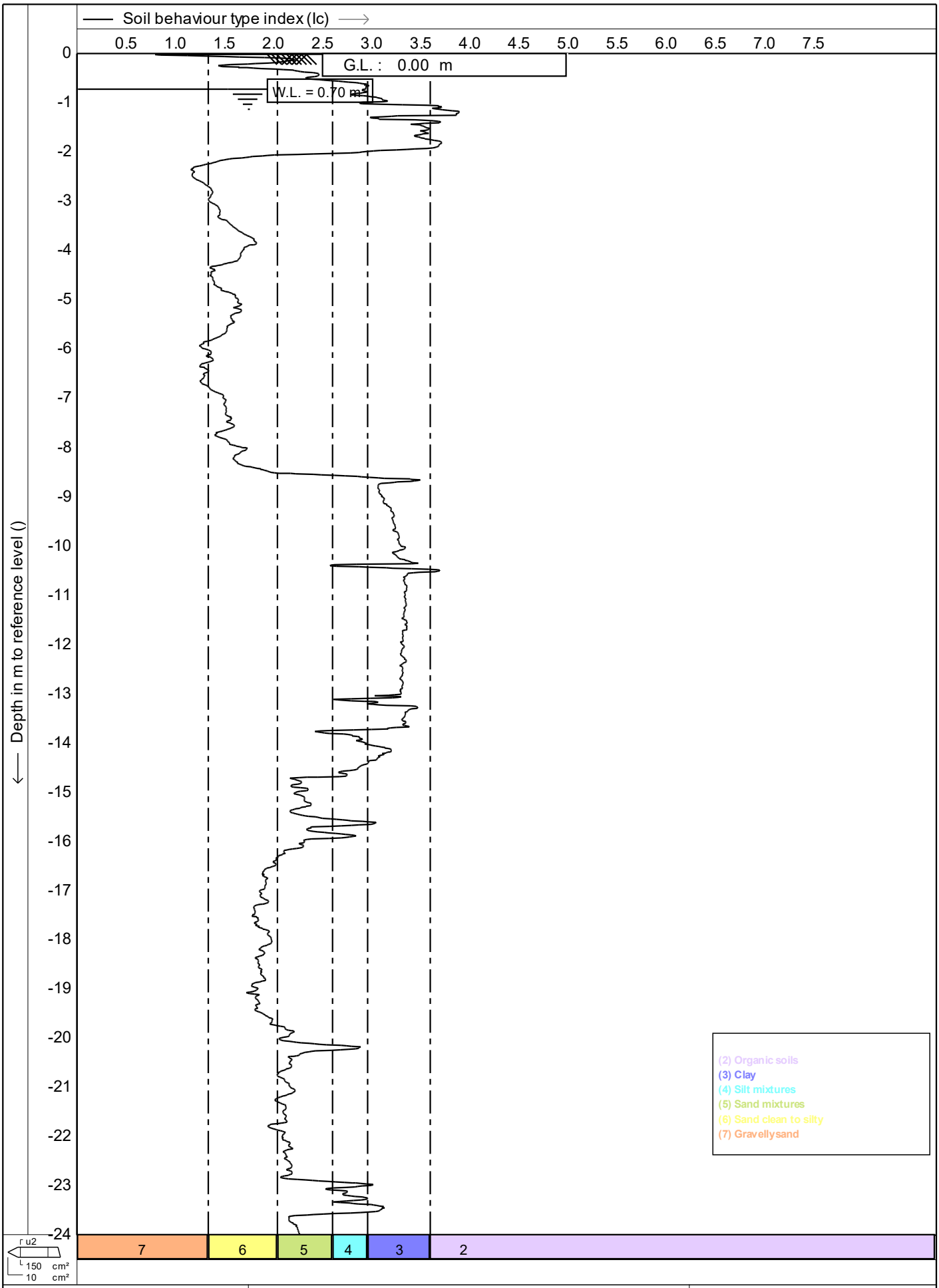
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT131** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

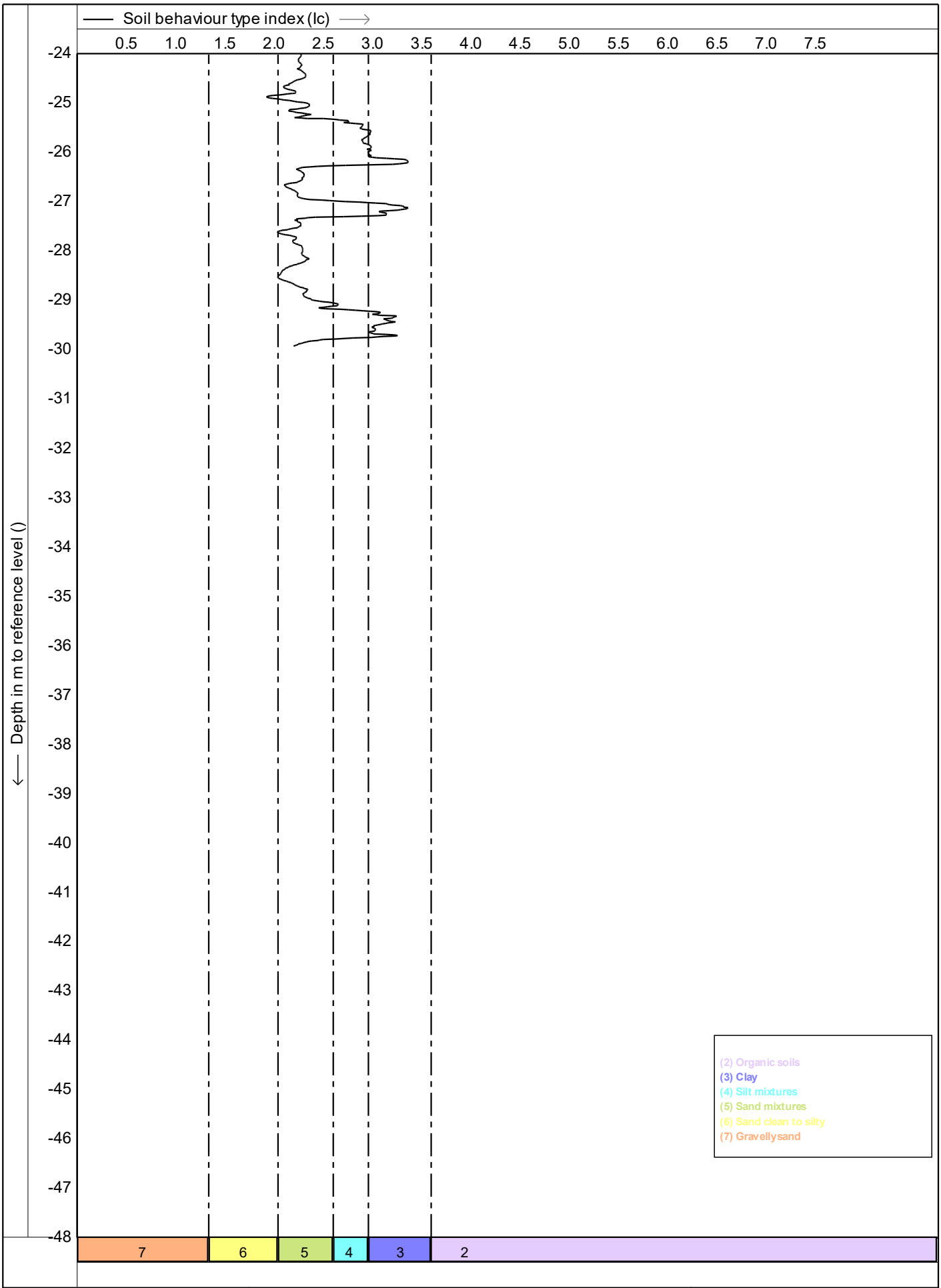
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT131** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

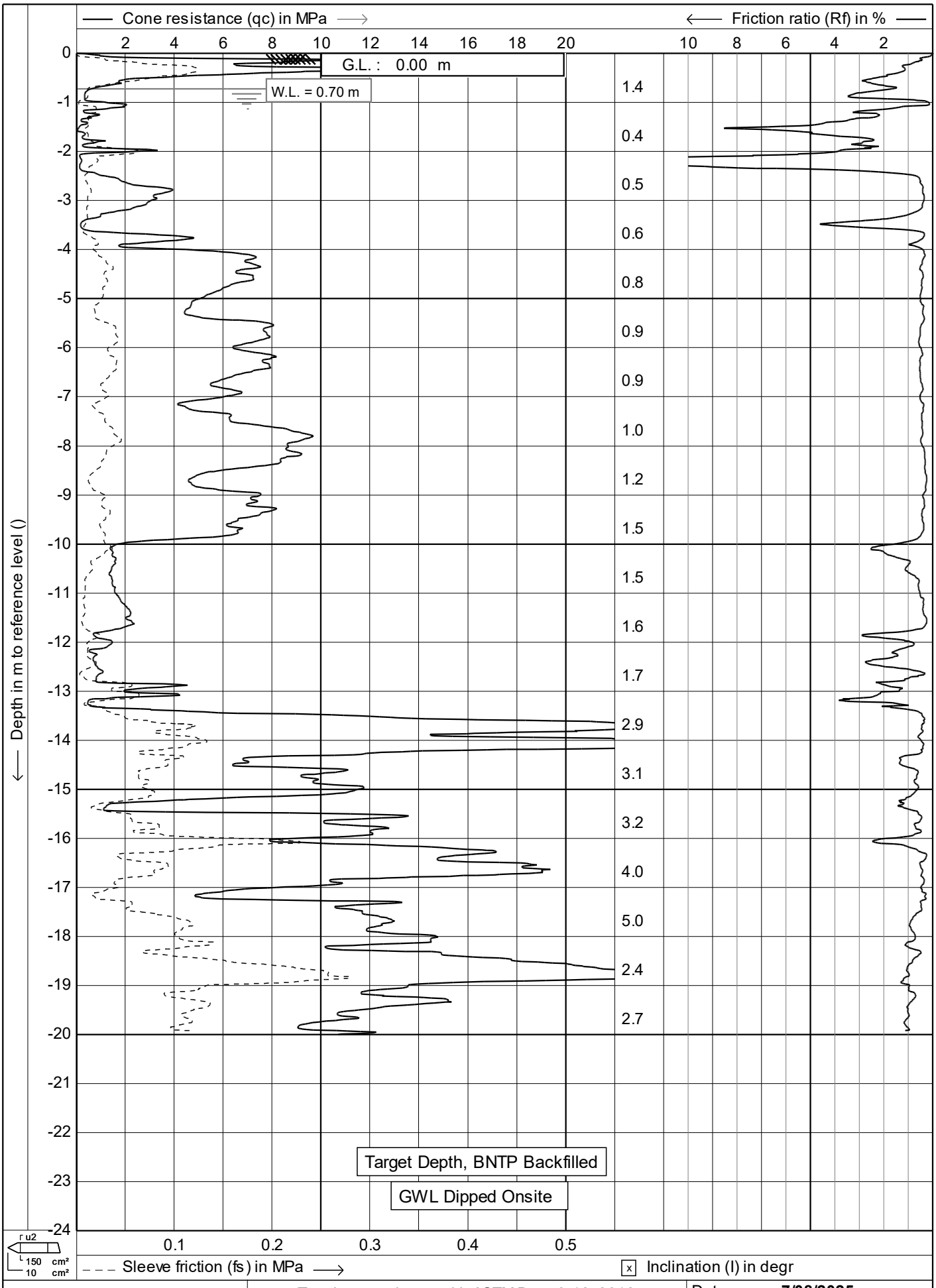
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT131** **18/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

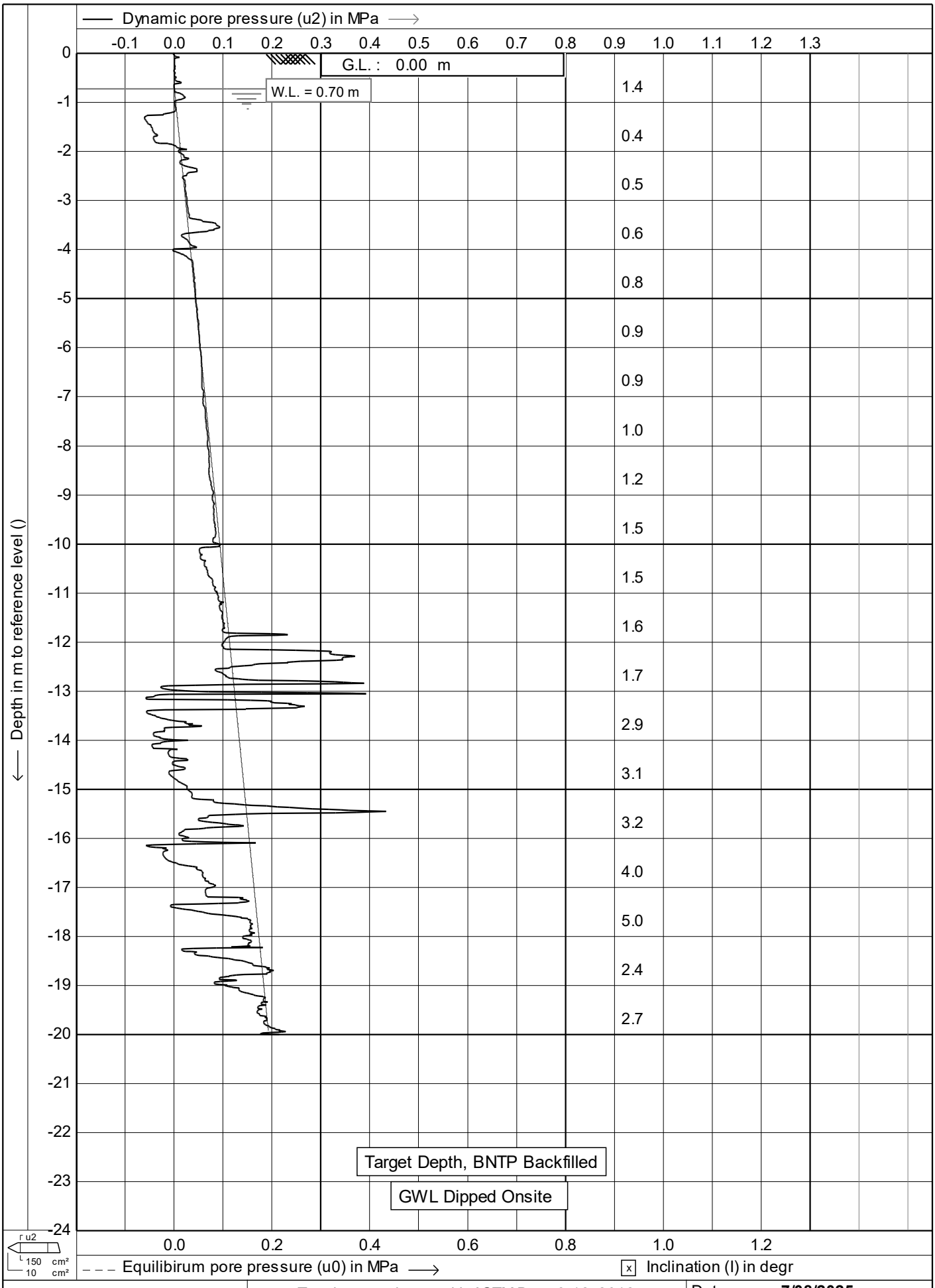
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT132** **1/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

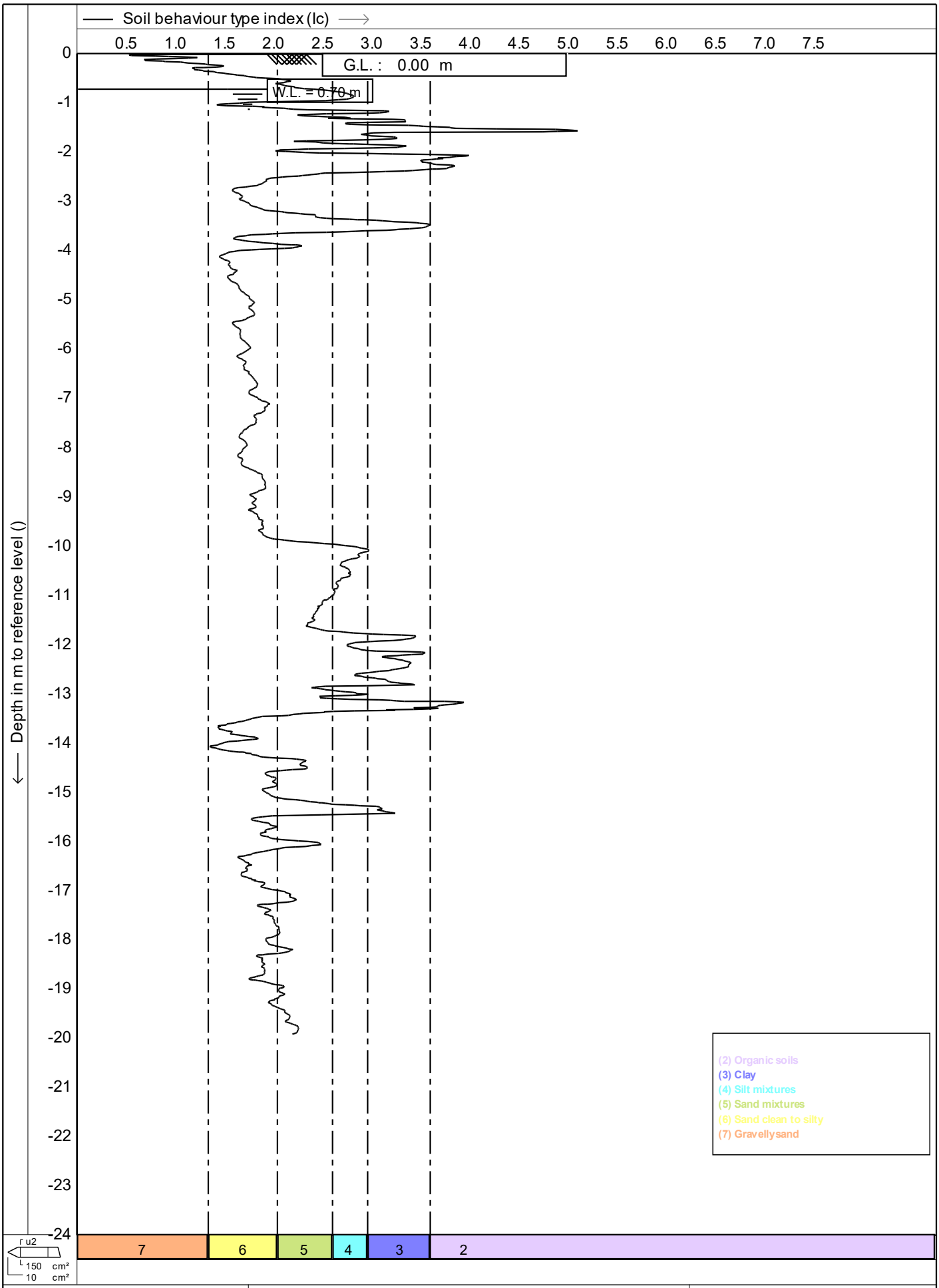
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **7/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT132** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

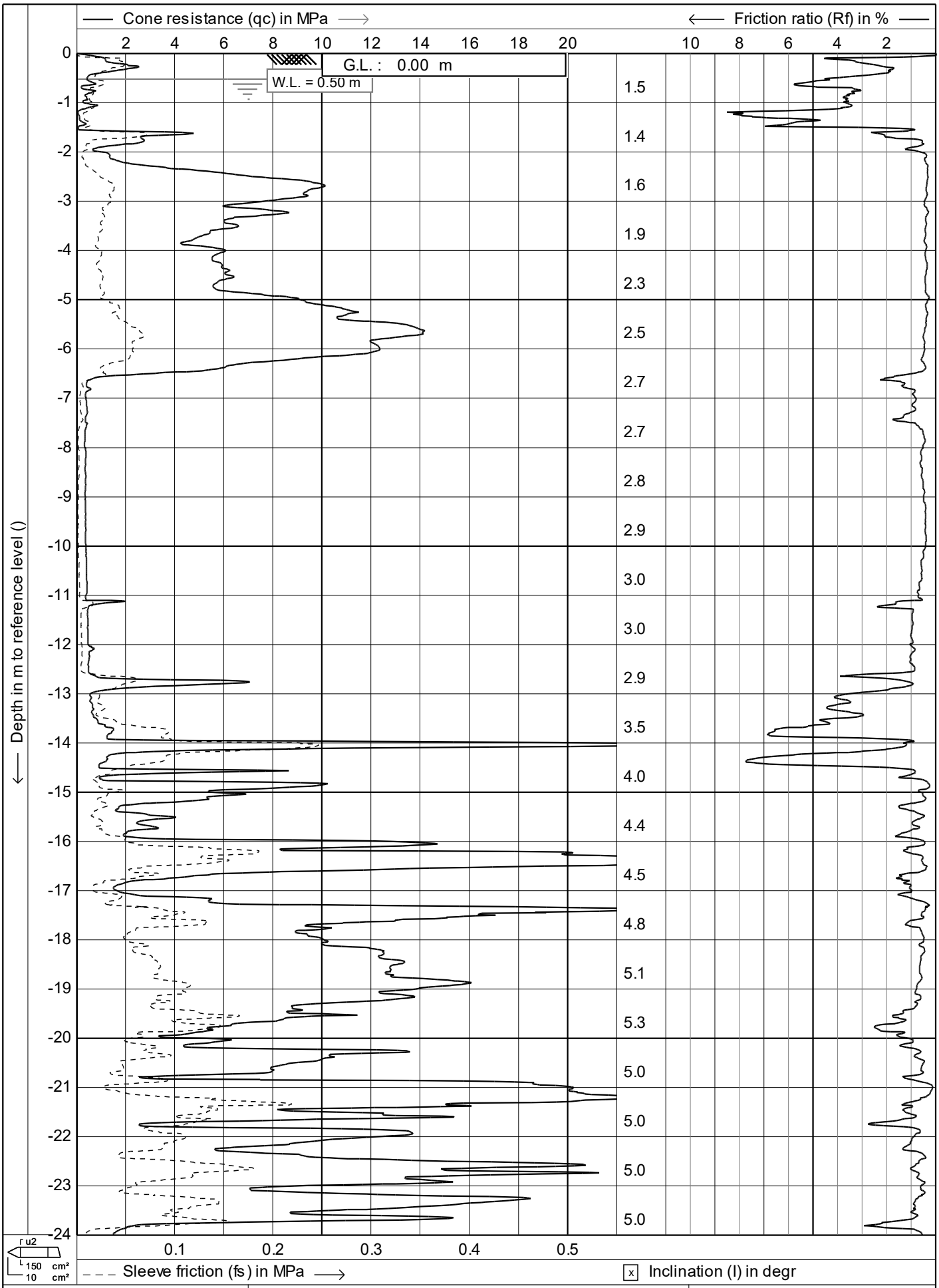
Date : **7/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT132** **9/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

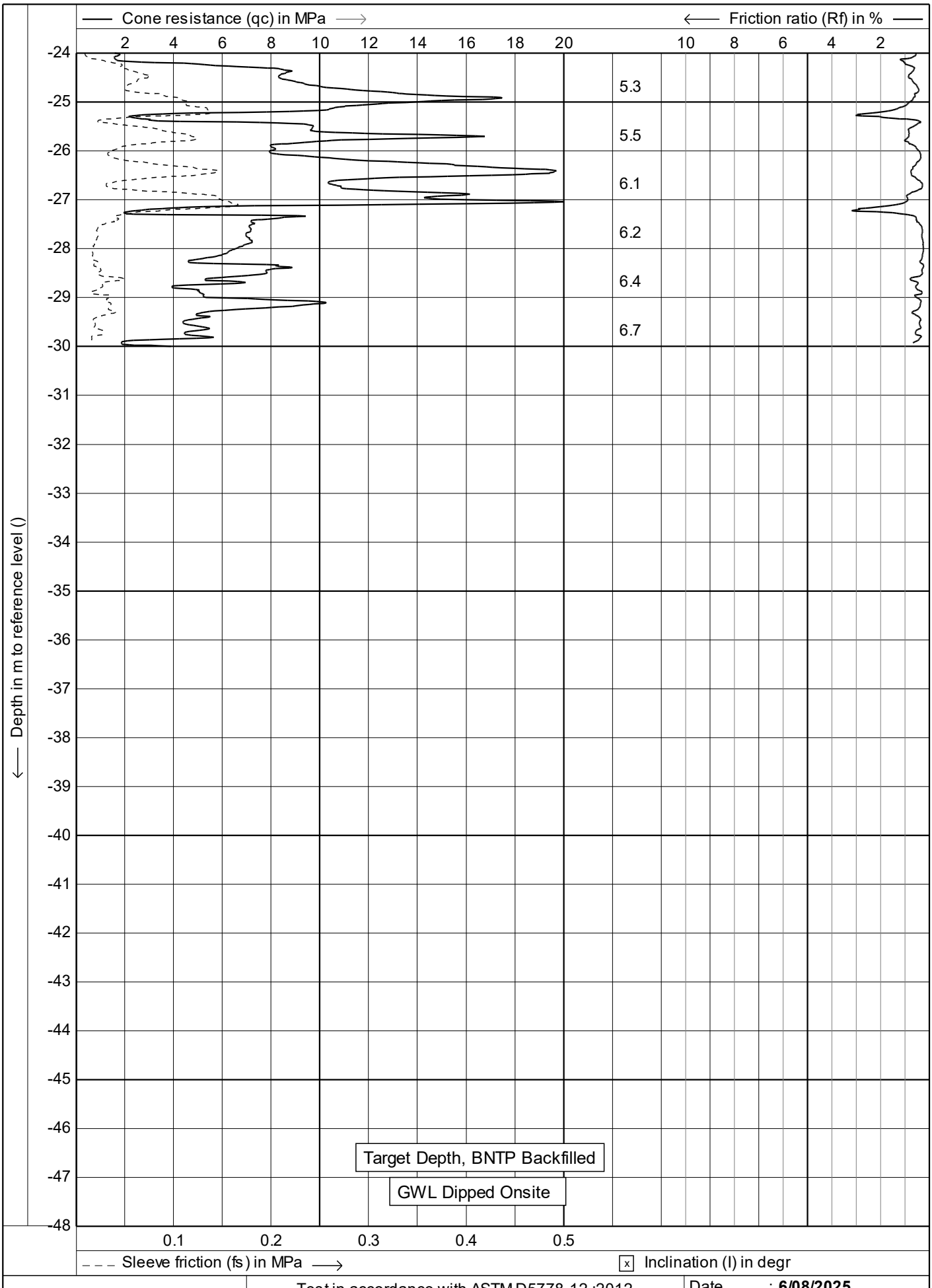
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT133** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

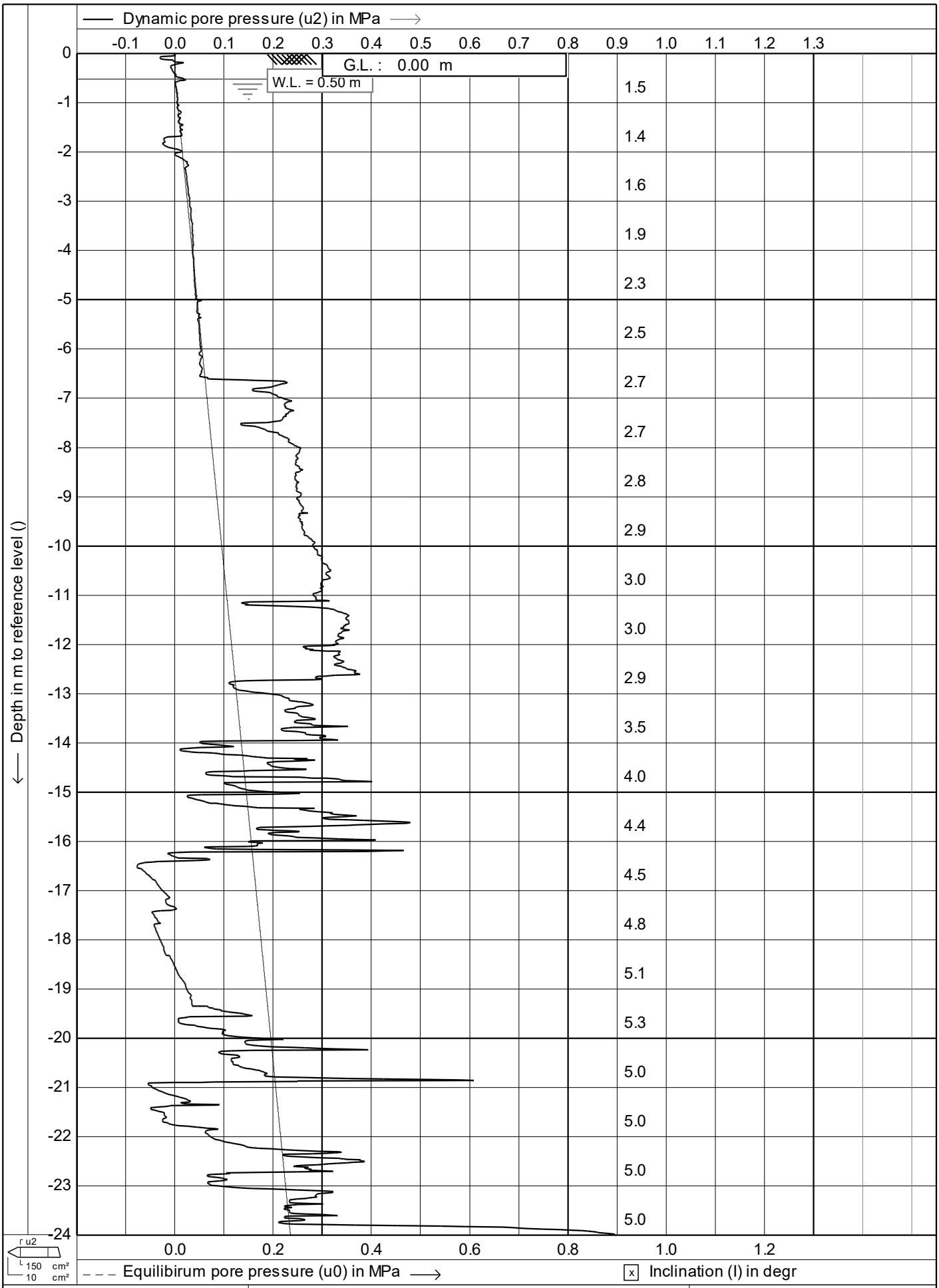
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT133** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

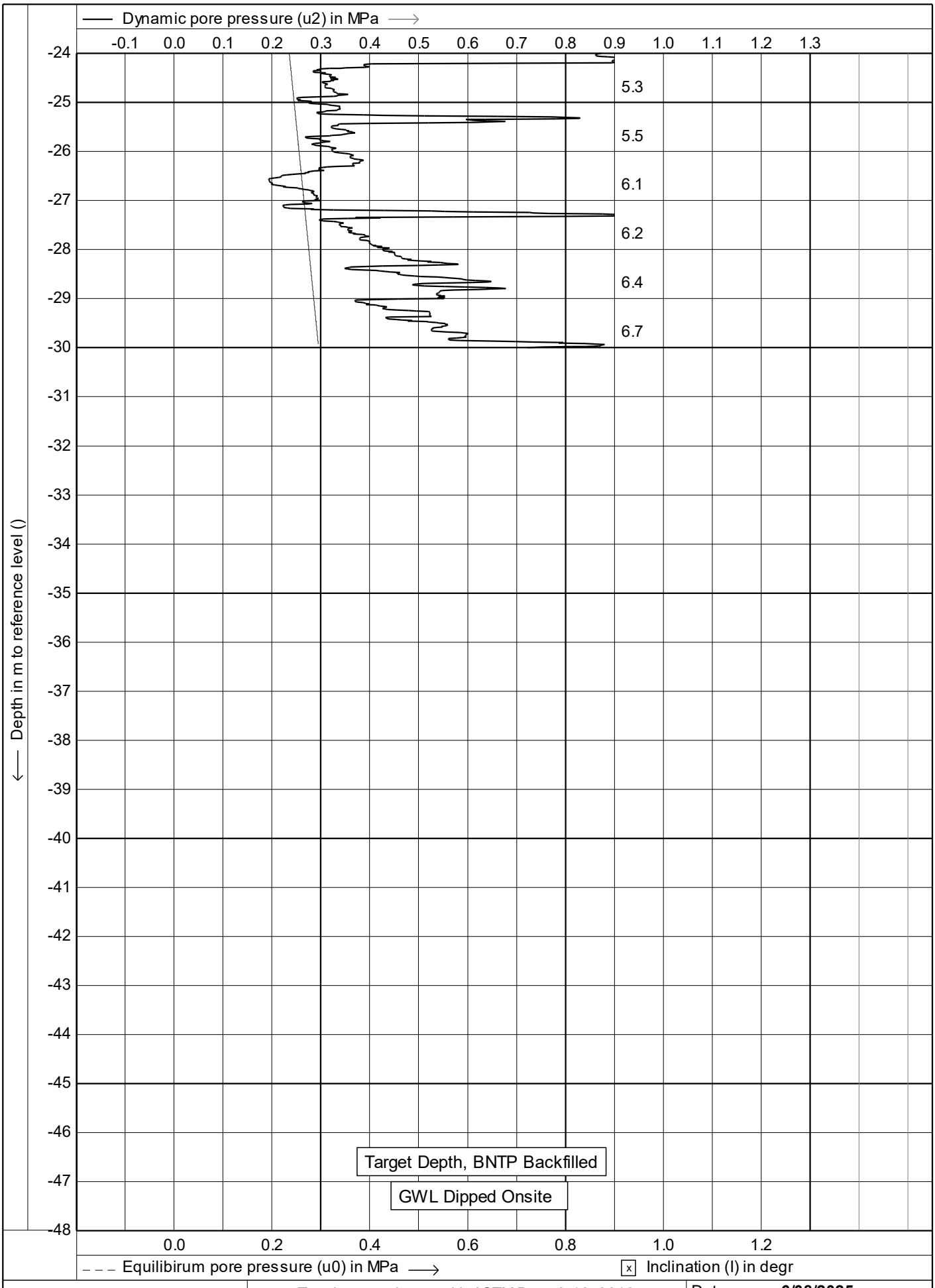
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT133** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

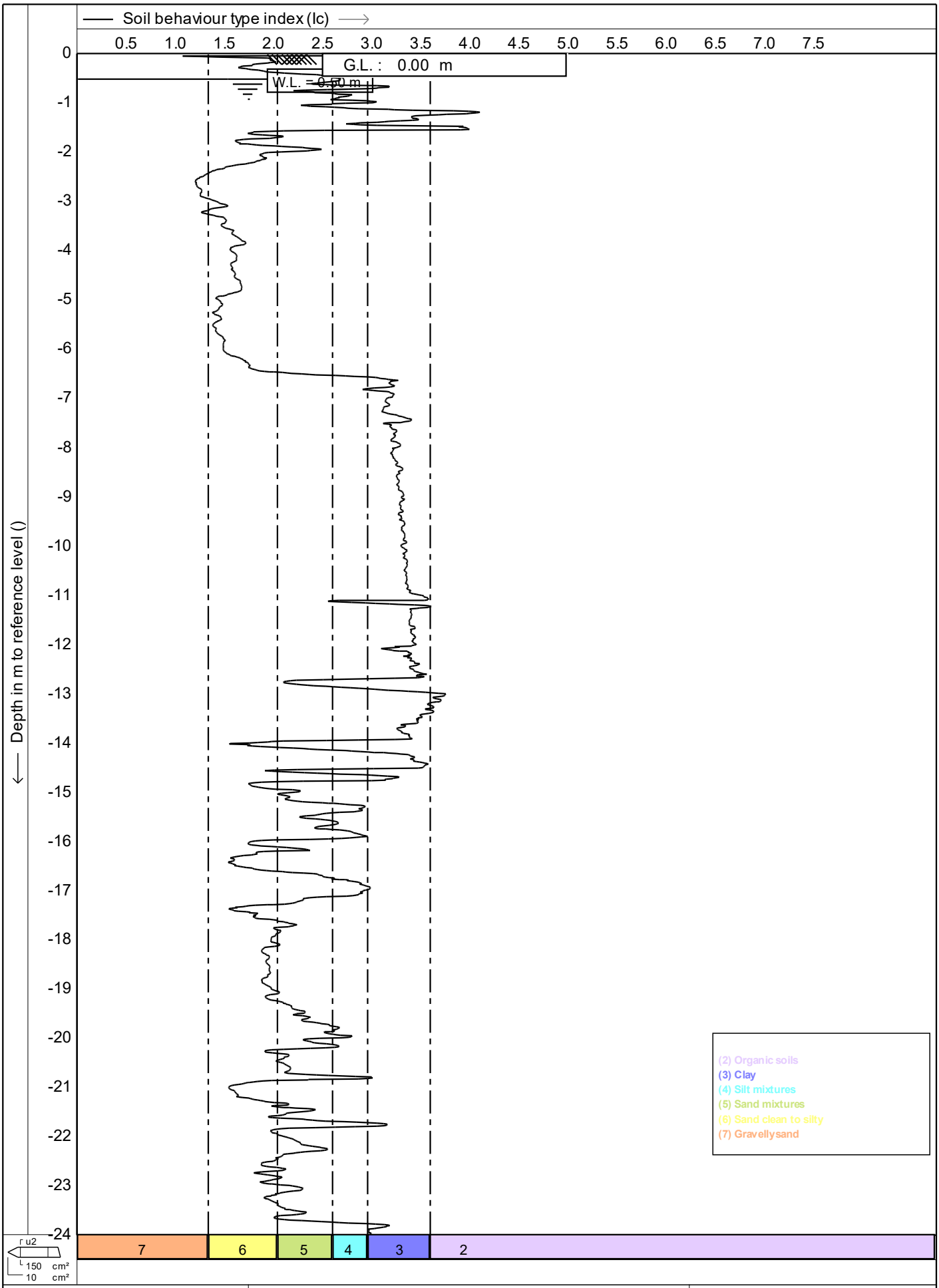
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **6/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT133** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

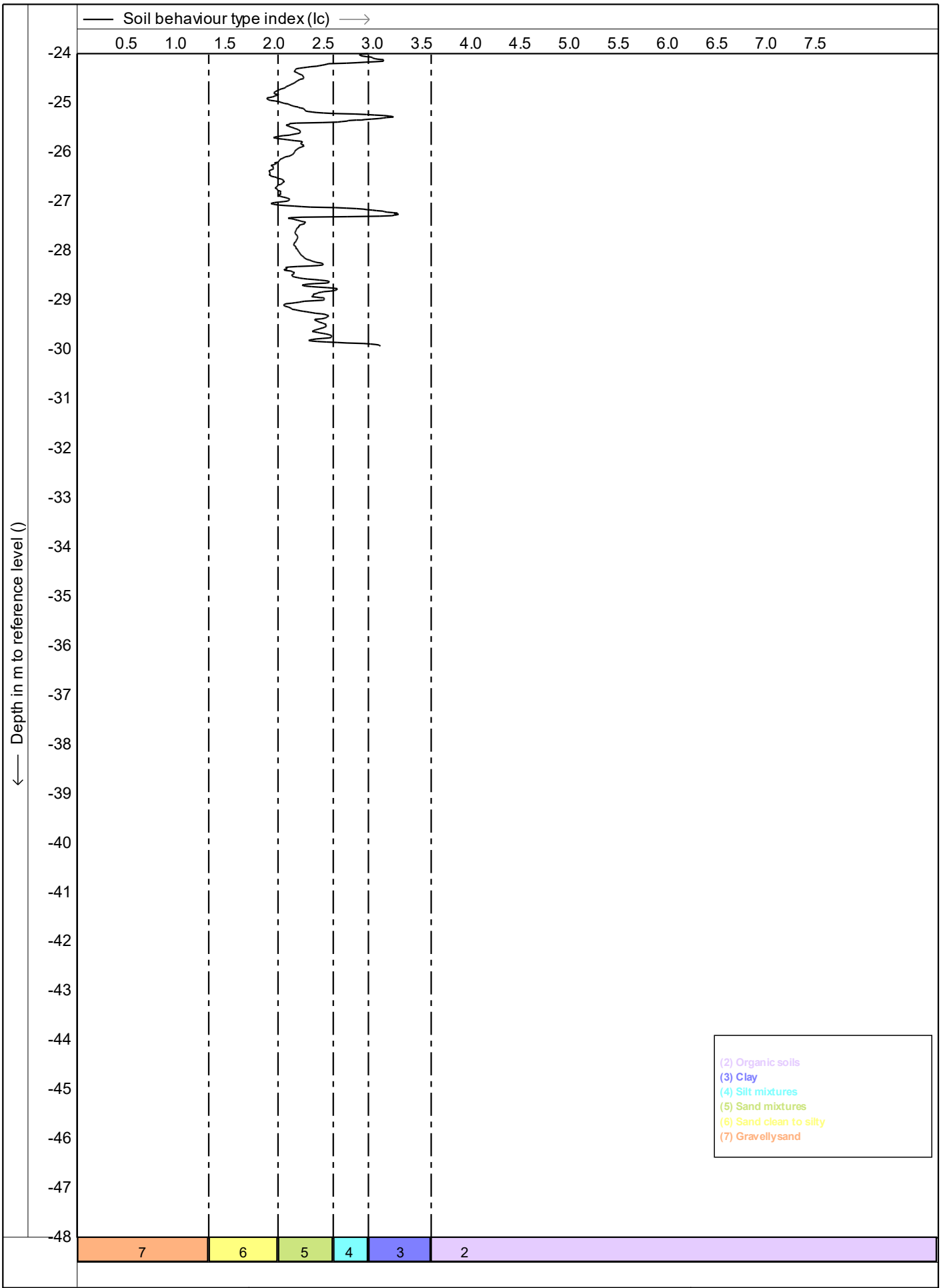
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT133** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

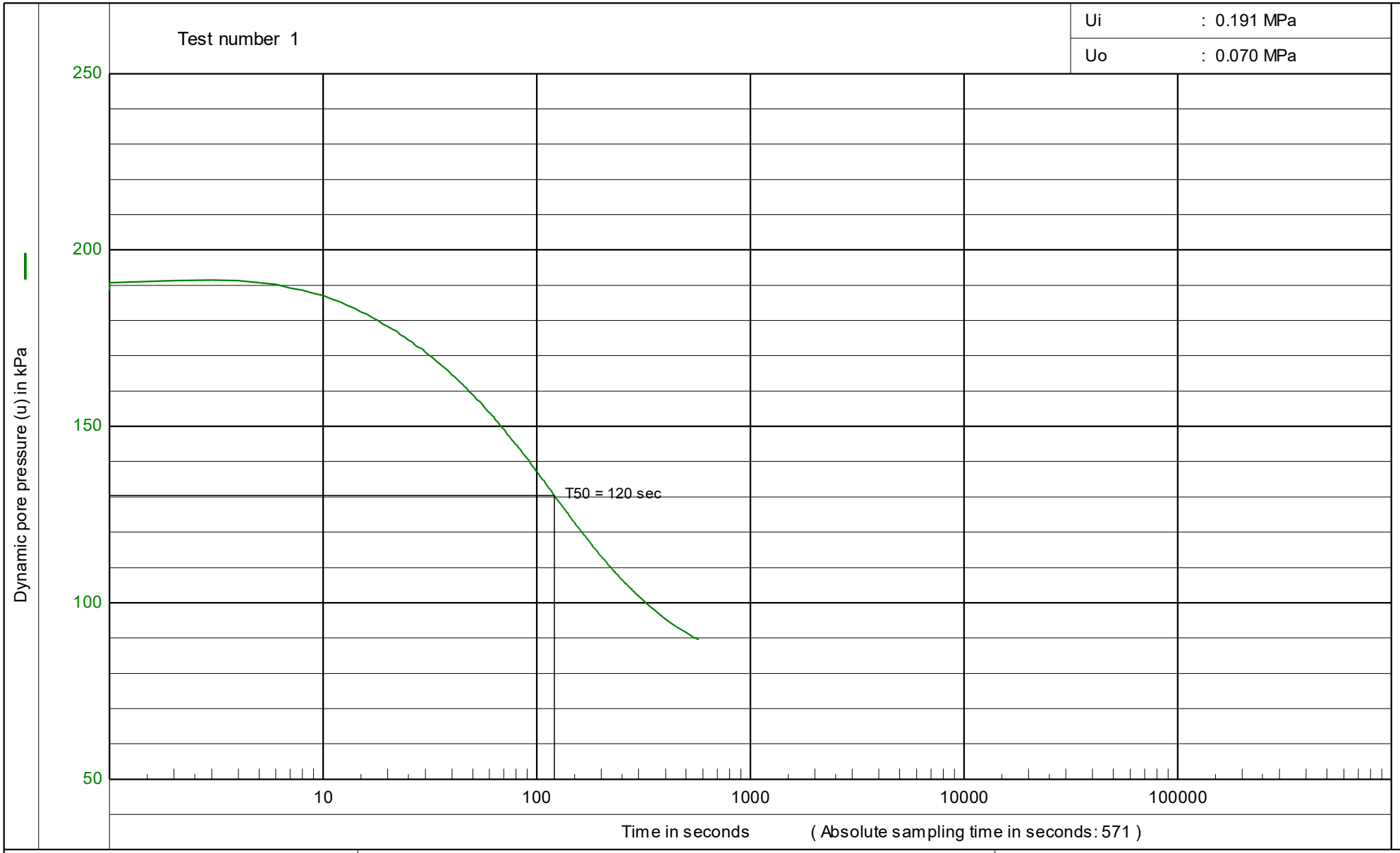
Project no. : **05EGO020**

CPT no. : **CPT133** **18/28**

1.49

Test number 1

Ui	: 0.191 MPa
Uo	: 0.070 MPa



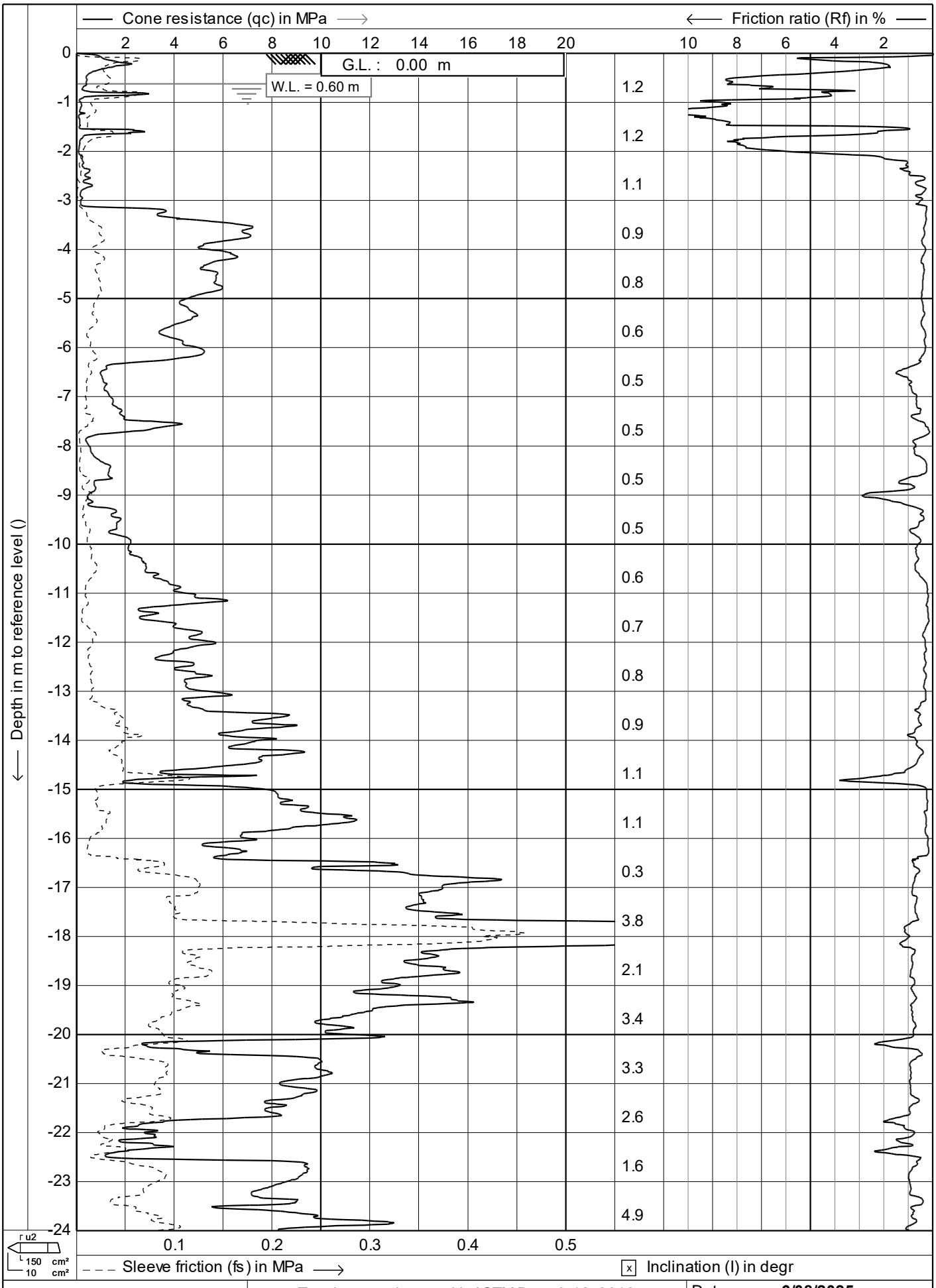
PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : Site Investigations

Location : Bell Rd - Papamoa

Date	: 6/08/2025	
Project no.	: 05EGO020	
CPT no.	: CPT133	
Test depth	: 7.50	[m] - G.L.
Water level	: 0.50	[m] - G.L.



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date : **6/08/2025**

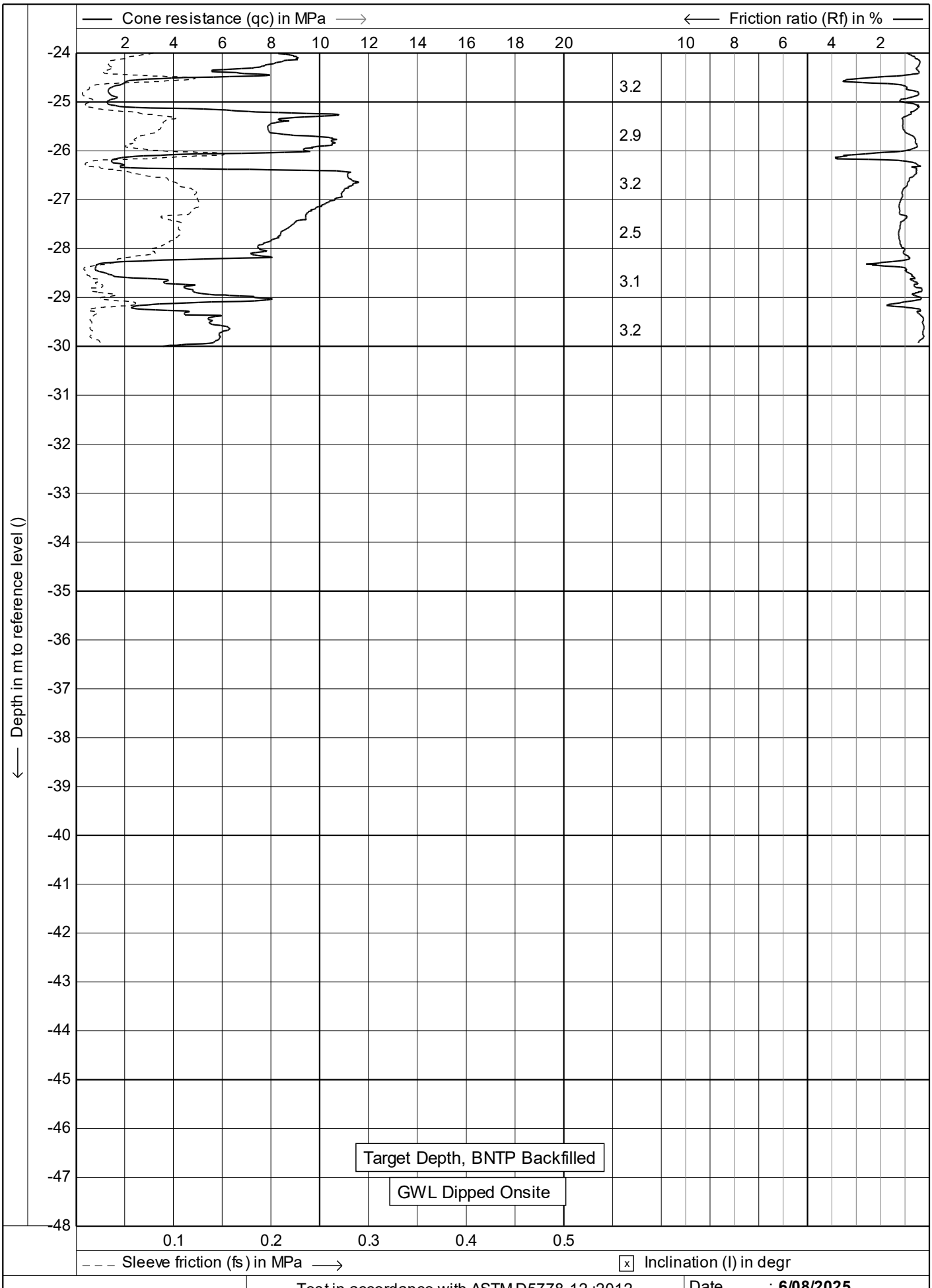
Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT134** **1/28**

PERRY GEOTECH

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

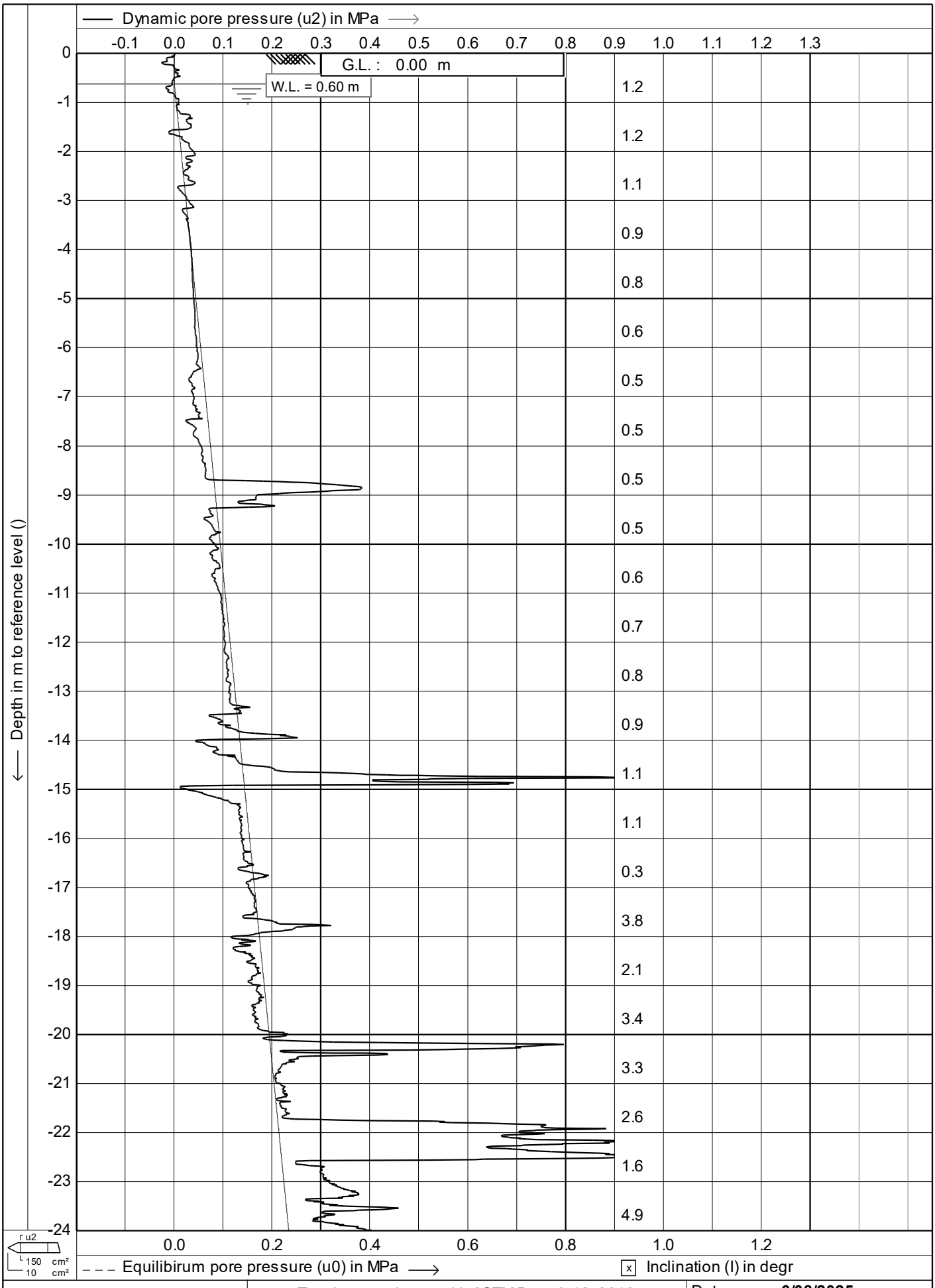
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT134** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

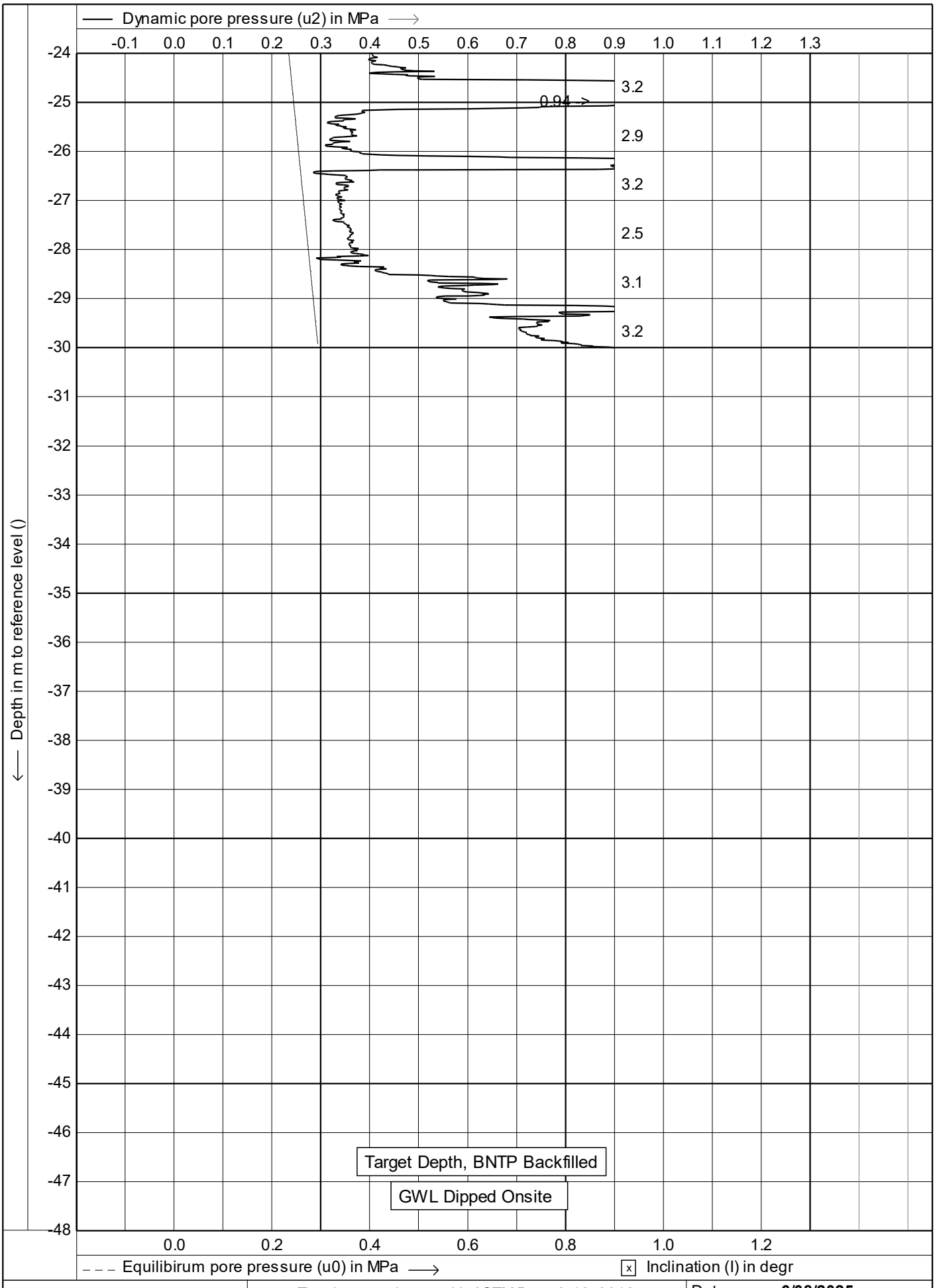
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT134** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

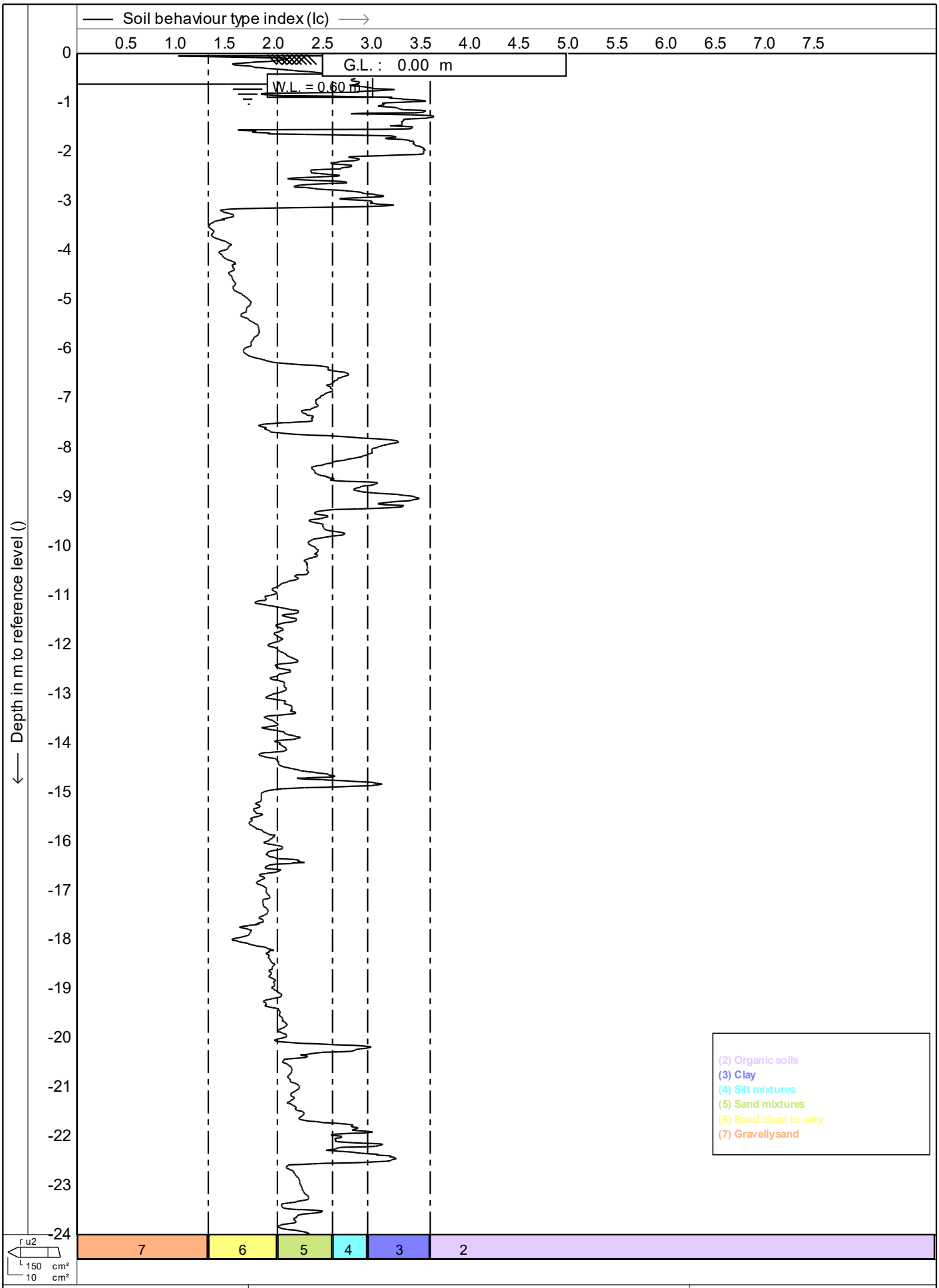
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **6/08/2025**
Cone no.	: **C10CFIIP.C13081**
Project no.	: **05EGO020**
CPT no.	: **CPT134** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

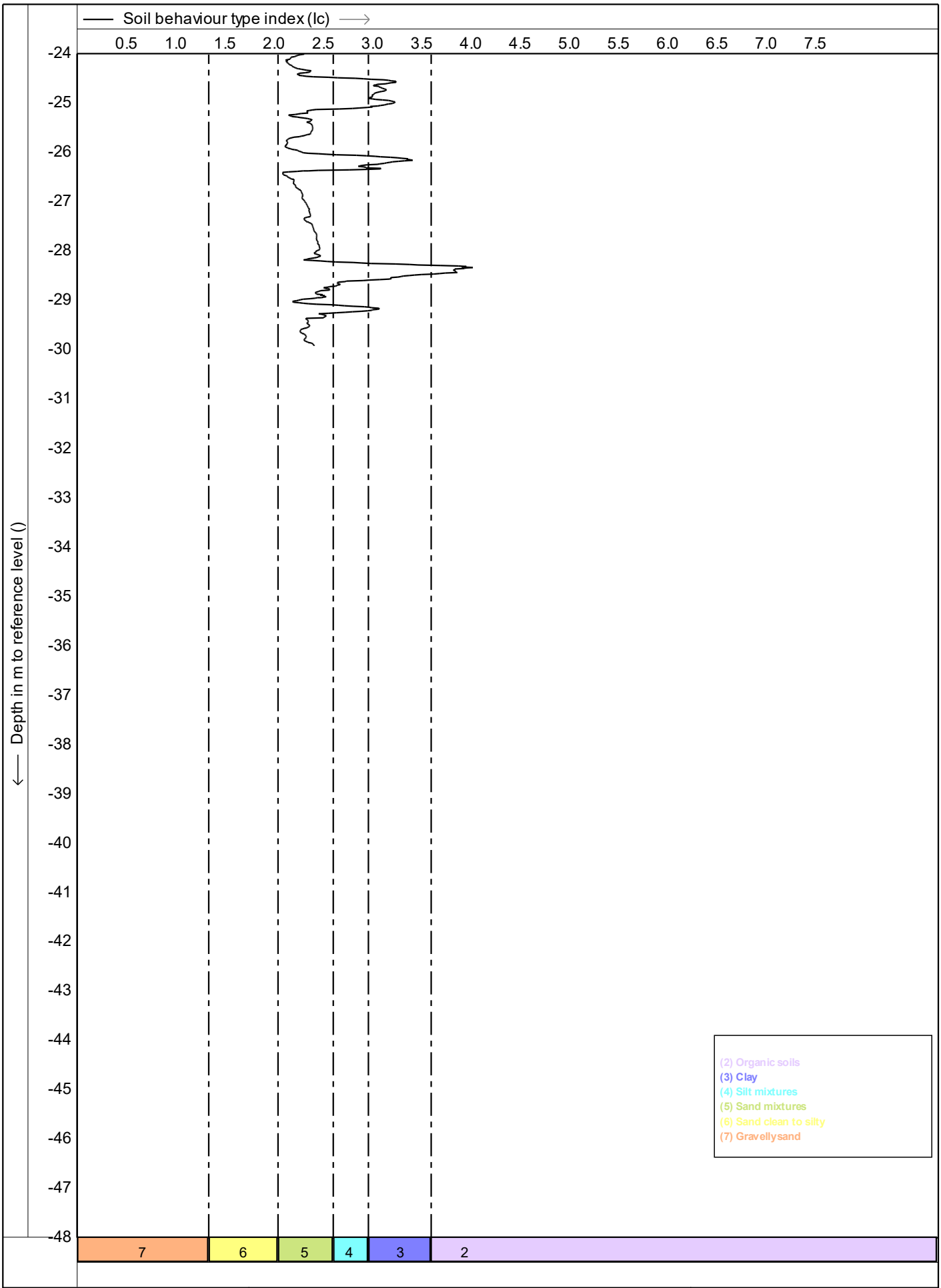
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT134** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

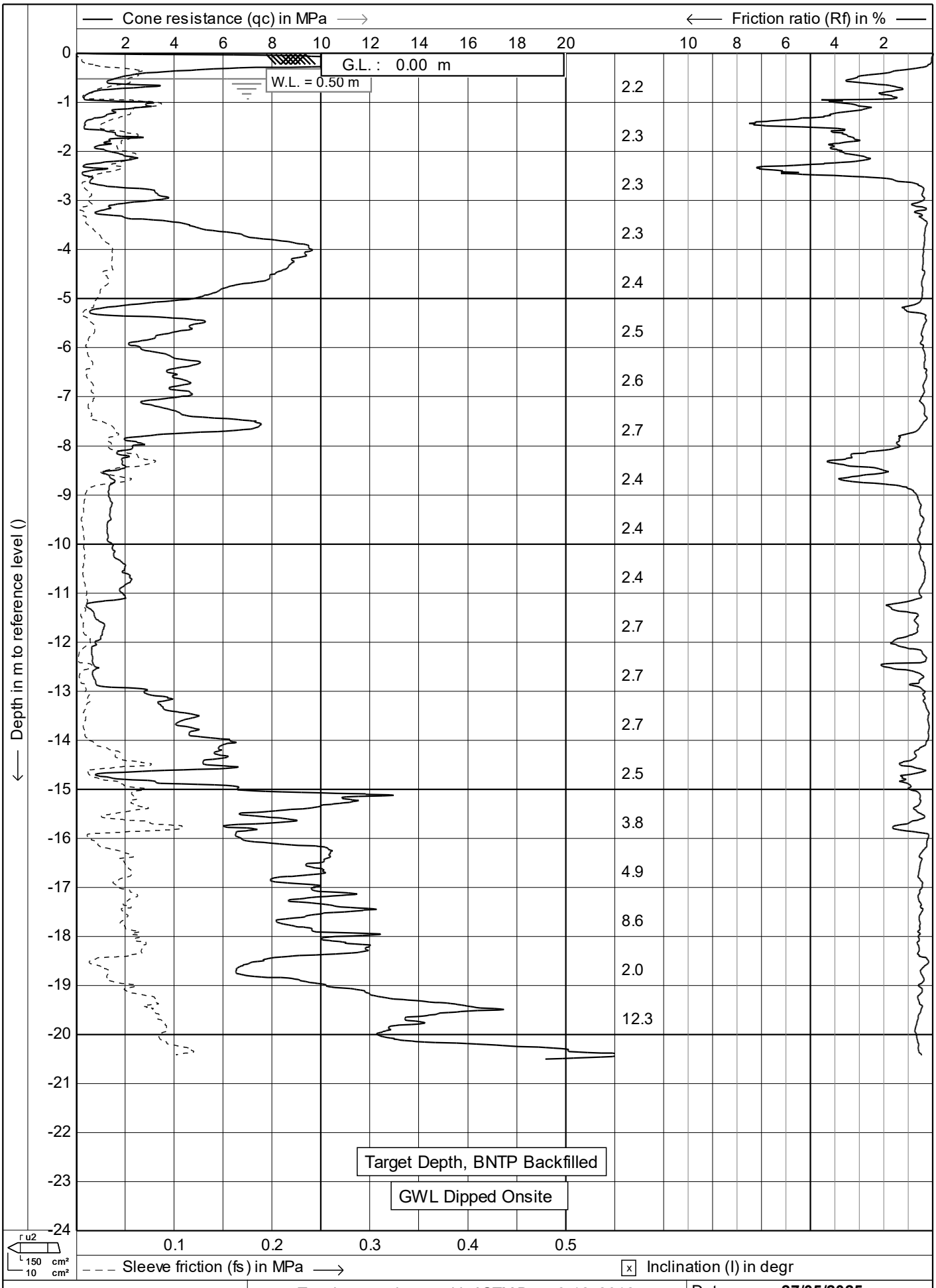
Date : **6/08/2025**

Cone no. : **C10CFIIP.C13081**

Project no. : **05EGO020**

CPT no. : **CPT134** **18/28**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

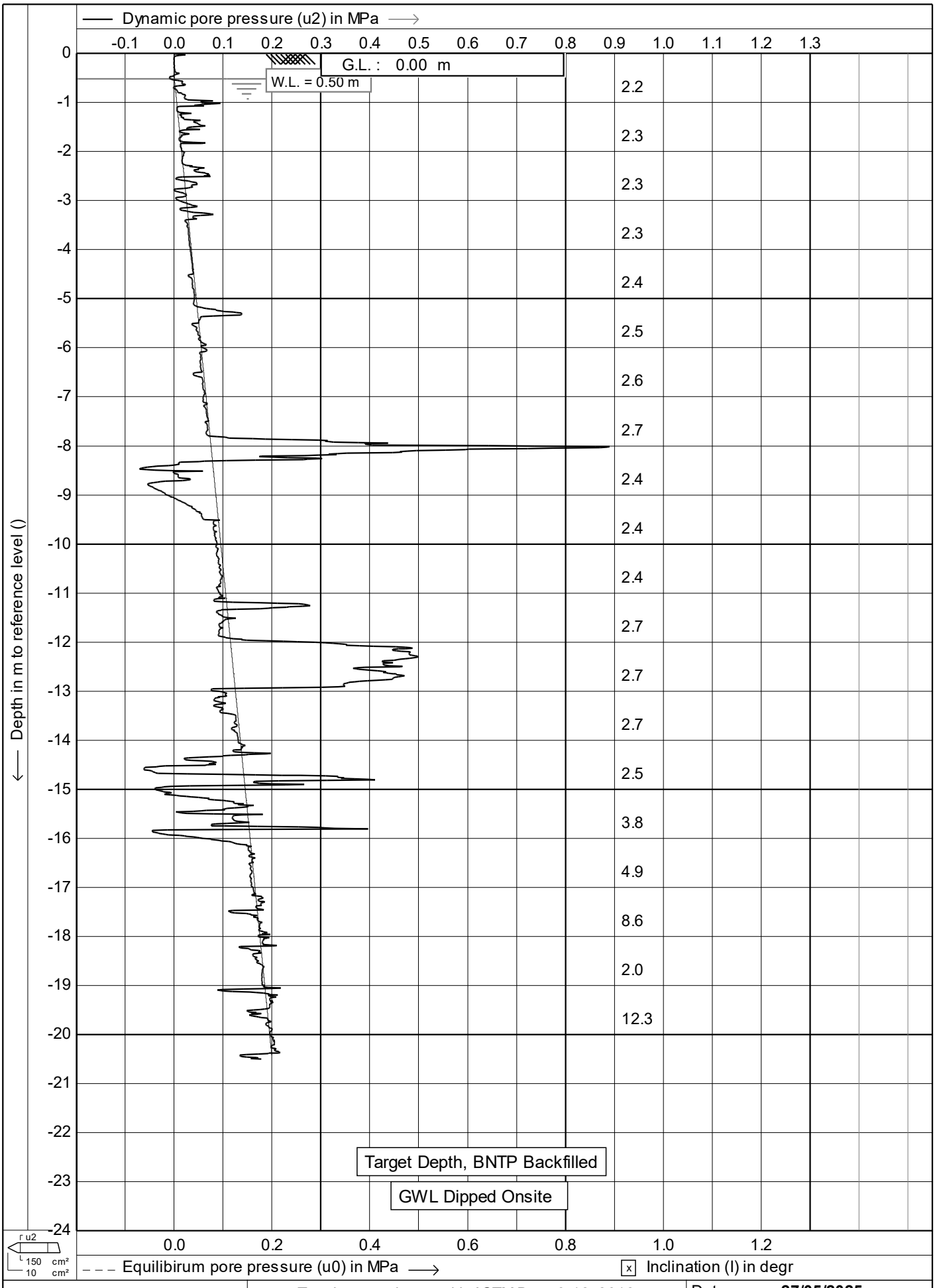
Position: **0, 0**

Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT1** **1/14**



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

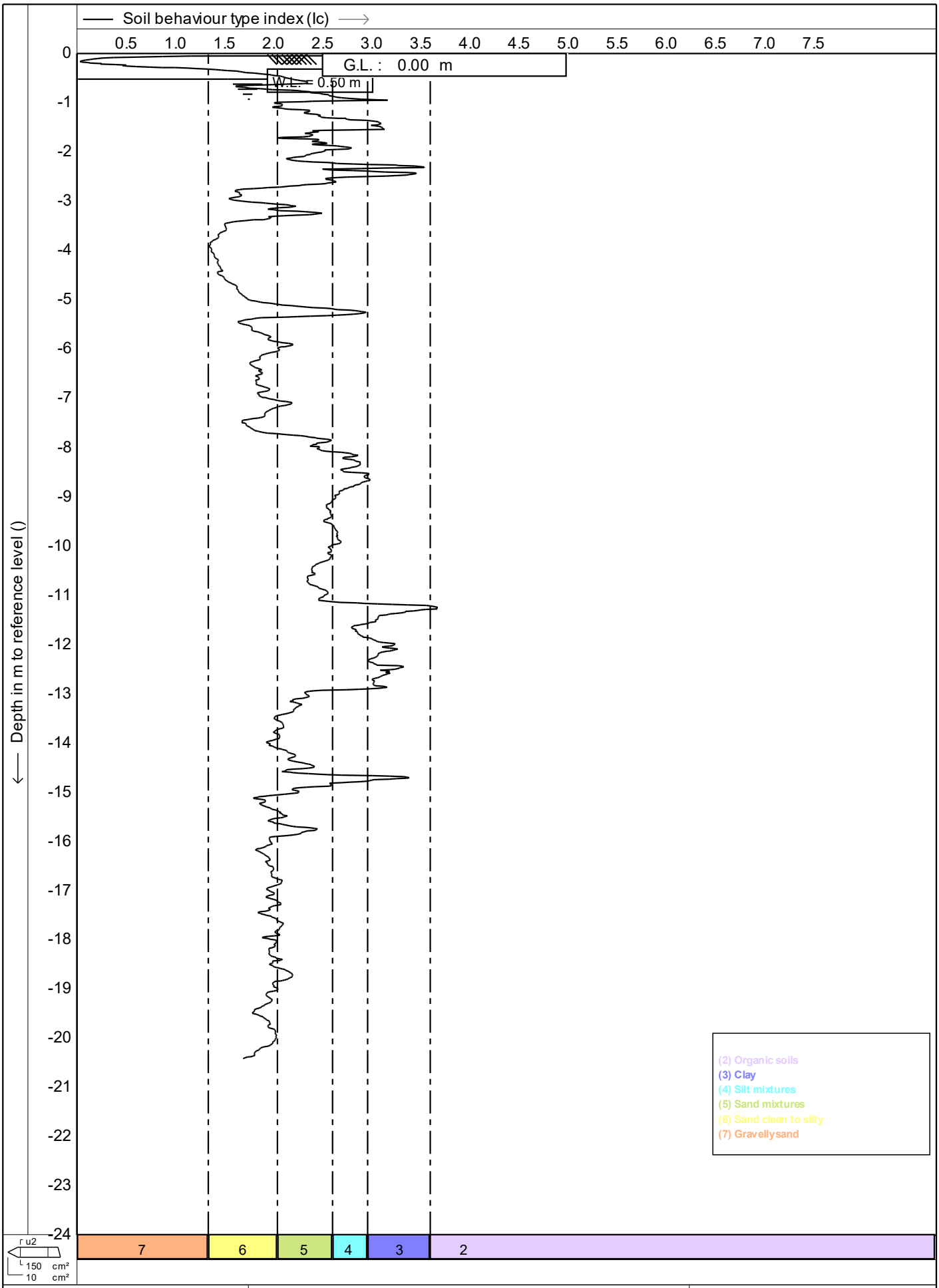
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT1** **2/14**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

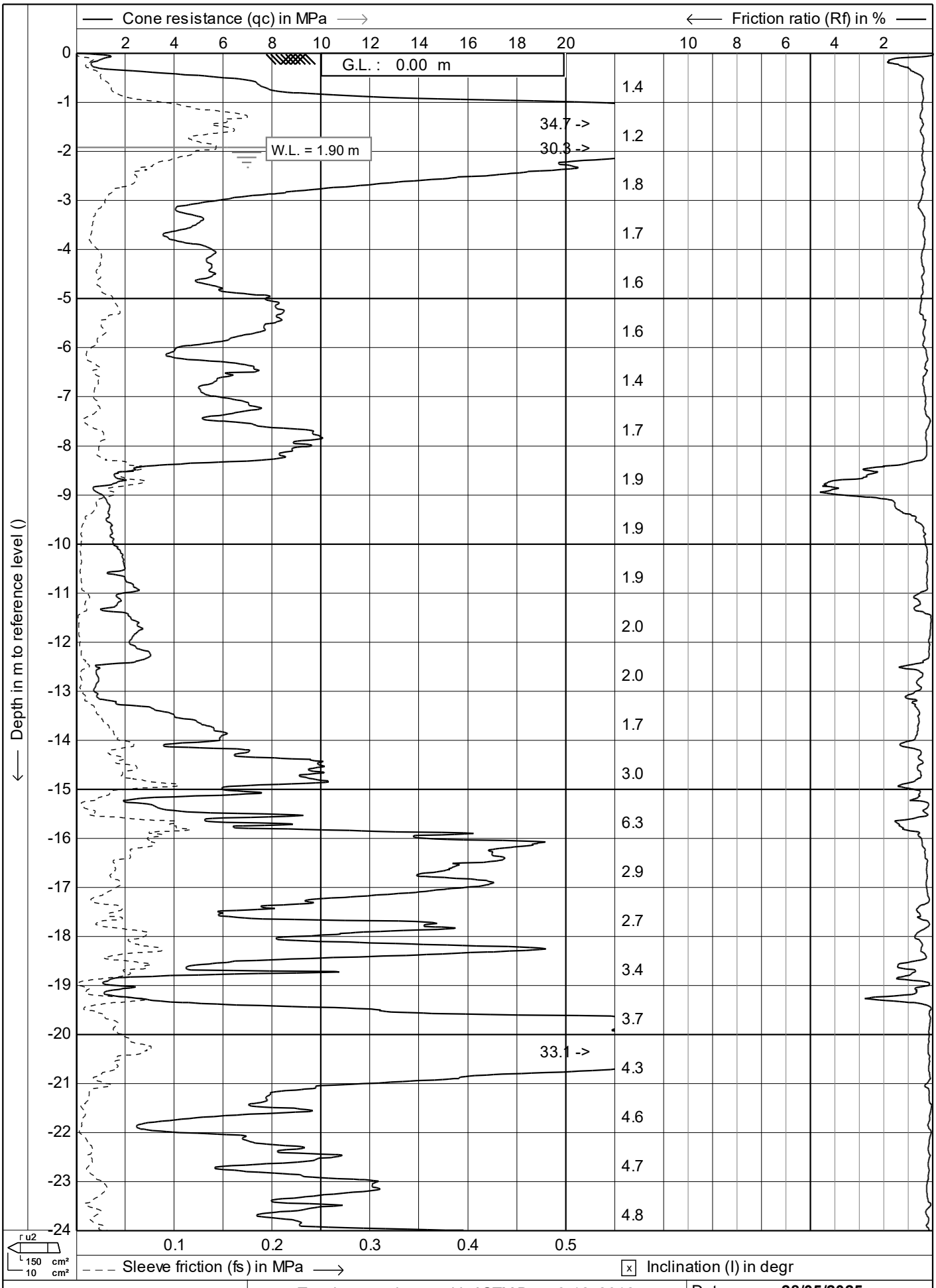
Date : **27/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT1** **9/14**

1.49



Test in accordance with ASTM D5778-12 :2012

PERRY GEOTECH

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

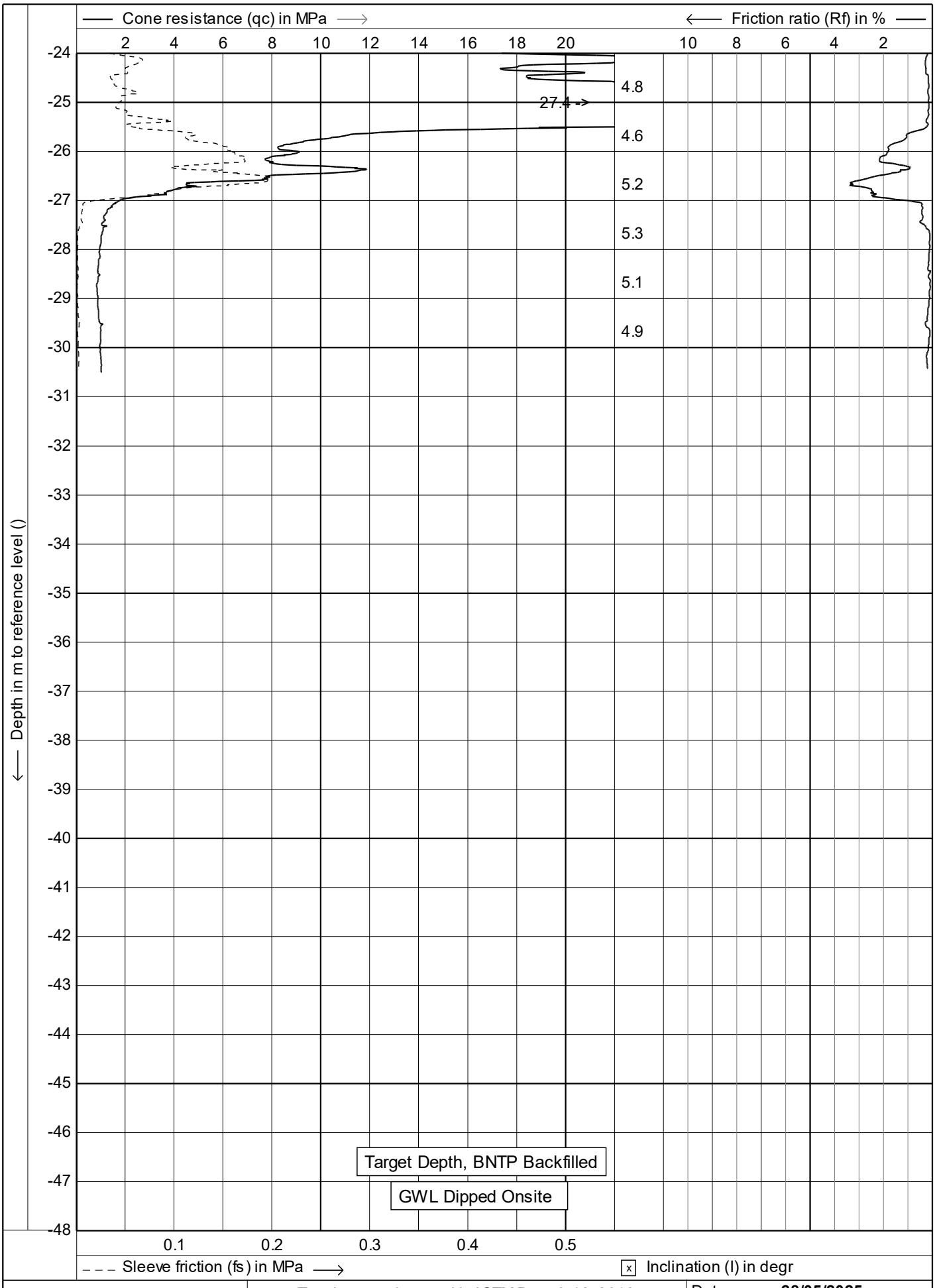
Date : **28/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT2** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

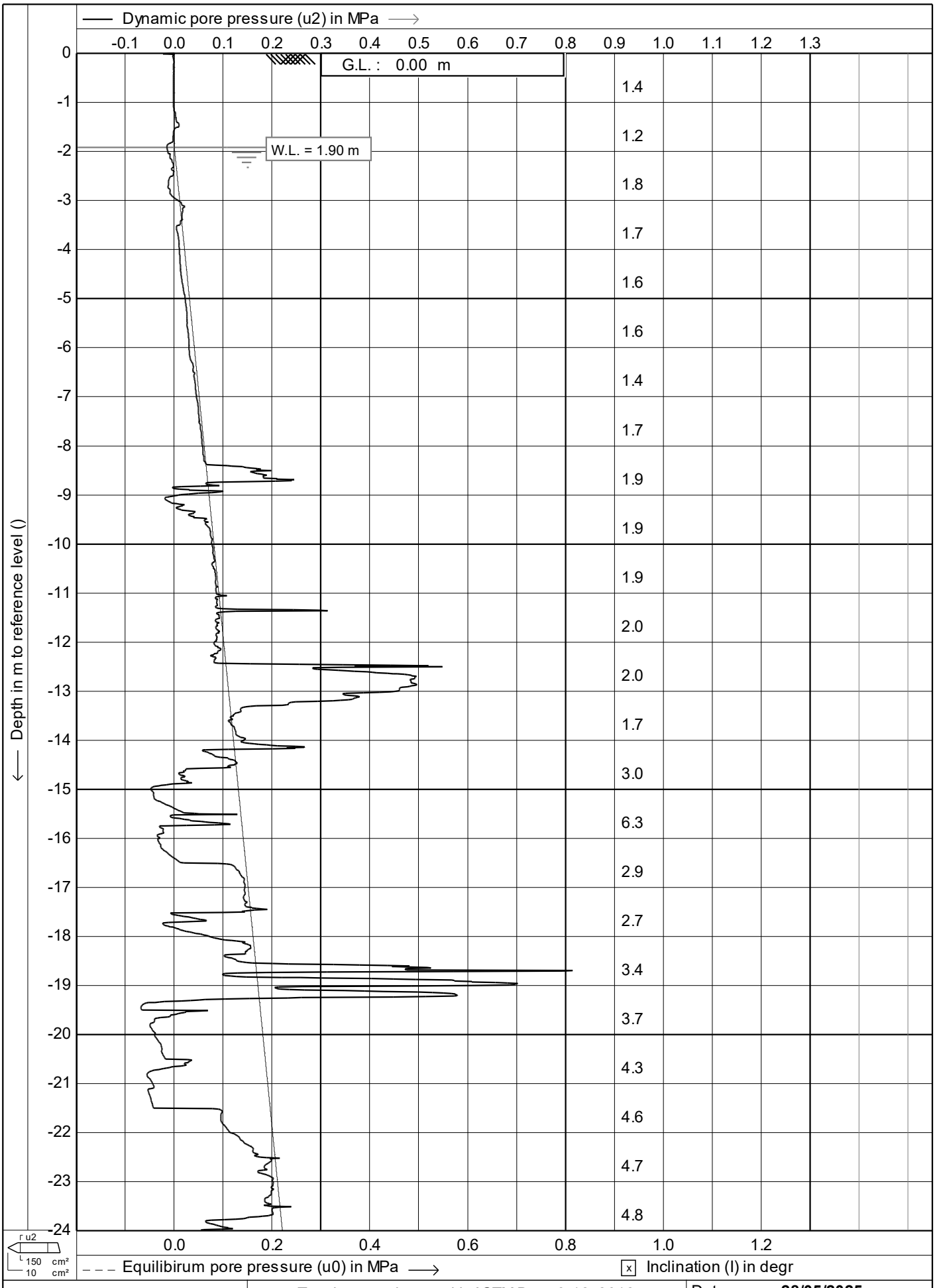
Date : **28/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT2** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

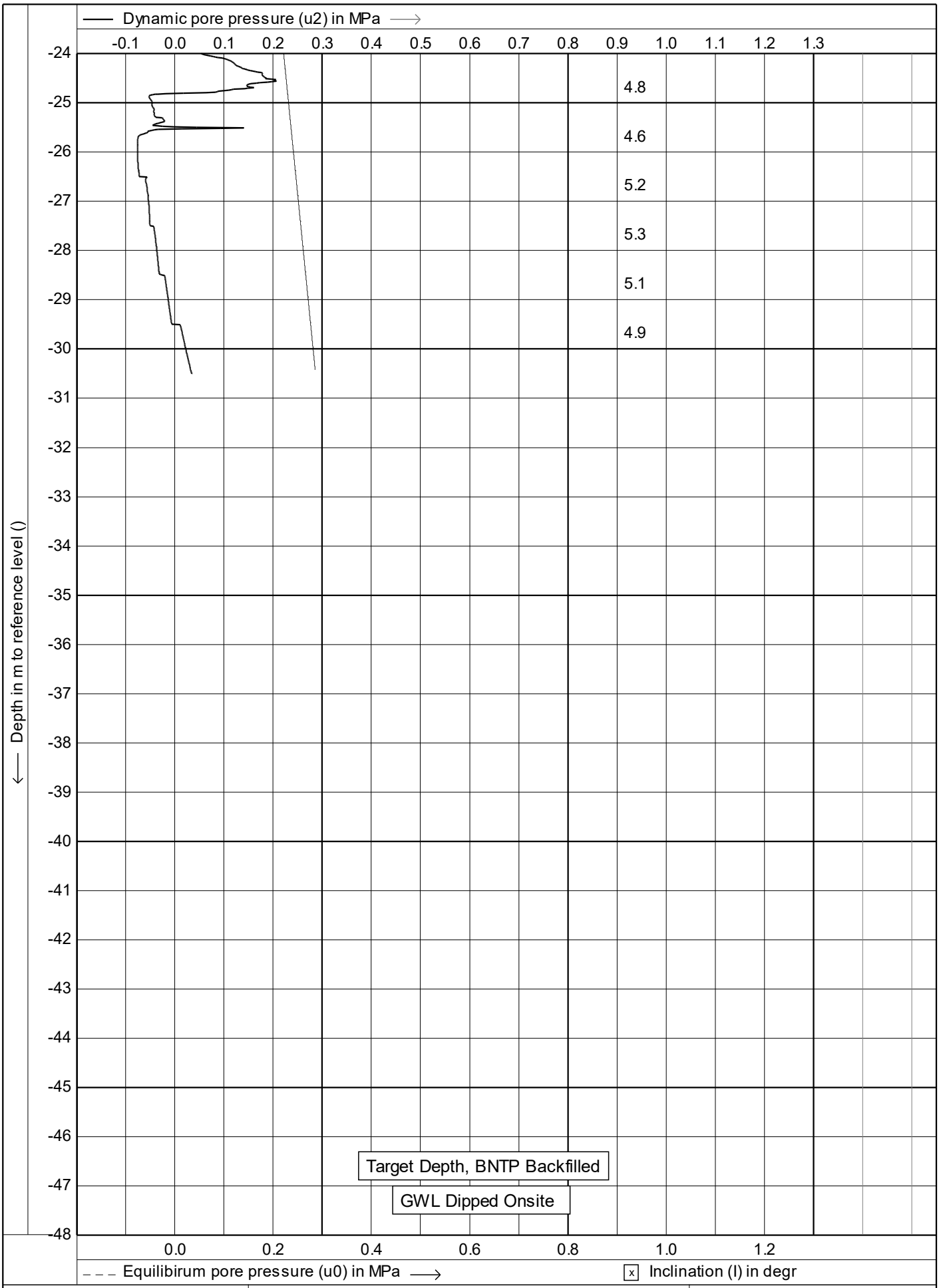
Date : **28/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT2** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

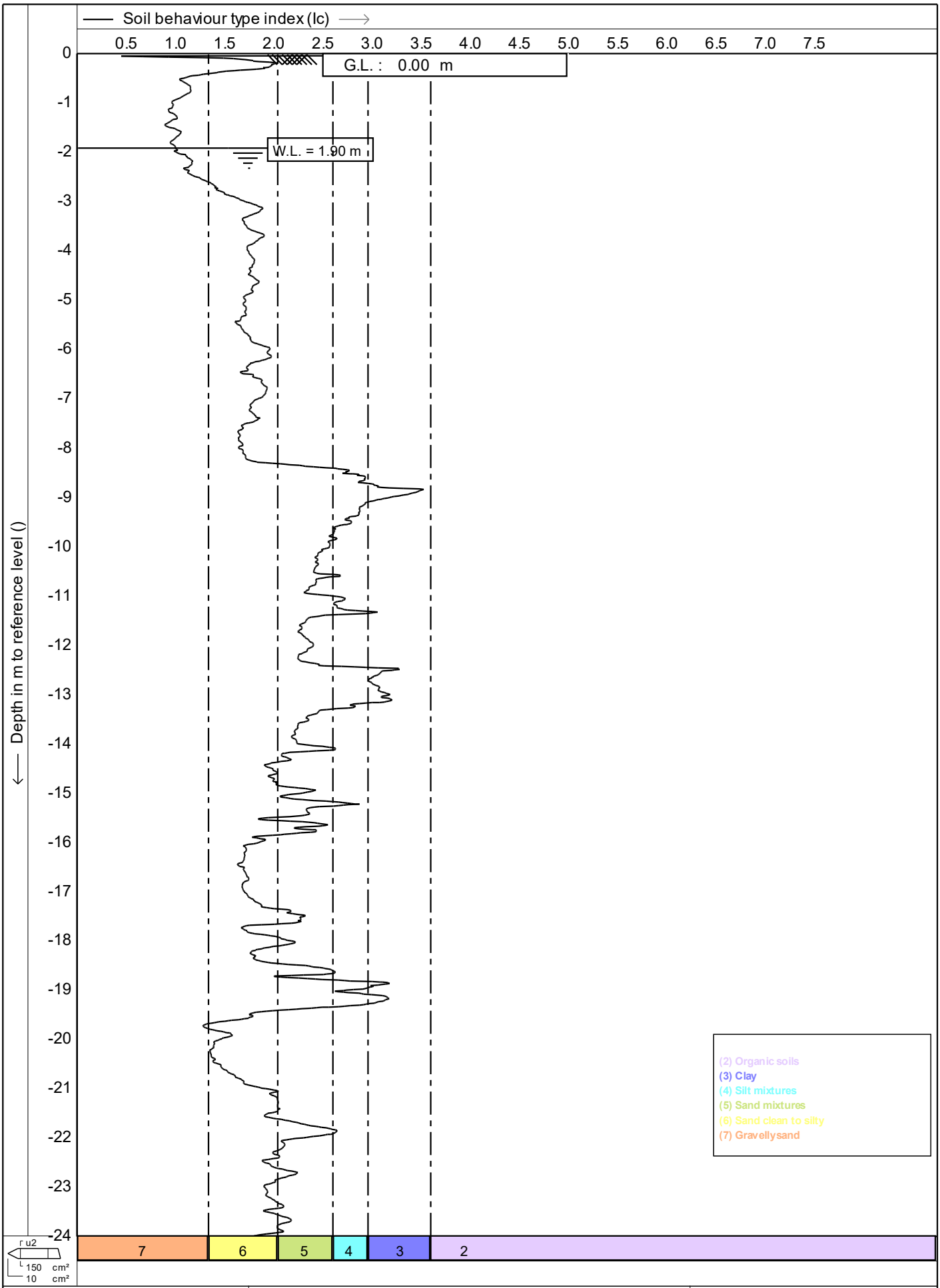
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **28/05/2025**
Cone no.	: **C10CFIIP.C14429**
Project no.	: **05EGO005**
CPT no.	: **SCPT2** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

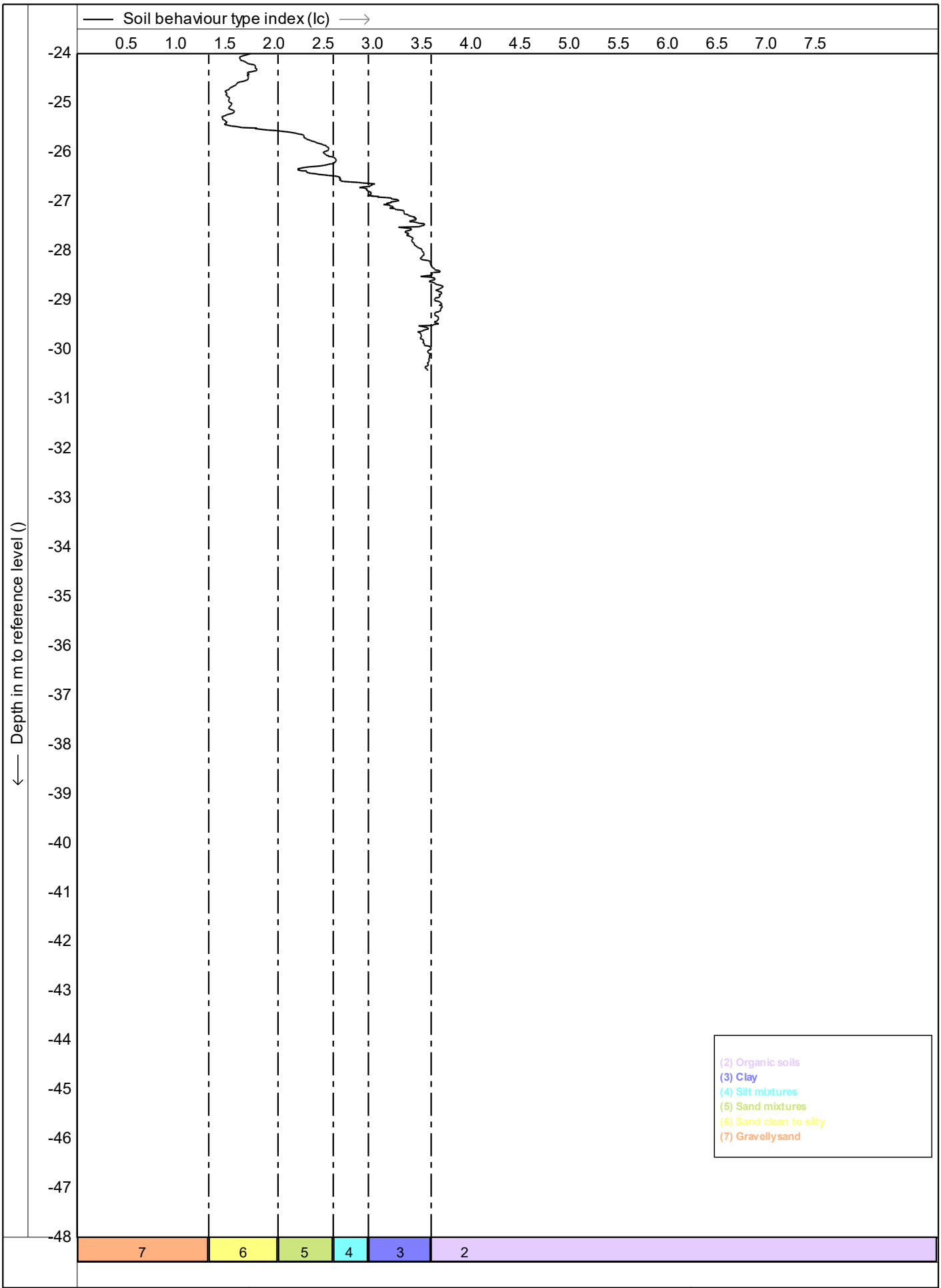
Date : **28/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT2** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

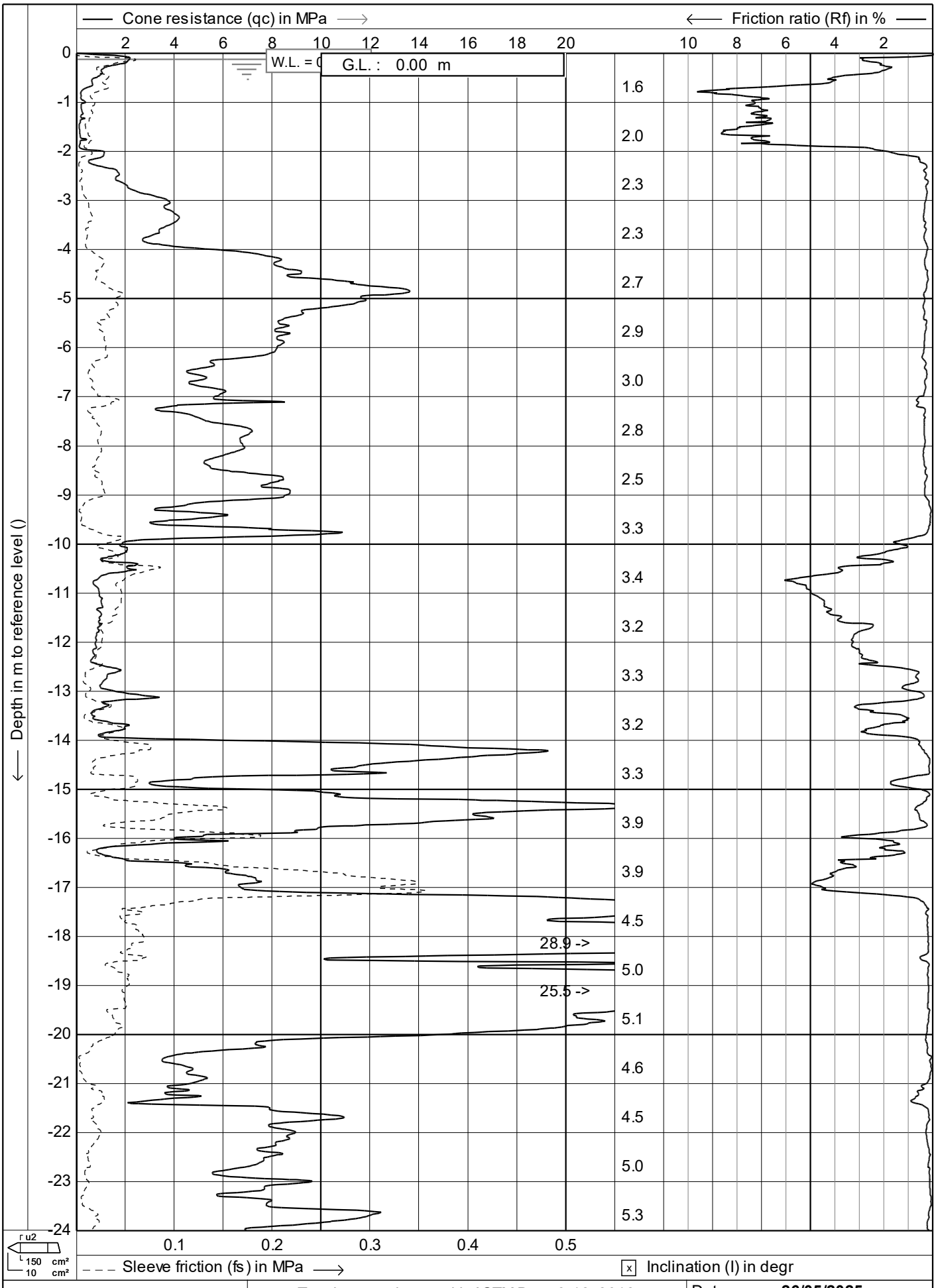
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **28/05/2025**
Cone no.	: **C10CFIIP.C14429**
Project no.	: **05EGO005**
CPT no.	: **SCPT2** **18/28**

1.49



Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

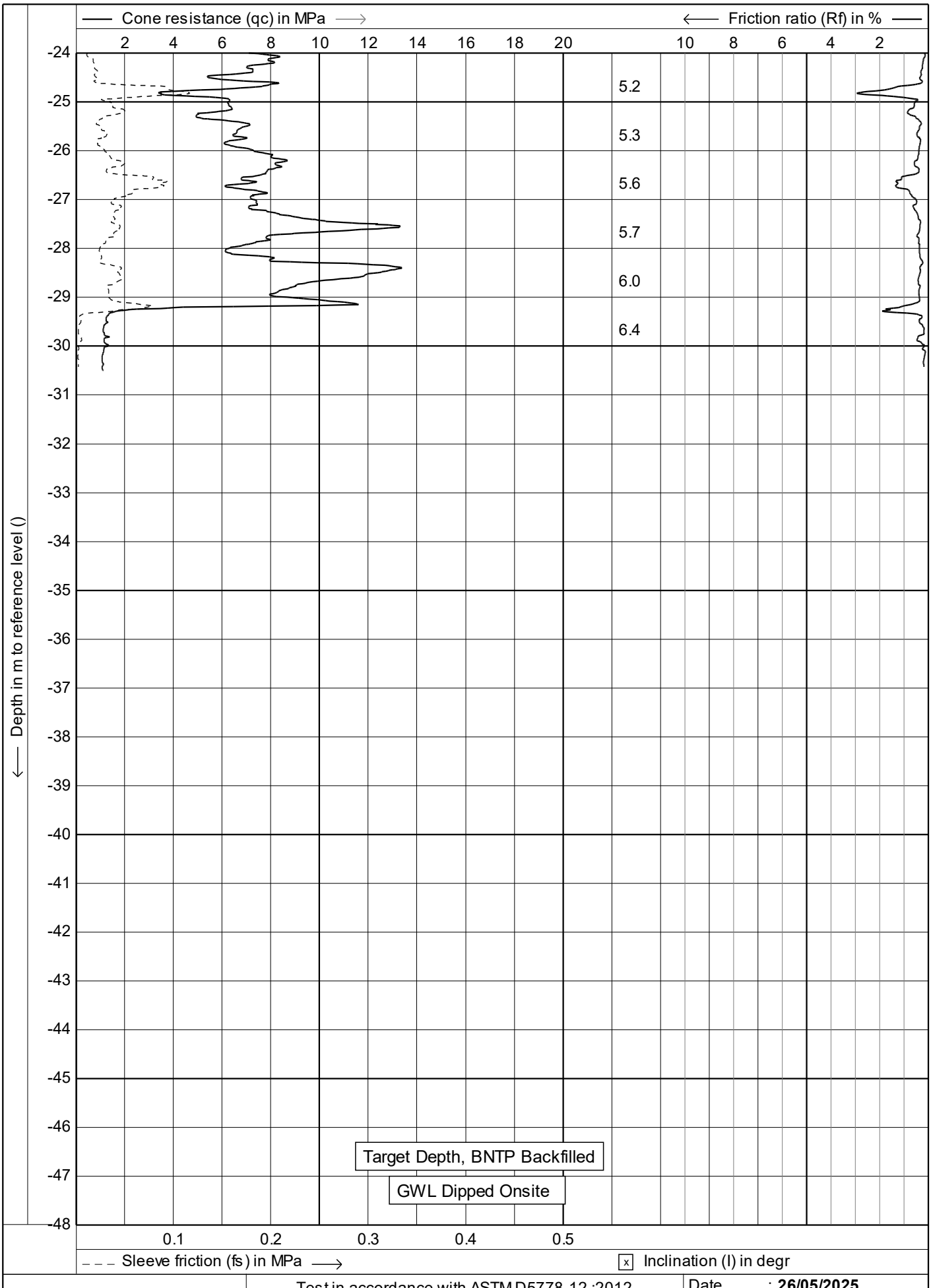
Date : **26/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT3** **1/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

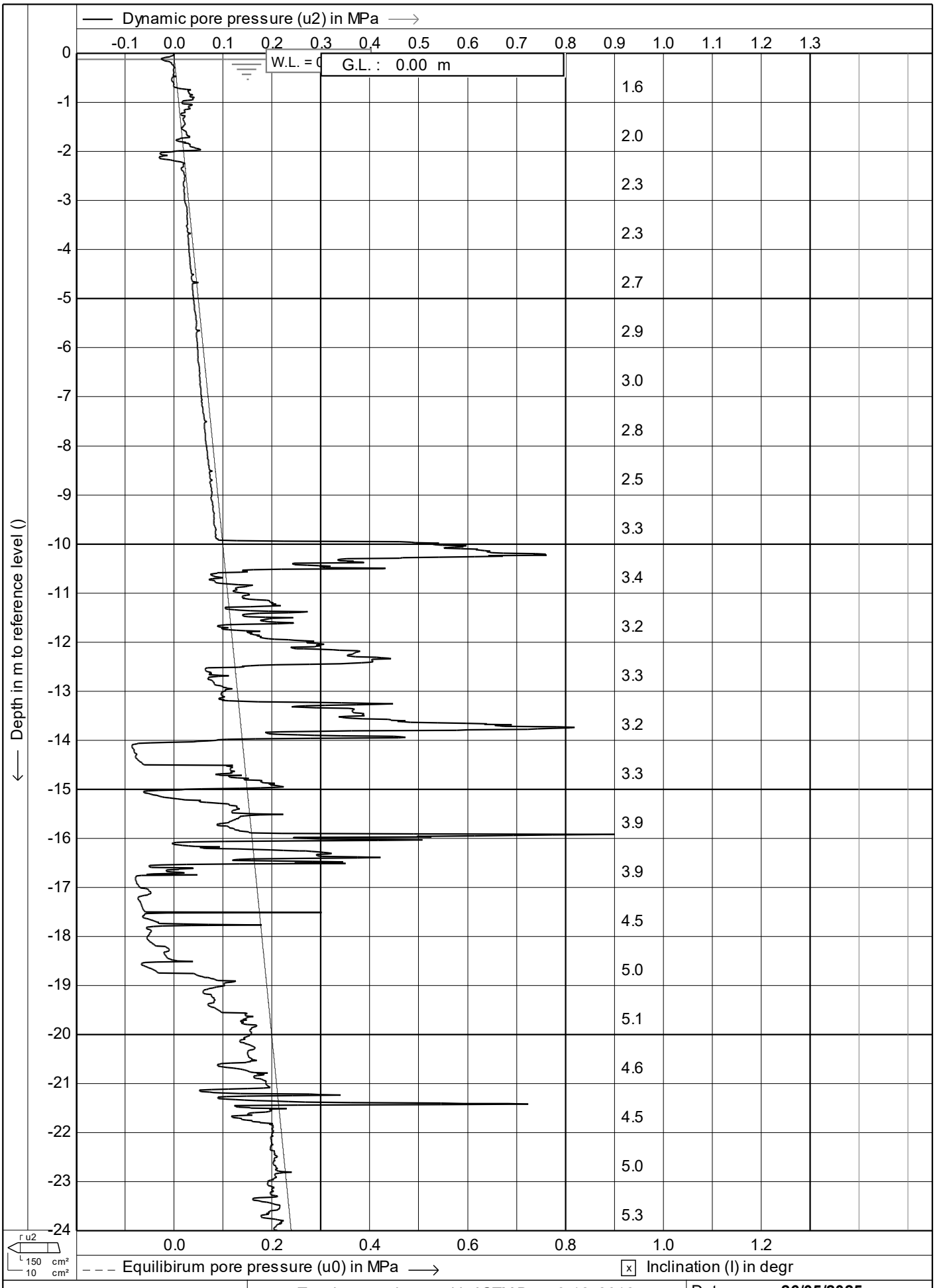
Date : **26/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT3** **2/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

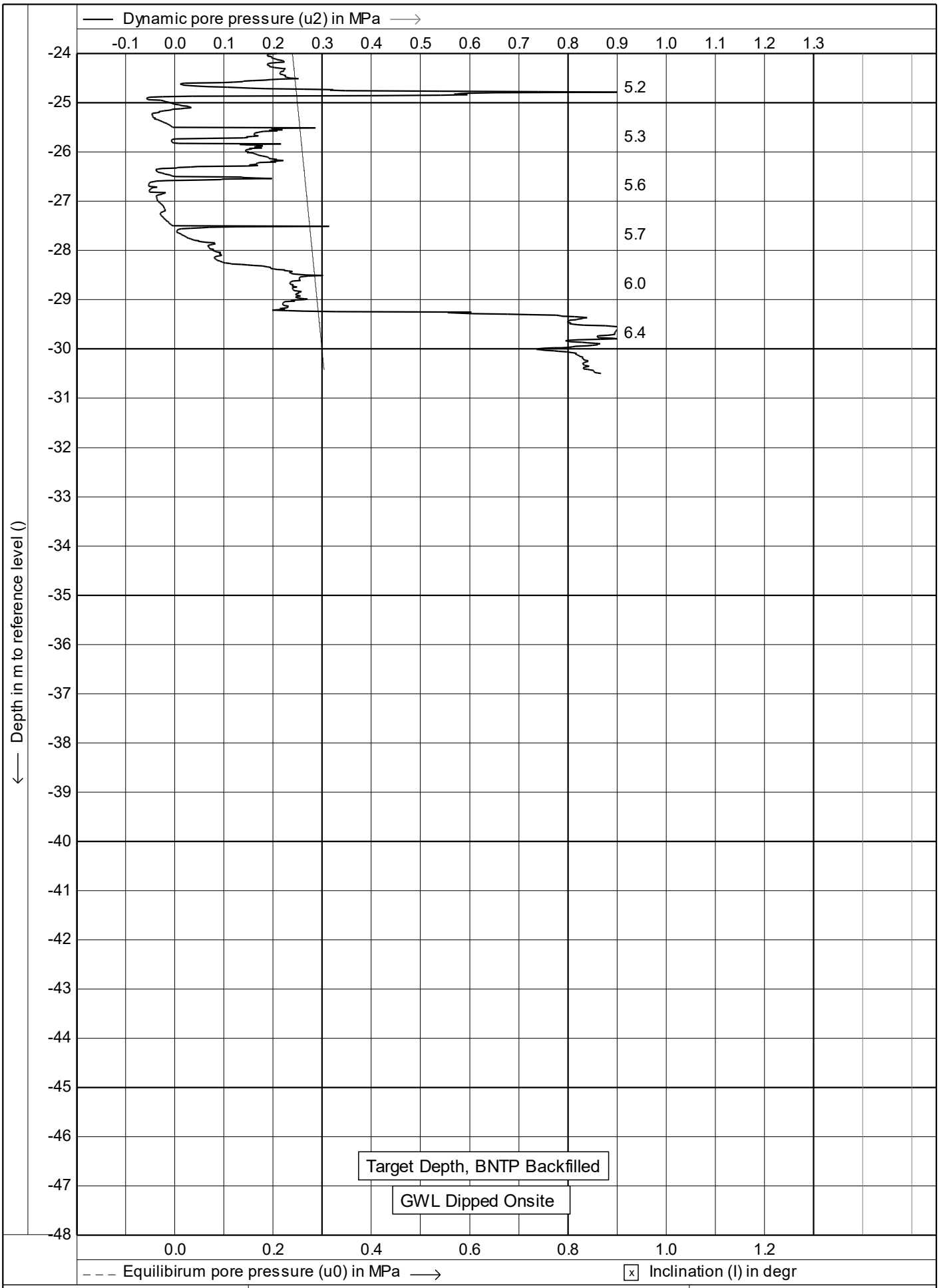
Date : **26/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT3** **3/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

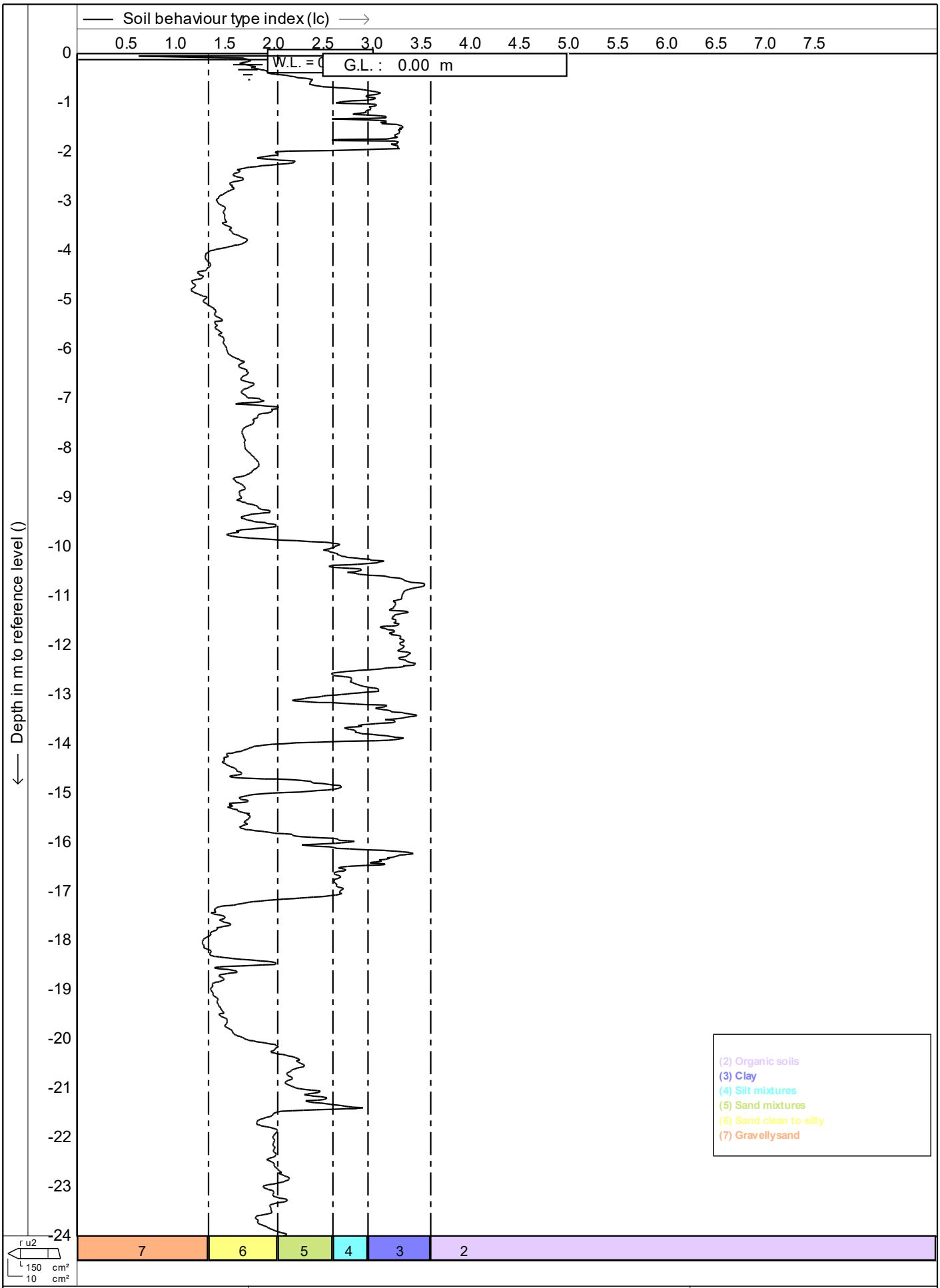
Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **26/05/2025**
Cone no.	: **C10CFIIP.C14429**
Project no.	: **05EGO005**
CPT no.	: **SCPT3** **4/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

Location: **Bell Rd - Papamoa**

Position: **0, 0**

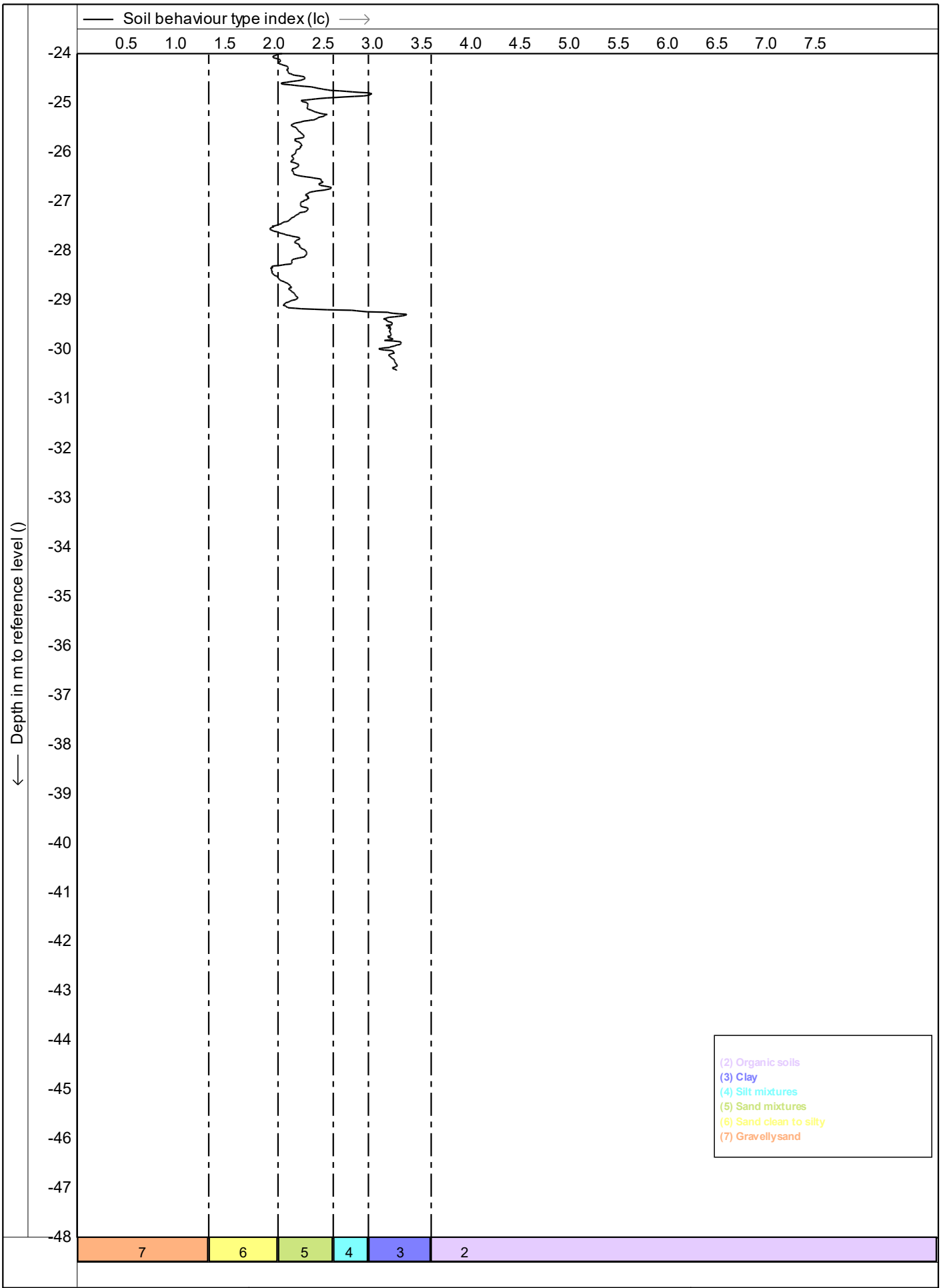
Date : **26/05/2025**

Cone no. : **C10CFIIP.C14429**

Project no. : **05EGO005**

CPT no. : **SCPT3** **17/28**

1.49



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : **Site Investigations**

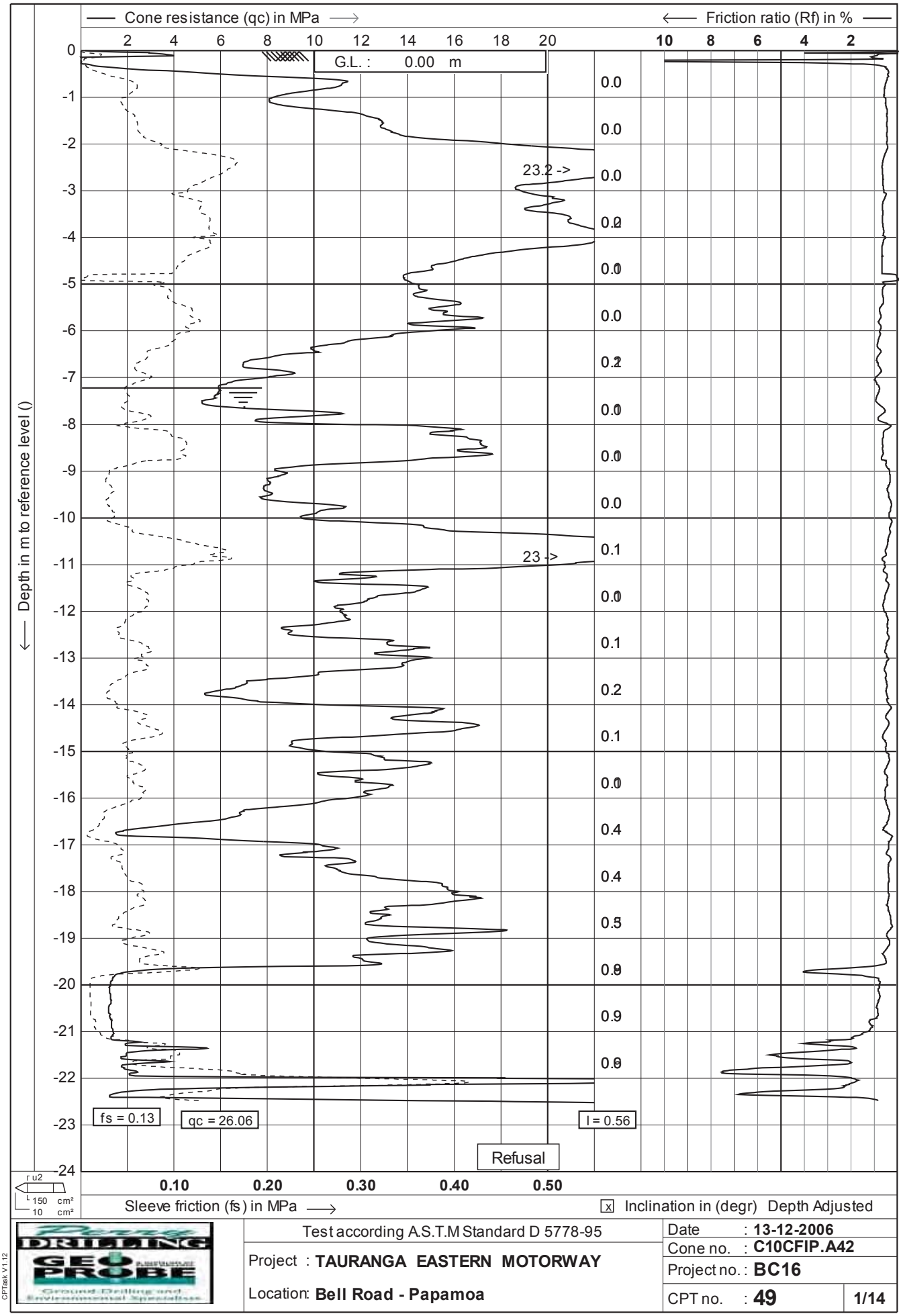
Location: **Bell Rd - Papamoa**

Position: **0, 0**

Date	: **26/05/2025**
Cone no.	: **C10CFIIP.C14429**
Project no.	: **05EGO005**
CPT no.	: **SCPT3** **18/28**

1.49

NZGD ID: 92228



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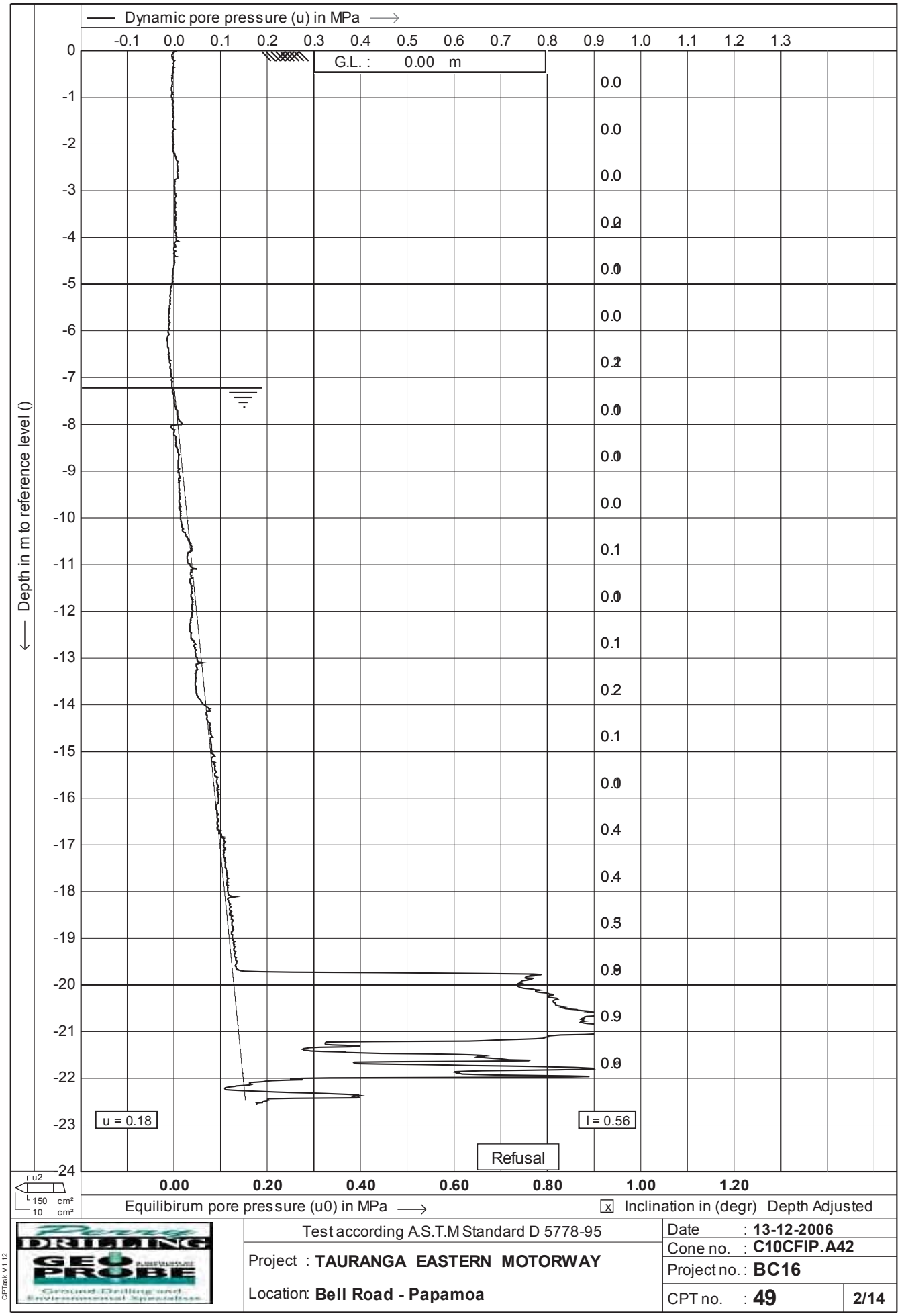


DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

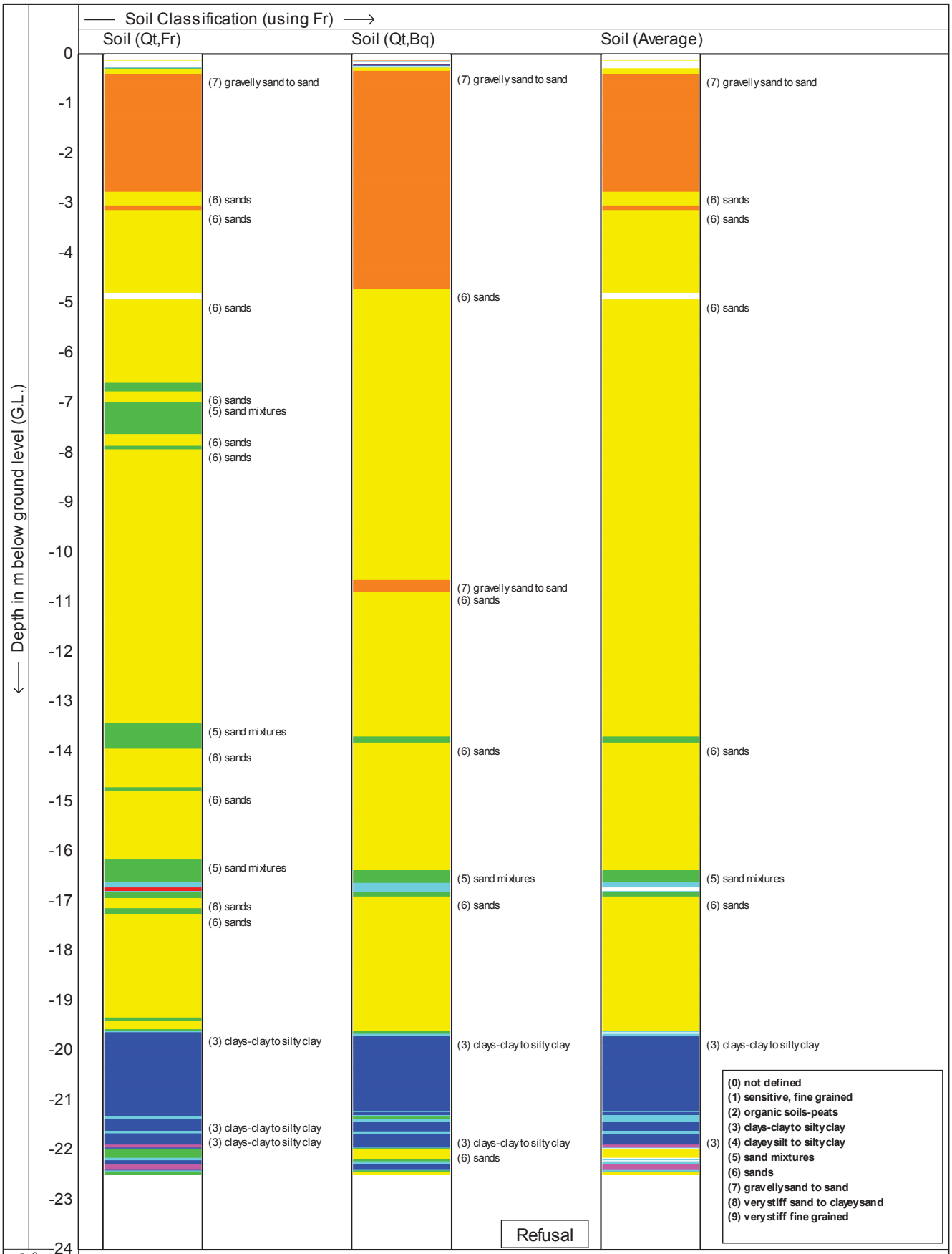
Location: **Bell Road - Papamoa**

Date : **13-12-2006**

Cone no. : **C10CFIP.A42**

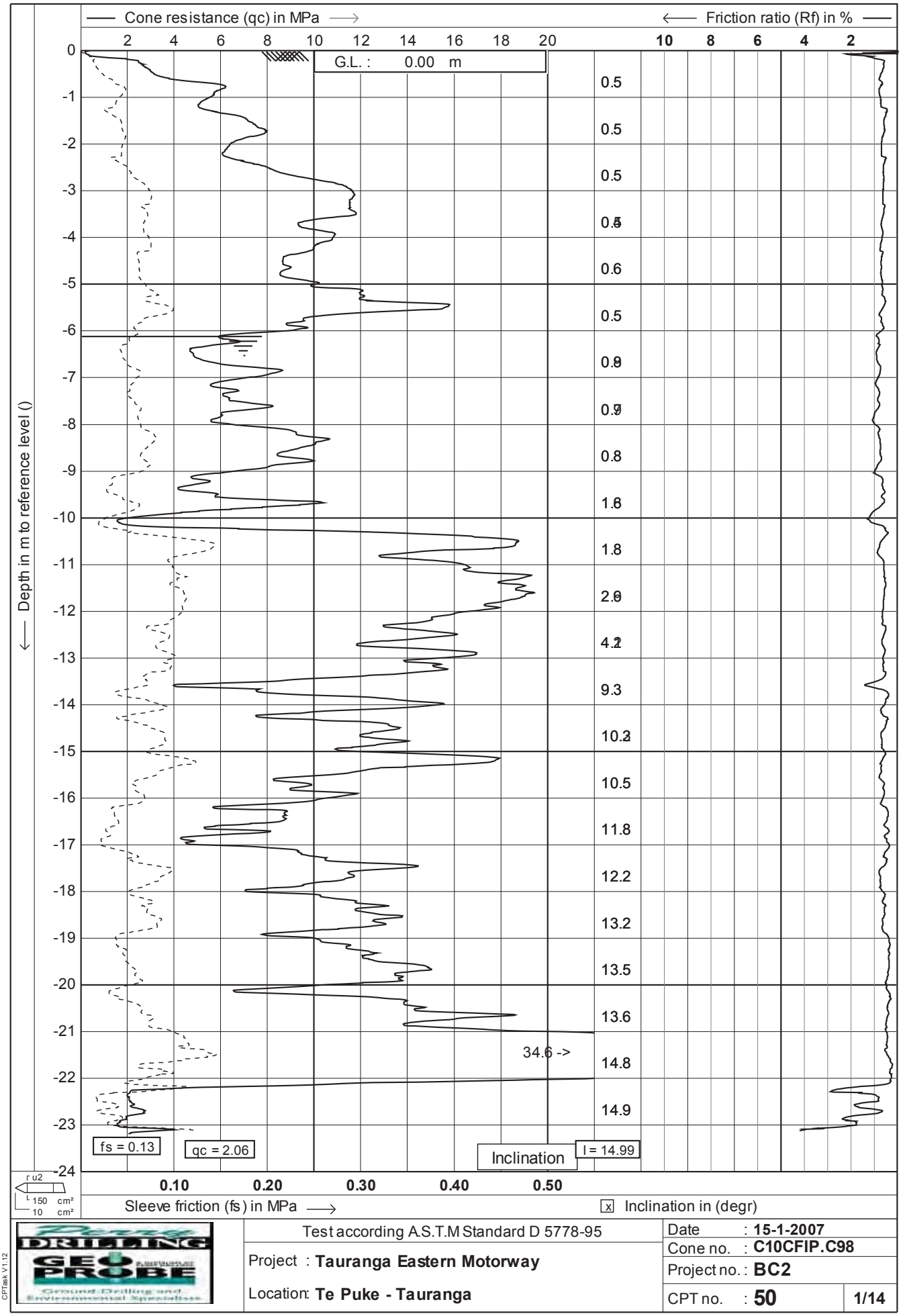
Project no. : **BC16**

CPT no. : **49** **2/14**



DRILLING GEOPROBE	Test according A.S.T.M Standard D 5778-95	Date : **13-12-2006**
	Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**
	Location: **Bell Road - Papamoa**	Project no. : **BC16**
	Position: **0, 0**	CPT no. : **49** 13/14

NZGD ID: 92229



Test according A.S.T.M Standard D 5778-95

Project : **Tauranga Eastern Motorway**

Location: **Te Puke - Tauranga**

Date : **15-1-2007**

Cone no. : **C10CFIP.C98**

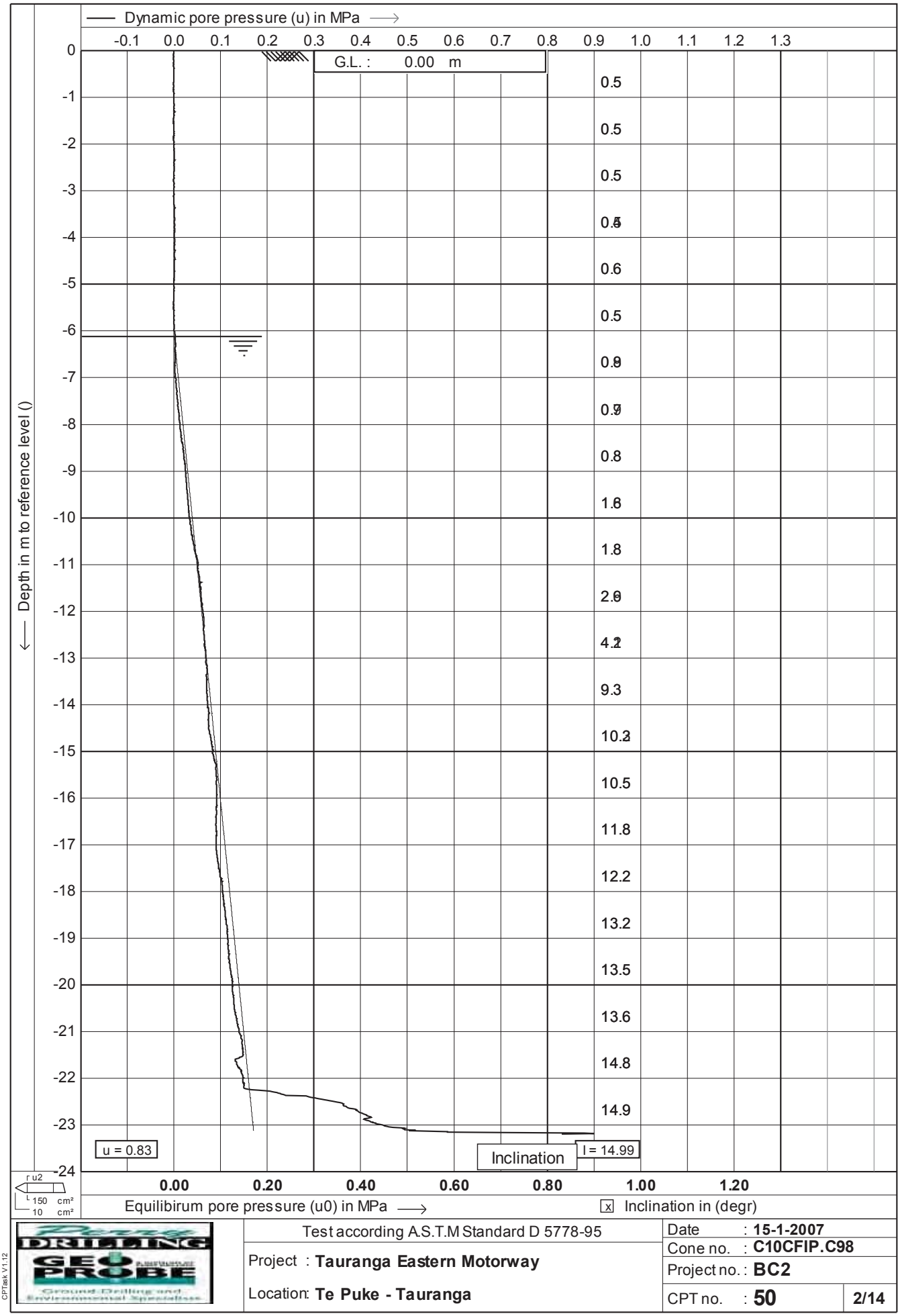
Project no. : **BC2**

CPT no. : **50** 1/14

CPTask V1.12

NZGD ID: 92229

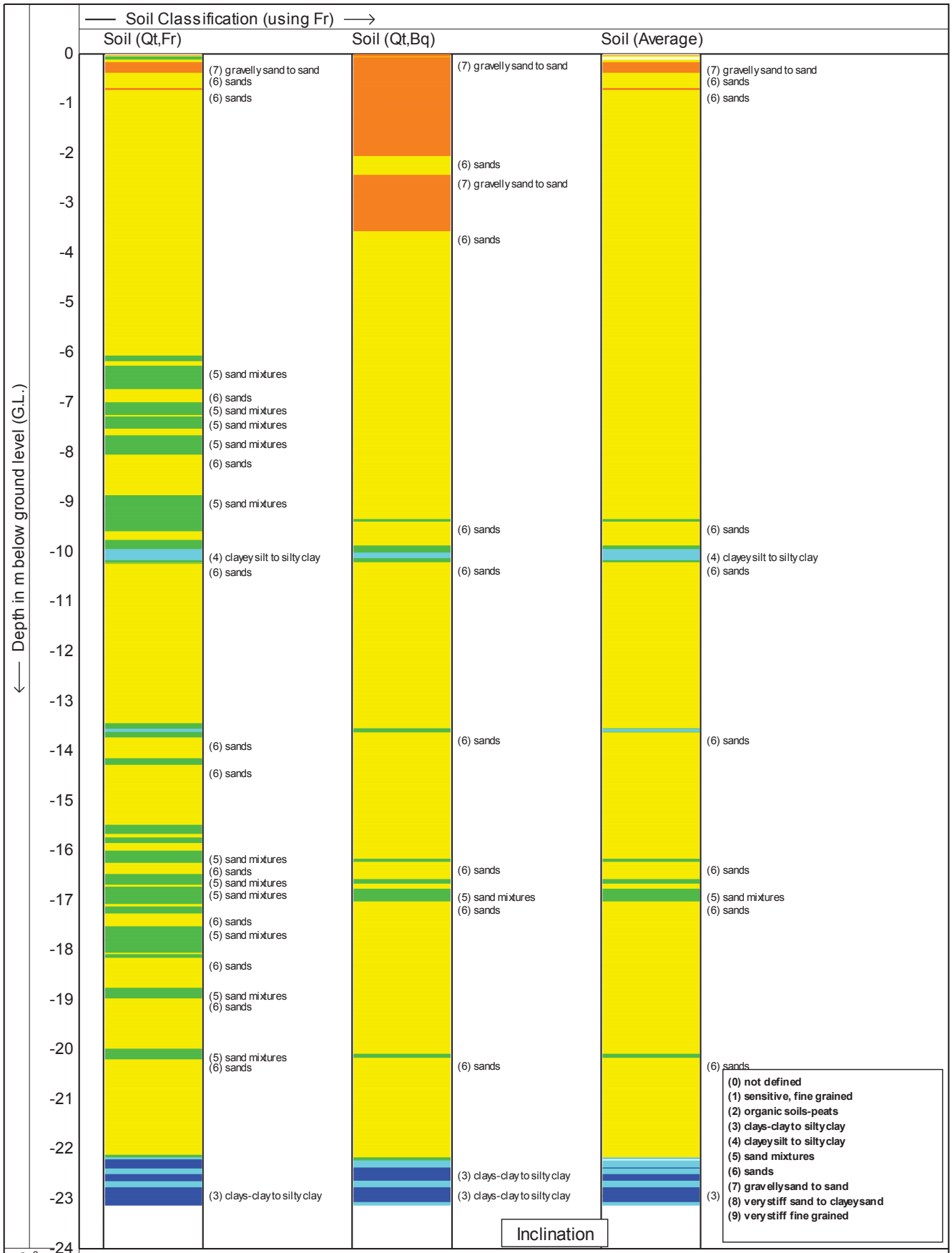
NZGD ID: 92229



DRILLING GEO PROBE Ground Drilling and Environmental Specialists	Test according A.S.T.M Standard D 5778-95	Date : **15-1-2007**
	Project : **Tauranga Eastern Motorway**	Cone no. : **C10CFIP.C98**
	Location: **Te Puke - Tauranga**	Project no. : **BC2**
		CPT no. : **50** 2/14

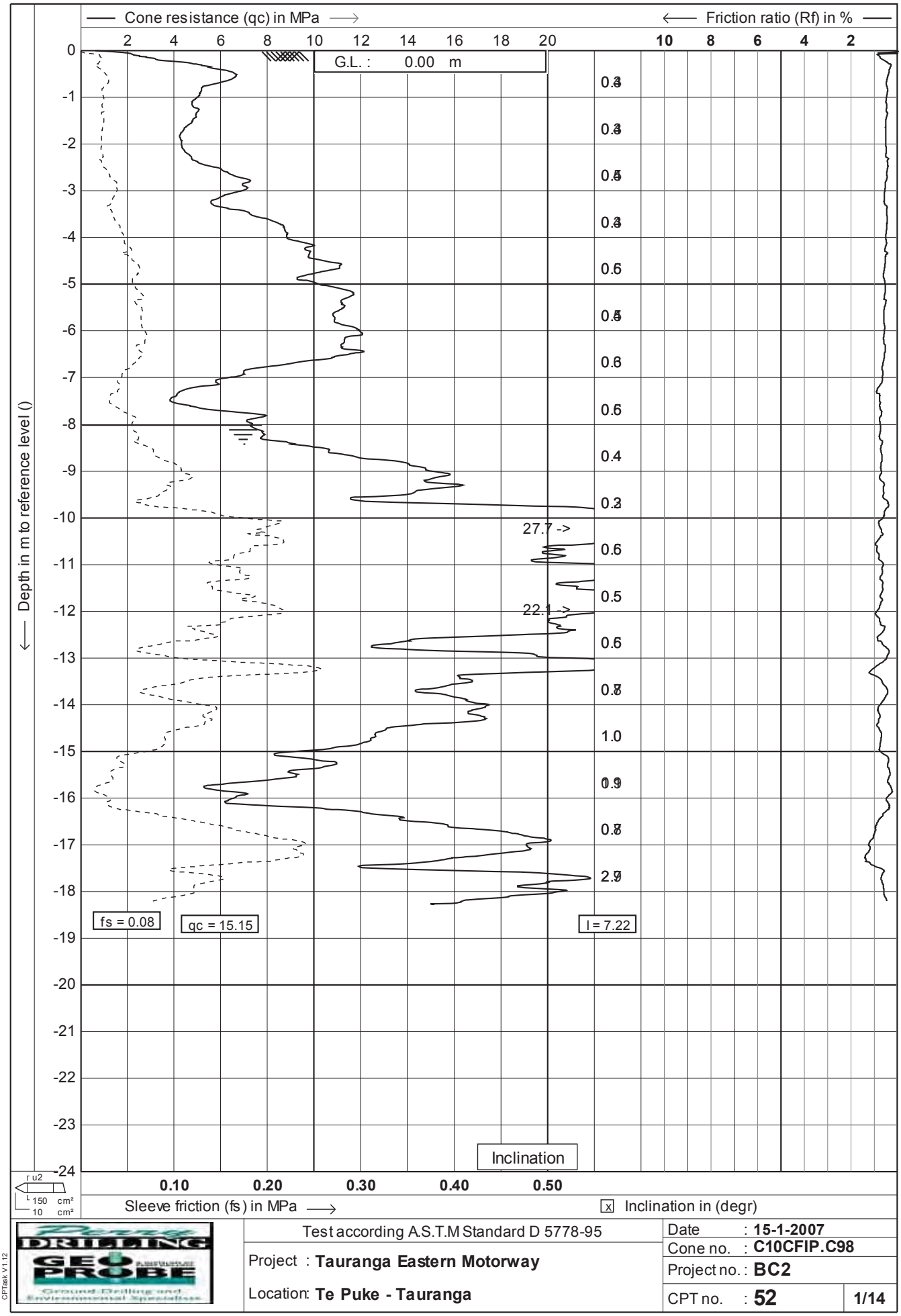
CPTask V1.12

NZGD ID: 92229



	Test according A.S.T.M Standard D 5778-95	Date : **15-1-2007**
	Project : **Tauranga Eastern Motorway**	Cone no. : **C10CFIP.C98**
	Location: **Te Puke - Tauranga**	Project no. : **BC2**
	Position: **0, 0**	CPT no. : **50** 13/14

NZGD ID: 92230



Test according A.S.T.M Standard D 5778-95

Project : **Tauranga Eastern Motorway**

Location: **Te Puke - Tauranga**

Date : **15-1-2007**

Cone no. : **C10CFIP.C98**

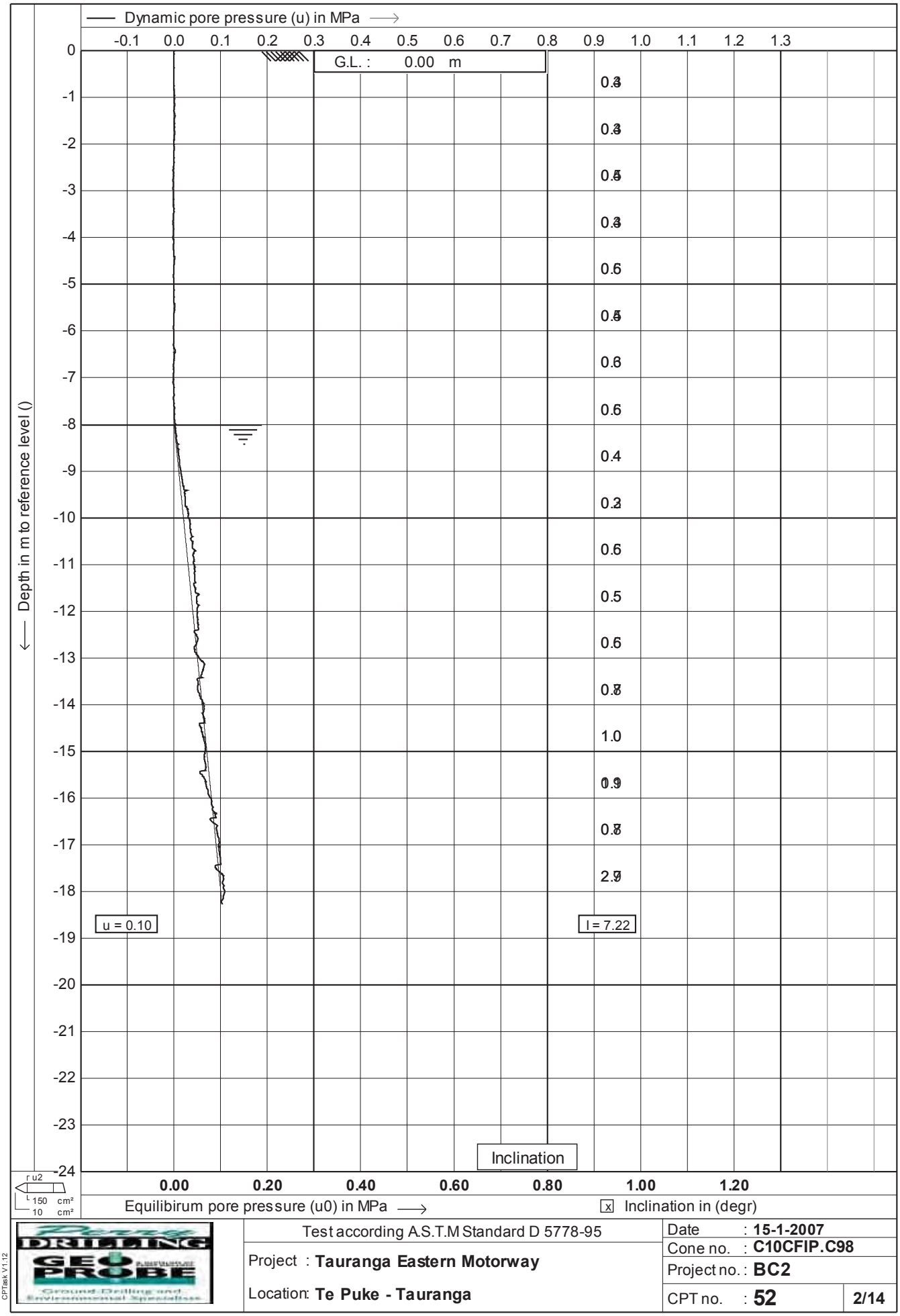
Project no. : **BC2**

CPT no. : **52** 1/14

CPTask V1.12

NZGD ID: 92230

NZGD ID: 92230



DRILLING GEOPROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **Tauranga Eastern Motorway**

Location: **Te Puke - Tauranga**

Date : **15-1-2007**

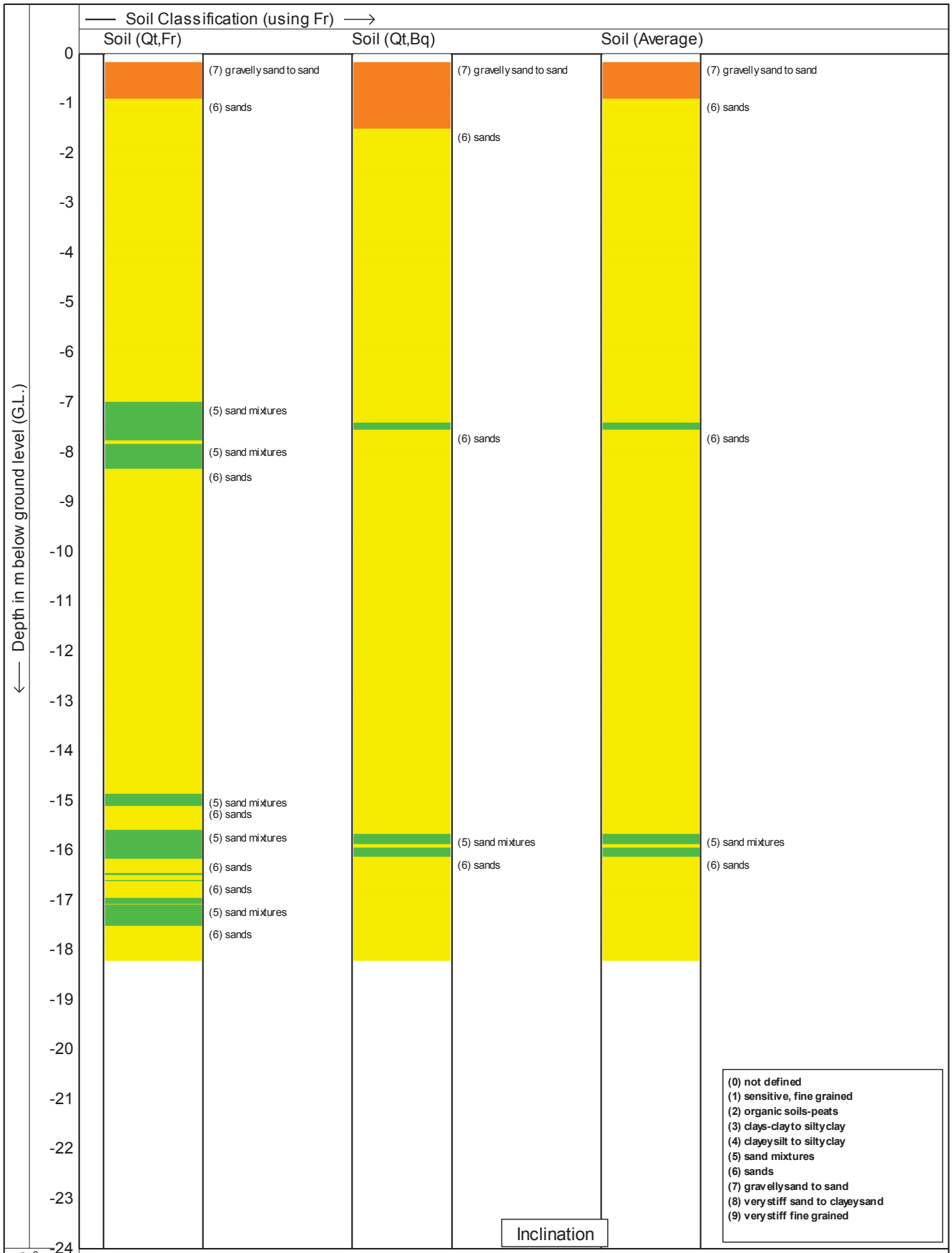
Cone no. : **C10CFIP.C98**

Project no. : **BC2**

CPT no. : **52** **2/14**

NZGD ID: 92230

NZGD ID: 92230



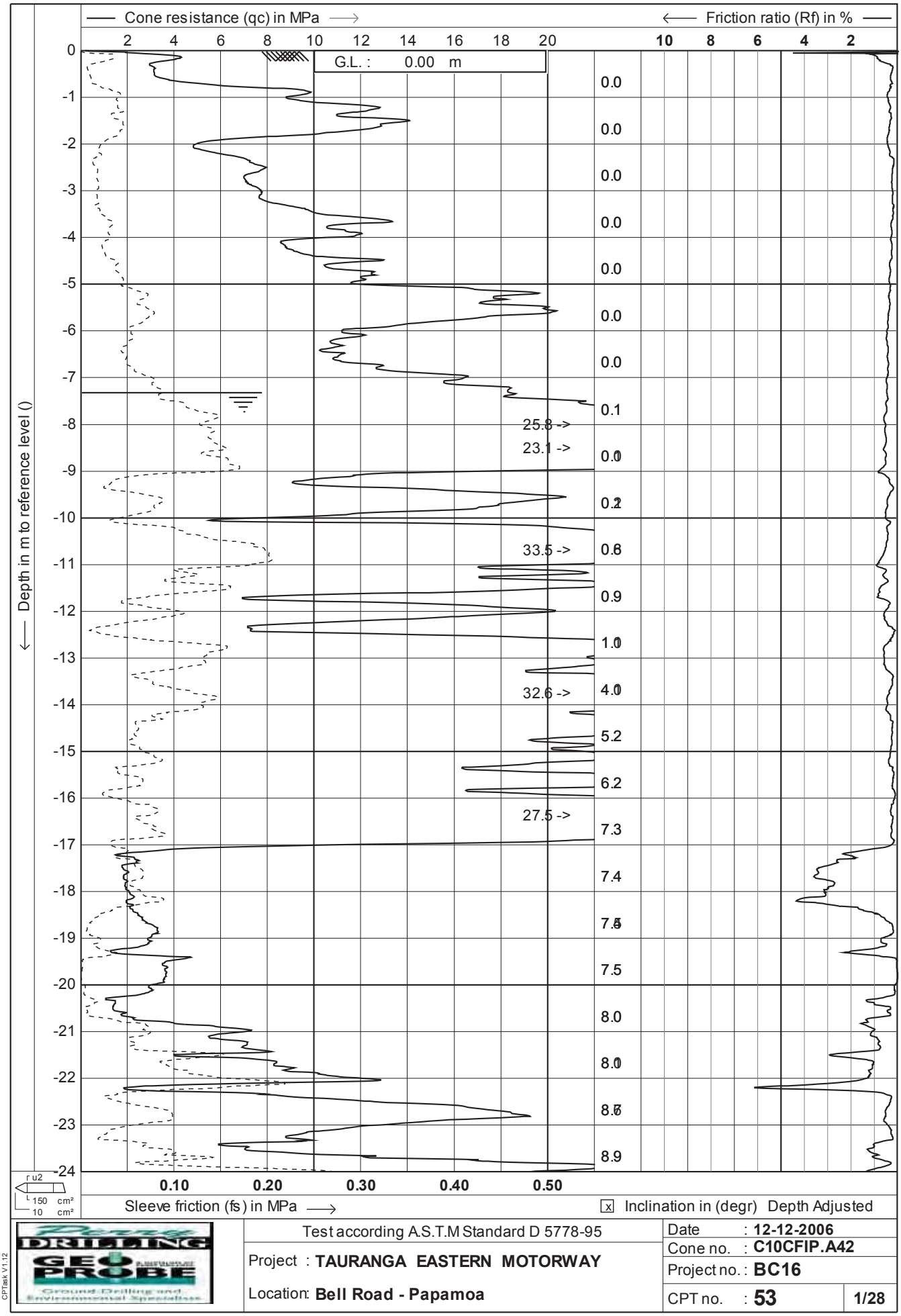
Test according A.S.T.M Standard D 5778-95

Project : **Tauranga Eastern Motorway**
Location: **Te Puke - Tauranga**
Position: **0, 0**

Date : **15-1-2007**
Cone no. : **C10CFIP.C98**
Project no. : **BC2**
CPT no. : **52** **13/14**

NZGD ID: 92230

NZGD ID: 92231



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **12-12-2006**

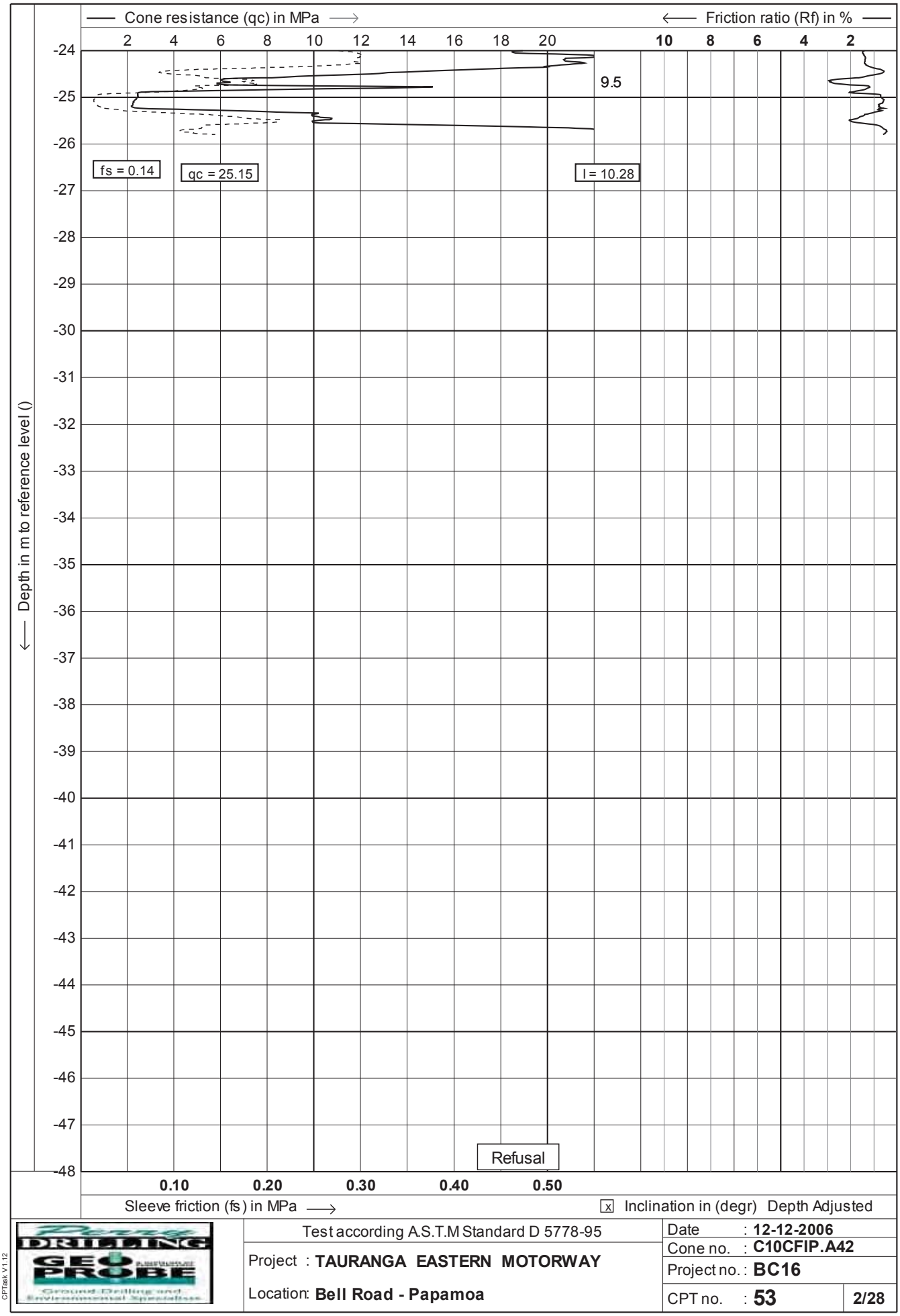
Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **53** 1/28

CPTask V1.12

NZGD ID: 92231



DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

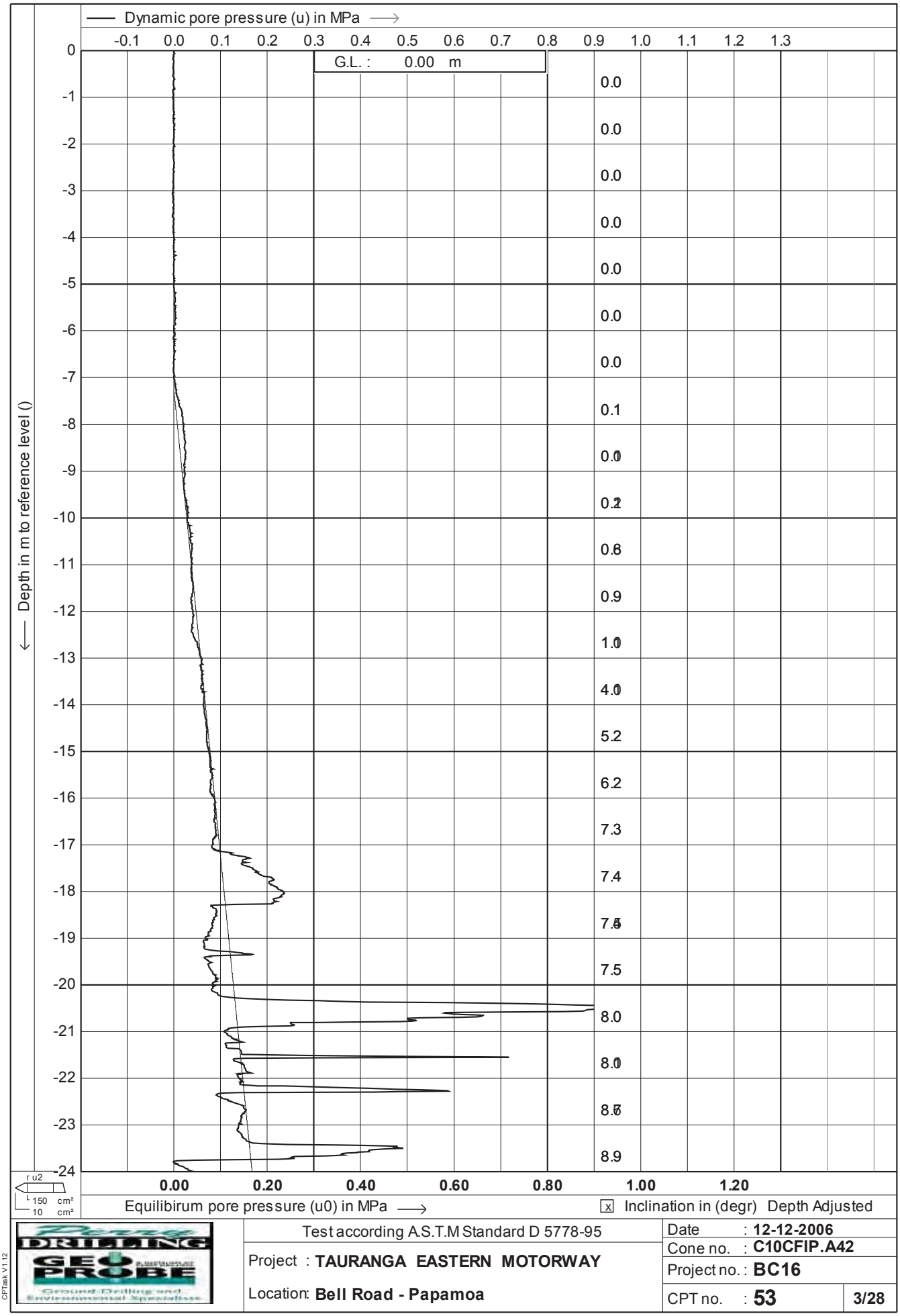
Location: **Bell Road - Papamoa**

Date	: **12-12-2006**
Cone no.	: **C10CFIP.A42**
Project no.	: **BC16**
CPT no.	: **53**

2/28

CPTask V1.12

NZGD ID: 92231



CPTask V1.12

DRILLING GEO PROBE Ground Drilling and Environmental Specialists

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

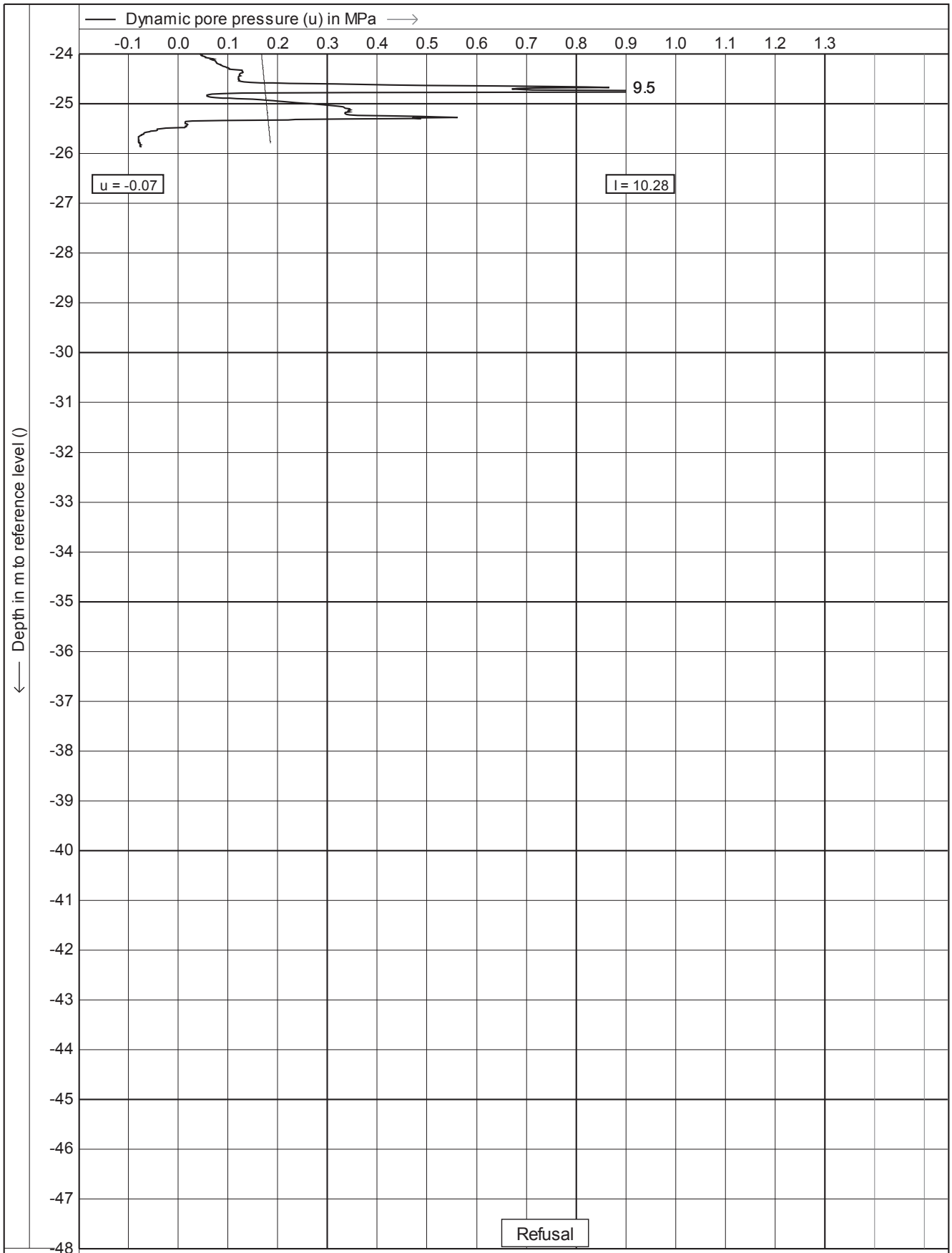
Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **53** 3/28

NZGD ID: 92231



DRILLING GEO PROBE Ground Drilling and Environmental Specialists

CPTask V1.12

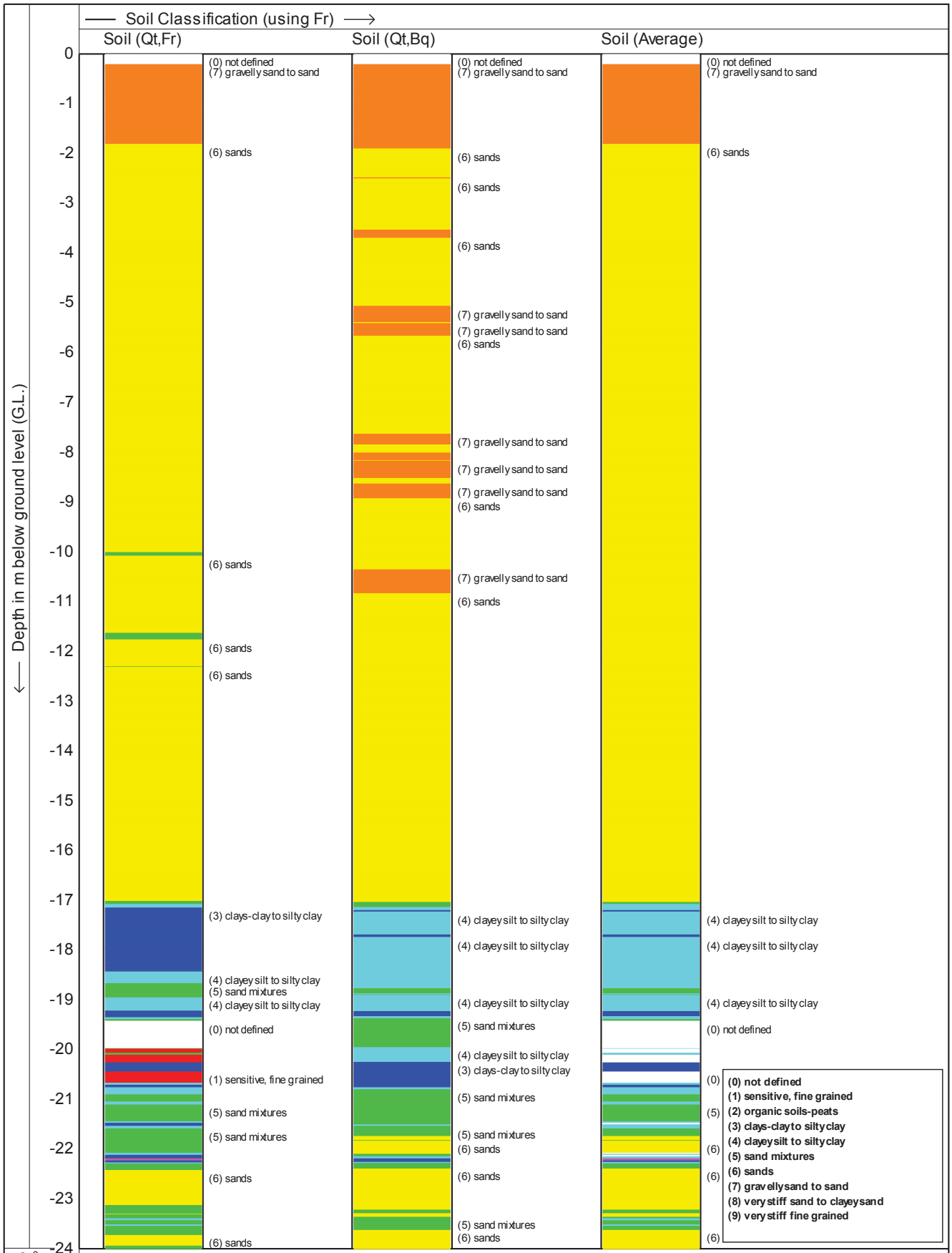
Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date	: **12-12-2006**
Cone no.	: **C10CFIP.A42**
Project no.	: **BC16**
CPT no.	: **53** 4/28

NZGD ID: 92231

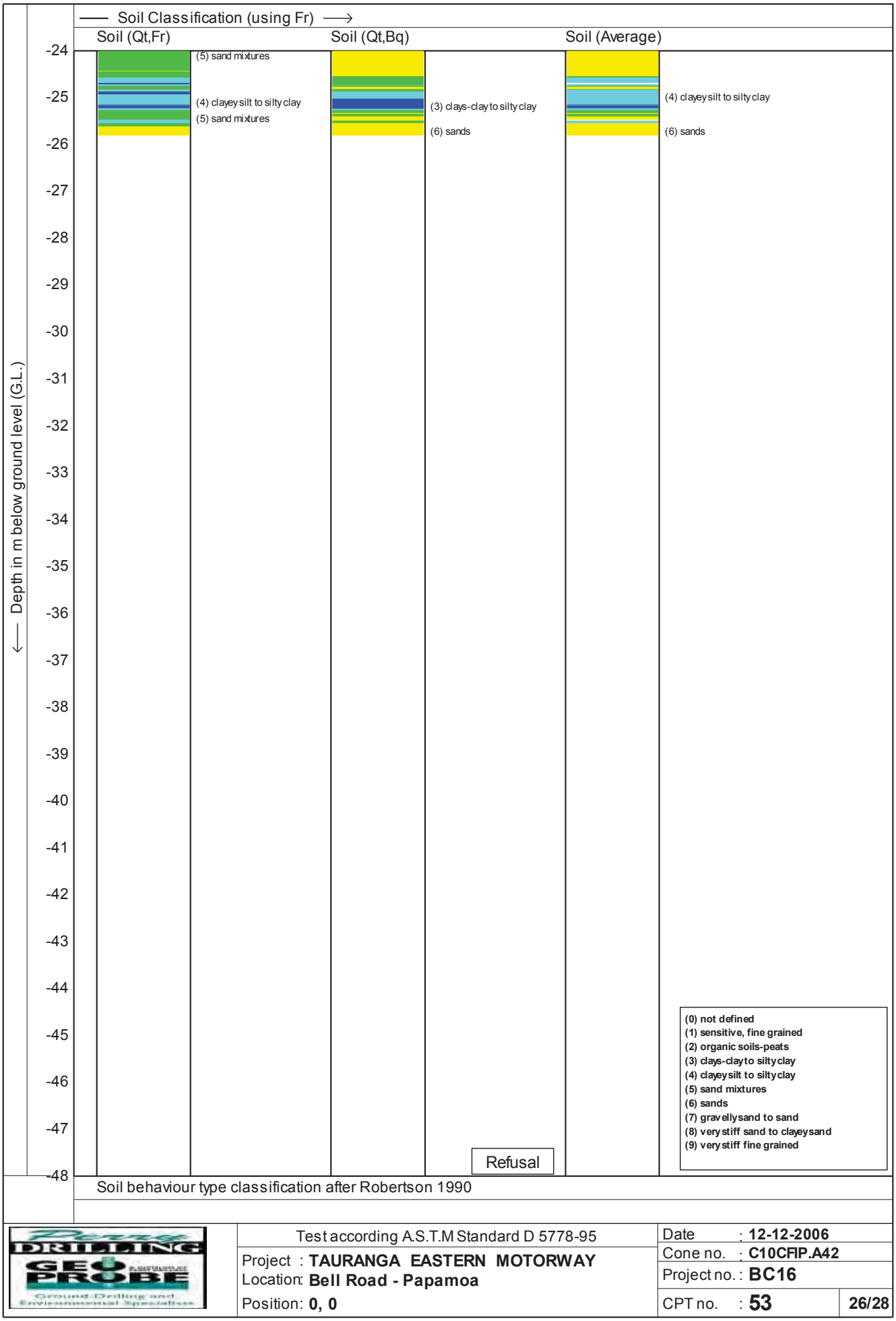


Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **53** **25/28**

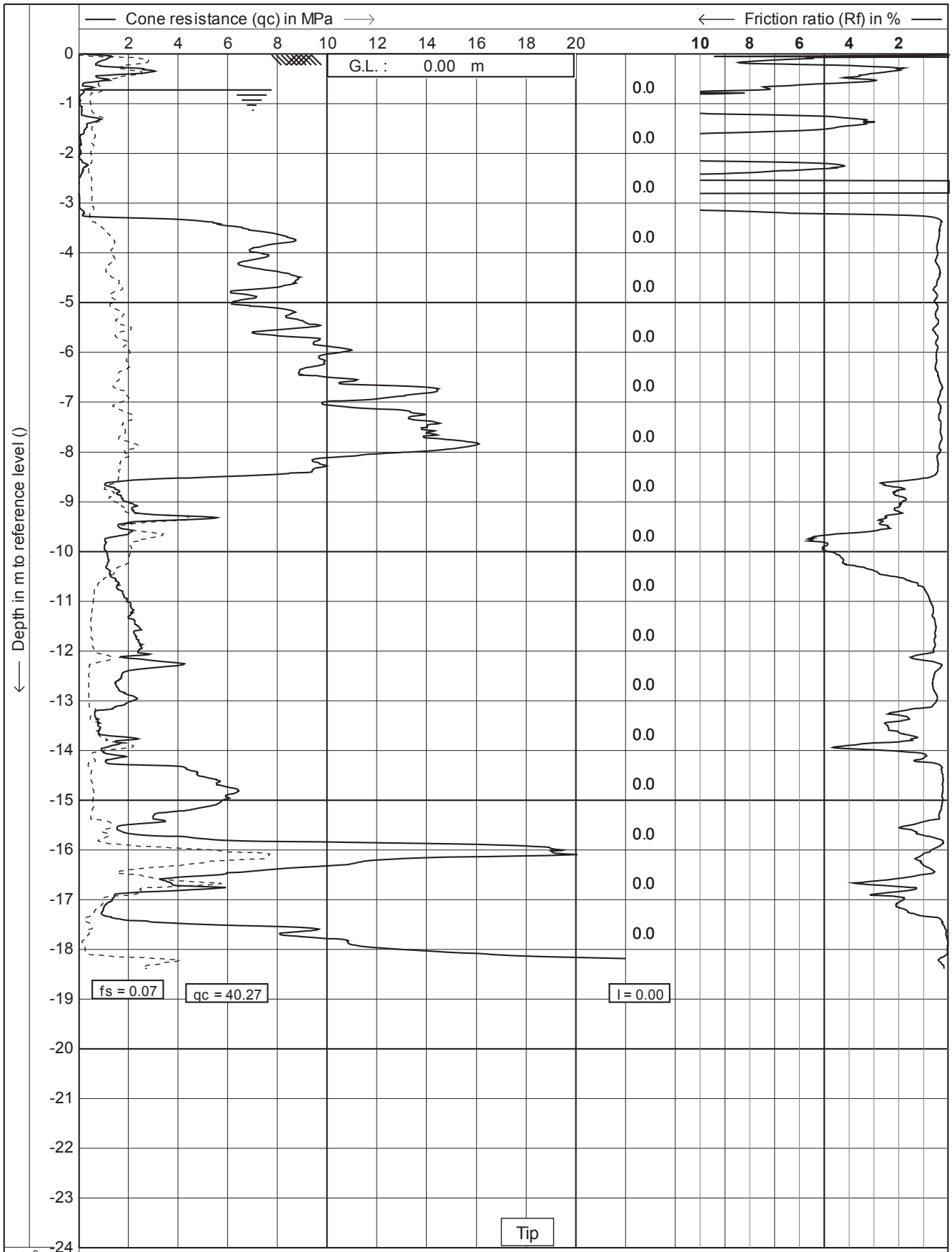
NZGD ID: 92231



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **53** **26/28**



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

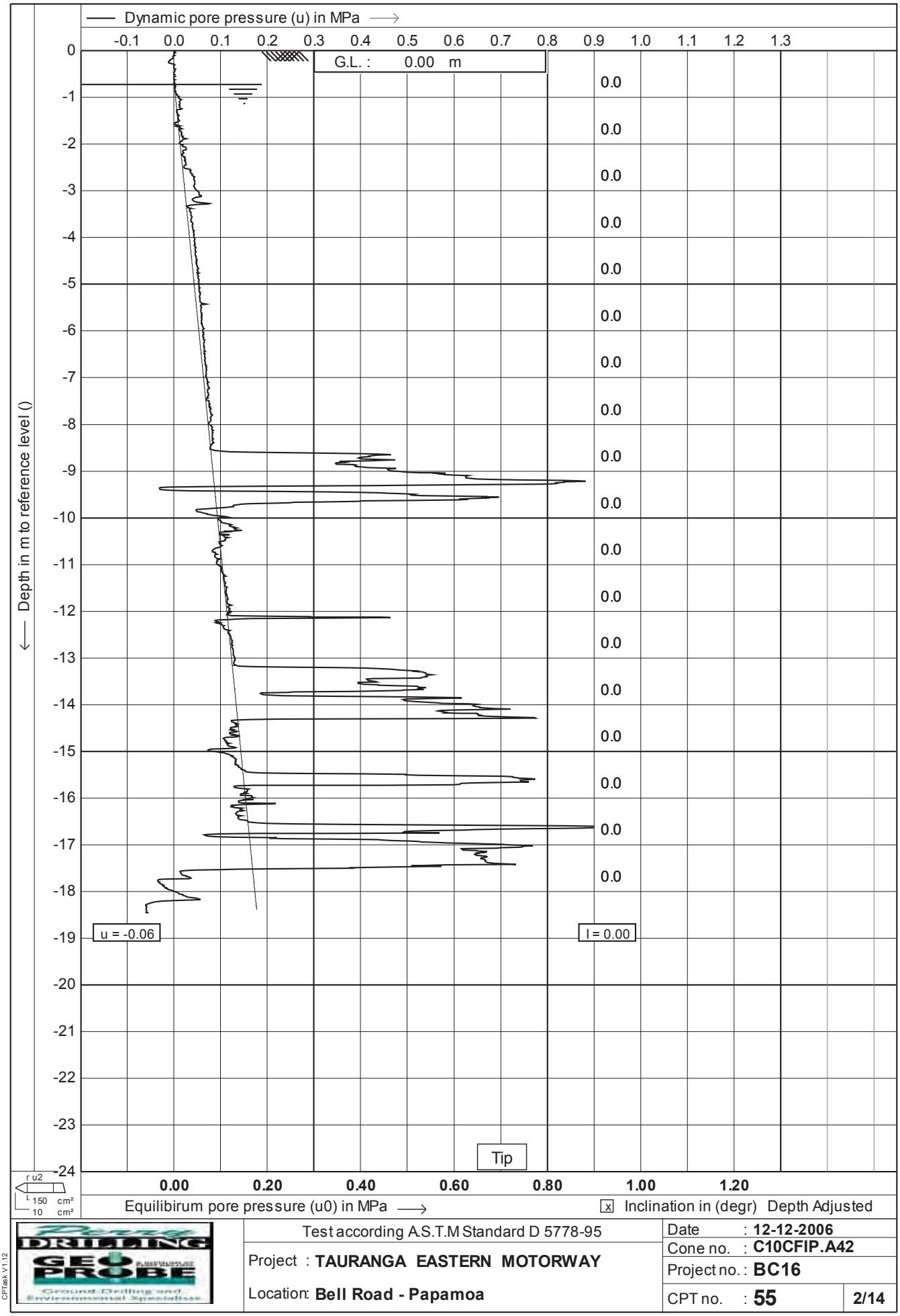
Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **55** 1/14

CPTask V1.12



DRILLING GEOPROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

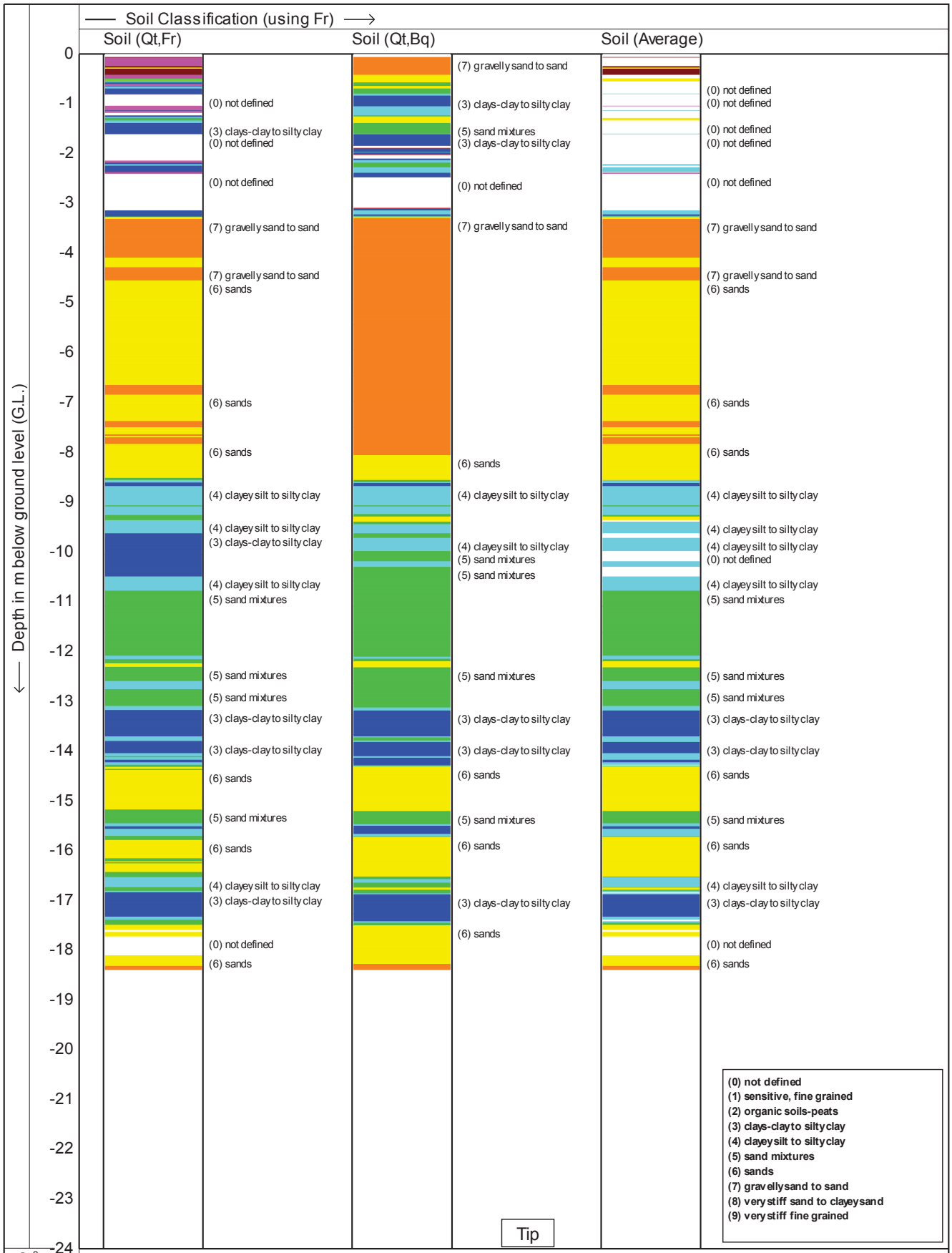
Location: **Bell Road - Papamoa**

Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **55** **2/14**



Soil behaviour type classification after Robertson 1990

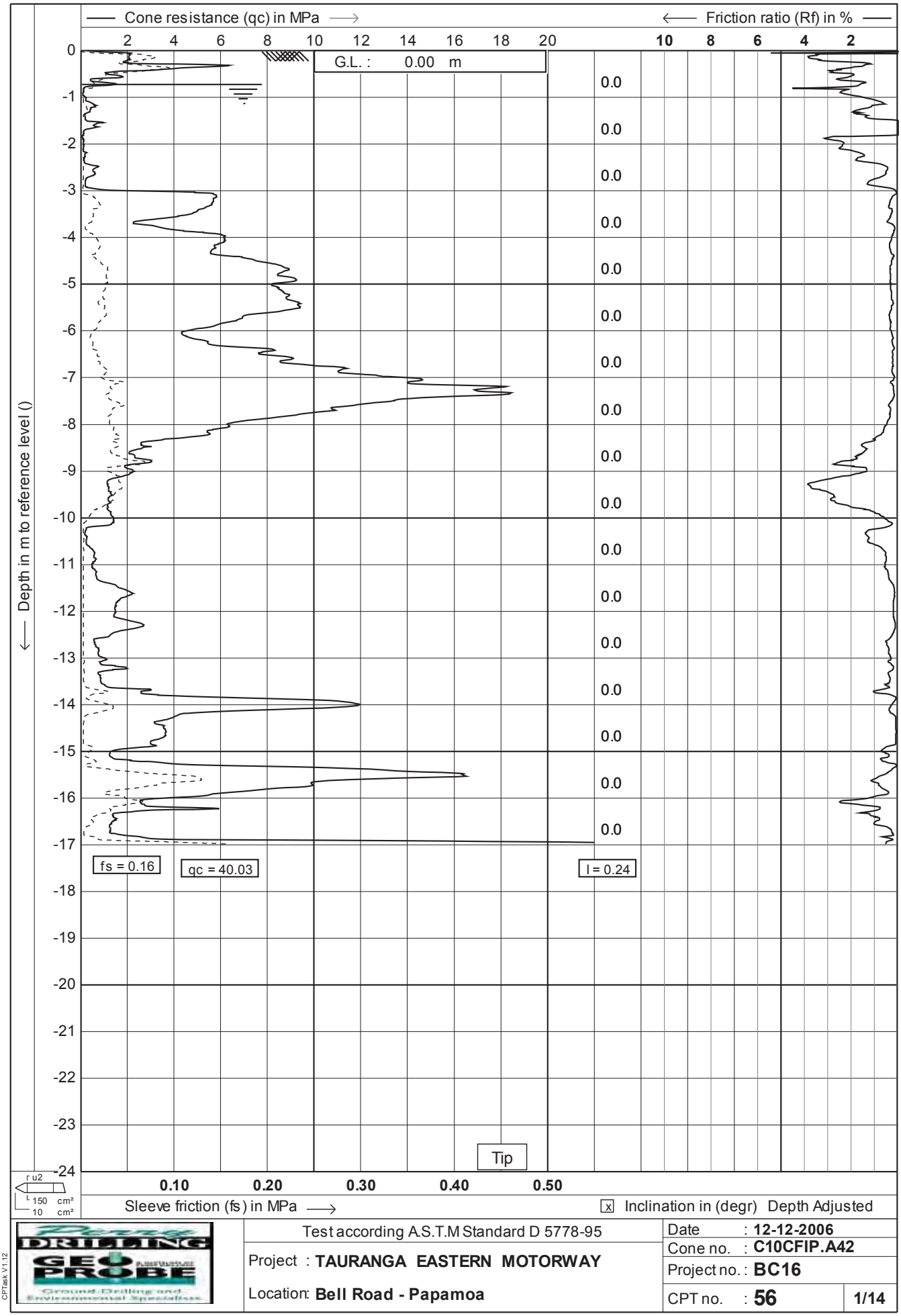
Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **55** **13/14**

NZGD ID: 92233

NZGD ID: 92234



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

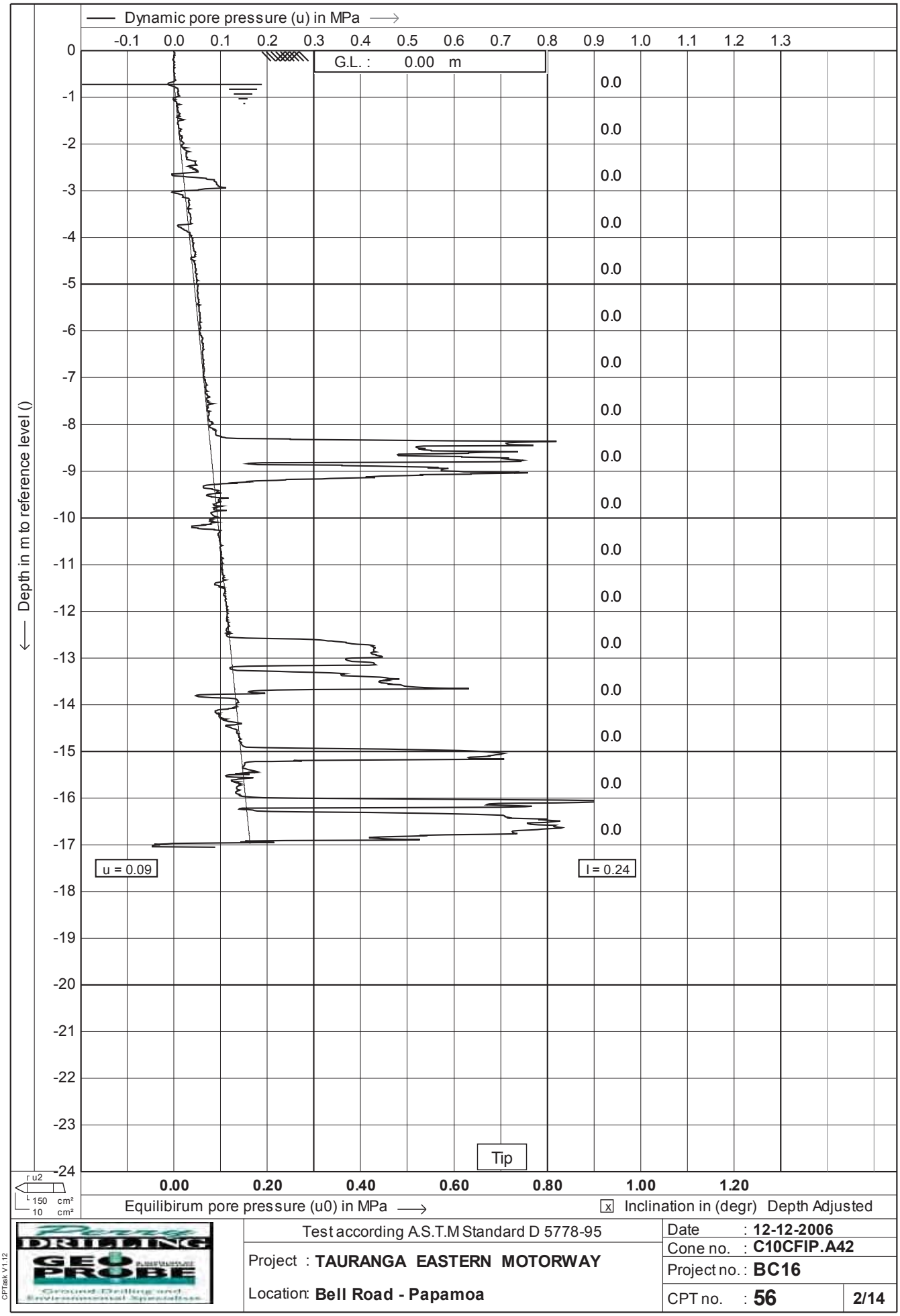
Project no. : **BC16**

CPT no. : **56** 1/14

CPTask V1.12

NZGD ID: 92234

NZGD ID: 92234



DRILLING GEOPROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date	: **12-12-2006**
Cone no.	: **C10CFIP.A42**
Project no.	: **BC16**
CPT no.	: **56**

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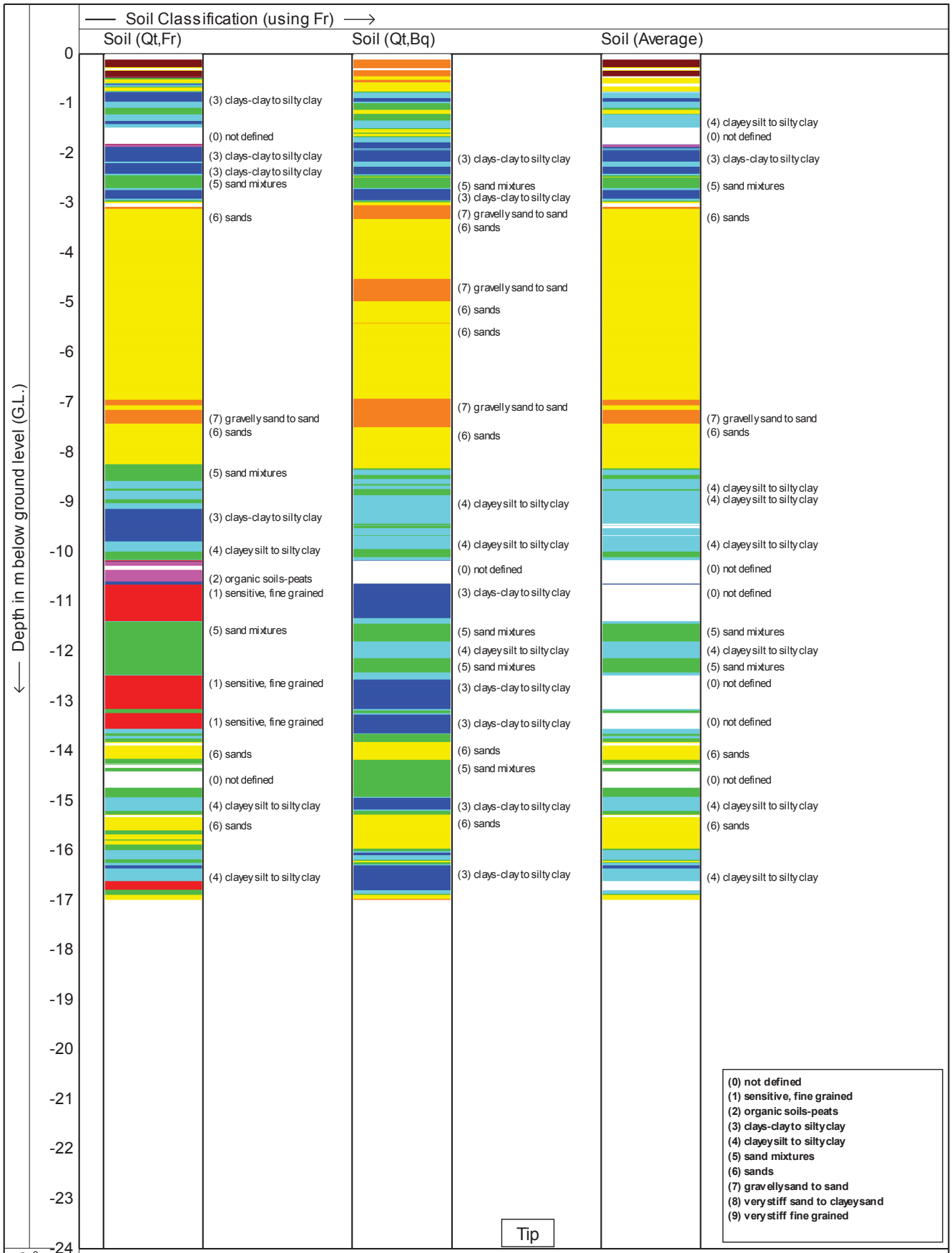


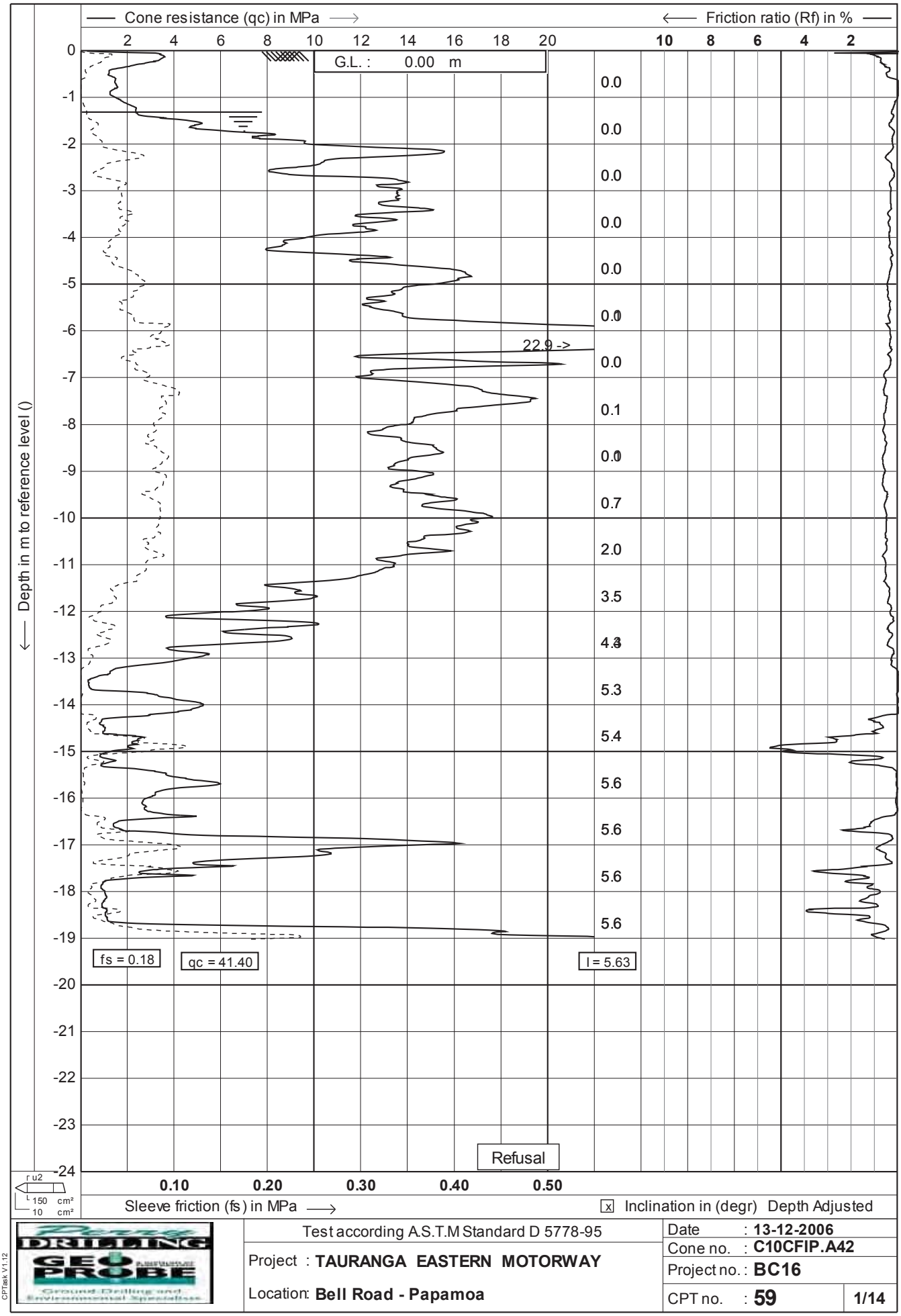
DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **56** **13/14**

NZGD ID: 92237



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **13-12-2006**

Cone no. : **C10CFIP.A42**

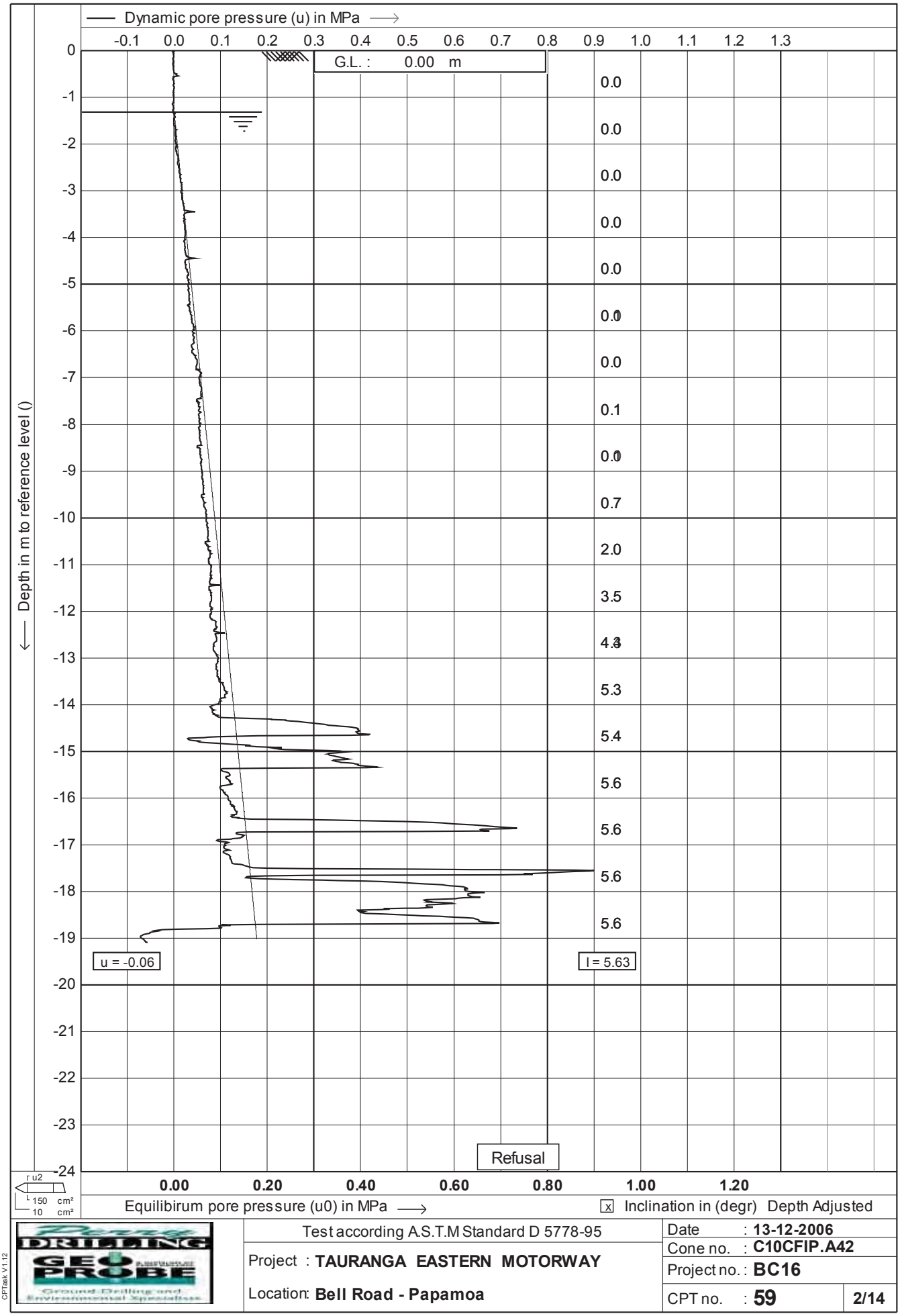
Project no. : **BC16**

CPT no. : **59** **1/14**

CPTask V1.12

NZGD ID: 92237

NZGD ID: 92237



DRILLING GEOPROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **13-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **59** **2/14**

NZGD ID: 92237

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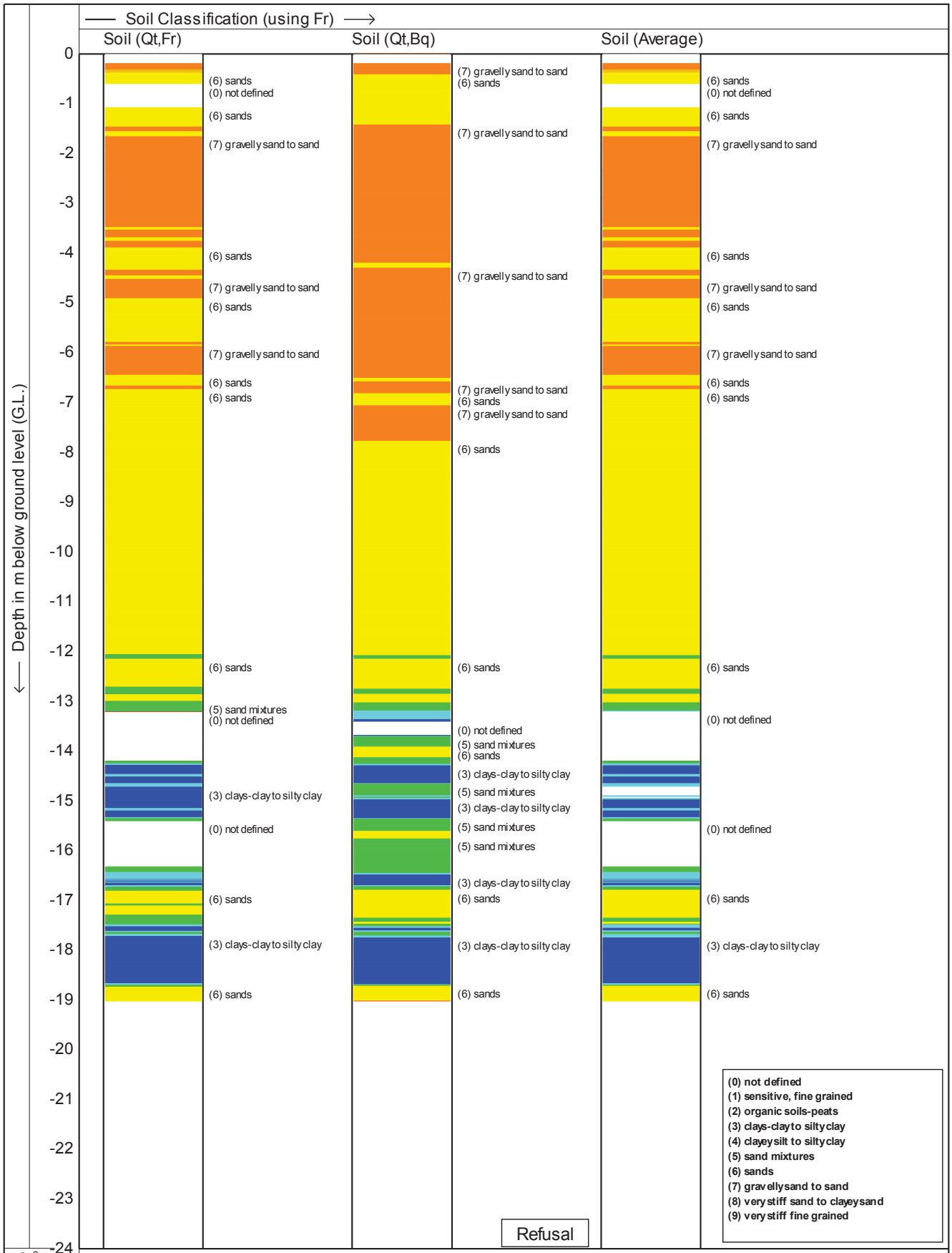
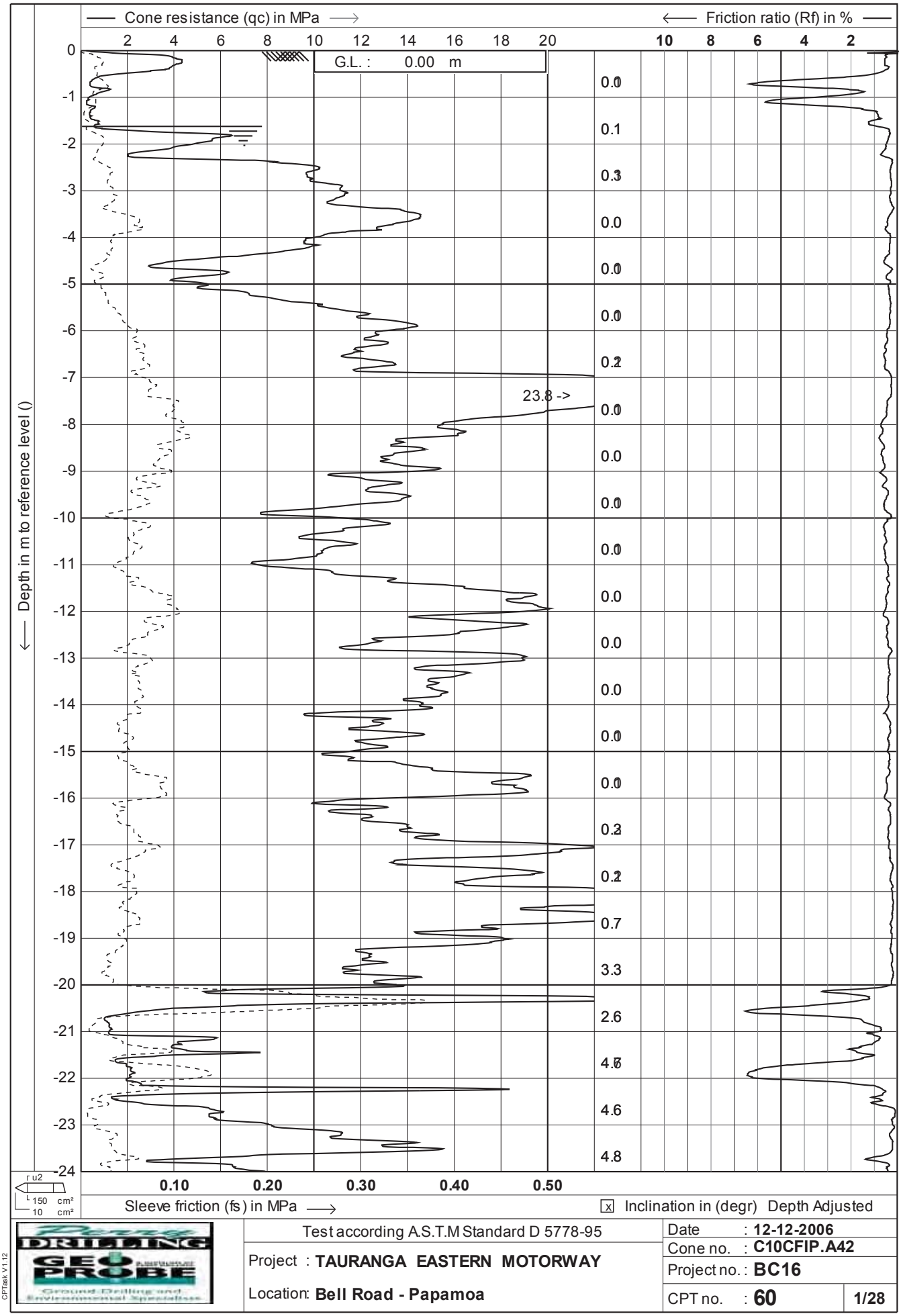


Test according A.S.T.M Standard D 5778-95	Date : **13-12-2006**	
Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**	
Location: **Bell Road - Papamoa**	Project no. : **BC16**	
Position: **0, 0**	CPT no. : **59**	**13/14**

NZGD ID: 92237

NZGD ID: 92238



Test according A.S.T.M Standard D 5778-95

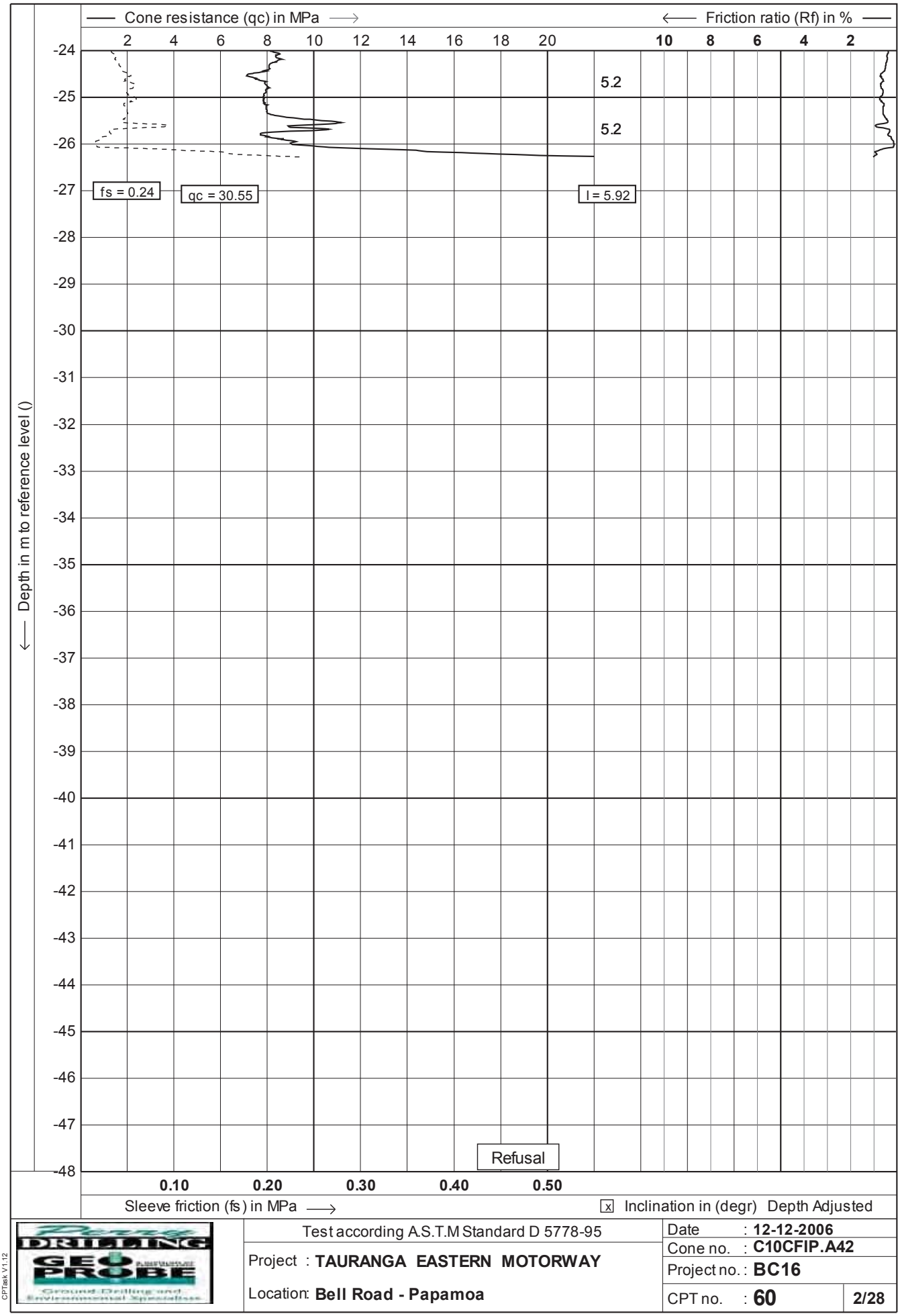
Project	**TAURANGA EASTERN MOTORWAY**
Location	**Bell Road - Papamoa**
Date	**12-12-2006**
Cone no.	**C10CFIP.A42**
Project no.	**BC16**
CPT no.	**60**

1/28

CPTask V1.12

NZGD ID: 92238

NZGD ID: 92238



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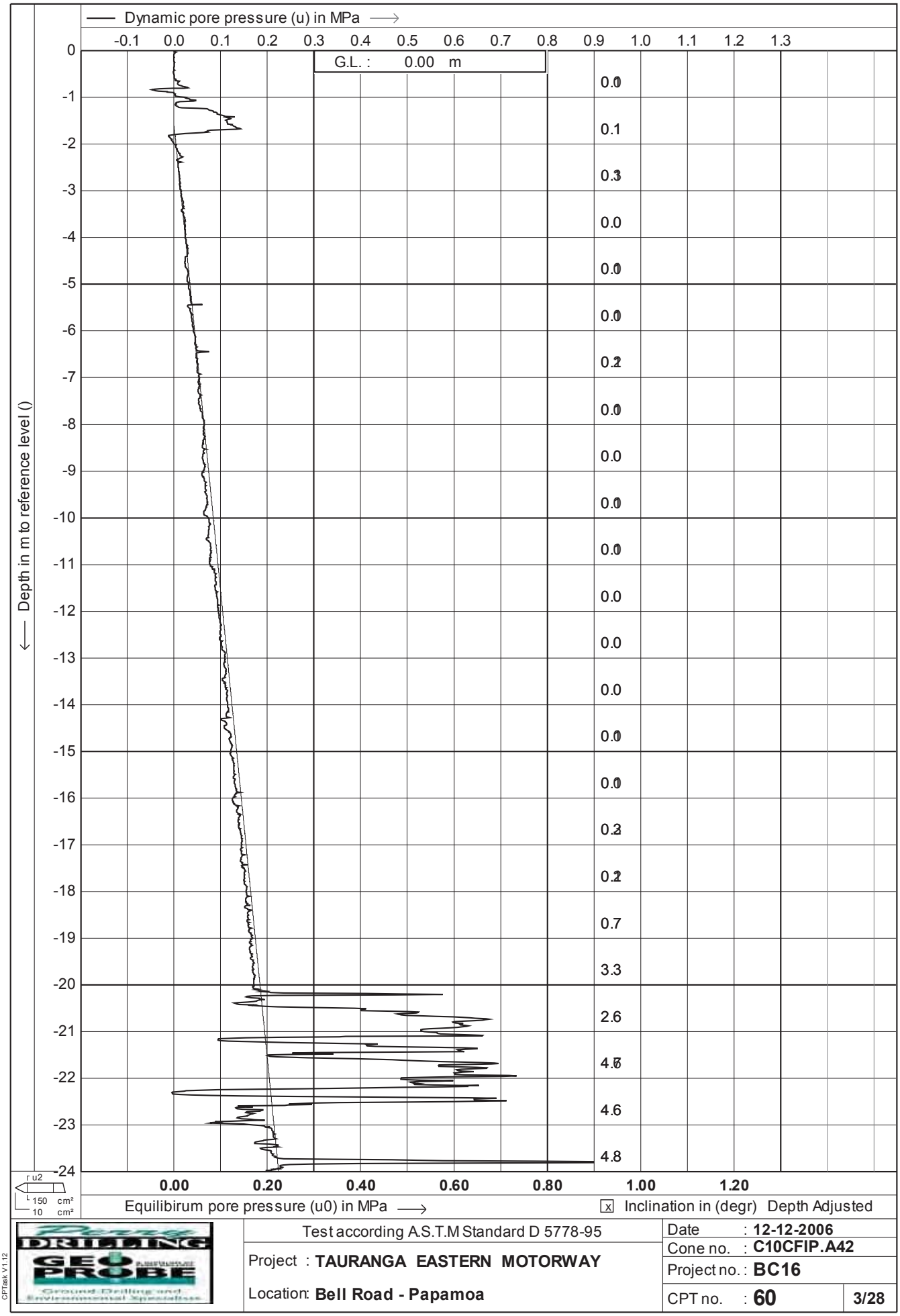


DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

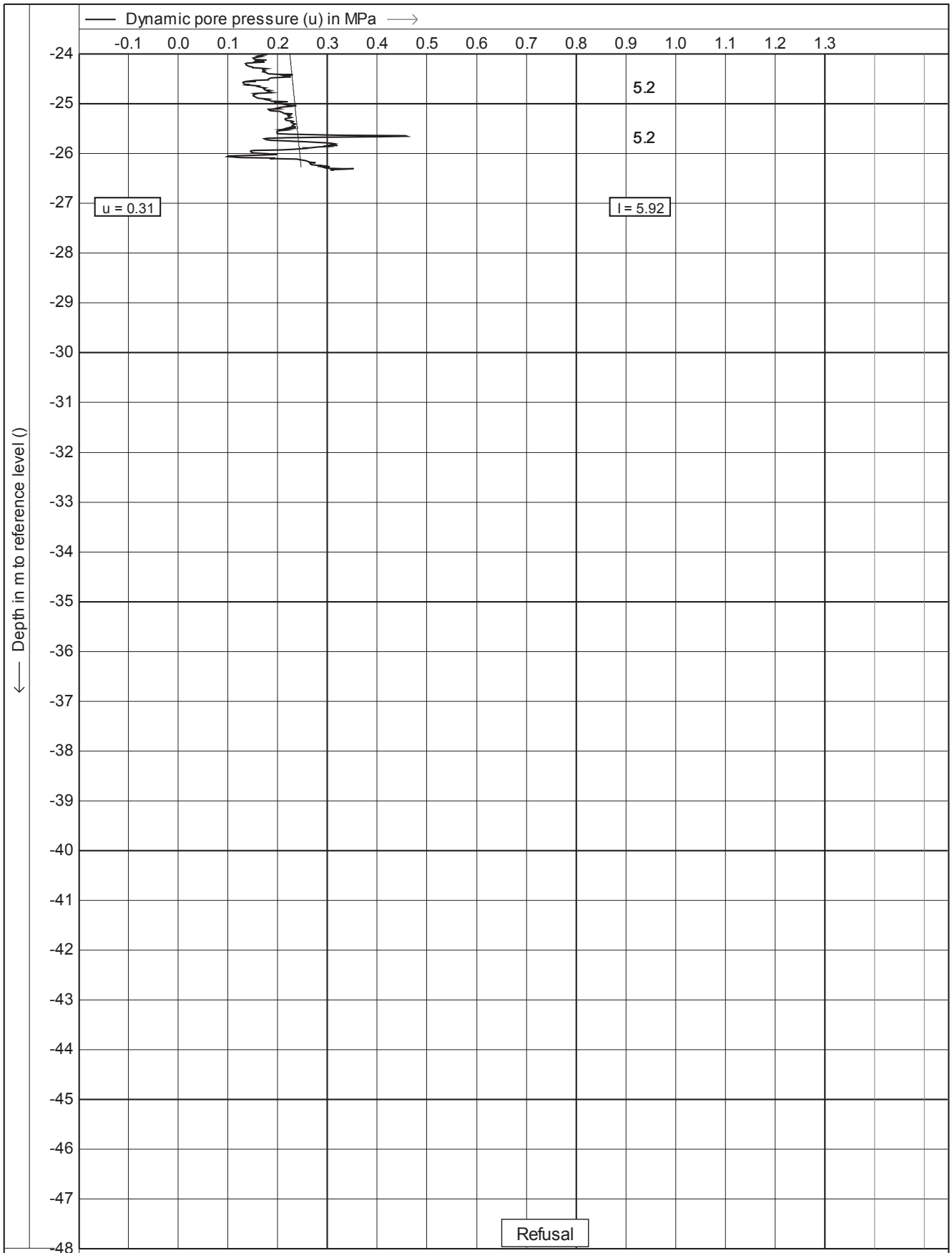
Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **60** **3/28**

NZGD ID: 92238



DRILLING GEO PROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

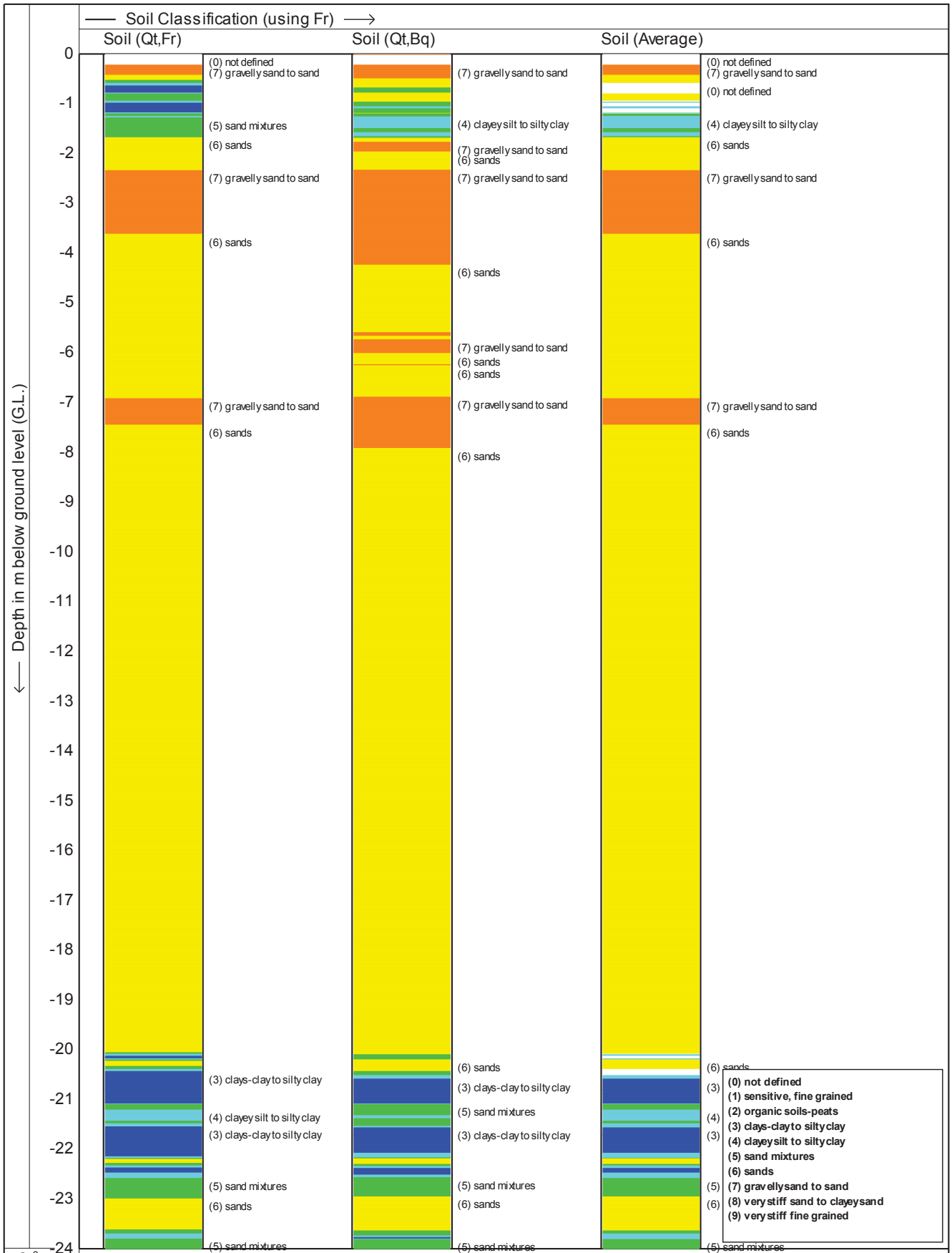
Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

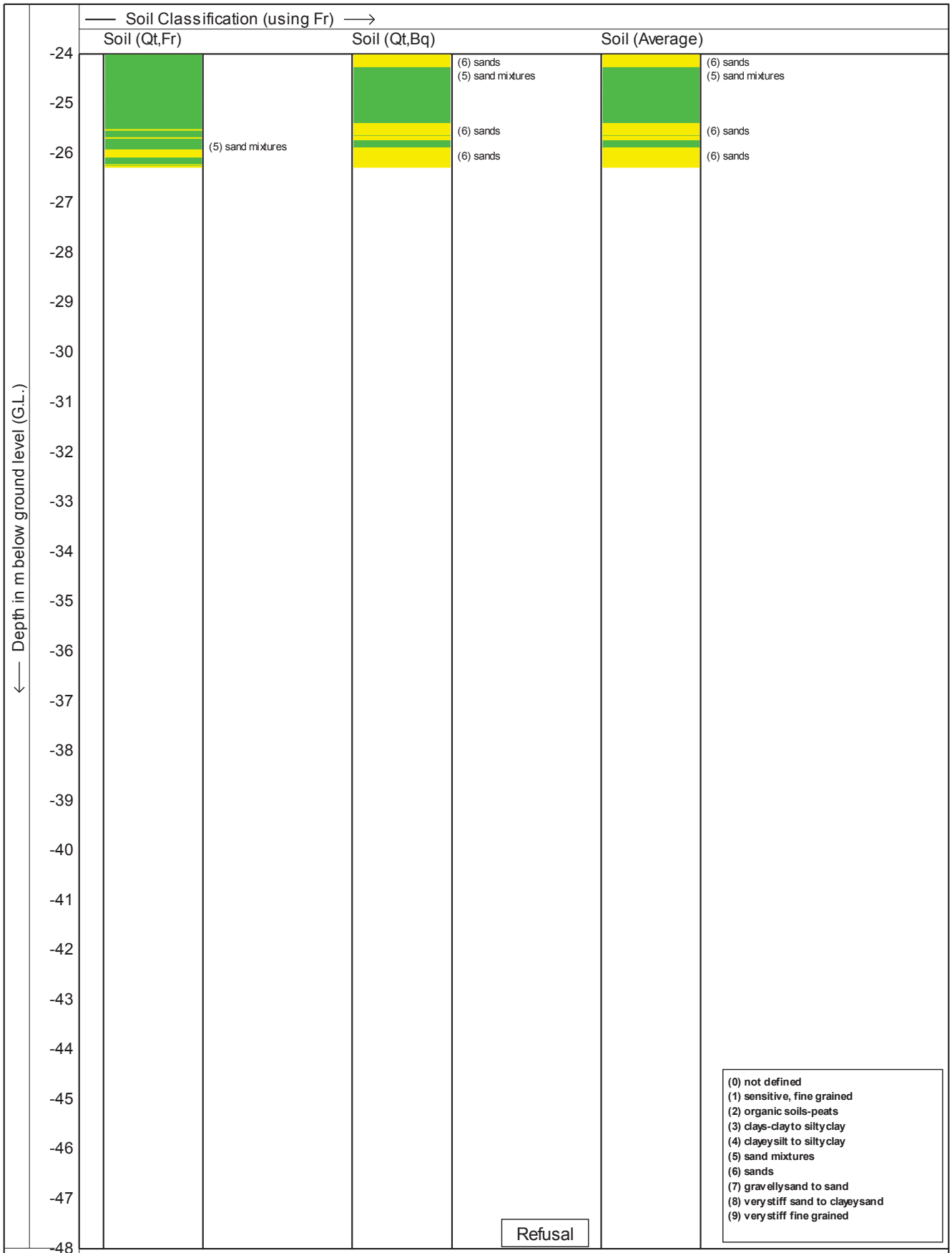
CPT no. : **60** **4/28**

NZGD ID: 92238



DRILLING GEO PROBE	Test according A.S.T.M Standard D 5778-95	Date : **12-12-2006**	
	Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**	
	Location: **Bell Road - Papamoa**	Project no. : **BC16**	
	Position: **0, 0**	CPT no. : **60**	**25/28**

NZGD ID: 92238

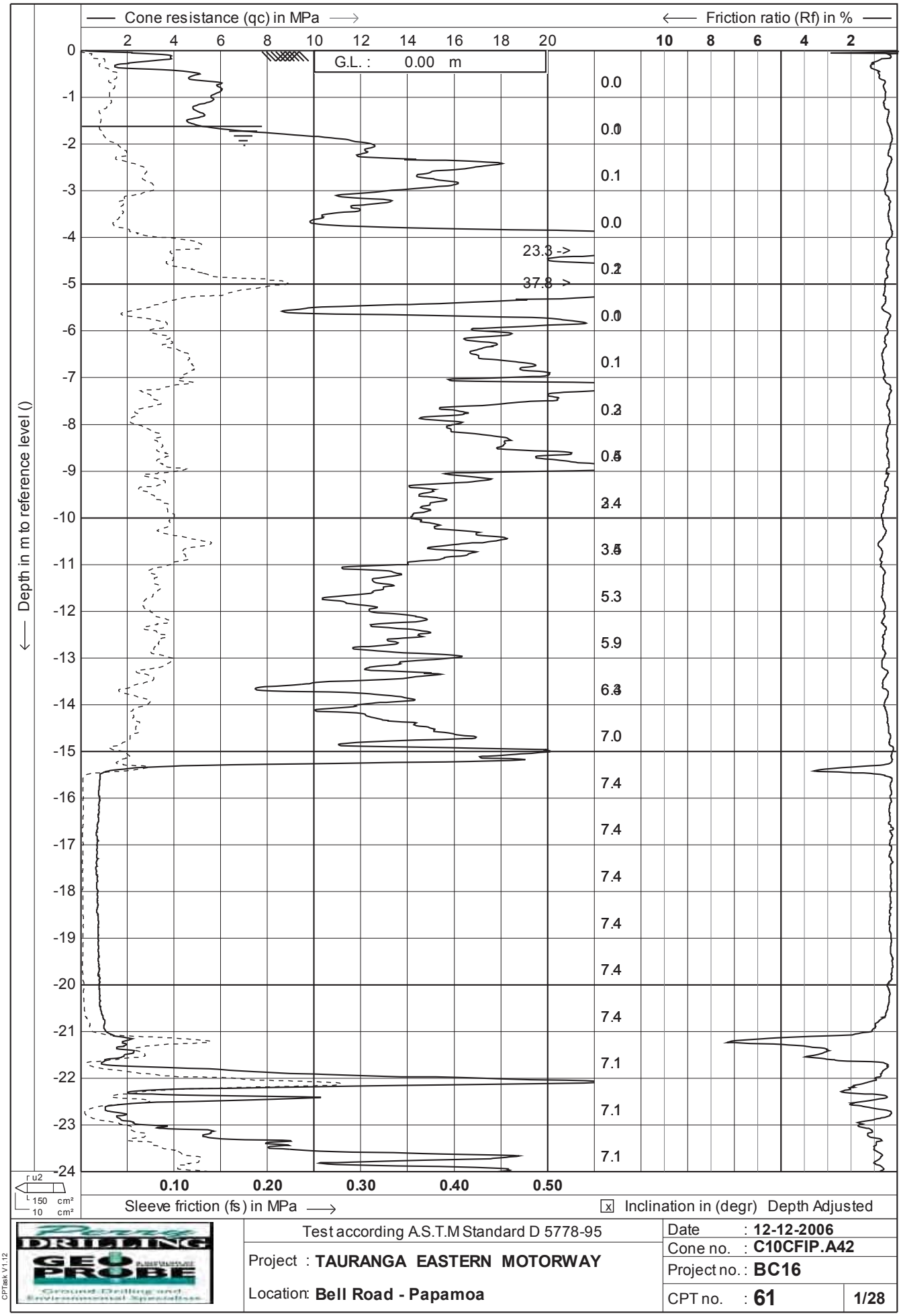


DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **60** **26/28**



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **12-12-2006**

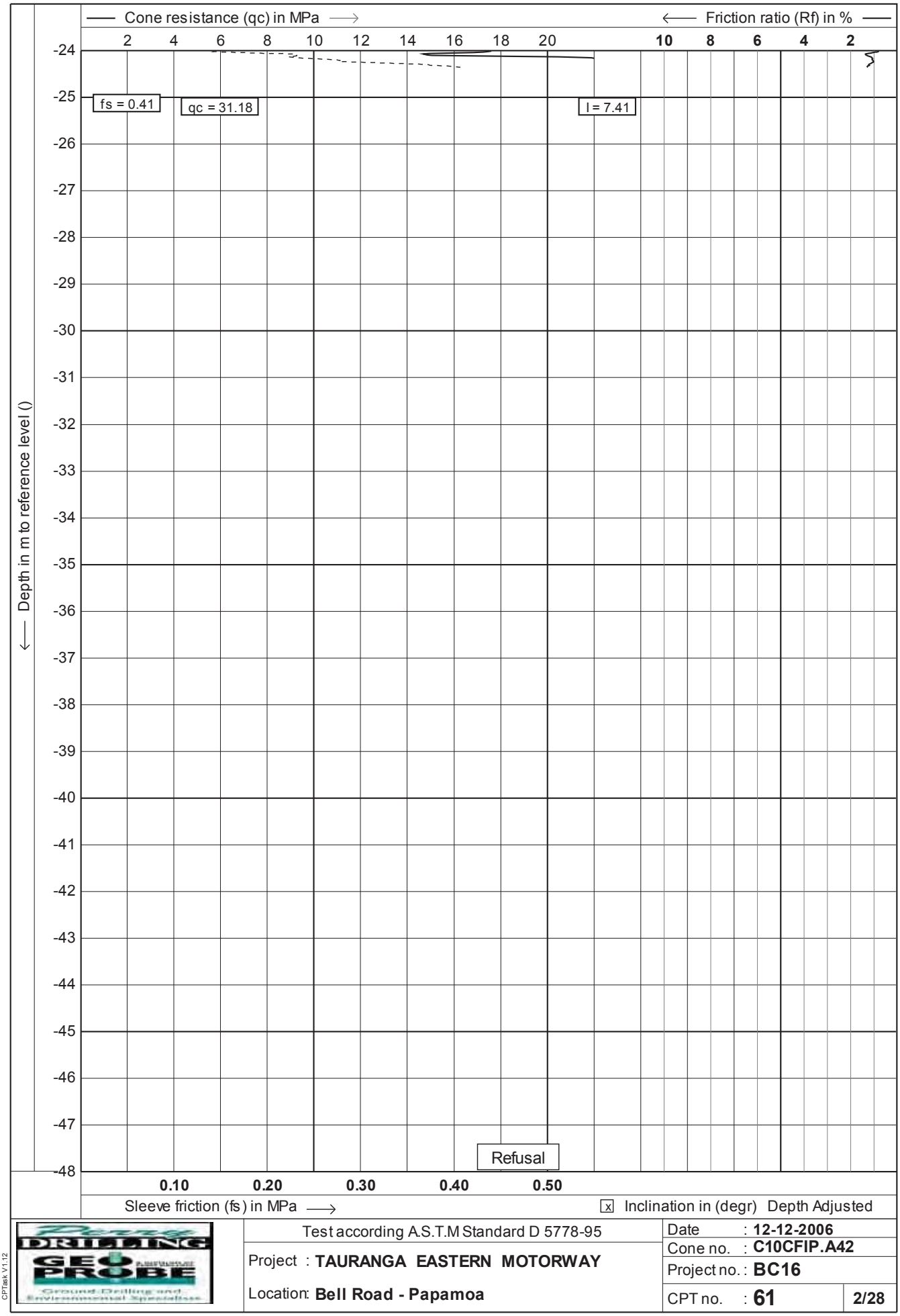
Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **61** 1/28

CPTask V1.12

NZGD ID: 92239



DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

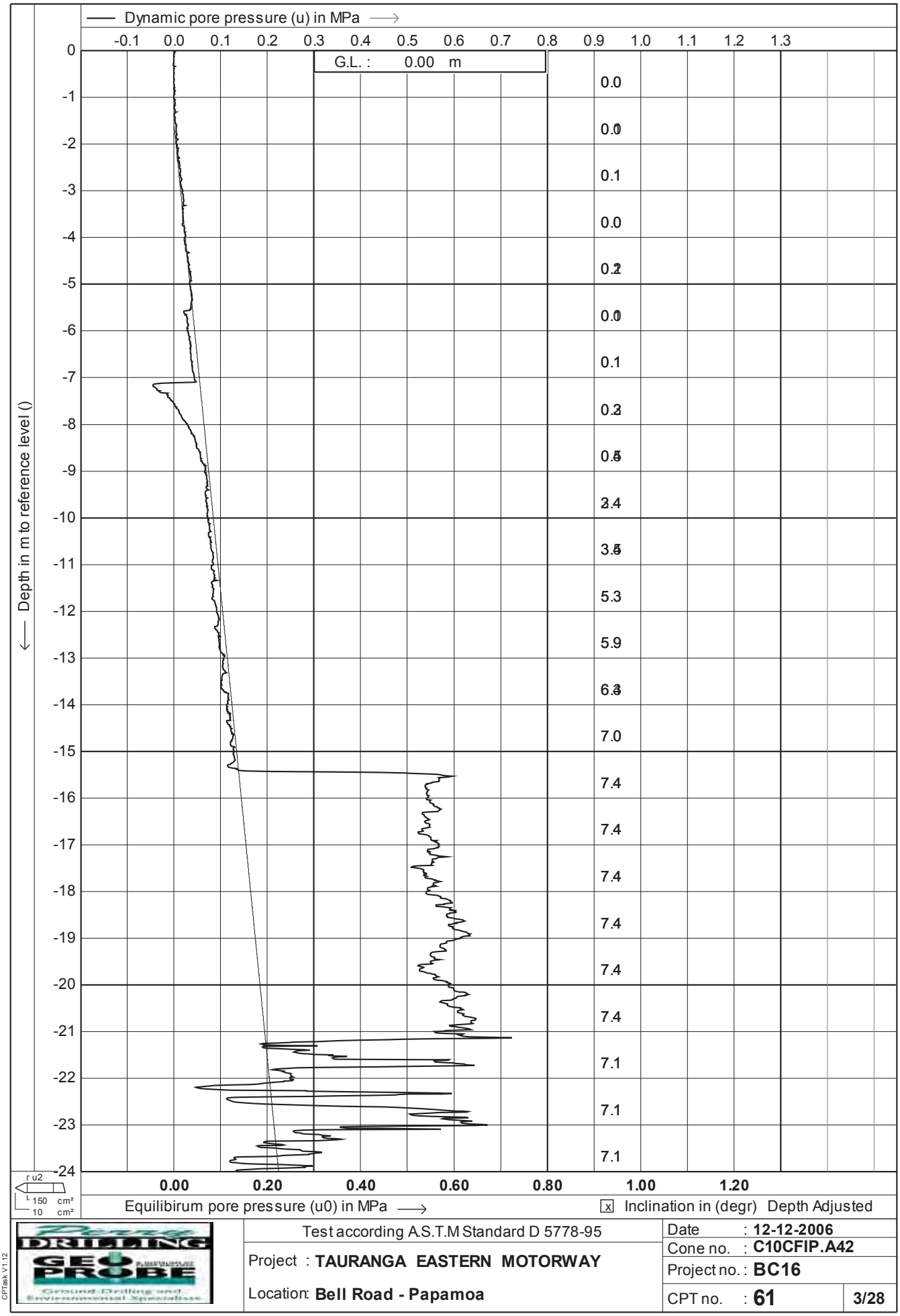
Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **61** **2/28**

NZGD ID: 92239

NZGD ID: 92239



CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

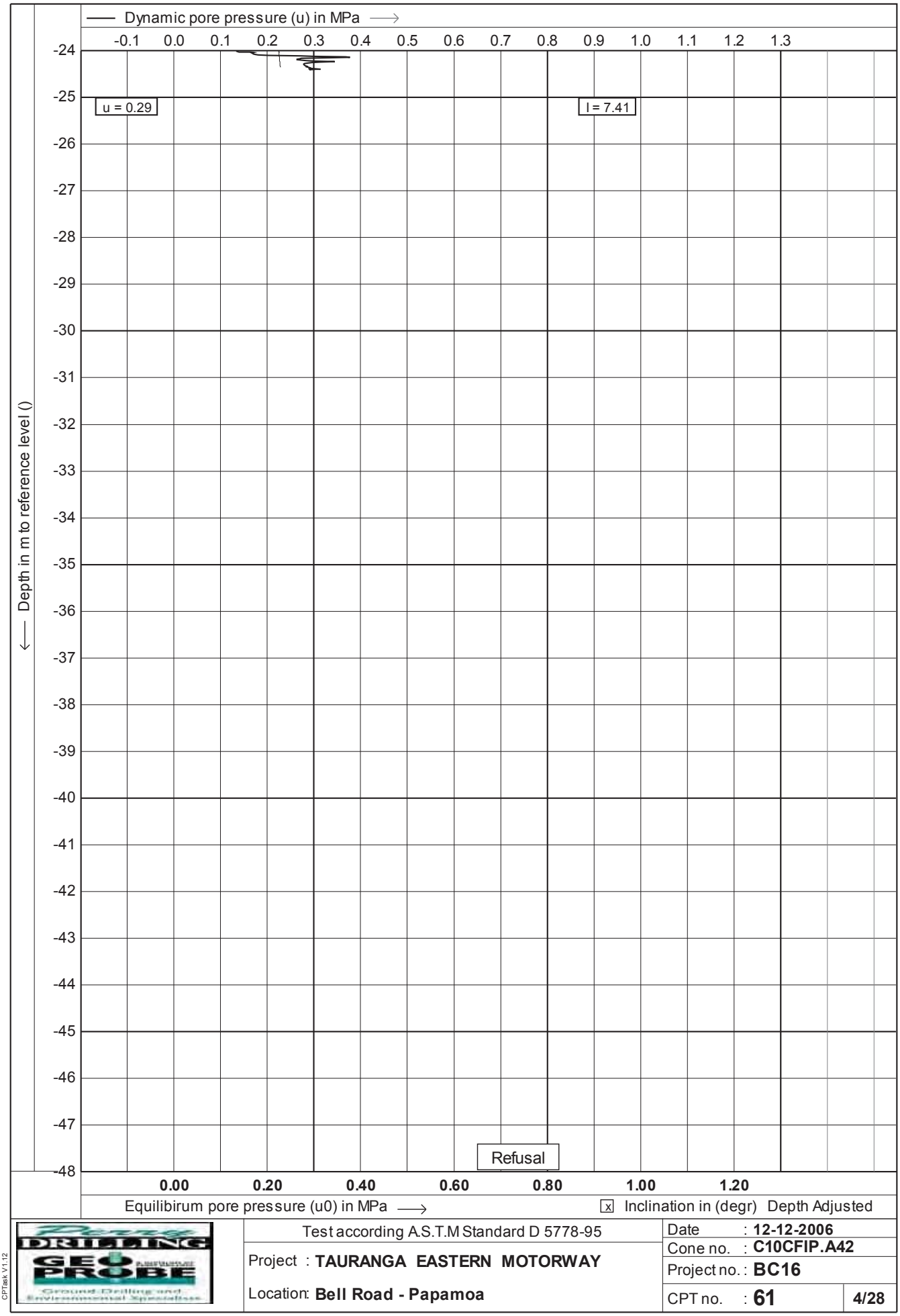
Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

CPT no. : **61** 3/28

NZGD ID: 92239



DRILLING GEOPROBE Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

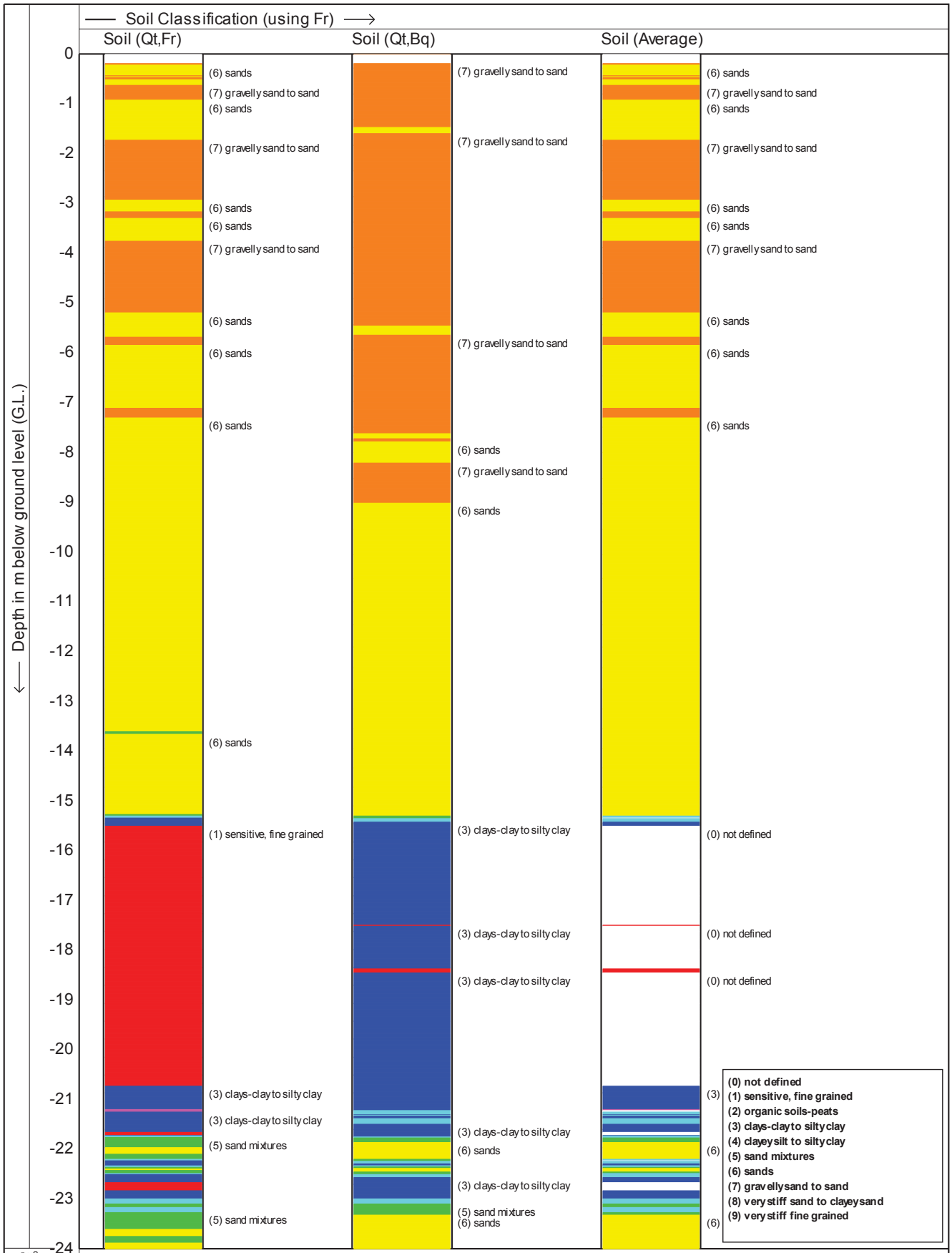
Location: **Bell Road - Papamoa**

Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

Project no. : **BC16**

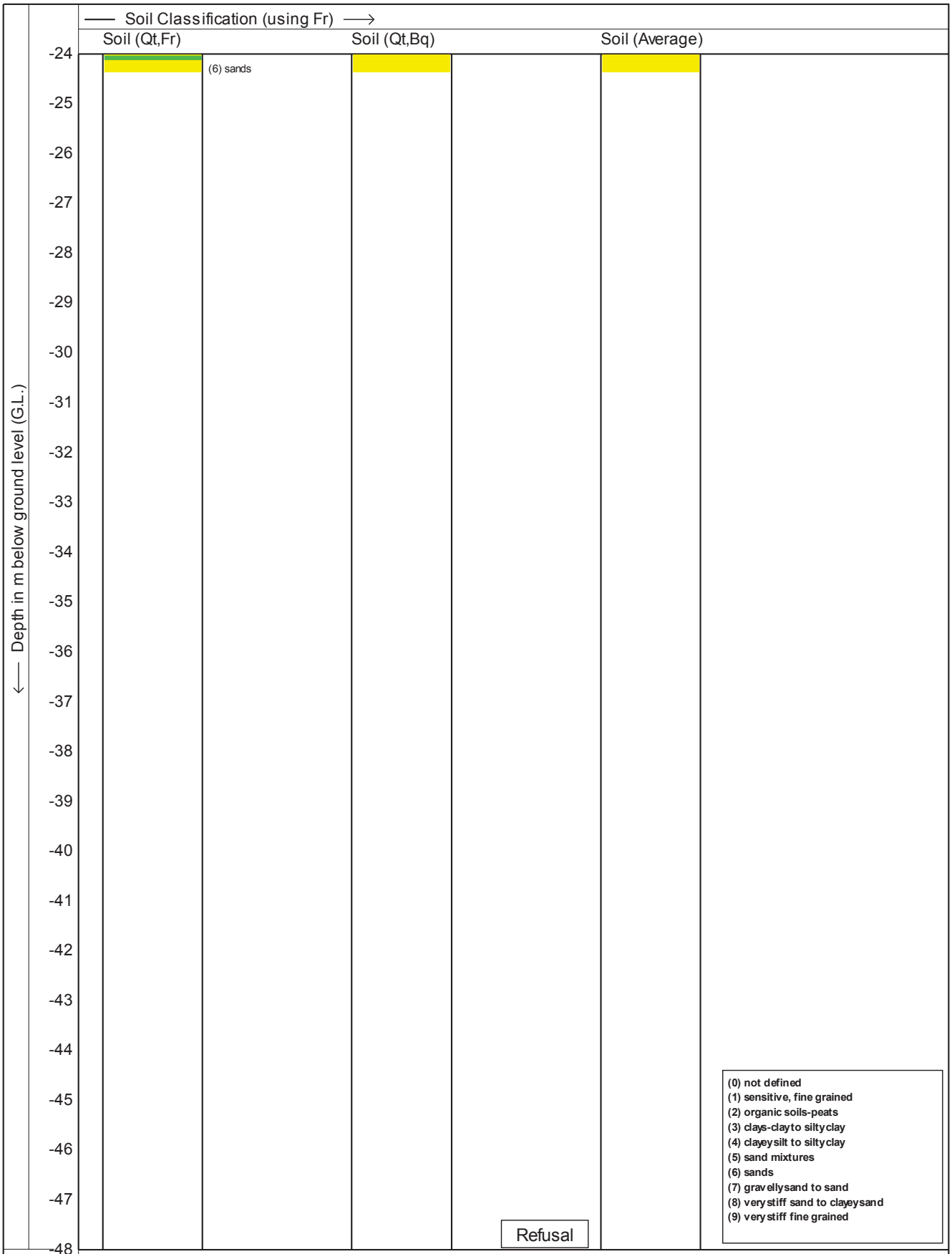
CPT no. : **61** **4/28**



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **61** **25/28**



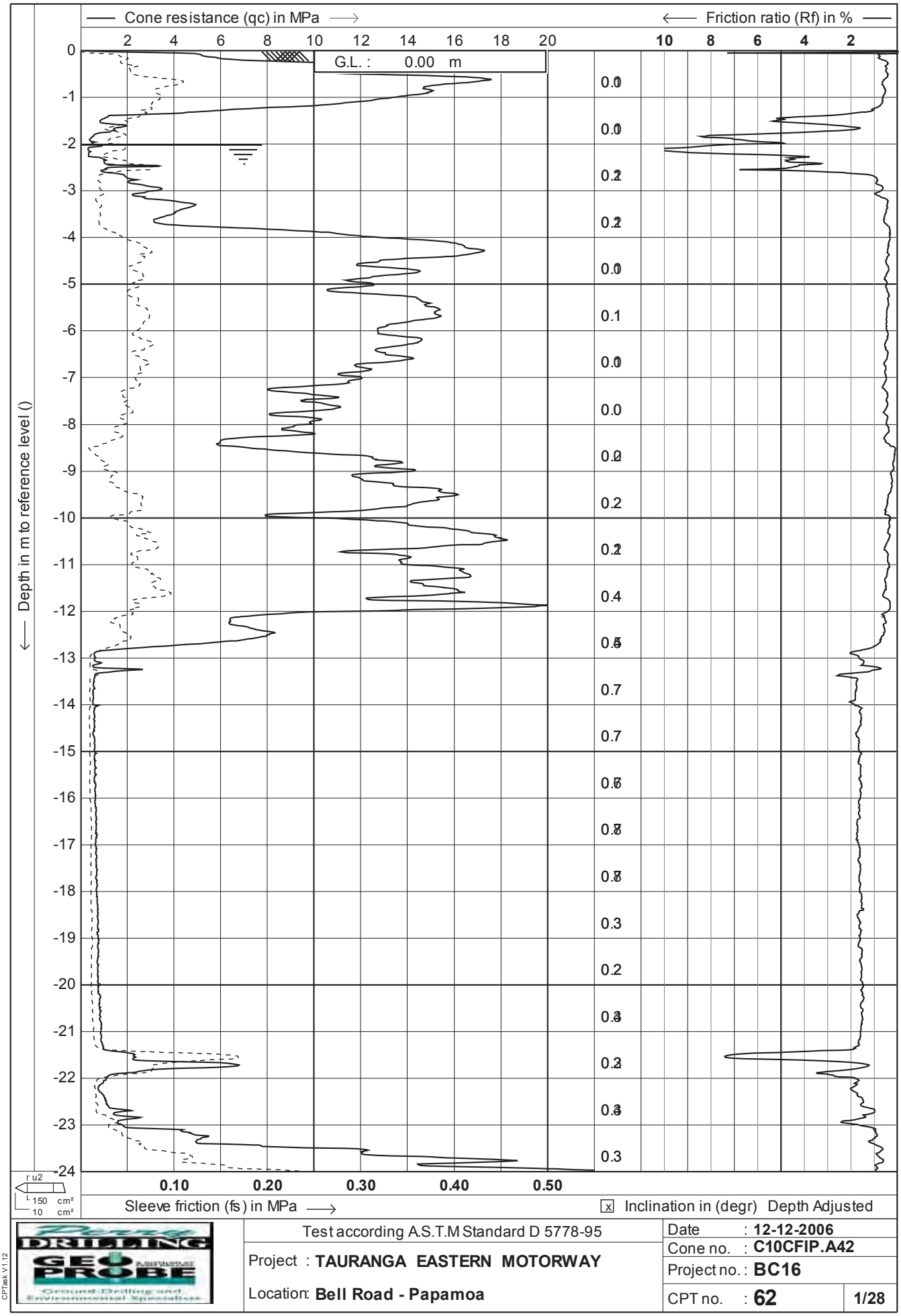
DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**
Location: **Bell Road - Papamoa**
Position: **0, 0**

Date : **12-12-2006**
Cone no. : **C10CFIP.A42**
Project no. : **BC16**
CPT no. : **61** **26/28**

NZGD ID: CPT_92240



Test according A.S.T.M Standard D 5778-95

Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date : **12-12-2006**

Cone no. : **C10CFIP.A42**

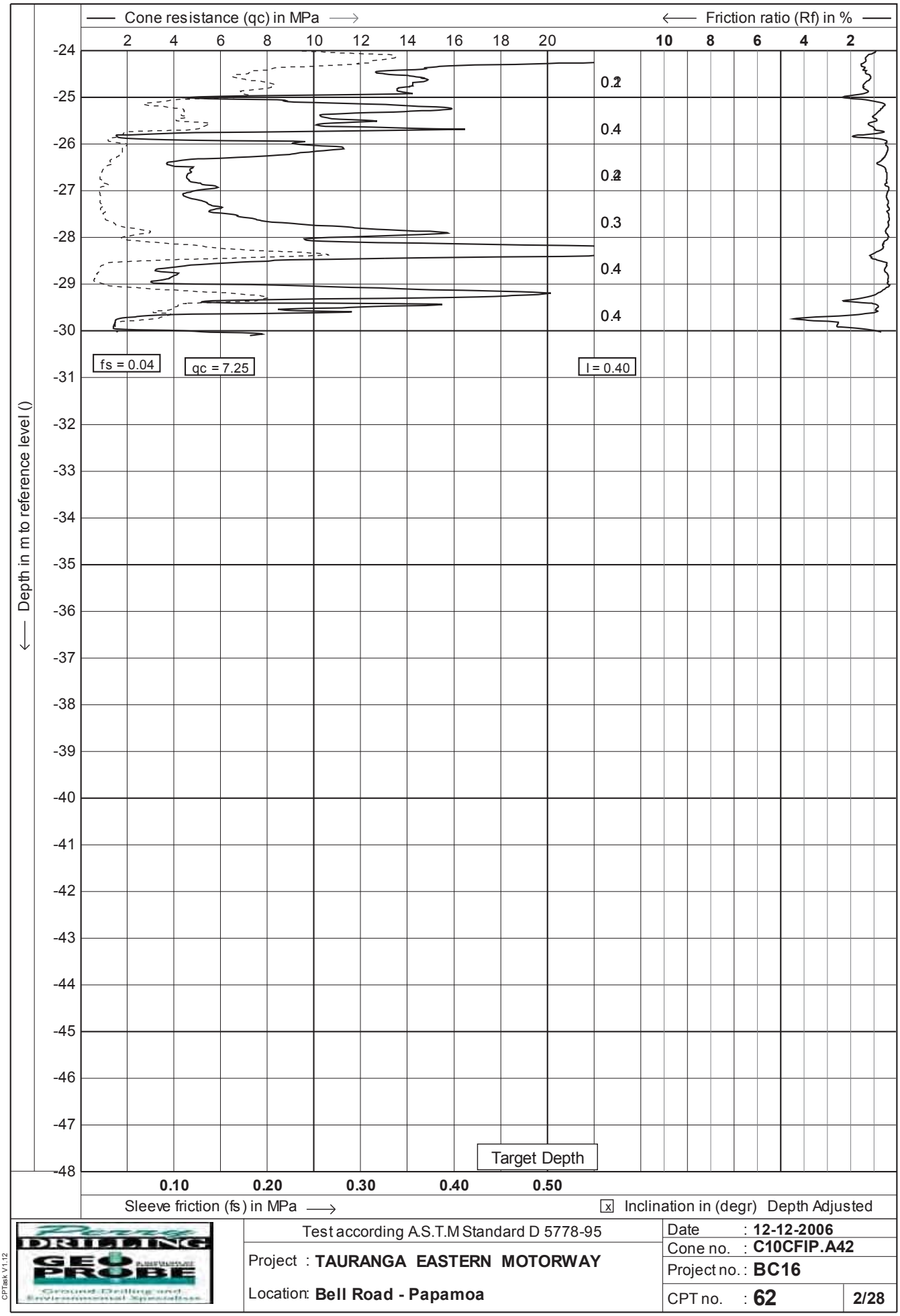
Project no. : **BC16**

CPT no. : **62** **1/28**

CPTask V1.12

NZGD ID: CPT_92240

NZGD ID: CPT_92240

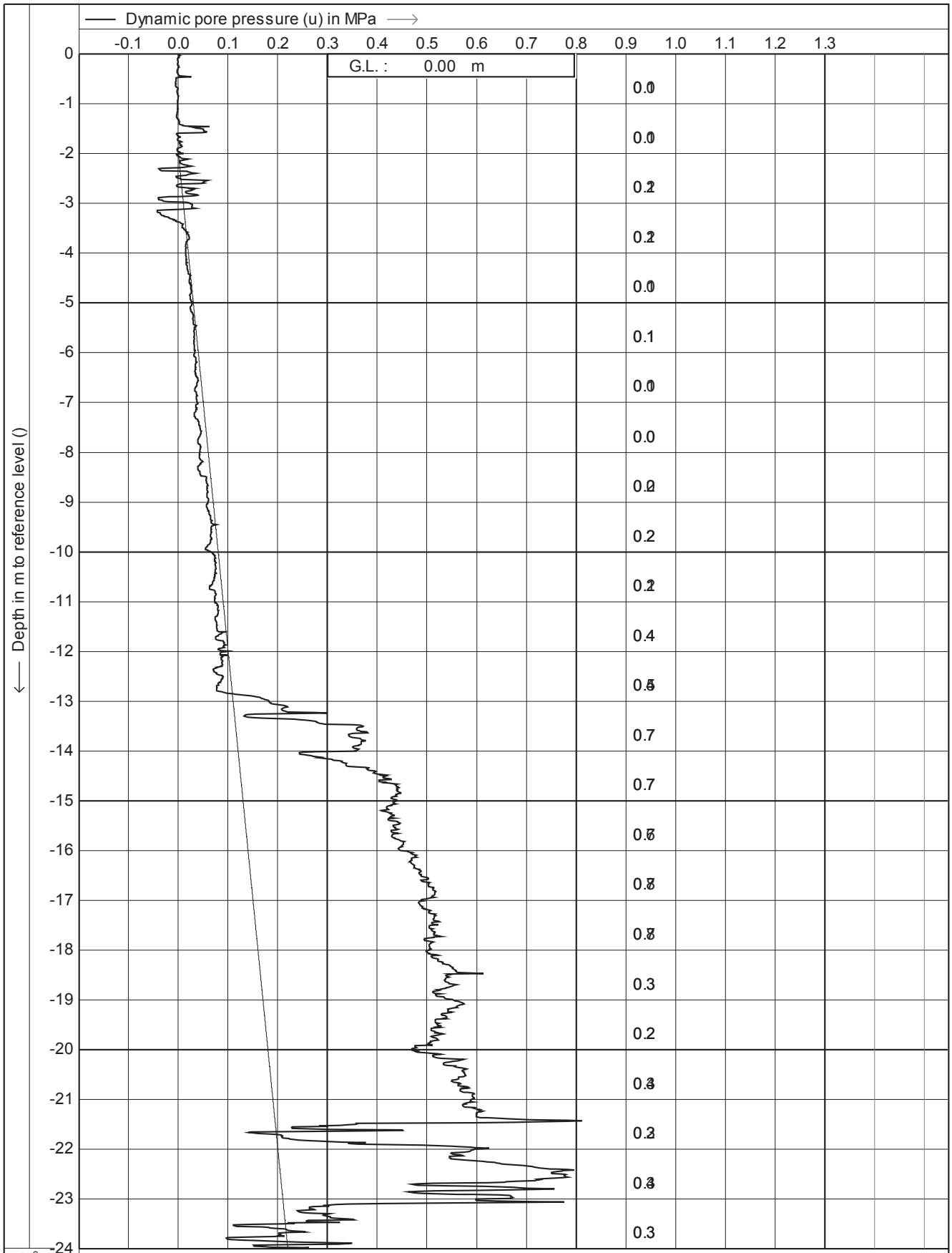


Test according A.S.T.M Standard D 5778-95	Date : **12-12-2006**	
Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**	
Location: **Bell Road - Papamoa**	Project no. : **BC16**	
	CPT no. : **62**	**2/28**

CPTask V1.12

NZGD ID: CPT_92240

NZGD ID: CPT_92240

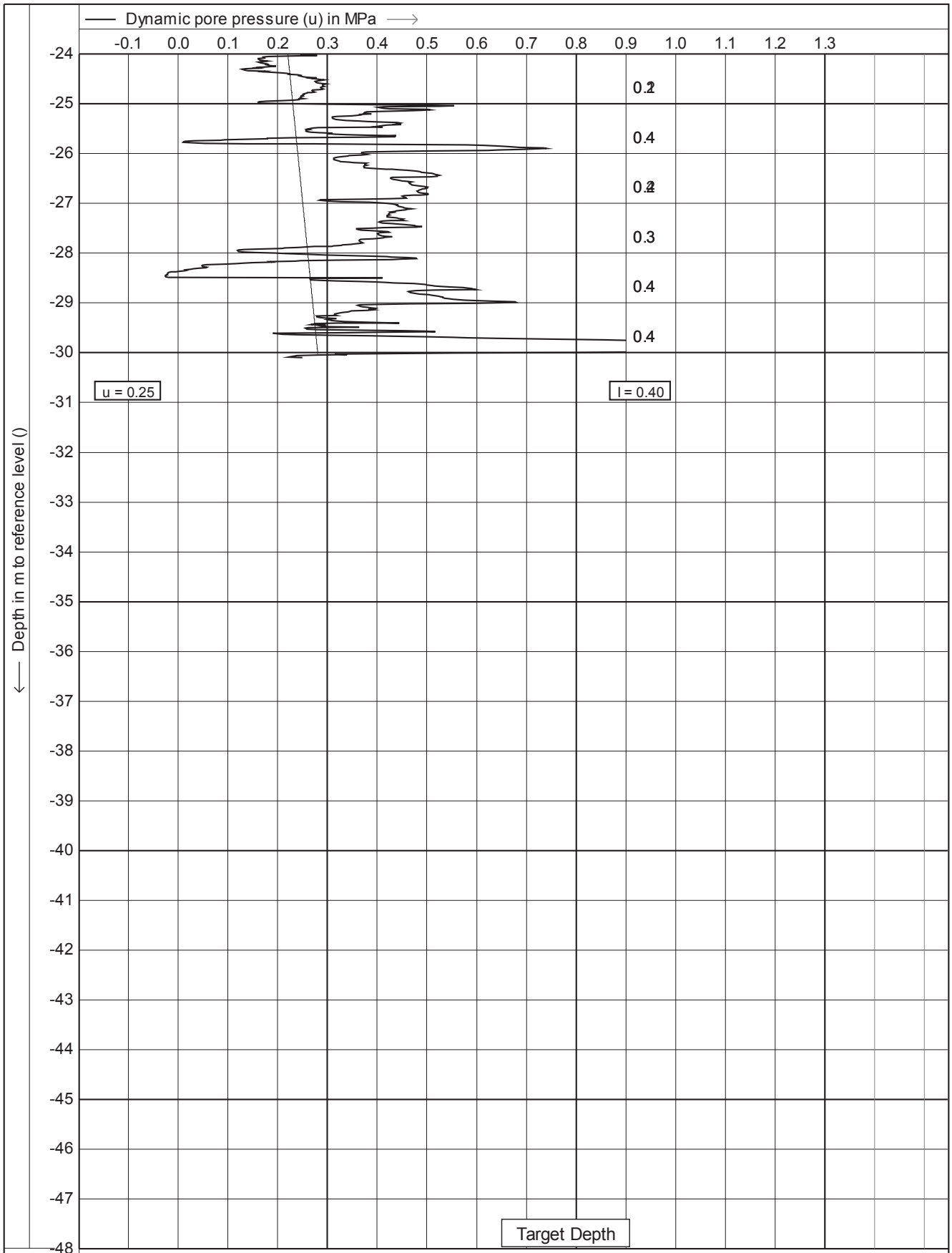


Test according A.S.T.M Standard D 5778-95	Date : **12-12-2006**	
Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**	
Location: **Bell Road - Papamoa**	Project no. : **BC16**	
	CPT no. : **62**	**3/28**

CPTask V1.12

NZGD ID: CPT_92240

NZGD ID: CPT_92240



DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

CPTask V1.12

Test according A.S.T.M Standard D 5778-95

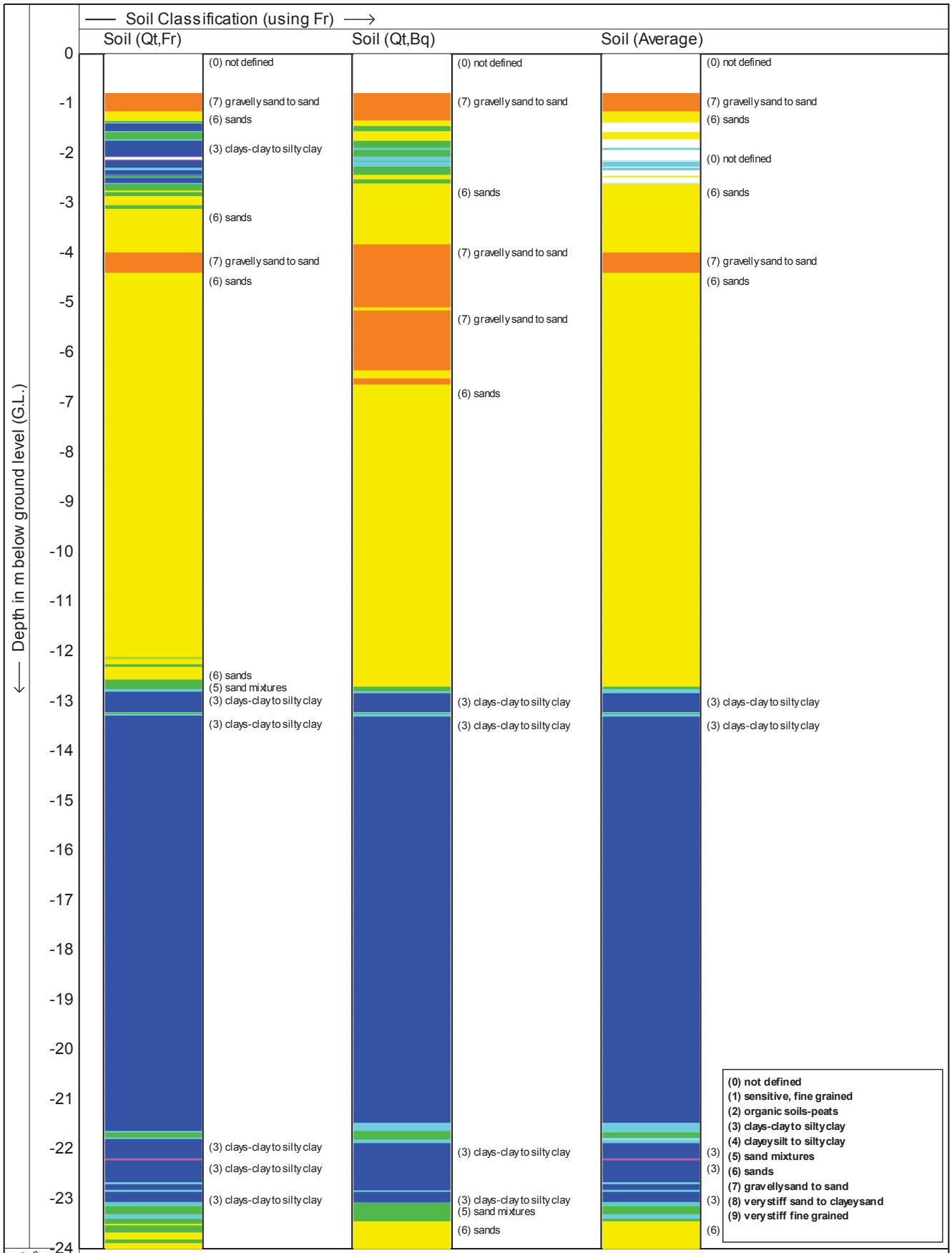
Project : **TAURANGA EASTERN MOTORWAY**

Location: **Bell Road - Papamoa**

Date	: **12-12-2006**
Cone no.	: **C10CFIP.A42**
Project no.	: **BC16**
CPT no.	: **62**

NZGD ID: CPT_92240

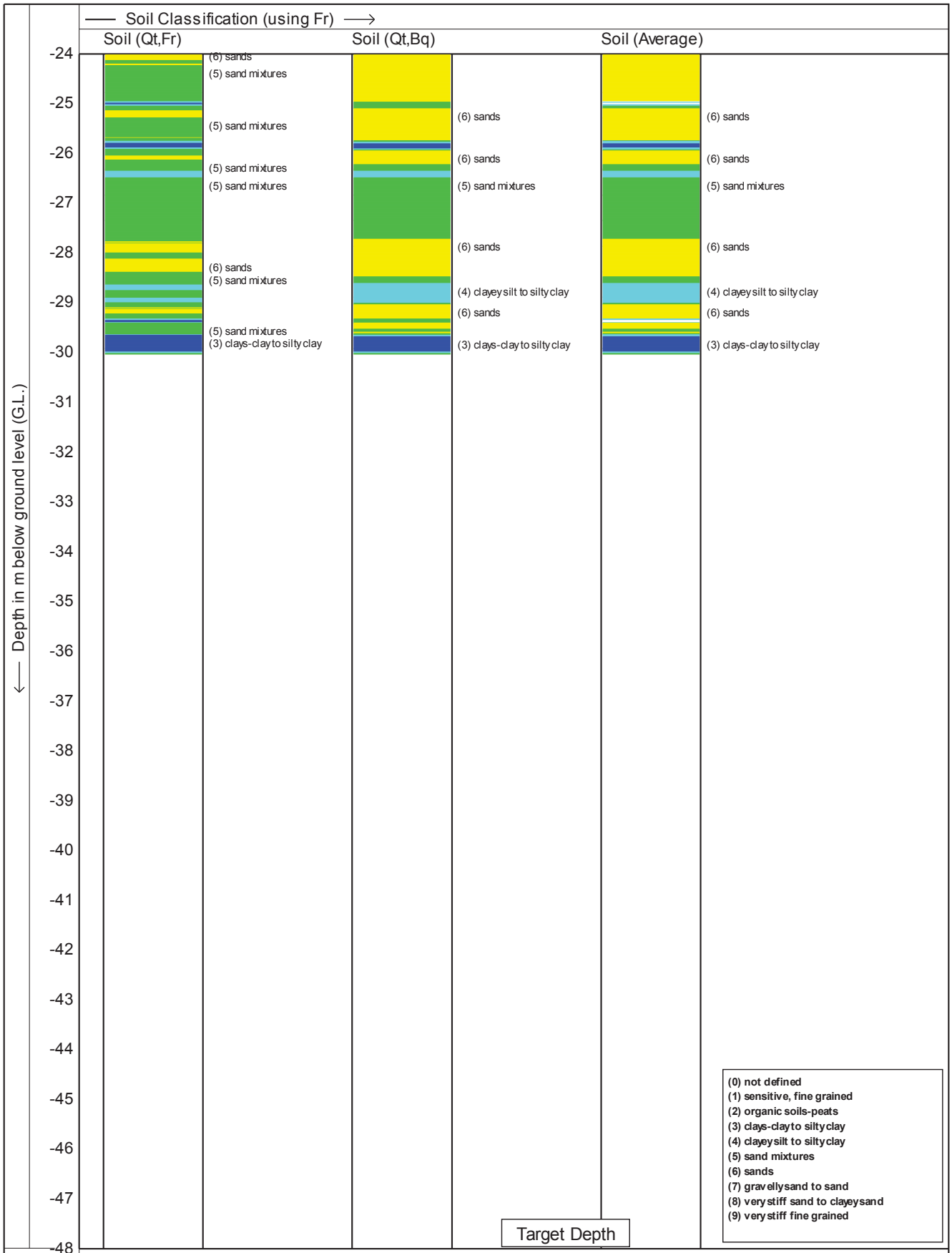
NZGD ID: CPT_92240



Test according A.S.T.M Standard D 5778-95	Date : **12-12-2006**	
Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**	
Location: **Bell Road - Papamoa**	Project no. : **BC16**	
Position: **0, 0**	CPT no. : **62**	**25/28**

NZGD ID: CPT_92240

NZGD ID: CPT_92240



DRILLING GEO PROBE Ground Drilling and Environmental Specialists	Test according A.S.T.M Standard D 5778-95	Date : **12-12-2006**
	Project : **TAURANGA EASTERN MOTORWAY**	Cone no. : **C10CFIP.A42**
	Location: **Bell Road - Papamoa**	Project no. : **BC16**
	Position: **0, 0**	CPT no. : **62** **26/28**

NZGD ID: CPT_92240

NZGD ID: CPT_92240

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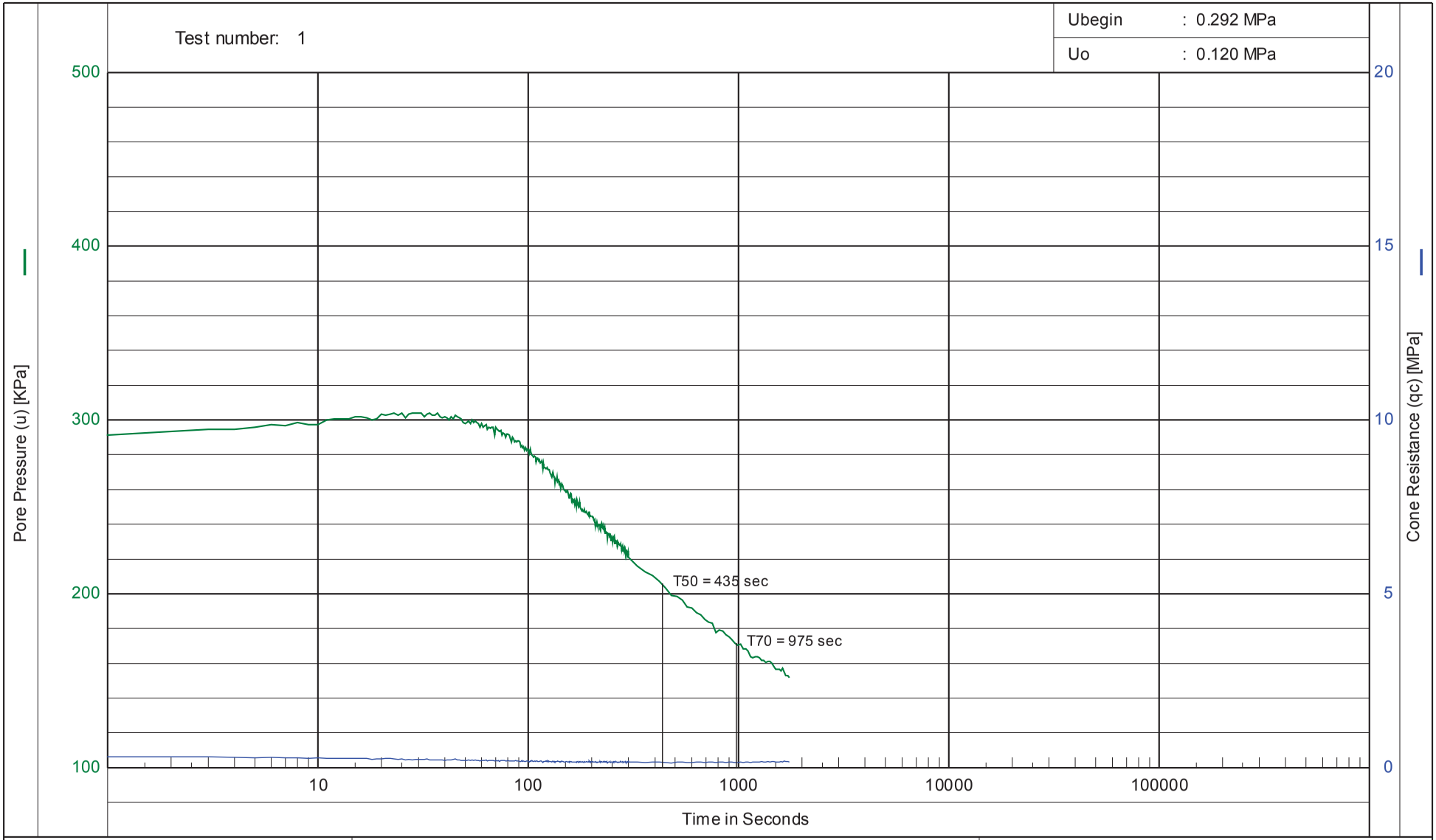


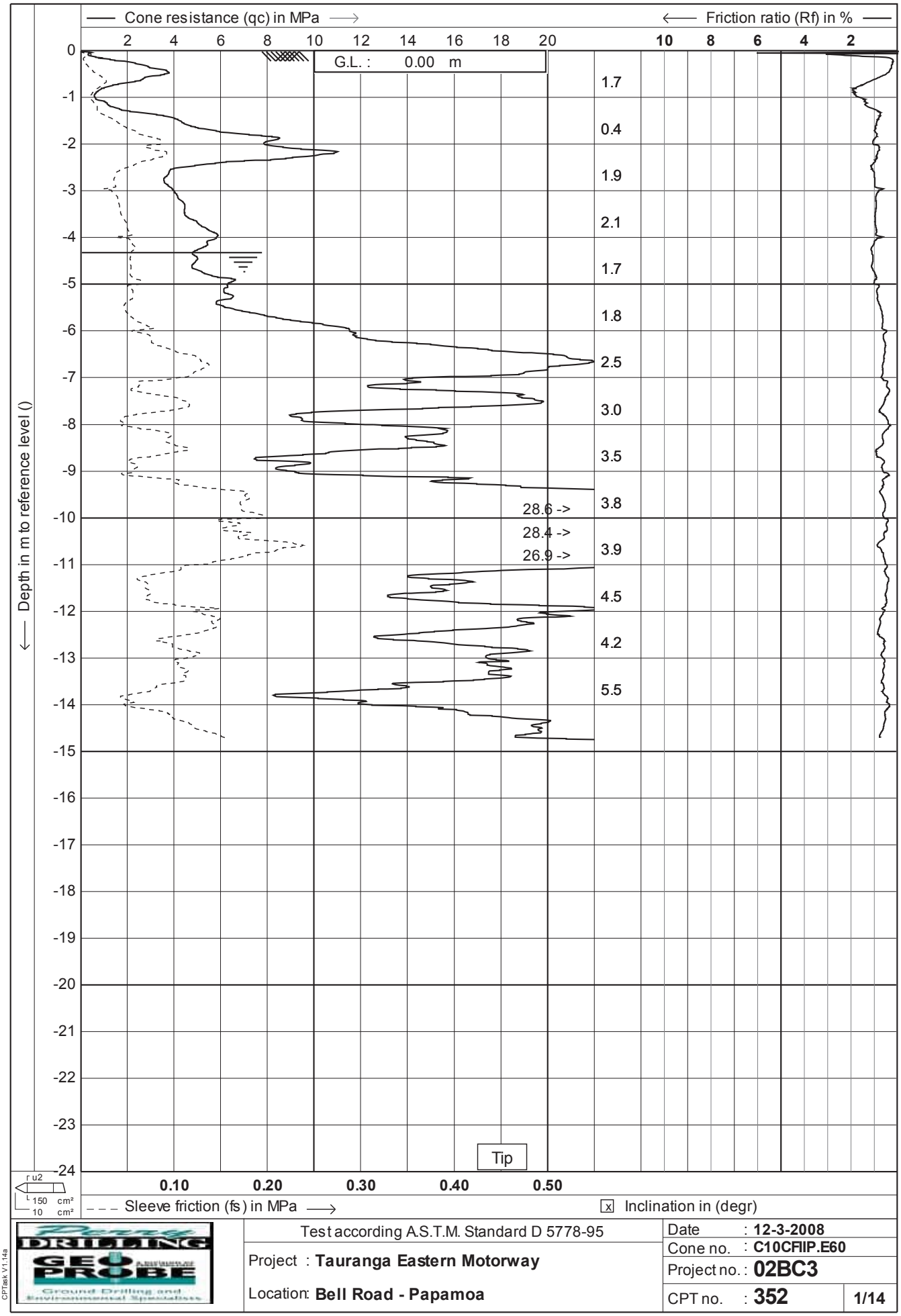
Test according A.S.T.M. standard D 5778-95

Project : TAURANGA EASTERN MOTORWAY

Location : Bell Road - Papamoa

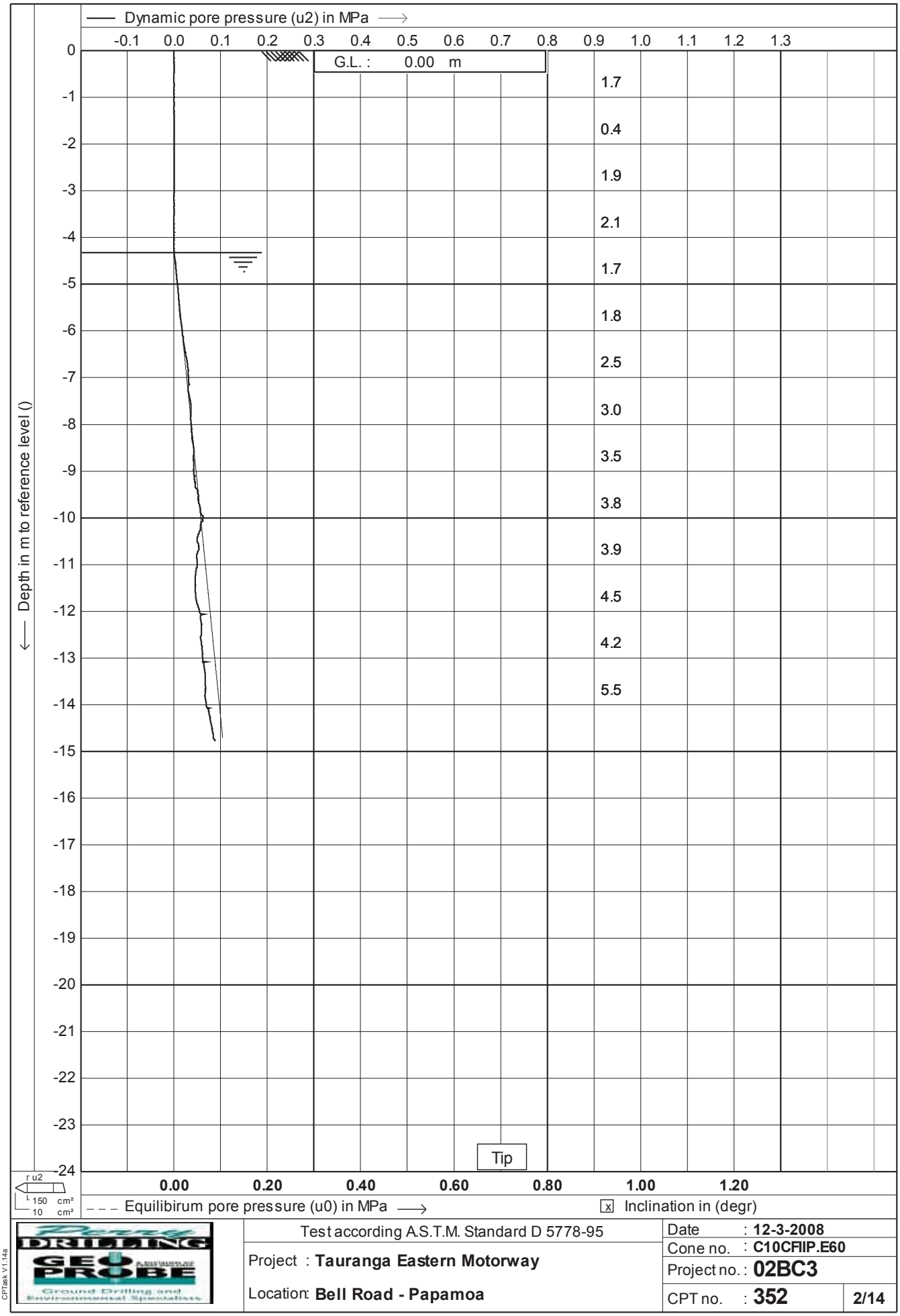
Date	: 12/12/2006
Project no.	: BC16
CPT no.	: 62
Test depth	: 14 m [m] -
Water level	: -2 [m] -

NZGD ID: 94735



NZGD ID: 94735

NZGD ID: 94735

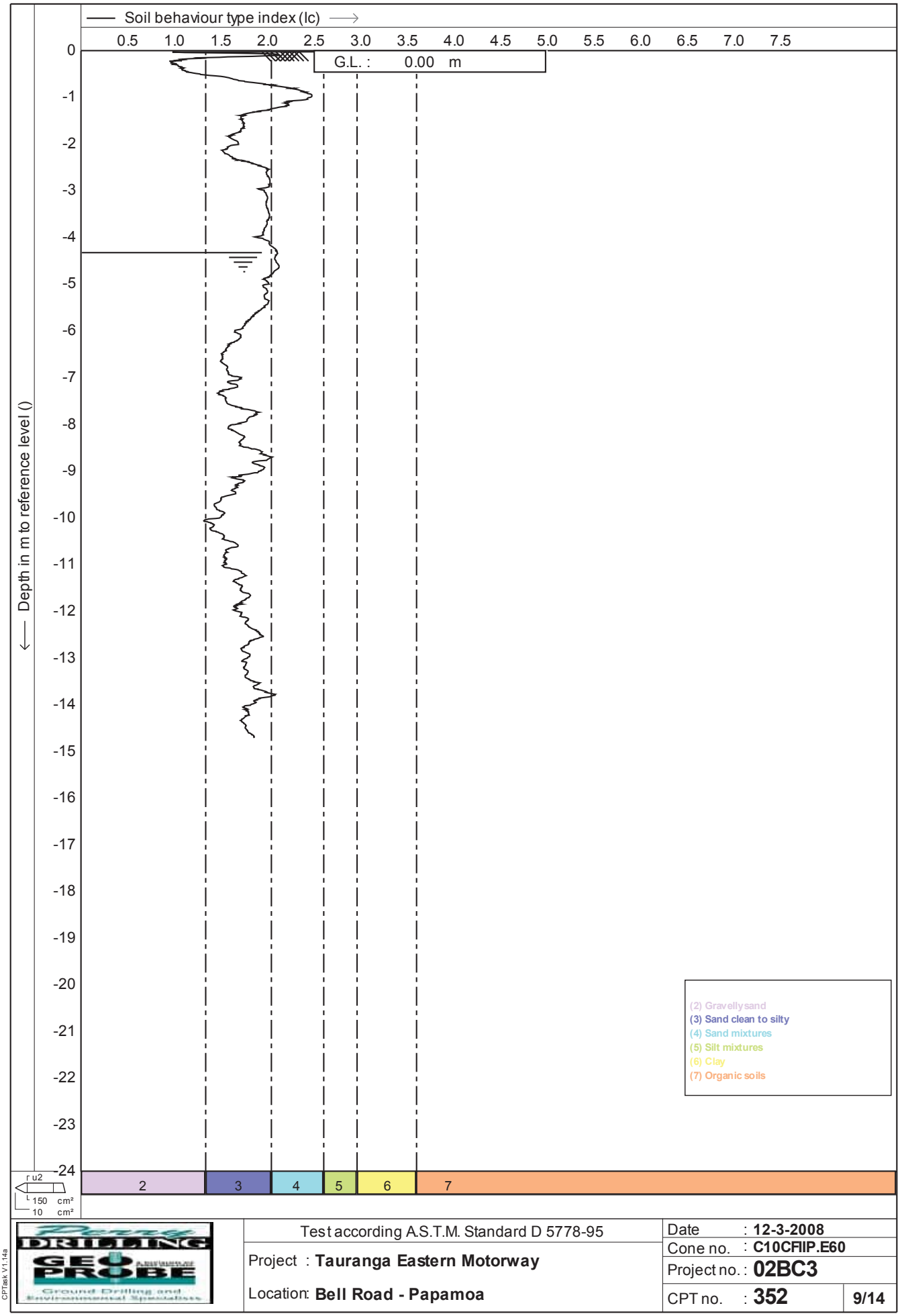


Test according A.S.T.M. Standard D 5778-95	Date : **12-3-2008**	
Project : **Tauranga Eastern Motorway**	Cone no. : **C10CFIIP.E60**	
	Project no. : **02BC3**	
Location: **Bell Road - Papamoa**	CPT no. : **352**	**2/14**

CPTask V1.14a

NZGD ID: 94735

NZGD ID: 94735



CPTask V1.14a

Test according A.S.T.M. Standard D 5778-95

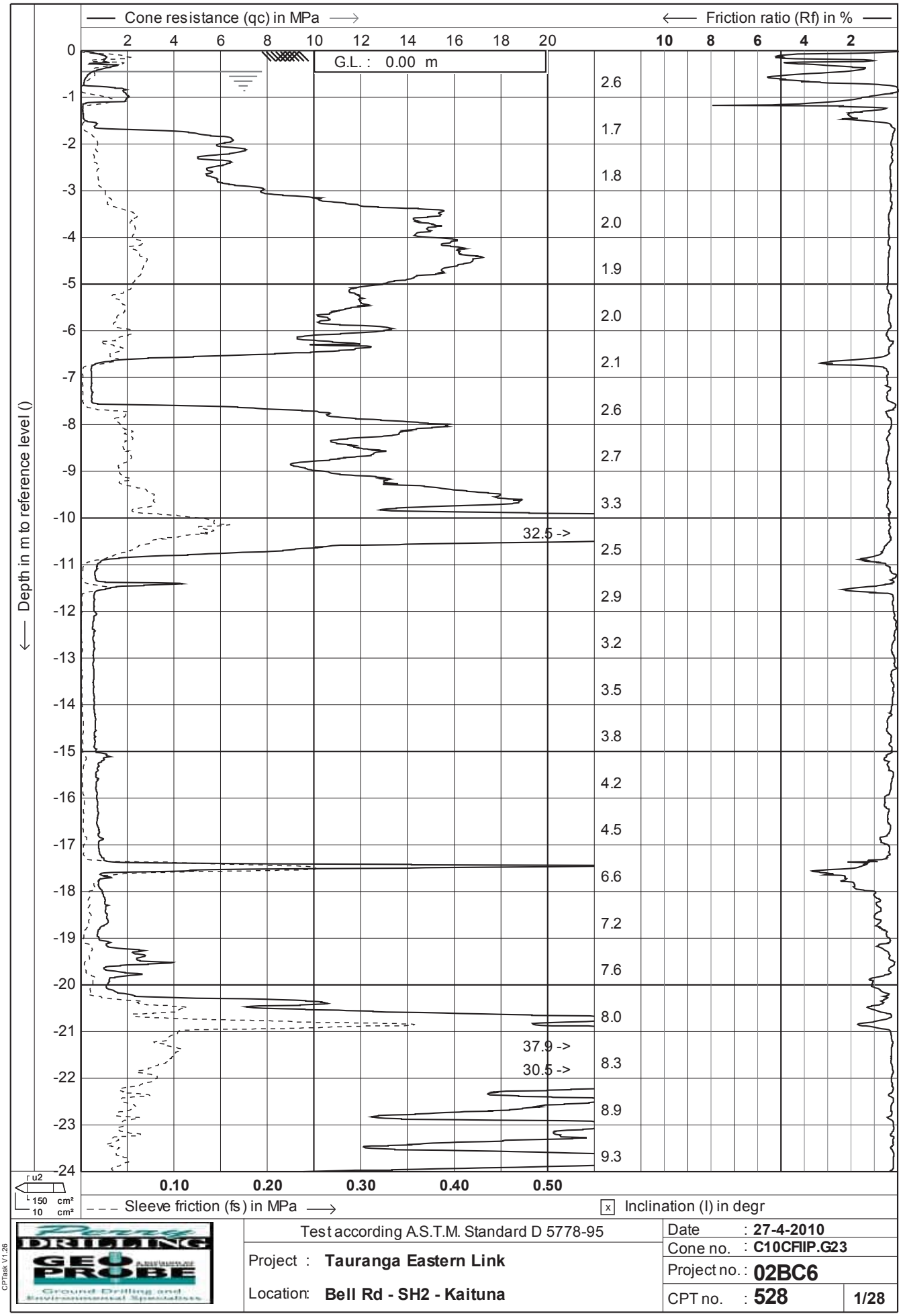
Project : **Tauranga Eastern Motorway**

Location: **Bell Road - Papamoa**

Date	: **12-3-2008**
Cone no.	: **C10CFIIP.E60**
Project no.	: **02BC3**
CPT no.	: **352**

NZGD ID: 94735

NZGD ID: CPT_94813



Test according A.S.T.M. Standard D 5778-95

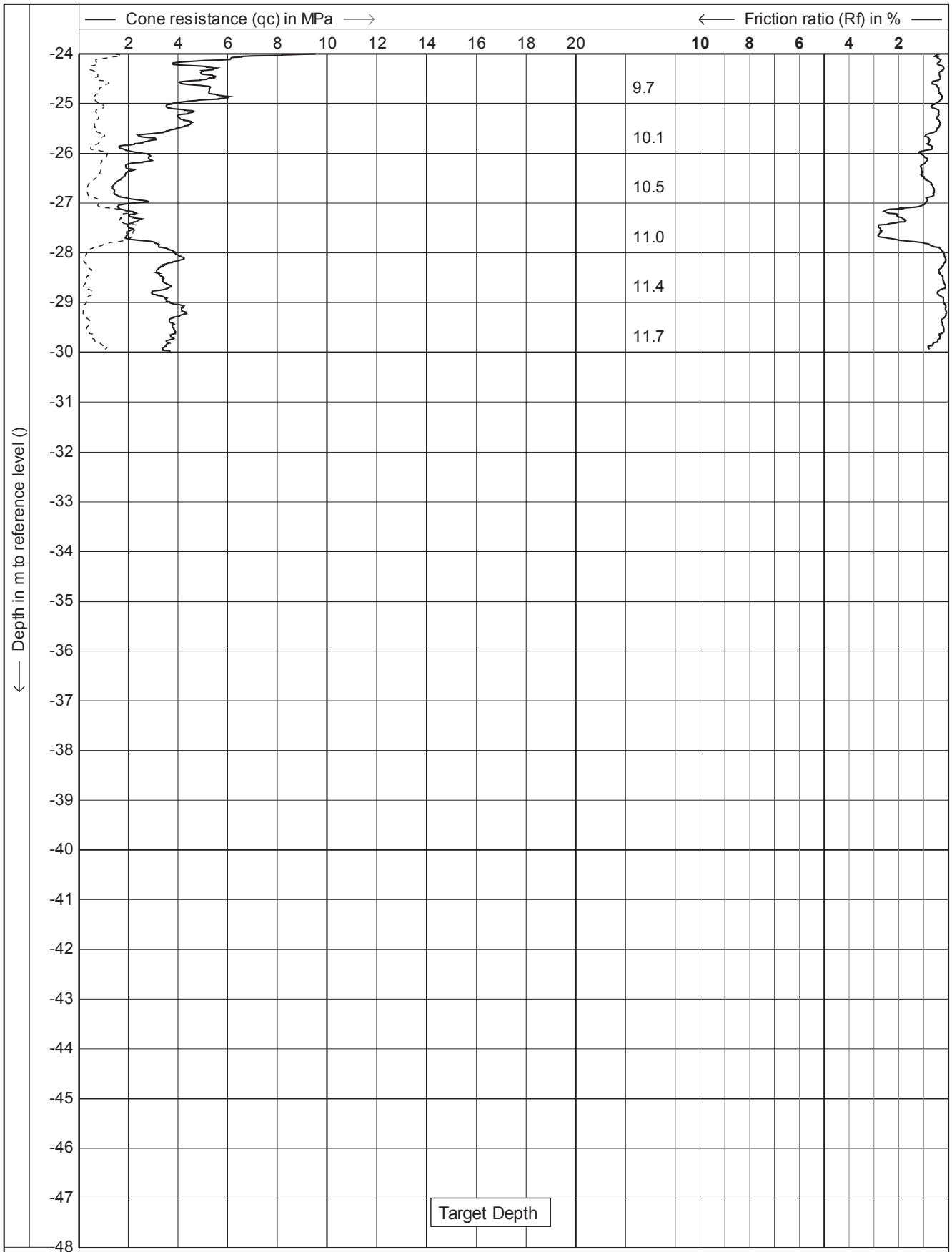
Project :	**Tauranga Eastern Link**
Location:	**Bell Rd - SH2 - Kaituna**
Date	: **27-4-2010**
Cone no.	: **C10CFIIP.G23**
Project no.	: **02BC6**
CPT no.	: **528**

1/28

CPTask V1.26

NZGD ID: CPT_94813

NZGD ID: CPT_94813



Test according A.S.T.M. Standard D 5778-95

Project : **Tauranga Eastern Link**

Location: **Bell Rd - SH2 - Kaituna**

Date : **27-4-2010**

Cone no. : **C10CFIIP.G23**

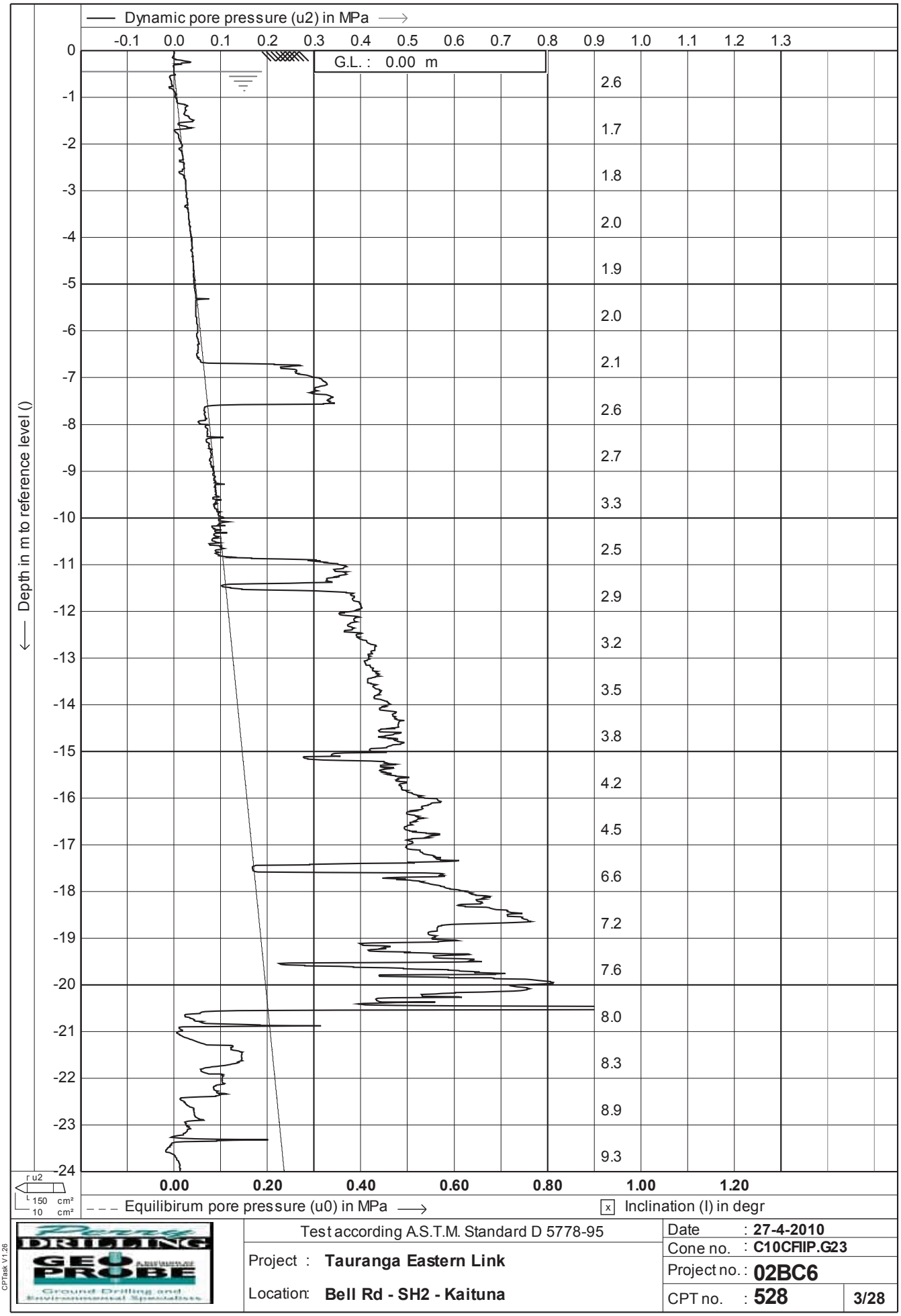
Project no. : **02BC6**

CPT no. : **528** **2/28**

CPTask V1.26

NZGD ID: CPT_94813

NZGD ID: CPT_94813



CPTask V1.26

Test according A.S.T.M. Standard D 5778-95

Project : **Tauranga Eastern Link**

Location: **Bell Rd - SH2 - Kaituna**

Date : **27-4-2010**

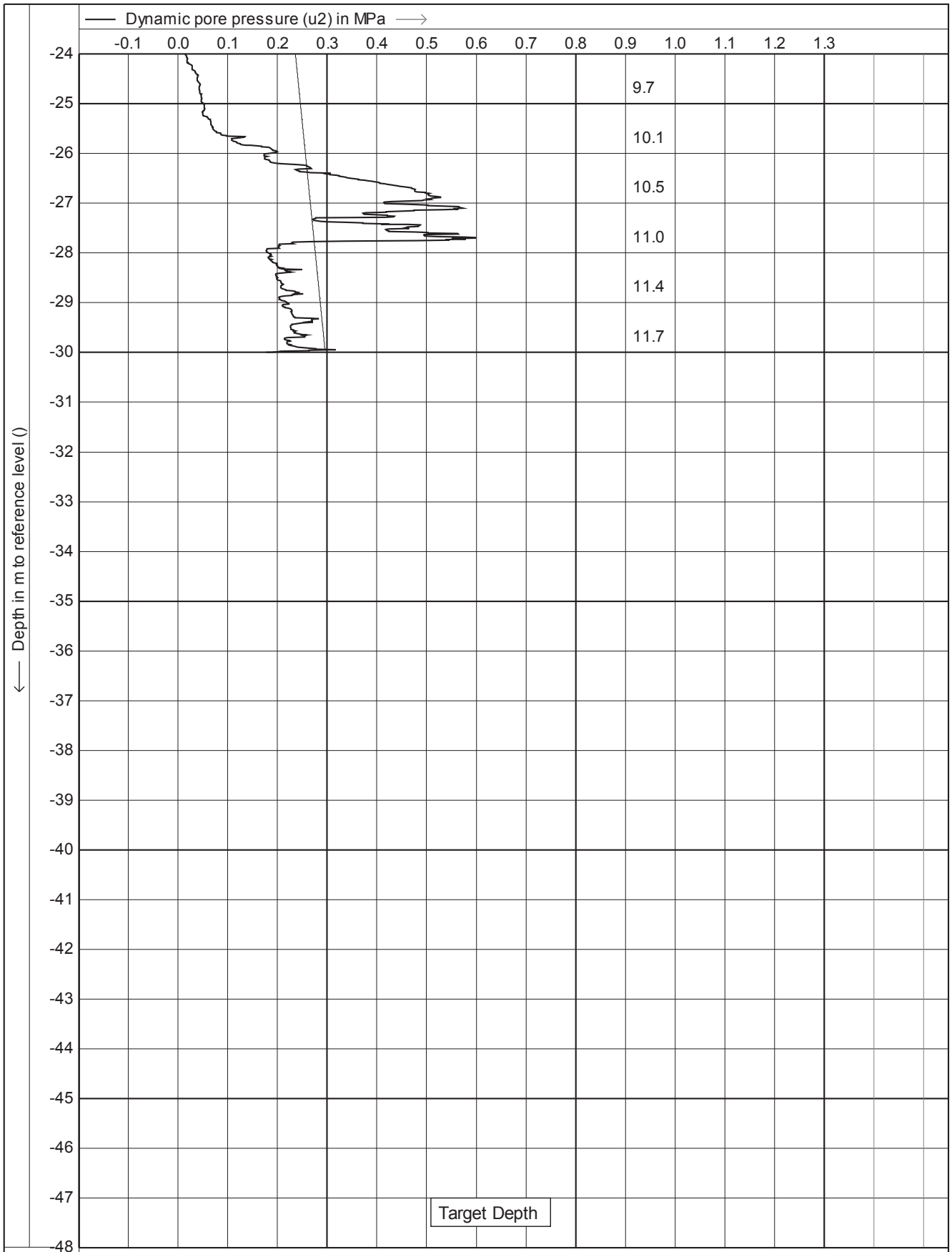
Cone no. : **C10CFIIP.G23**

Project no. : **02BC6**

CPT no. : **528** **3/28**

NZGD ID: CPT_94813

NZGD ID: CPT_94813



CPTask V1.26

Test according A.S.T.M. Standard D 5778-95

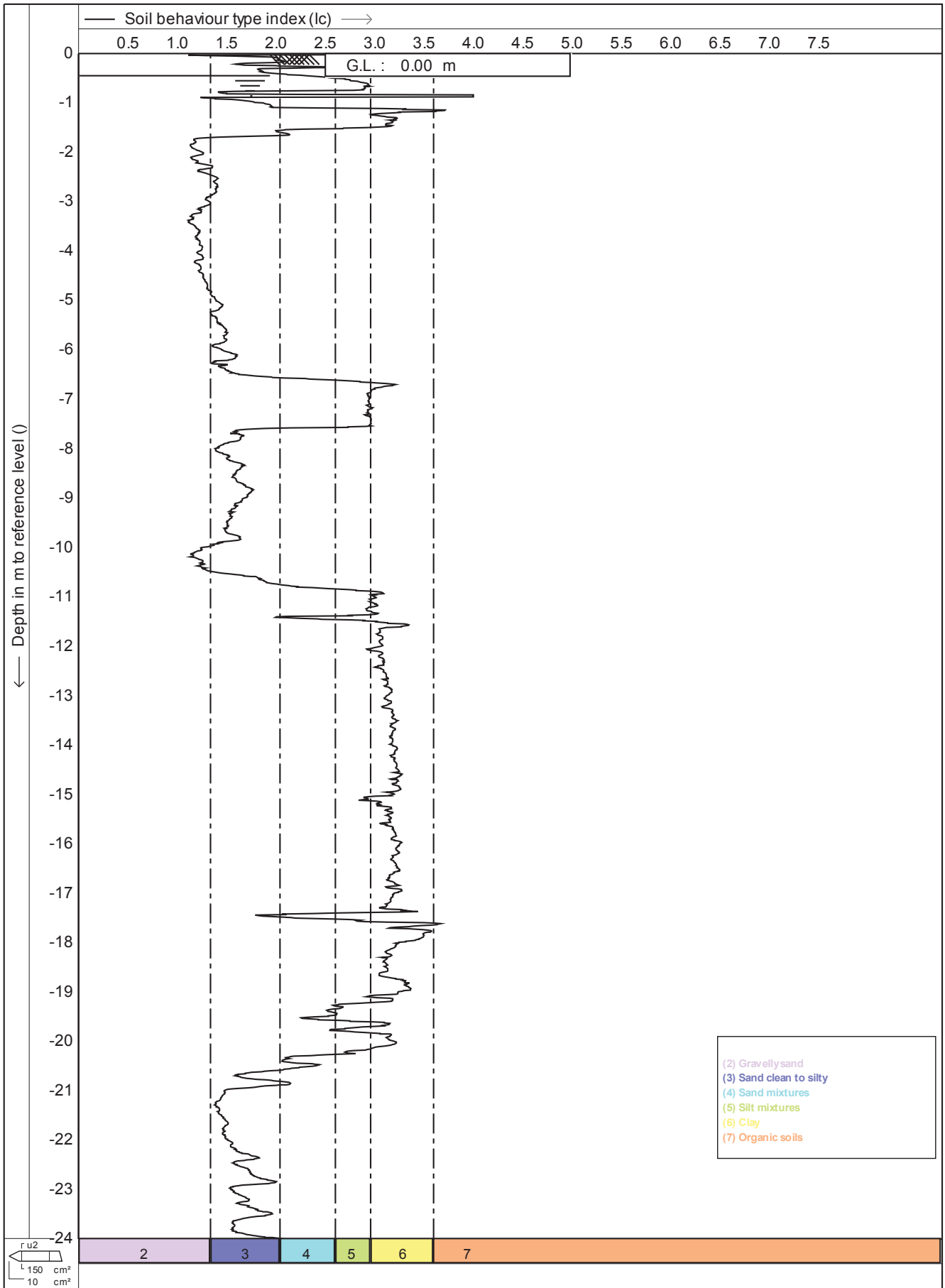
Project : **Tauranga Eastern Link**

Location: **Bell Rd - SH2 - Kaituna**

Date	: **27-4-2010**
Cone no.	: **C10CFIIP.G23**
Project no.	: **02BC6**
CPT no.	: **528**

NZGD ID: CPT_94813

NZGD ID: CPT_94813



CPTask V1.26

Test according A.S.T.M. Standard D 5778-95

Project : **Tauranga Eastern Link**

Location: **Bell Rd - SH2 - Kaituna**

Date : **27-4-2010**

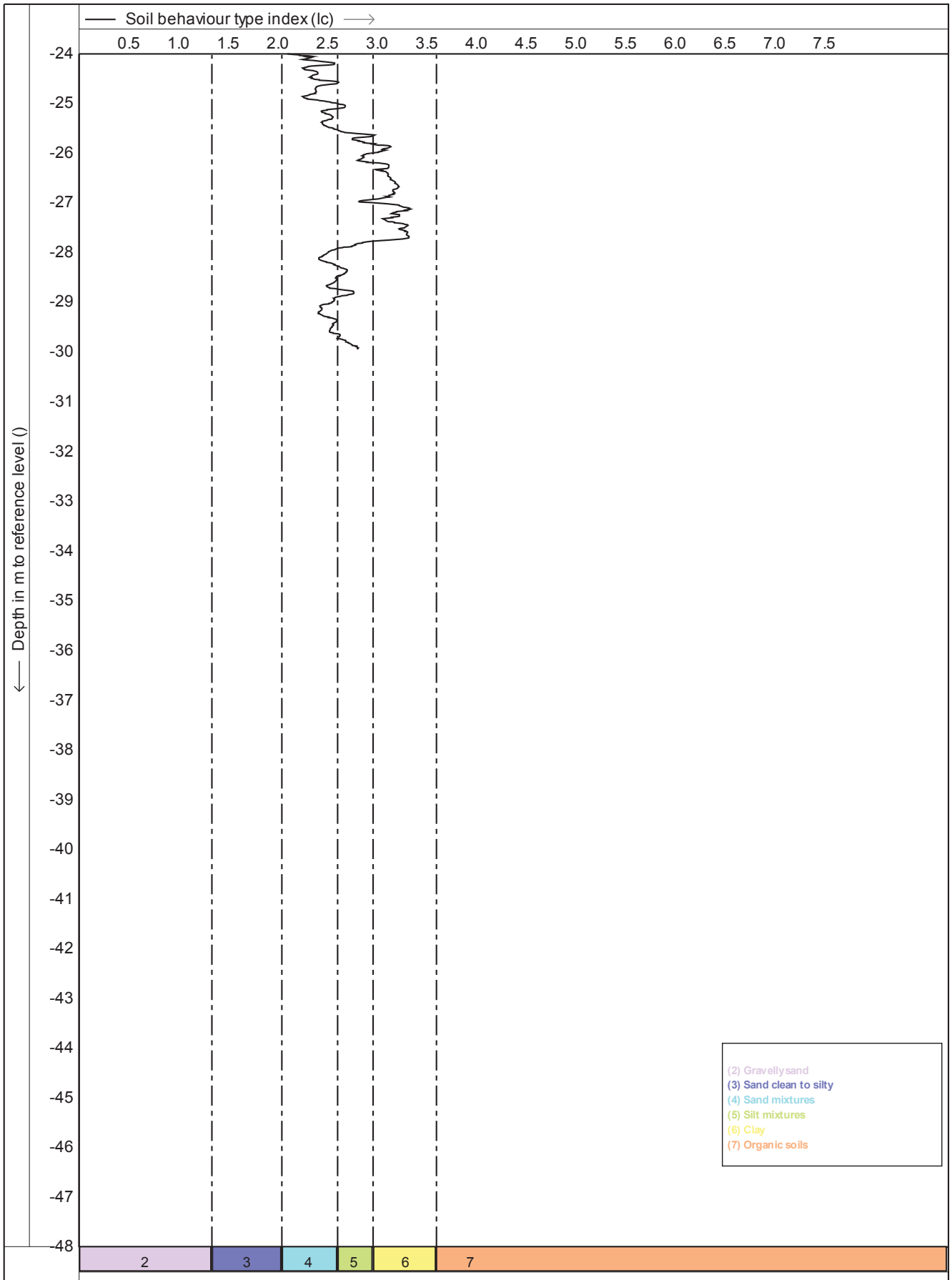
Cone no. : **C10CFIIP.G23**

Project no. : **02BC6**

CPT no. : **528** **17/28**

NZGD ID: CPT_94813

NZGD ID: CPT_94813



CPTask V1.26

Test according A.S.T.M. Standard D 5778-95

Project : **Tauranga Eastern Link**

Location: **Bell Rd - SH2 - Kaituna**

Date : **27-4-2010**

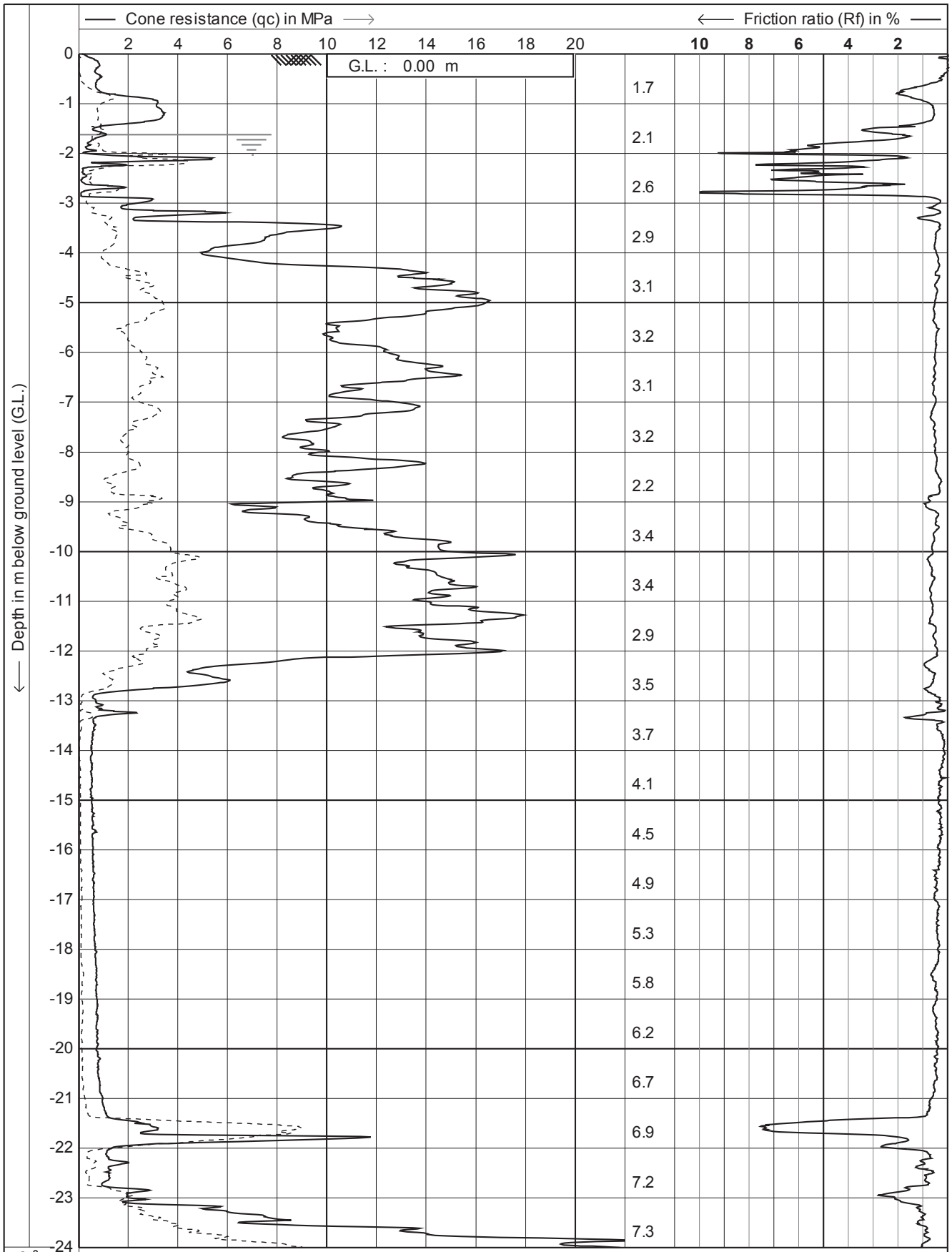
Cone no. : **C10CFIIP.G23**

Project no. : **02BC6**

CPT no. : **528** **18/28**

NZGD ID: CPT_94813

NZGD ID: CPT_94888



Test according NEN 5140 class 1

Project : **Site Investigations**

Location: **Tauranga Eastern Link**

Date : **14-2-2011**

Cone no. : **C10CFIIP.F14**

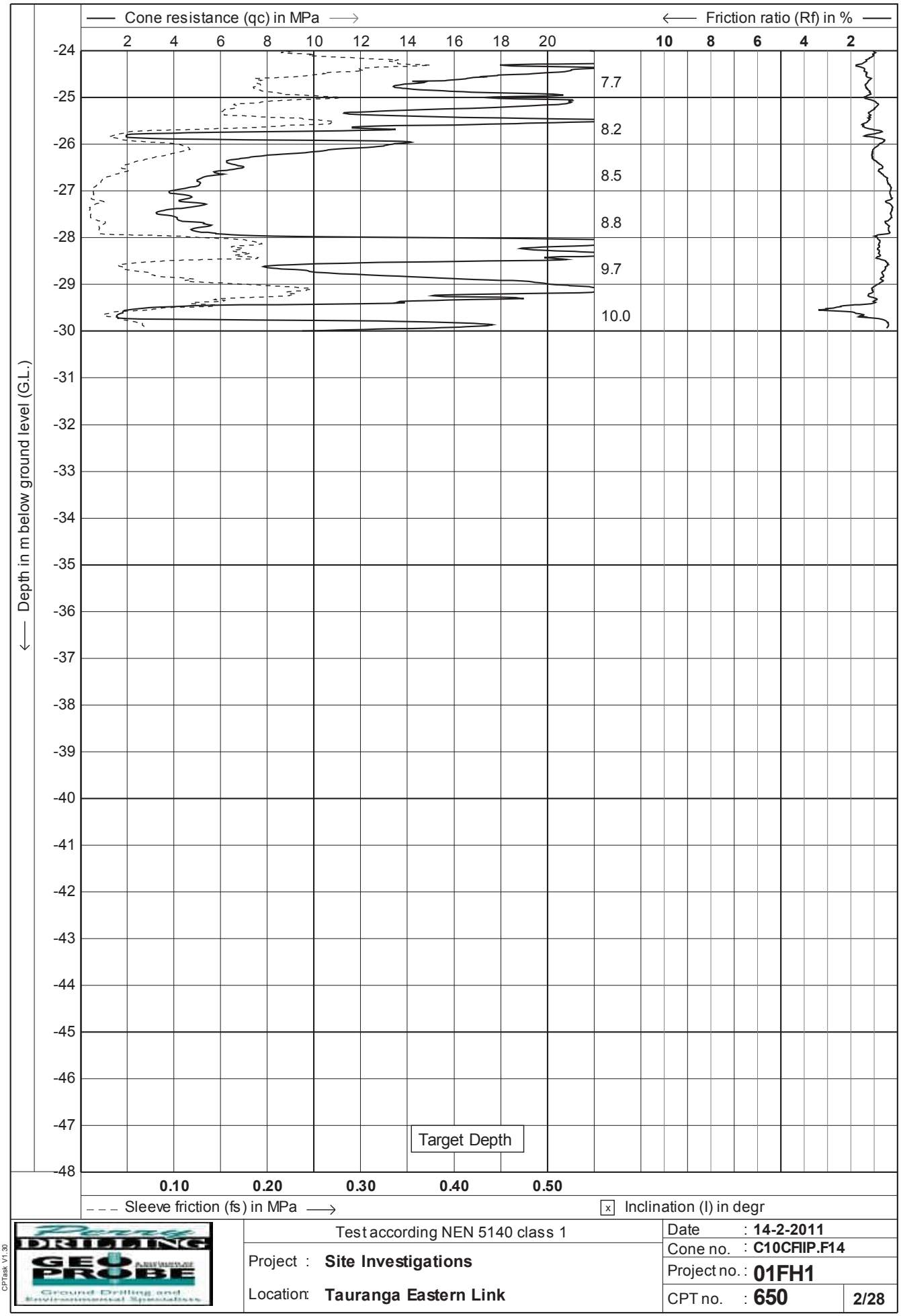
Project no. : **01FH1**

CPT no. : **650** **1/28**

CPTask V1.30

NZGD ID: CPT_94888

NZGD ID: CPT_94888

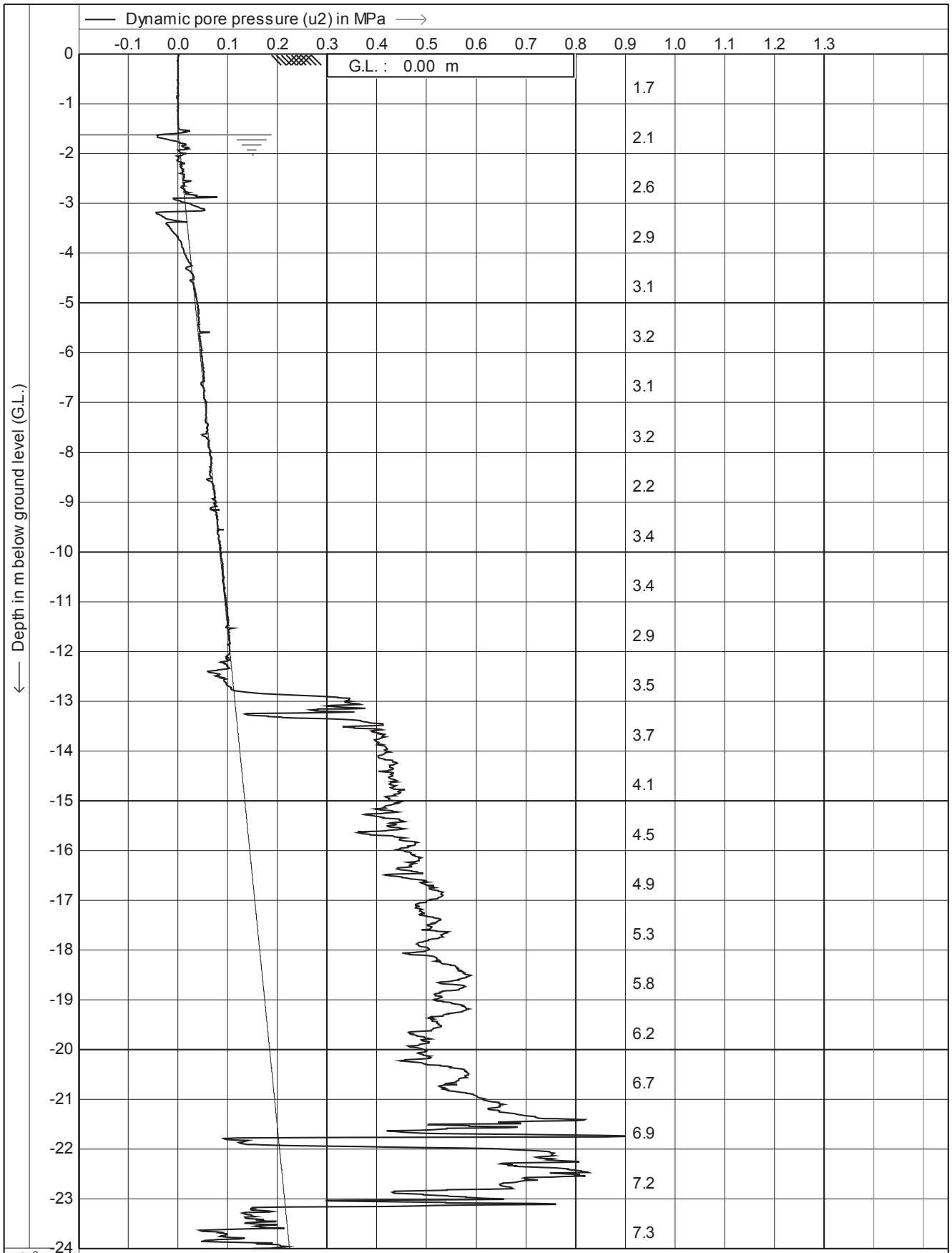


Test according NEN 5140 class 1	Date	: 14-2-2011
Project : **Site Investigations**	Cone no.	: C10CFIIP.F14
	Project no.	: 01FH1
Location: **Tauranga Eastern Link**	CPT no.	: 650 2/28

CPTask V1.30

NZGD ID: CPT_94888

NZGD ID: CPT_94888



CPTask V1.30

DRILLING GEO PROBE
Ground Drilling and Environmental Specialists

Test according NEN 5140 class 1

Project : **Site Investigations**

Location: **Tauranga Eastern Link**

Date : **14-2-2011**

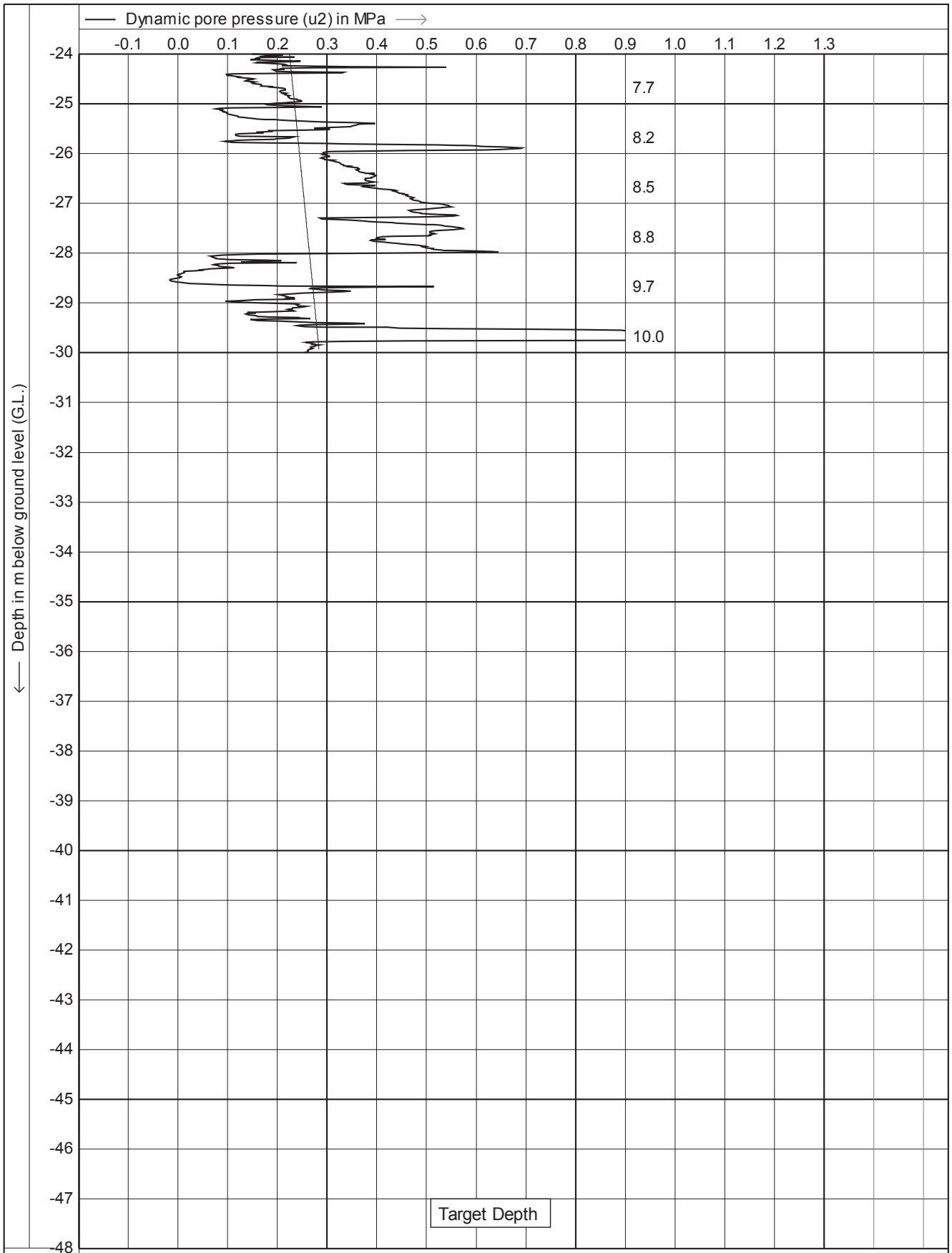
Cone no. : **C10CFIIP.F14**

Project no. : **01FH1**

CPT no. : **650** **3/28**

NZGD ID: CPT_94888

NZGD ID: CPT_94888

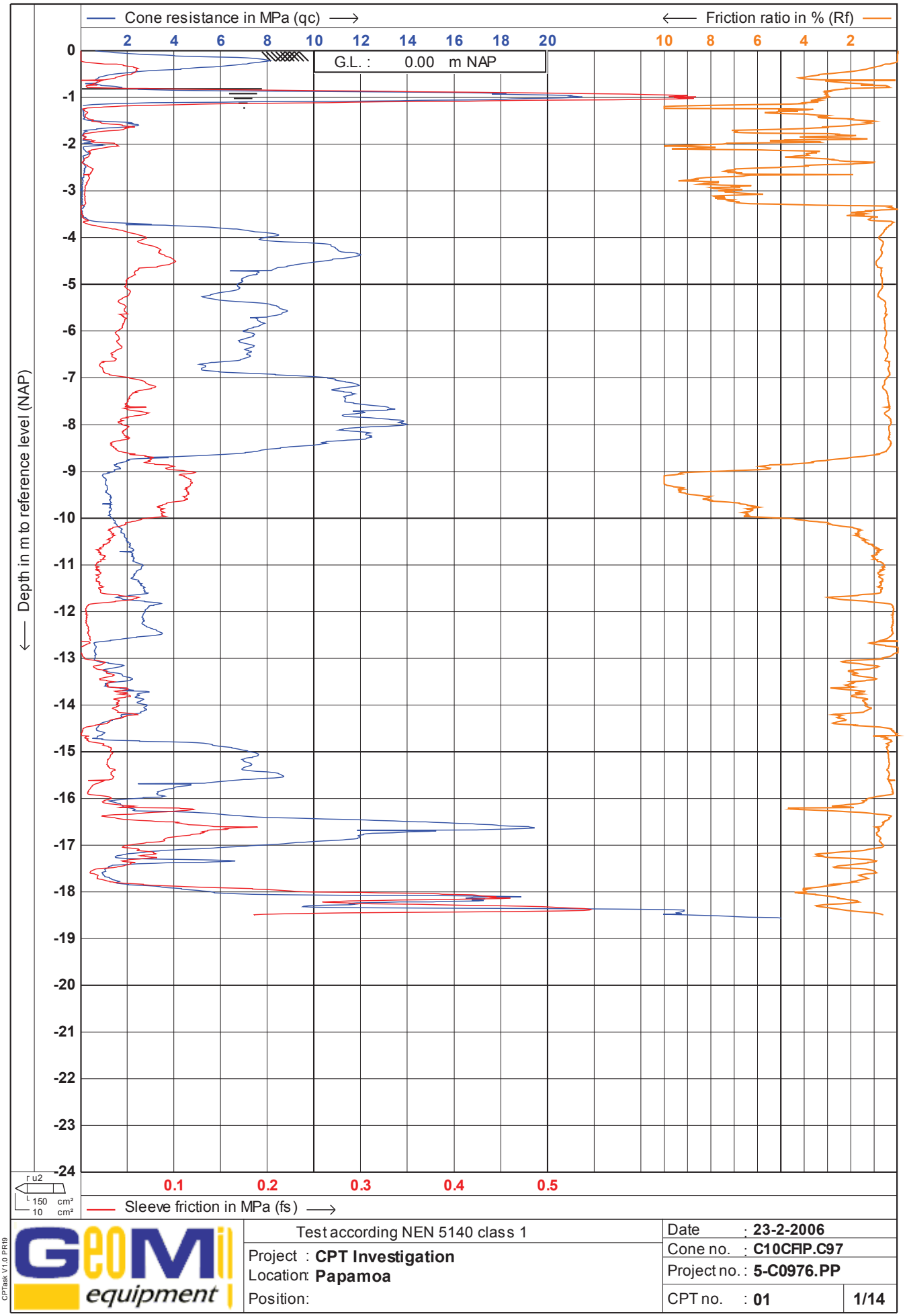


Test according NEN 5140 class 1		Date : **14-2-2011**
Project : **Site Investigations**		Cone no. : **C10CFIIP.F14**
		Project no. : **01FH1**
Location: **Tauranga Eastern Link**		CPT no. : **650** 4/28

CPTask V1.30

NZGD ID: CPT_94888

NZGD ID: 106822



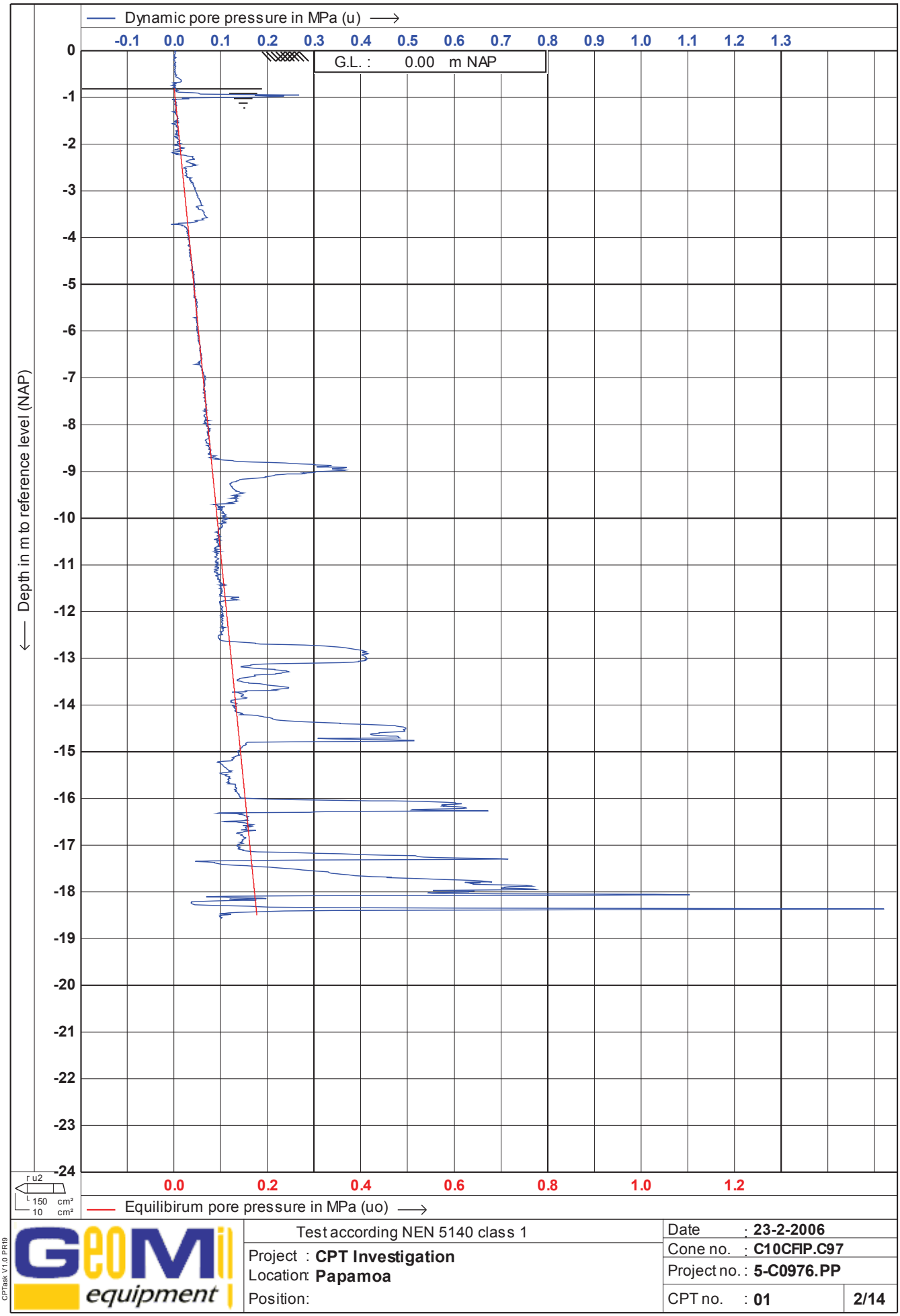
Test according NEN 5140 class 1

Project : **CPT Investigation**
Location: **Papamoa**
Position:

Date : **23-2-2006**
Cone no. : **C10CFIP.C97**
Project no. : **5-C0976.PP**
CPT no. : **01** **1/14**

CPTask V1.0 PR19

NZGD ID: 106822



CPTask V1.0 PR19

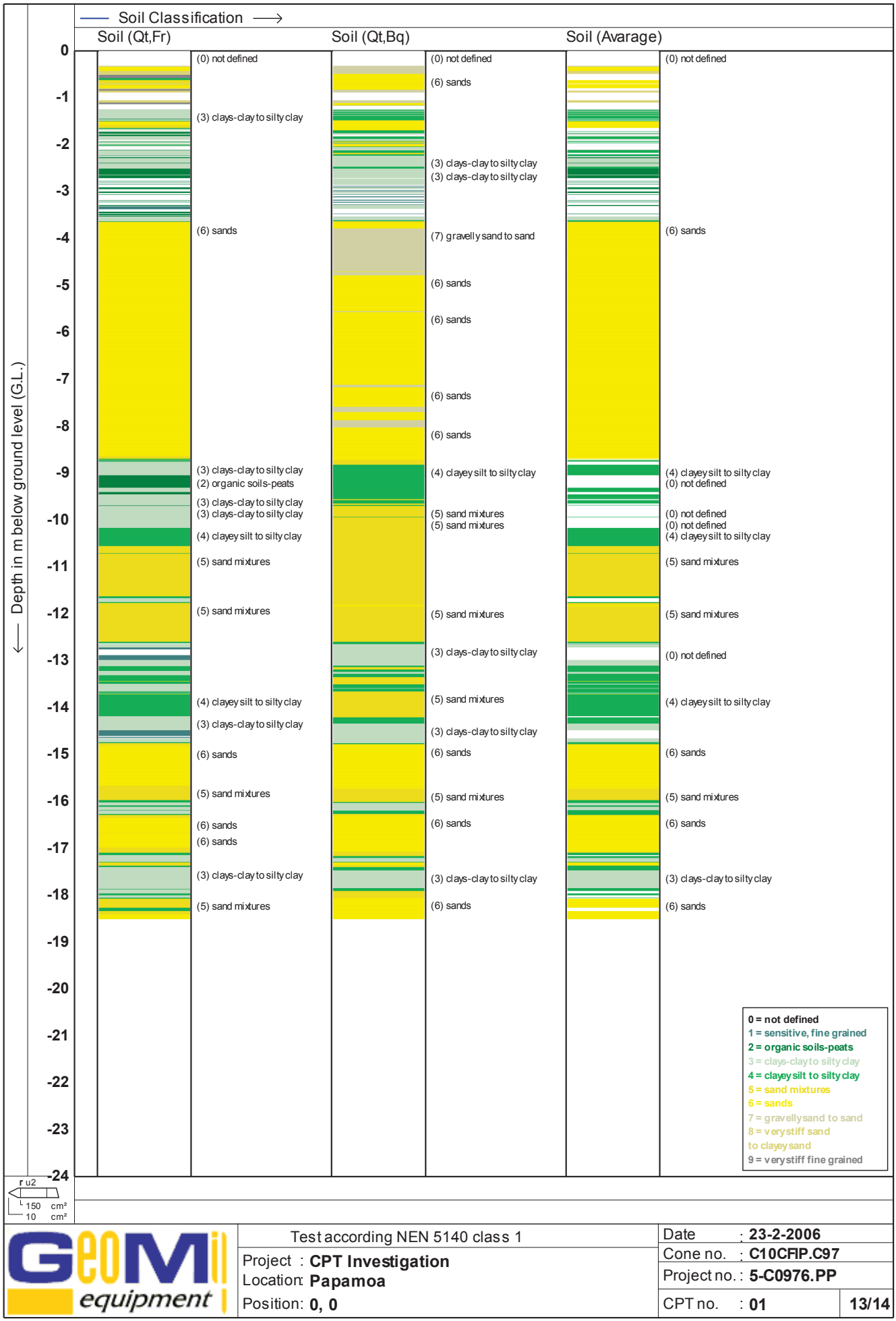
GeoMil equipment

Test according NEN 5140 class 1

Project : **CPT Investigation**
Location: **Papamoa**
Position:

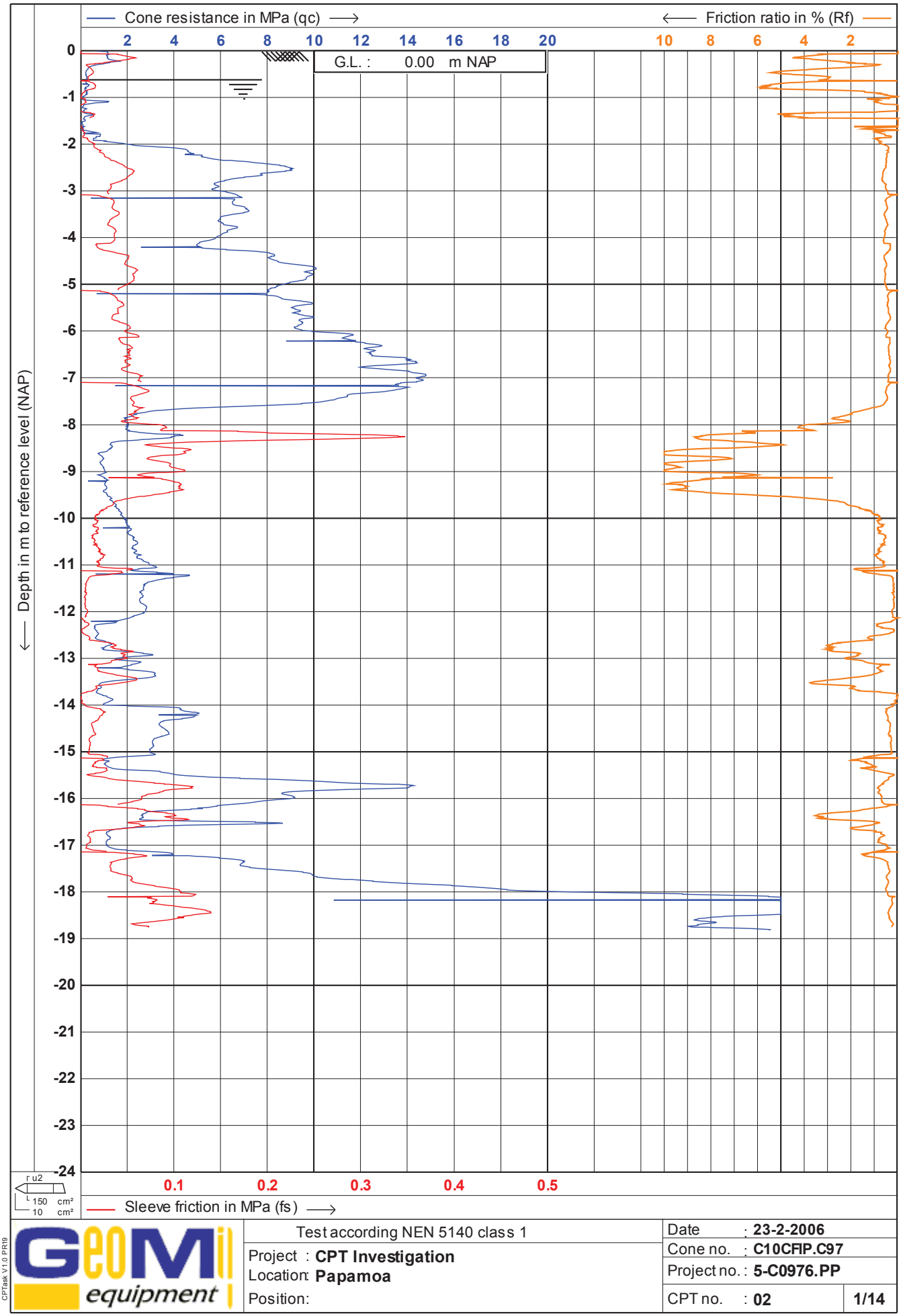
Date : **23-2-2006**
Cone no. : **C10CFIP.C97**
Project no. : **5-C0976.PP**
CPT no. : **01**

NZGD ID: 106822



GeoMil equipment	Test according NEN 5140 class 1	Date : **23-2-2006**
	Project : **CPT Investigation**	Cone no. : **C10CFIP.C97**
	Location: **Papamoa**	Project no. : **5-C0976.PP**
	Position: **0, 0**	CPT no. : **01** 13/14

NZGD ID: 106823



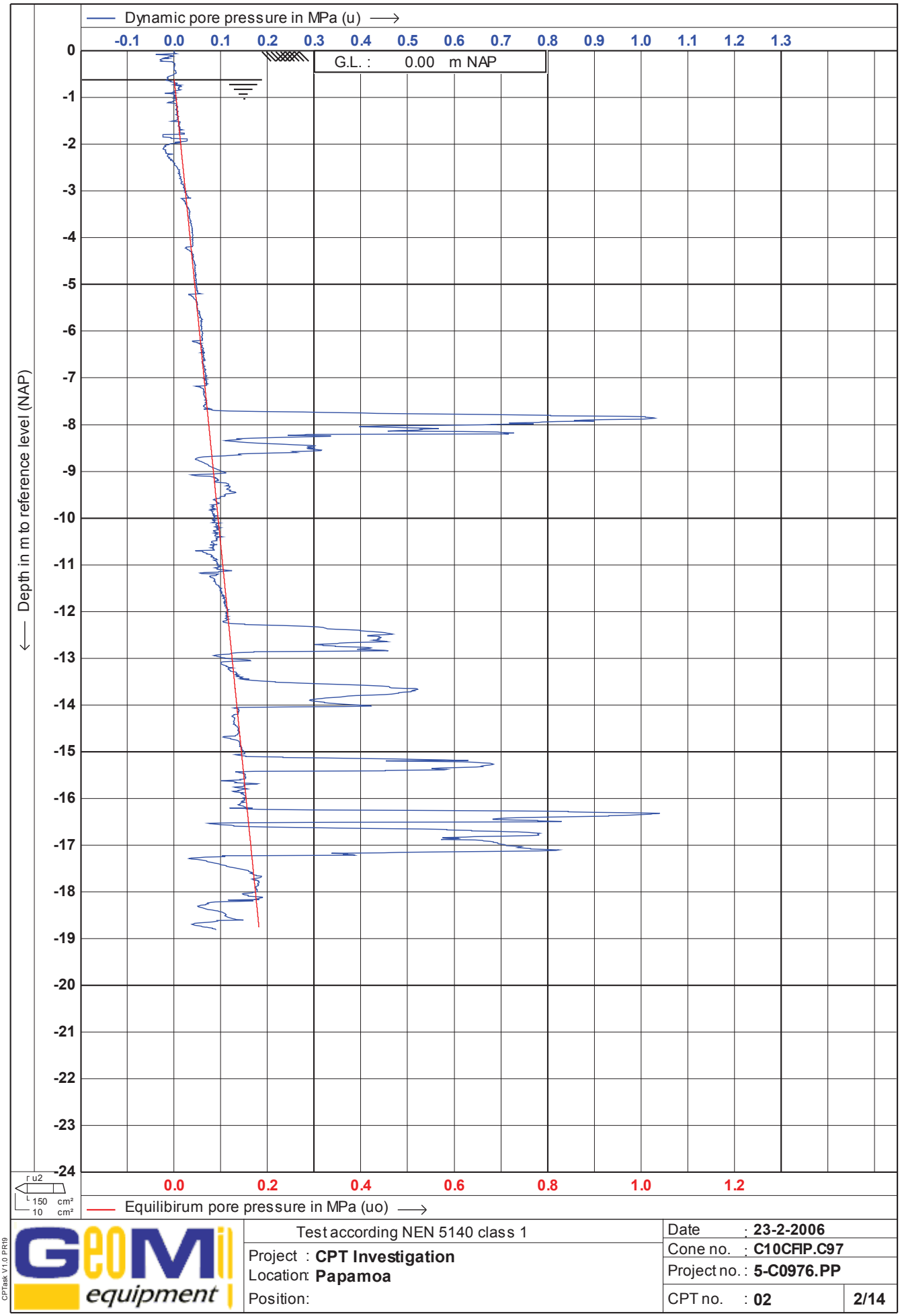
Test according NEN 5140 class 1

Project : **CPT Investigation**
Location: **Papamoa**
Position:

Date : **23-2-2006**
Cone no. : **C10CFIP.C97**
Project no. : **5-C0976.PP**
CPT no. : **02** **1/14**

CPTask V1.0 PR19

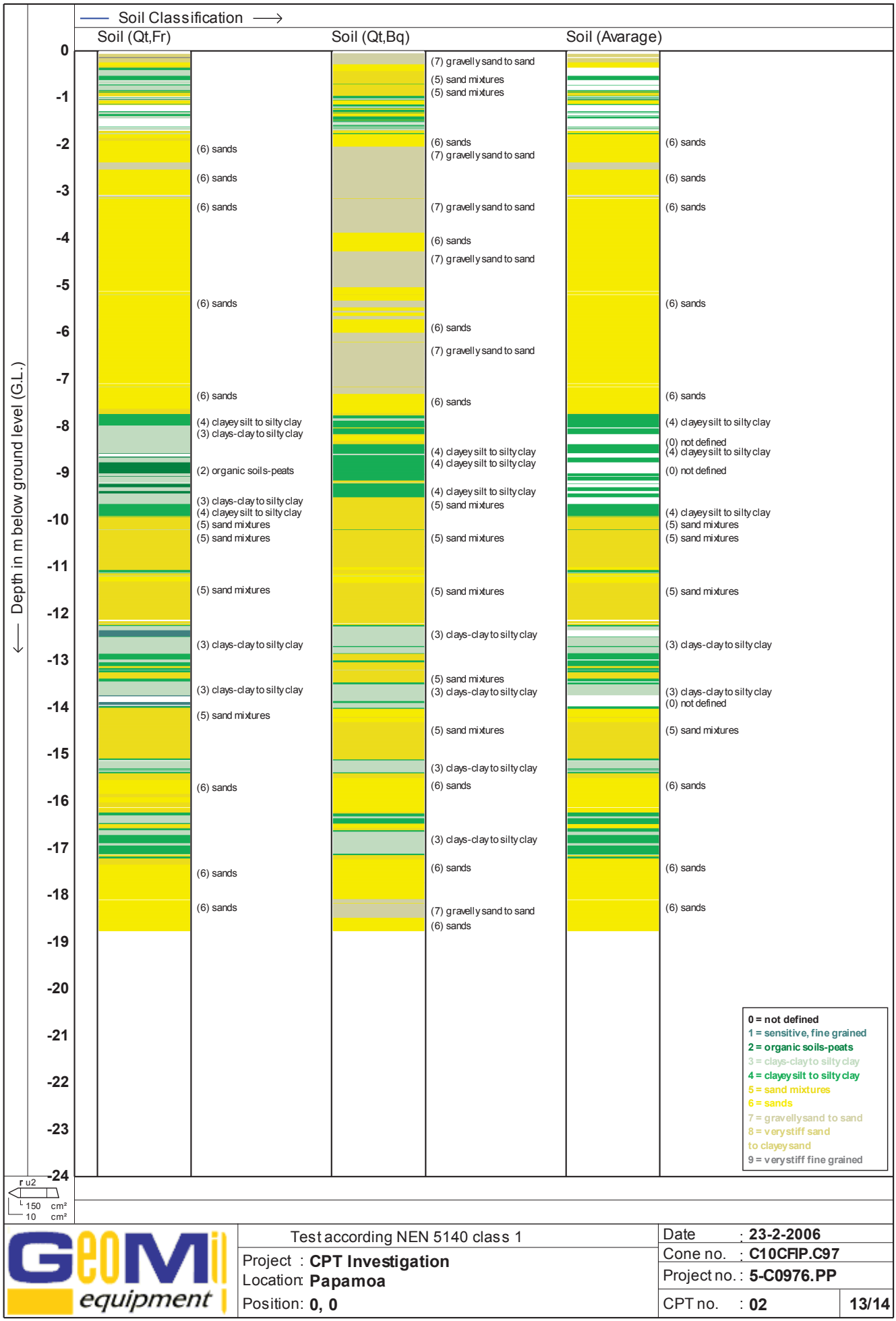
NZGD ID: 106823



GeoMil equipment	Test according NEN 5140 class 1	Date	: **23-2-2006**
	Project : **CPT Investigation**	Cone no.	: **C10CFIP.C97**
	Location: **Papamoa**	Project no.	: **5-C0976.PP**
	Position:	CPT no.	: **02** **2/14**

CPTask V1.0 PR19

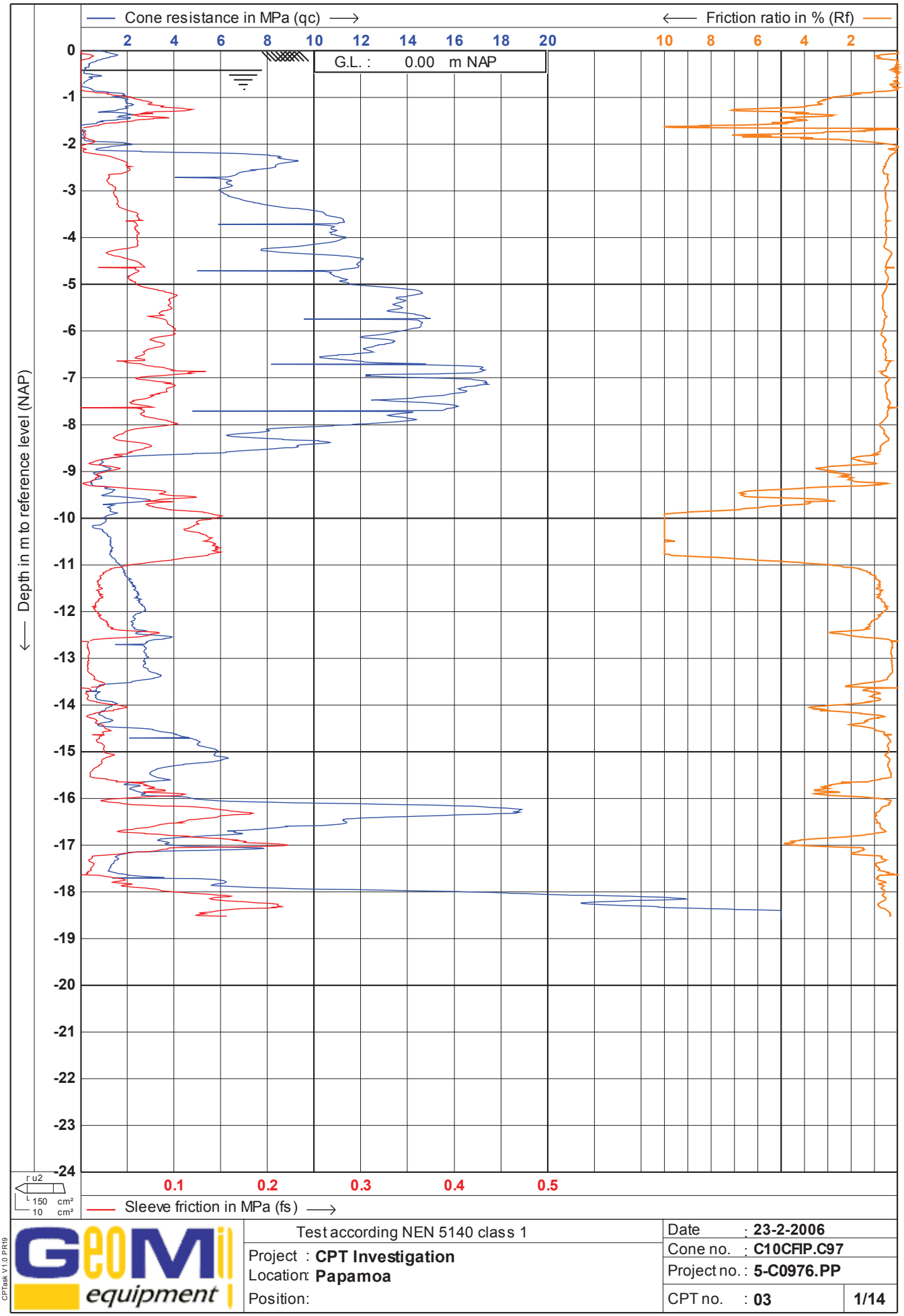
NZGD ID: 106823



GeoMil equipment	Test according NEN 5140 class 1	Date : **23-2-2006**
	Project : **CPT Investigation**	Cone no. : **C10CFIP.C97**
	Location: **Papamoa**	Project no. : **5-C0976.PP**
	Position: **0, 0**	CPT no. : **02** 13/14

NZGD ID: 106823

NZGD ID: 106824



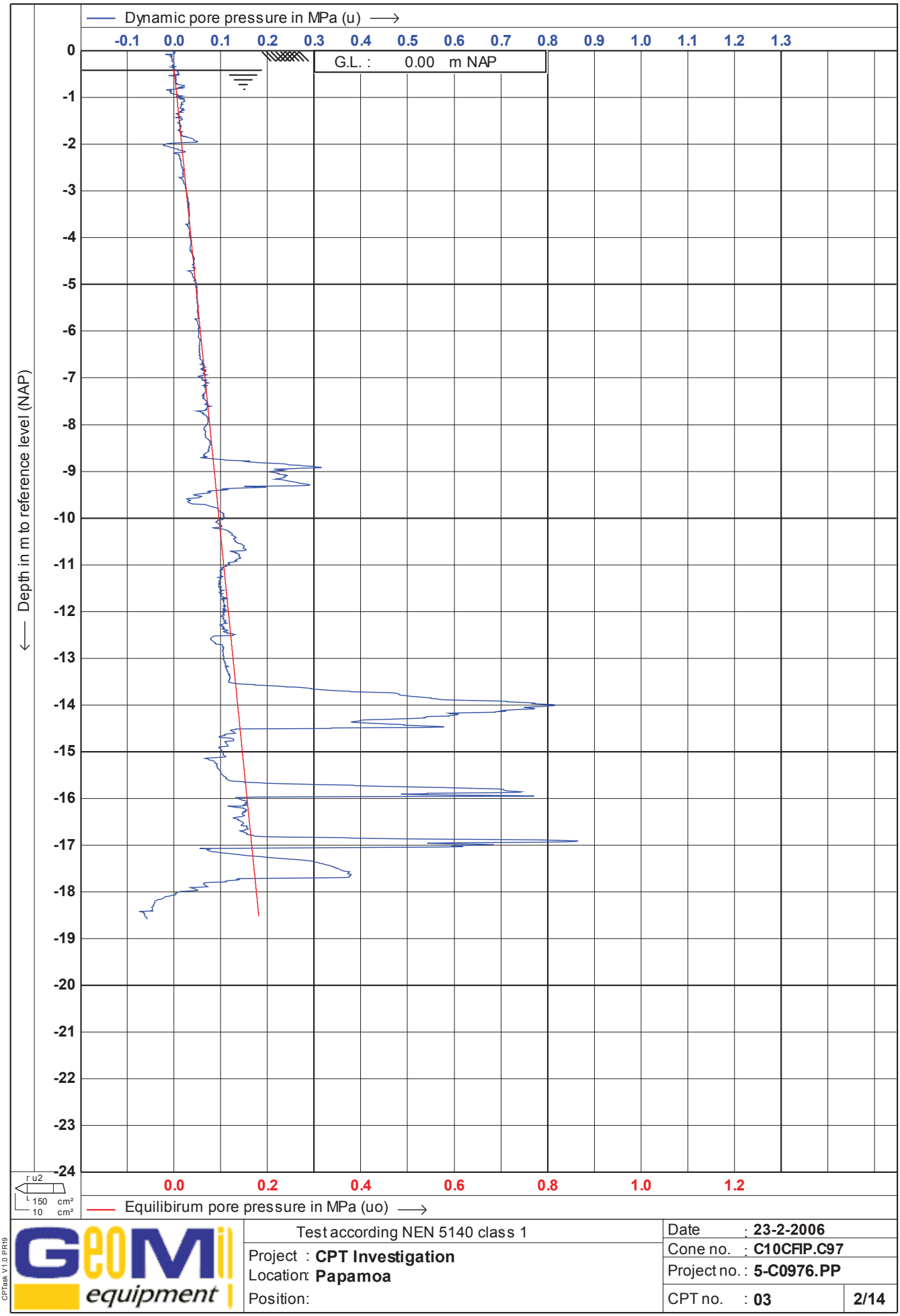
Test according NEN 5140 class 1

Project : **CPT Investigation**
Location: **Papamoa**
Position:

Date : **23-2-2006**
Cone no. : **C10CFIP.C97**
Project no. : **5-C0976.PP**
CPT no. : **03** **1/14**

CPTask V1.0 PR19

NZGD ID: 106824



CPTask V1.0 PR19

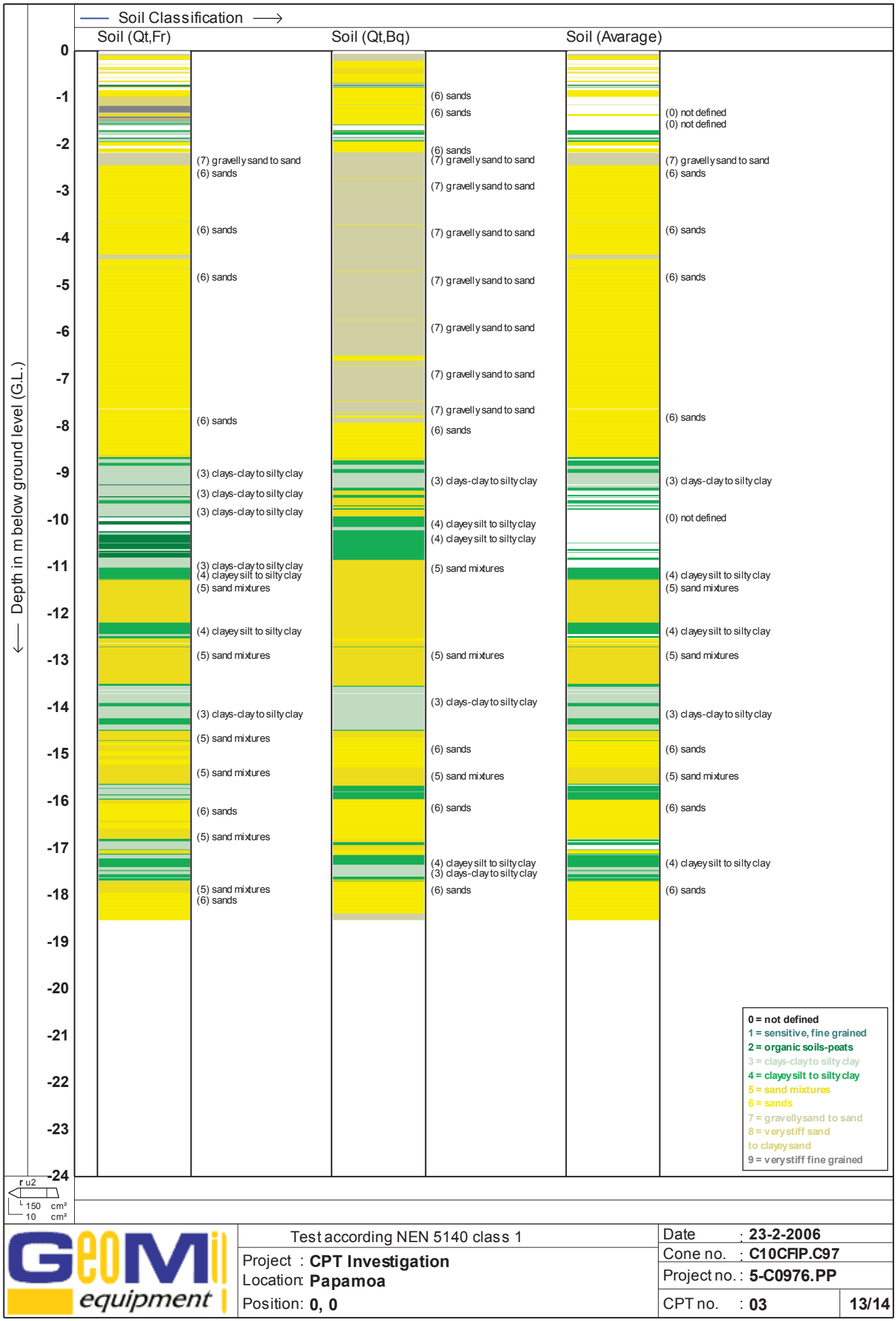
GeoMil equipment

Test according NEN 5140 class 1

Project : **CPT Investigation**
Location: **Papamoa**
Position:

Date : **23-2-2006**
Cone no. : **C10CFIP.C97**
Project no. : **5-C0976.PP**
CPT no. : **03** **2/14**

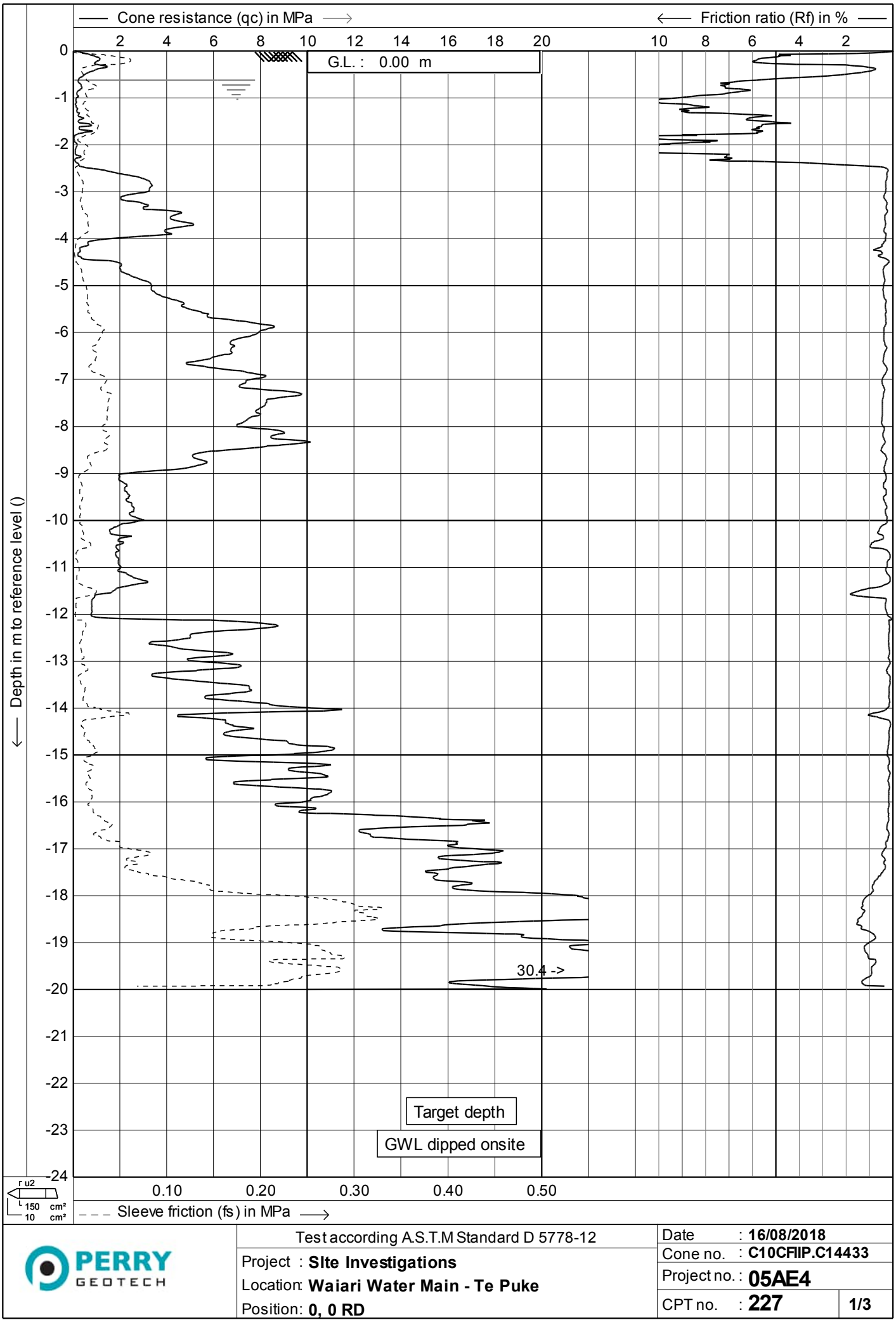
NZGD ID: 106824



GeoMil equipment	Test according NEN 5140 class 1	Date : **23-2-2006**
	Project : **CPT Investigation**	Cone no. : **C10CFIP.C97**
	Location: **Papamoa**	Project no. : **5-C0976.PP**
	Position: **0, 0**	CPT no. : **03** 13/14

NZGD ID: 106824

NZGD ID: 110980



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

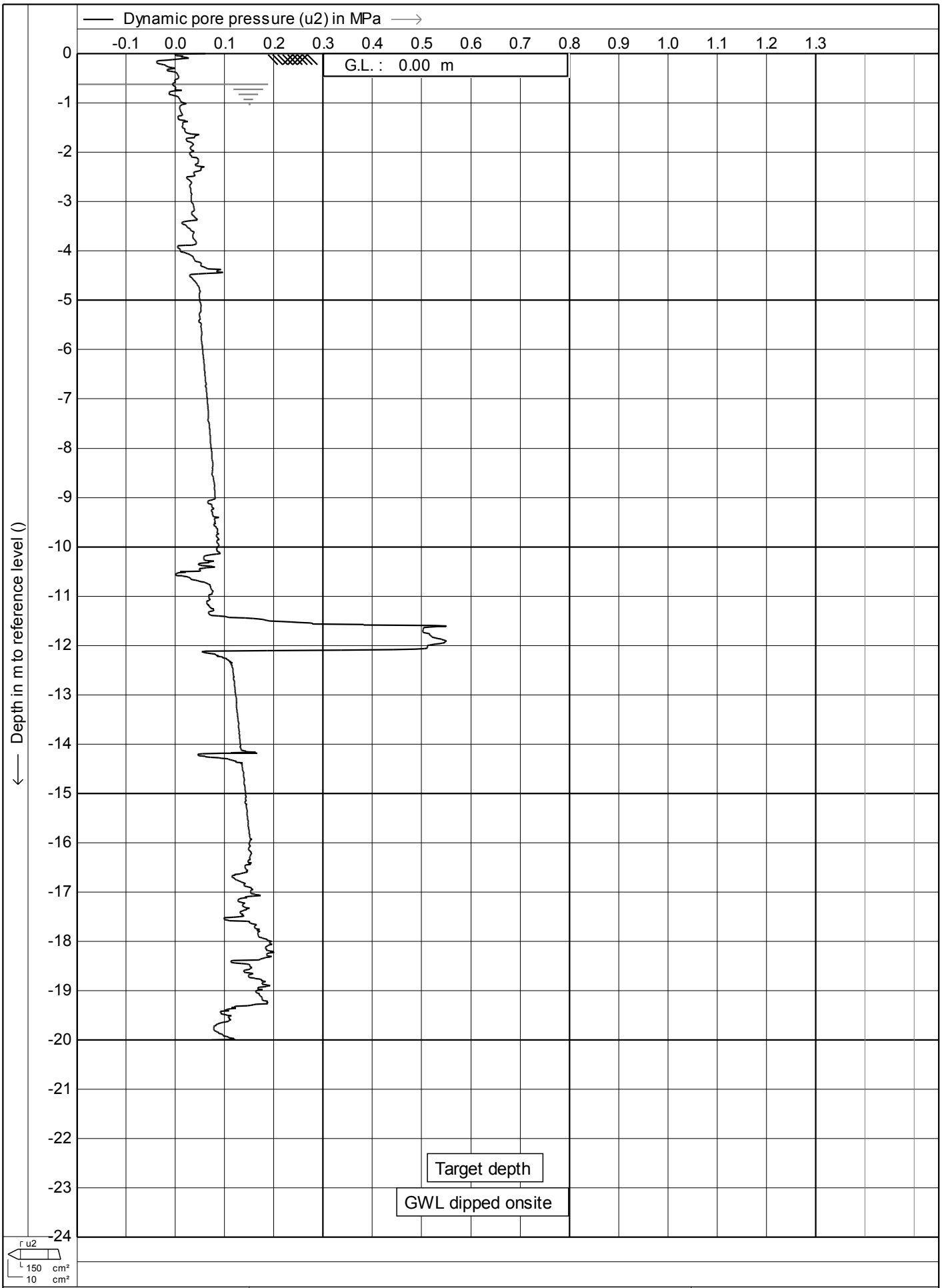
Location: **Waiari Water Main - Te Puke**

Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **227**

NZGD ID: 110980

NZGD ID: 110980



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

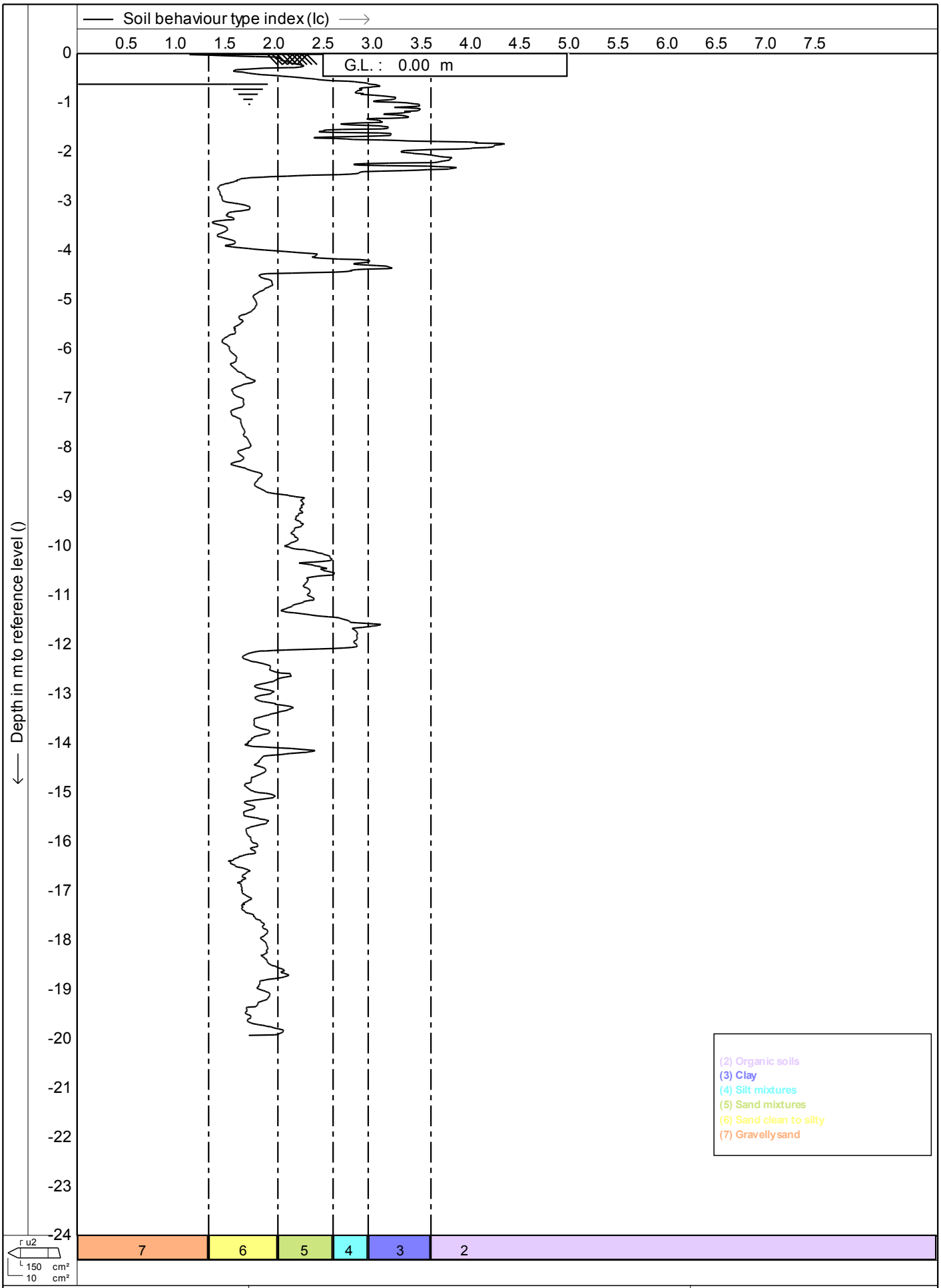
Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **227**

1.47

NZGD ID: 110980

NZGD ID: 110980



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

Position: **0, 0 RD**

Date : **16/08/2018**

Cone no. : **C10CFIIP.C14433**

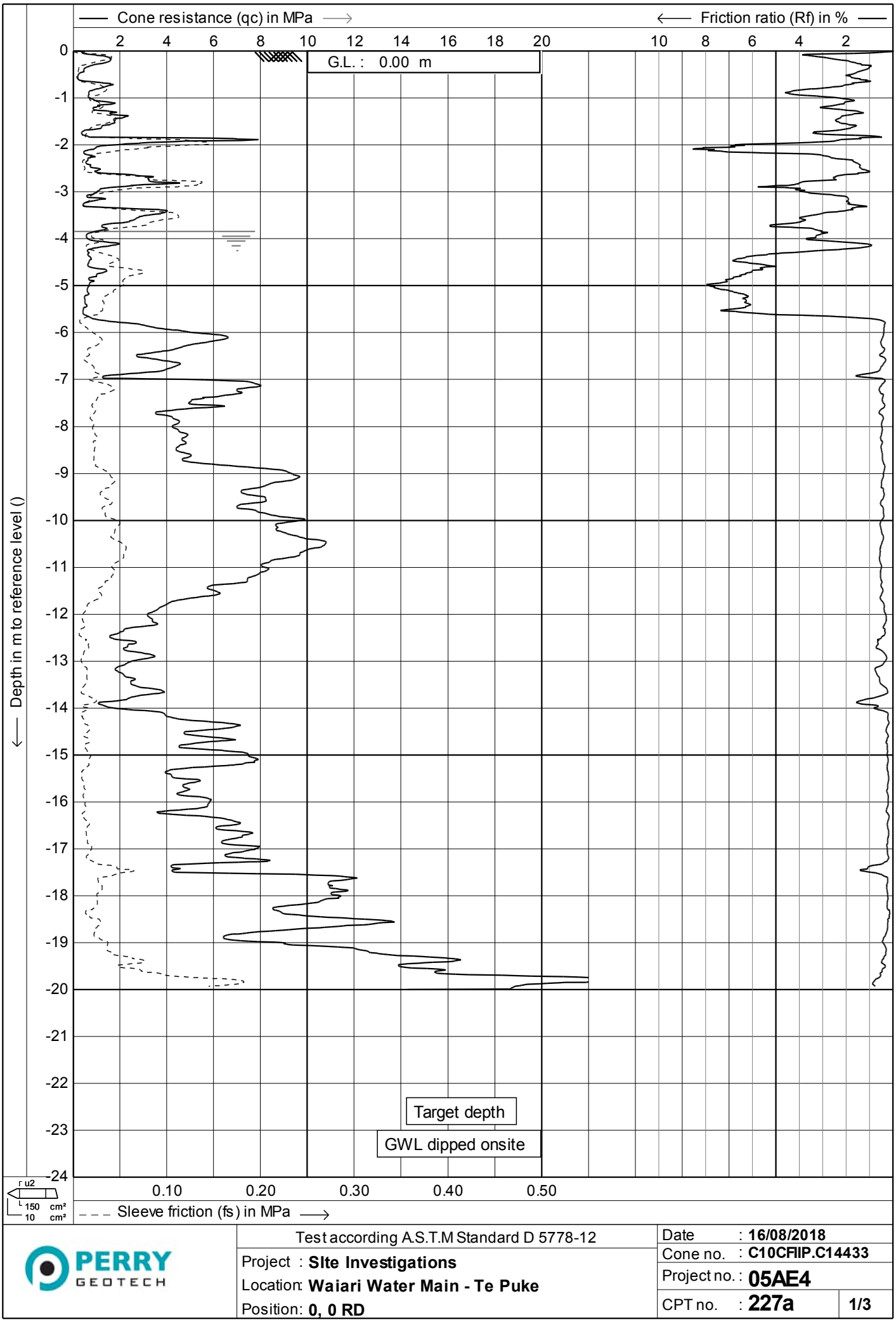
Project no. : **05AE4**

CPT no. : **227** **3/3**

1.47

NZGD ID: 110980

NZGD ID: 110983



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

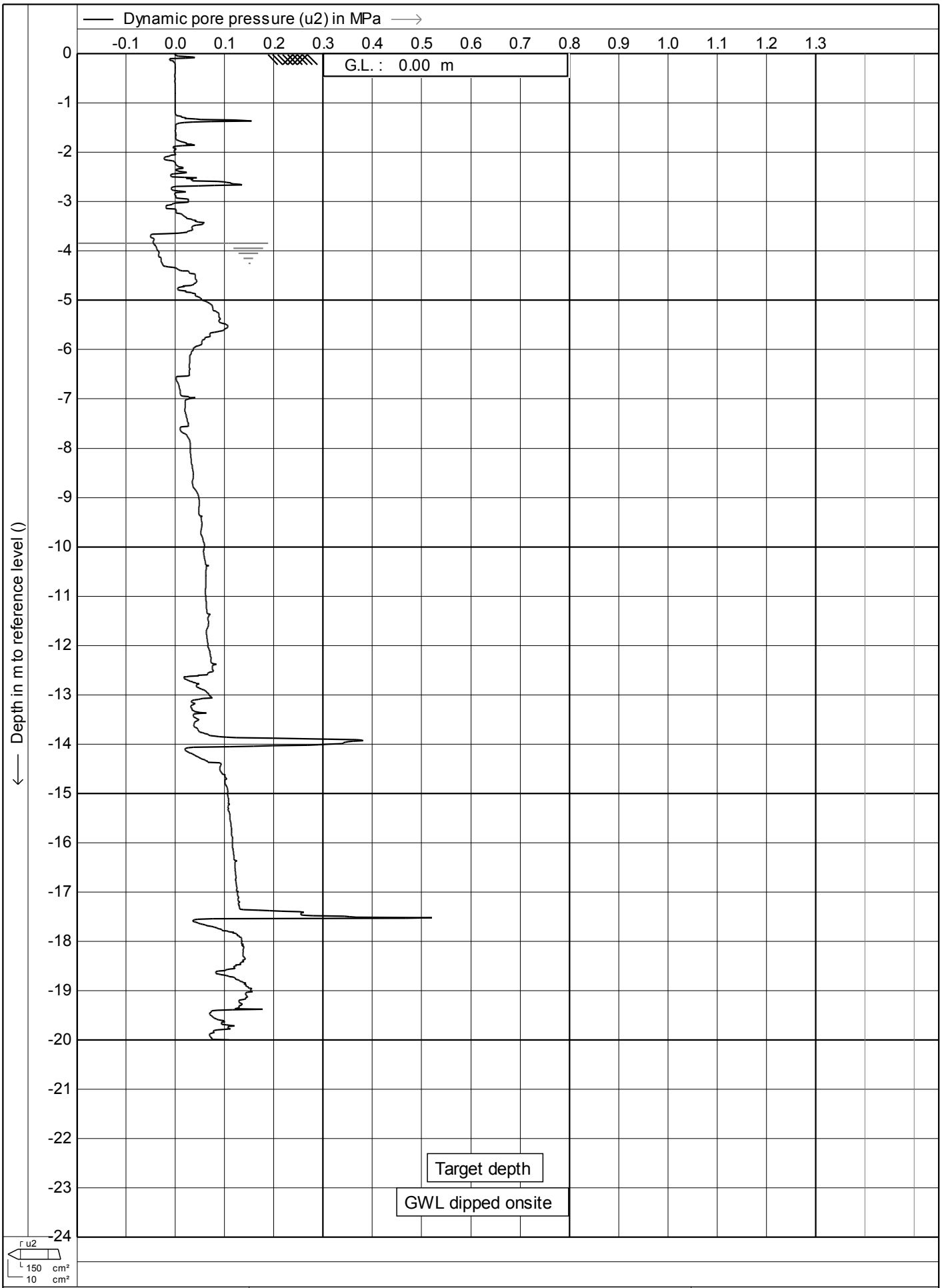
Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **227a** 1/3

1.47

NZGD ID: 110983

NZGD ID: 110983



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

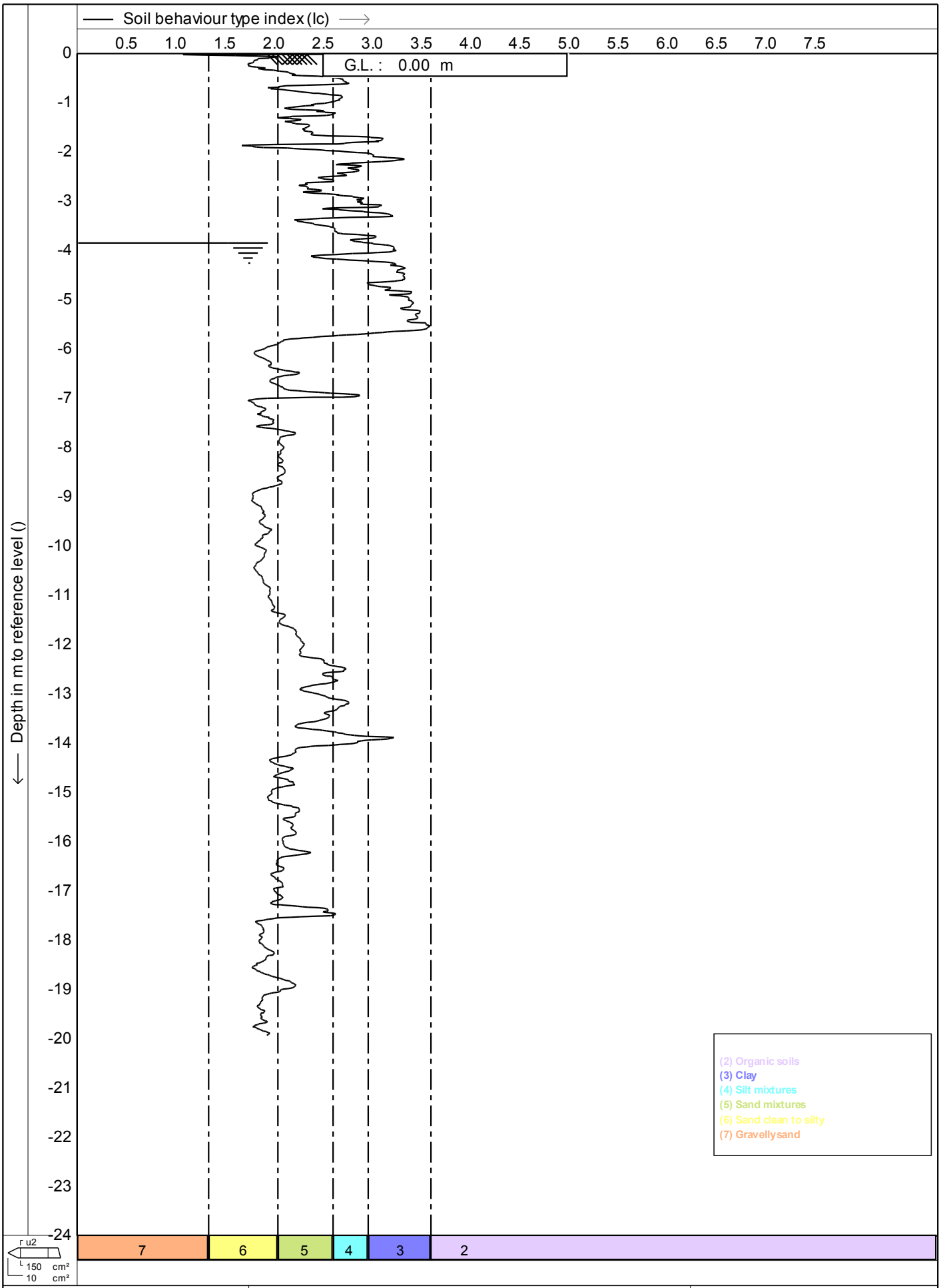
Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **227a**

1.47

NZGD ID: 110983

NZGD ID: 110983



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

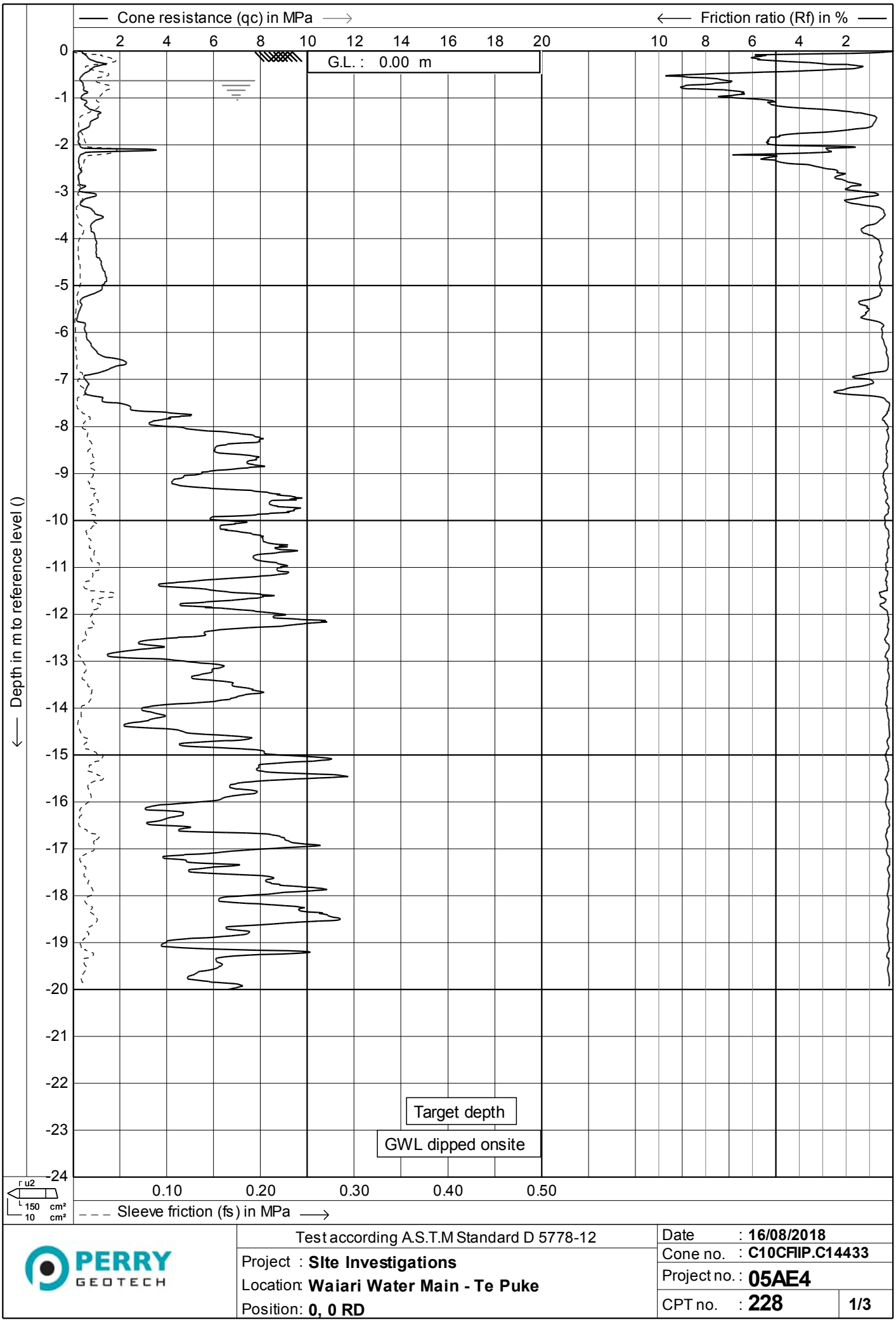
Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **227a** 3/3

1.47

NZGD ID: 110983

NZGD ID: 110985



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **228**

1.47

NZGD ID: 110985

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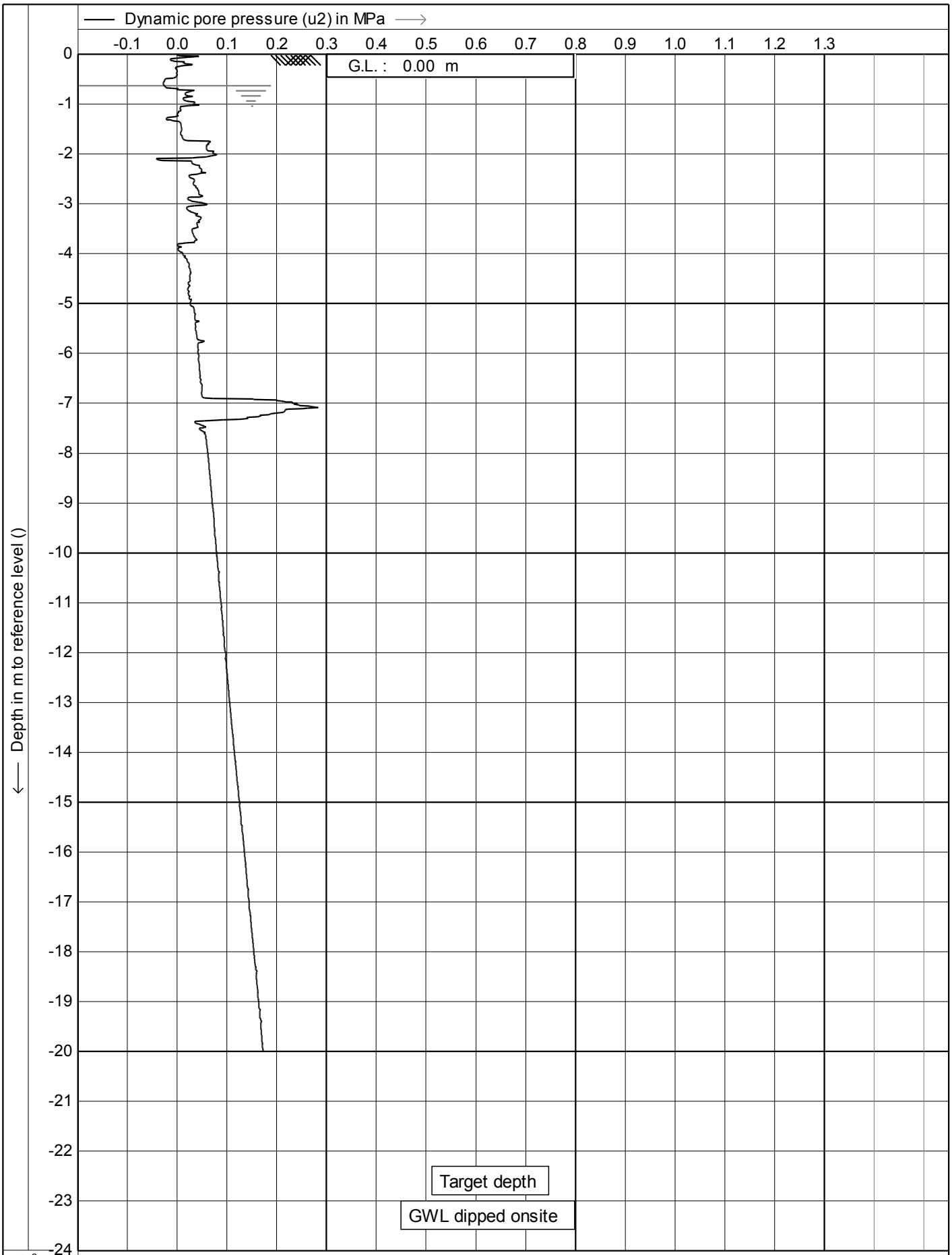

PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

Position: **0, 0 RD**

Date	: **16/08/2018**
Cone no.	: **C10CFIIP.C14433**
Project no.	: **05AE4**
CPT no.	: **228**

1.47

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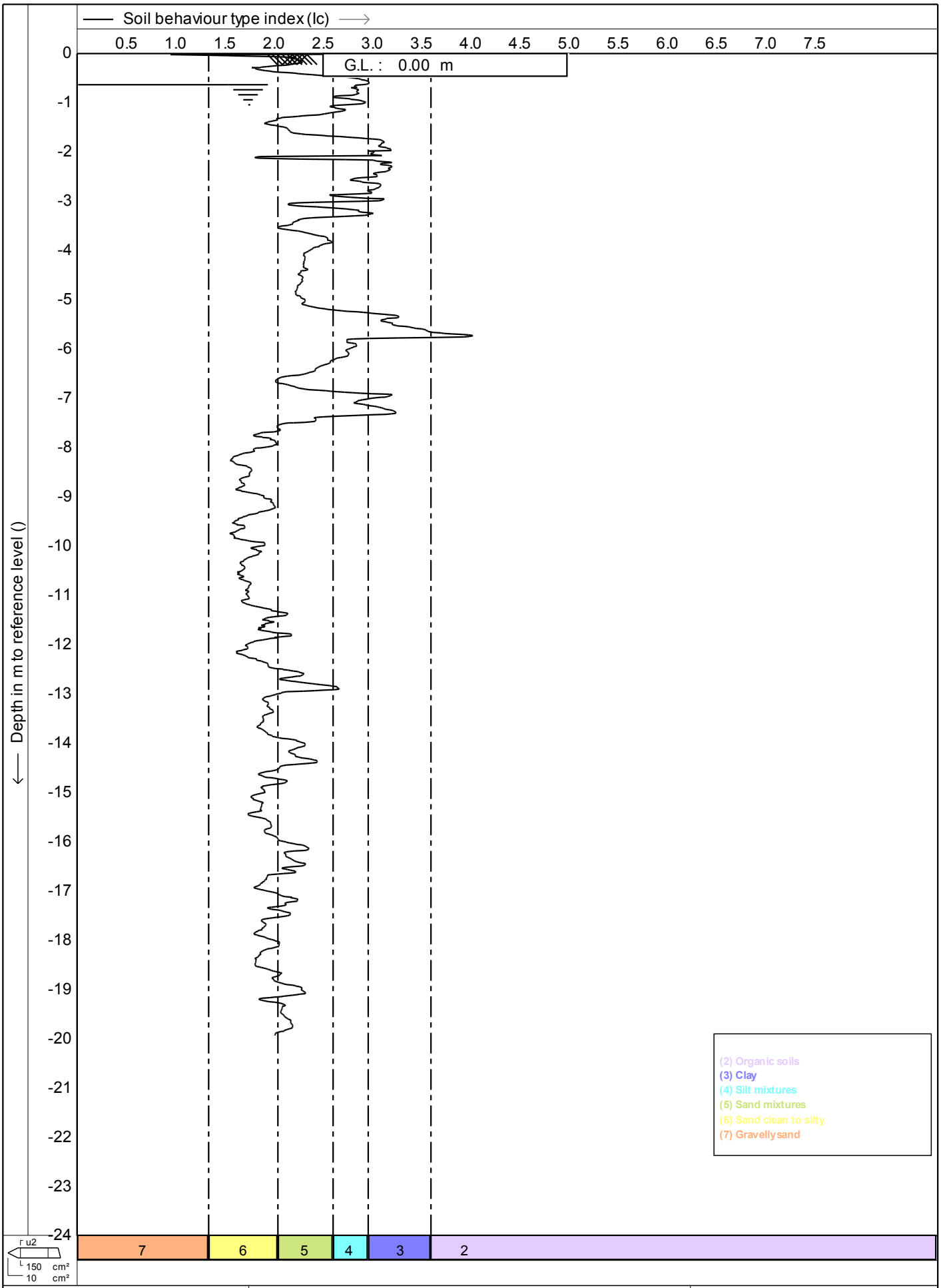


PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **SIte Investigations**

Location: **Waiari Water Main - Te Puke**

Position: **0, 0 RD**

Date : **16/08/2018**

Cone no. : **C10CFIIP.C14433**

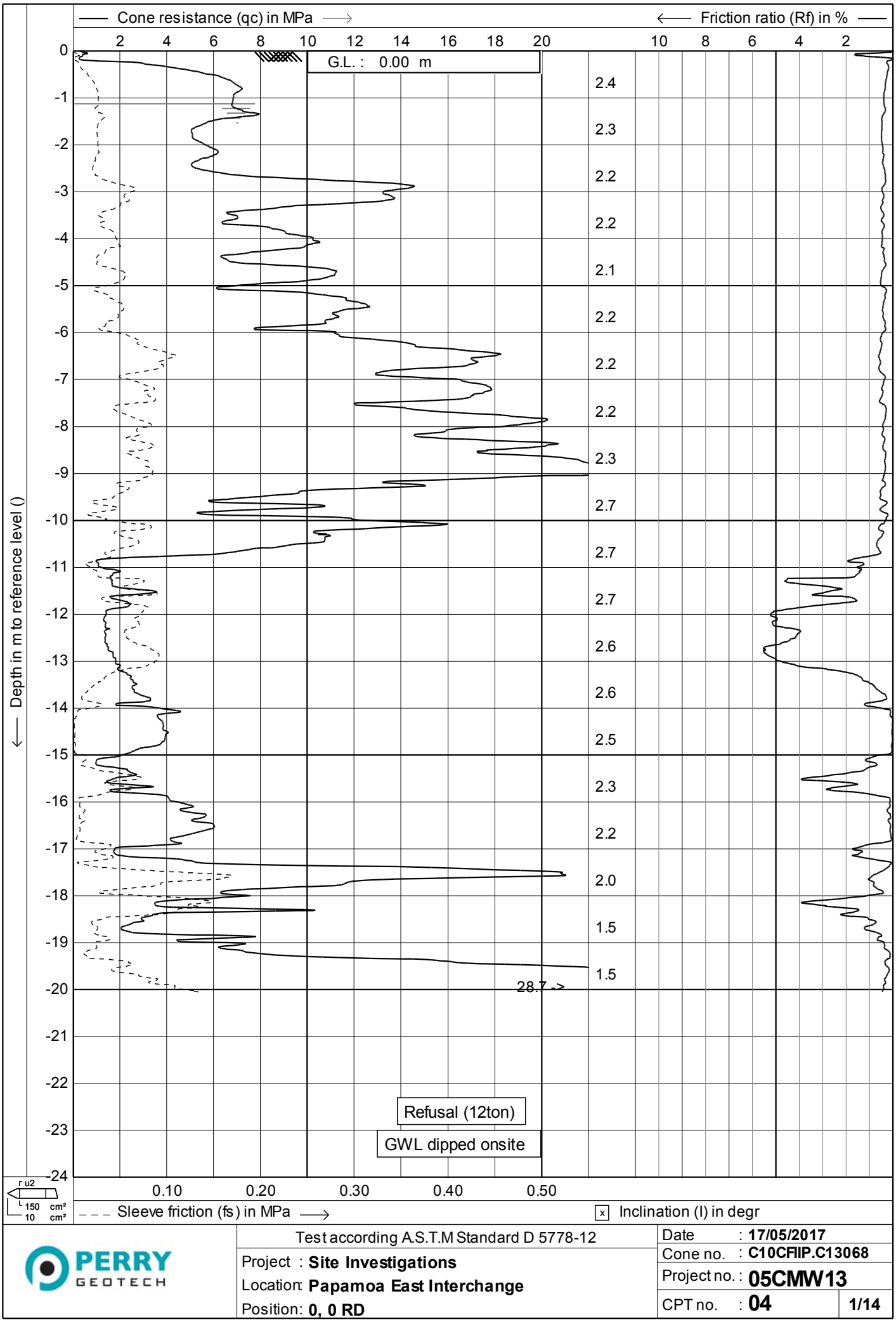
Project no. : **05AE4**

CPT no. : **228** **3/3**

1.47

NZGD ID: 110985

NZGD ID: 126068



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

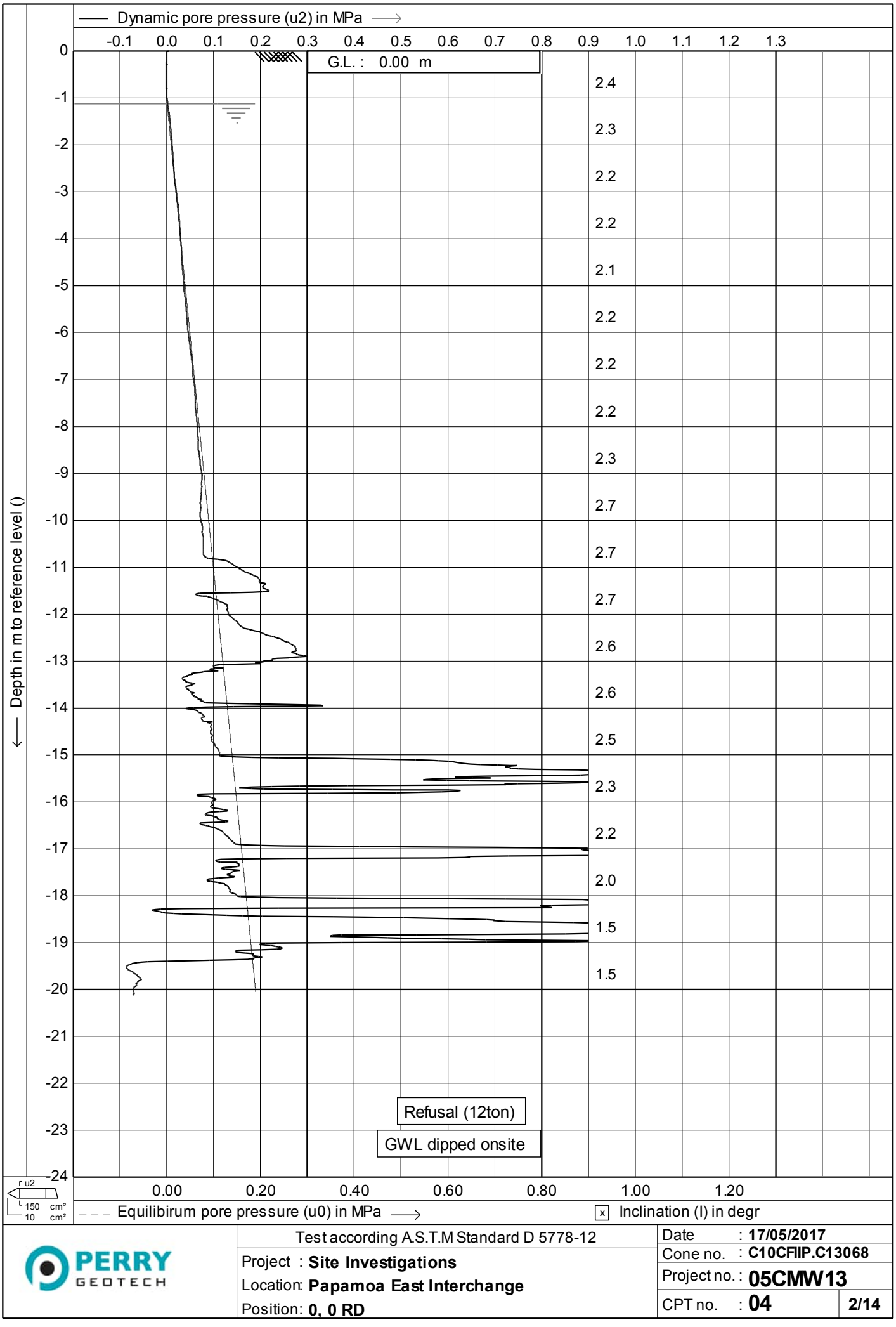
Project no. : **05CMW13**

CPT no. : **04** 1/14

1.43

NZGD ID: 126068

NZGD ID: 126068



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

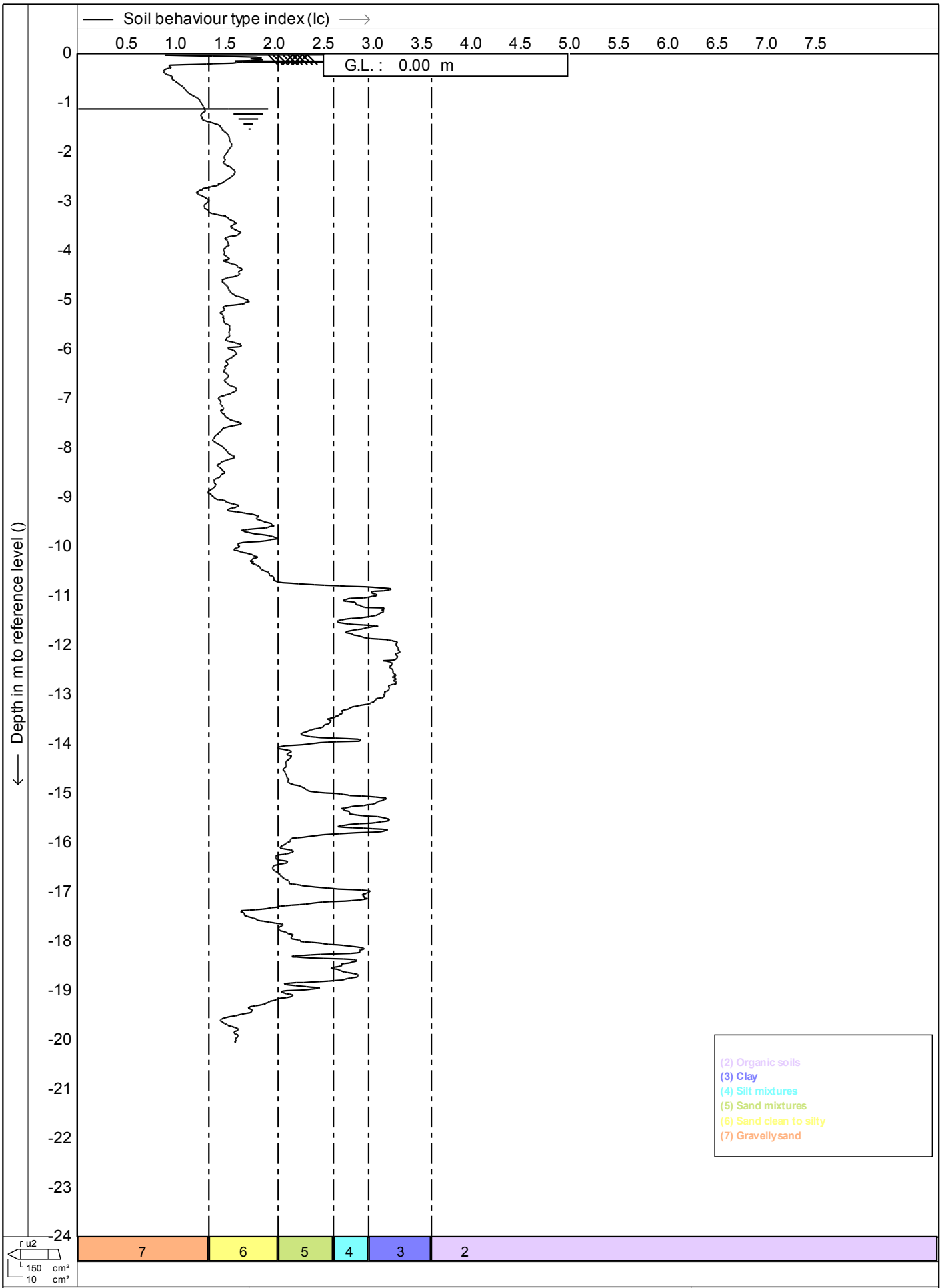
Position: **0, 0 RD**

Date	: **17/05/2017**
Cone no.	: **C10CFIIP.C13068**
Project no.	: **05CMW13**
CPT no.	: **04**

2/14

1.43

NZGD ID: 126068



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

Project no. : **05CMW13**

CPT no. : **04** **9/14**

1.43

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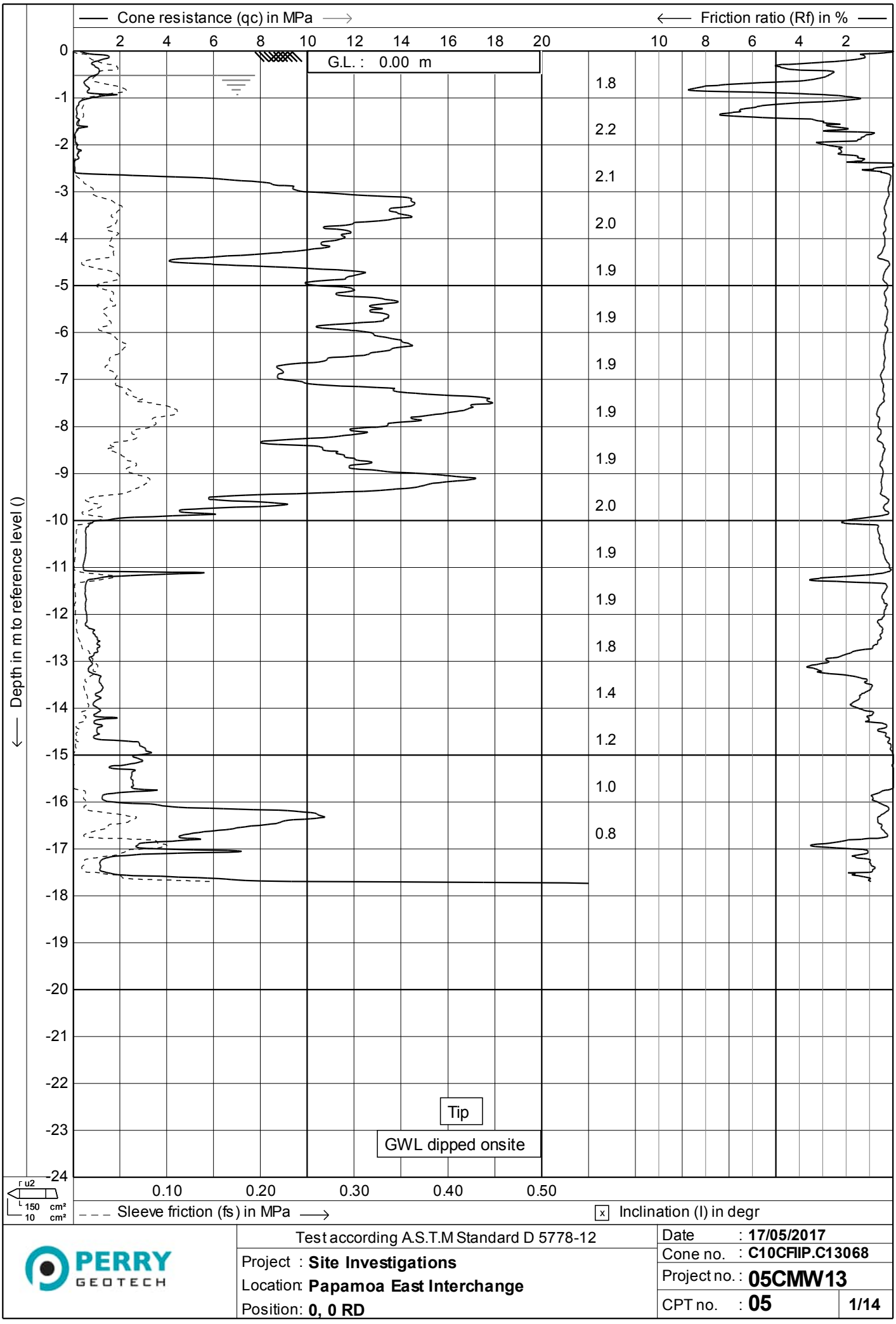

Test according A.S.T.M Standard D 5778-12

PERRY GEOTECH

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

Project no. : **05CMW13**

CPT no. : **05** **1/14**

1.43

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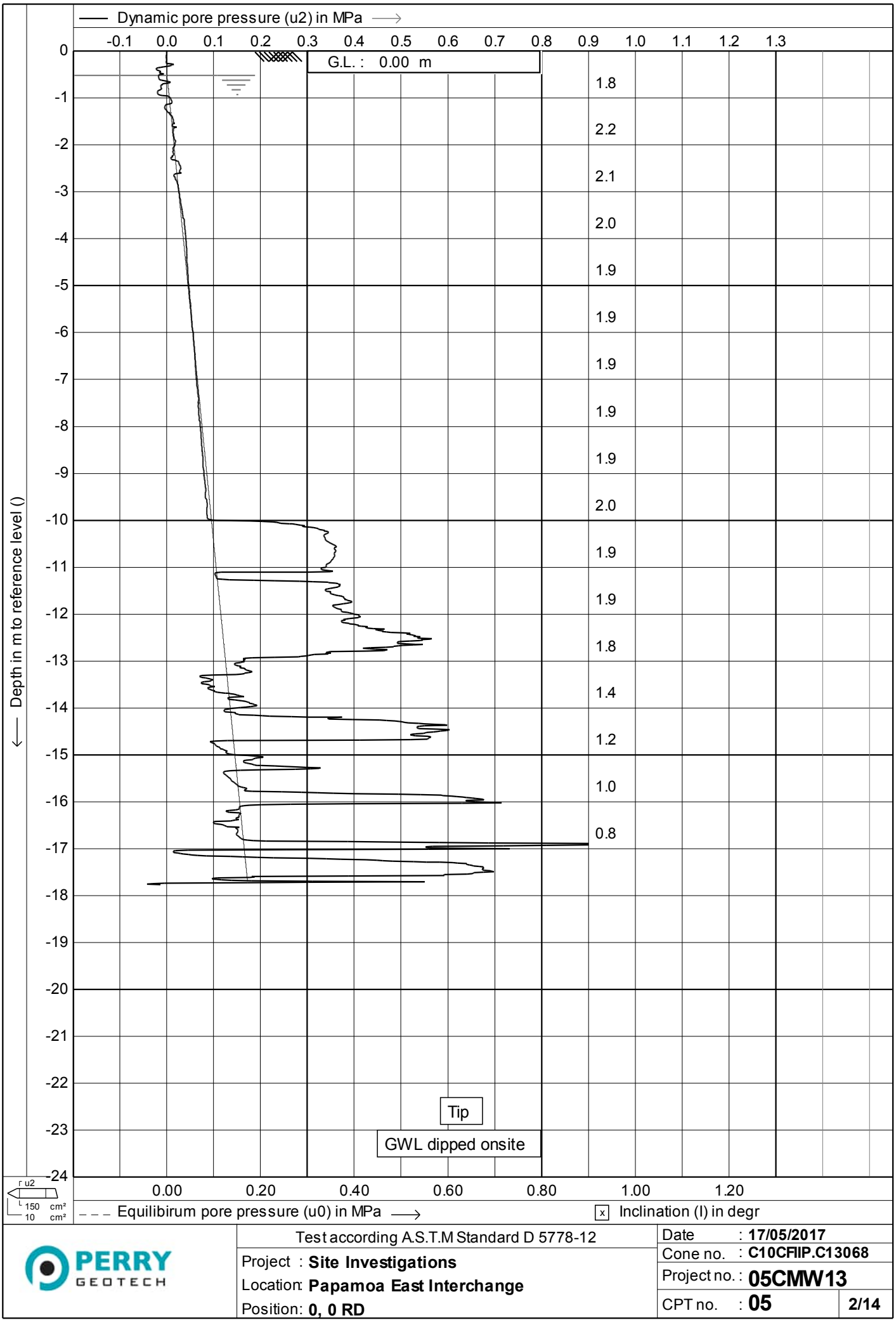

PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date	: **17/05/2017**
Cone no.	: **C10CFIIP.C13068**
Project no.	: **05CMW13**
CPT no.	: **05**

1.43

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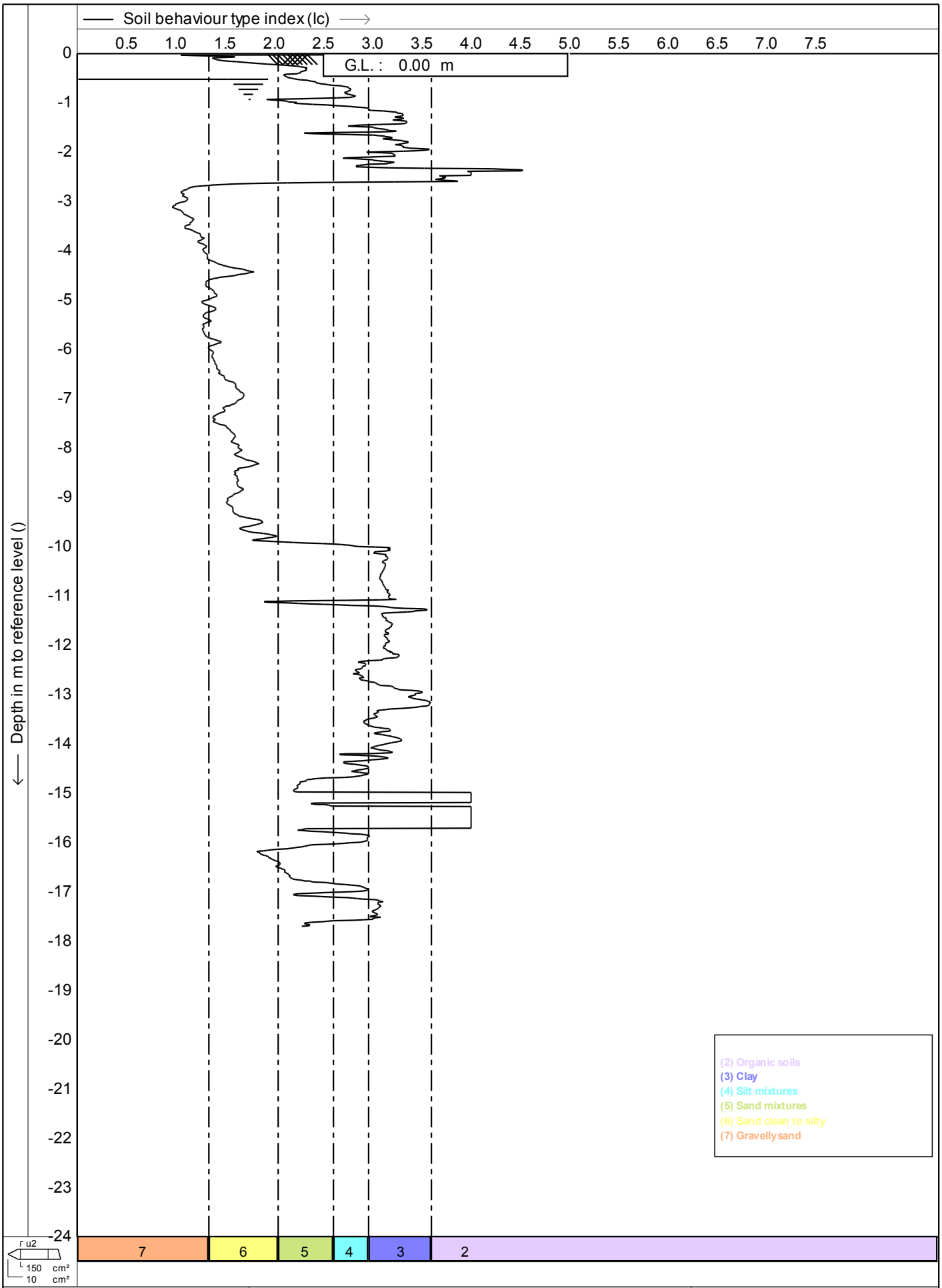


PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

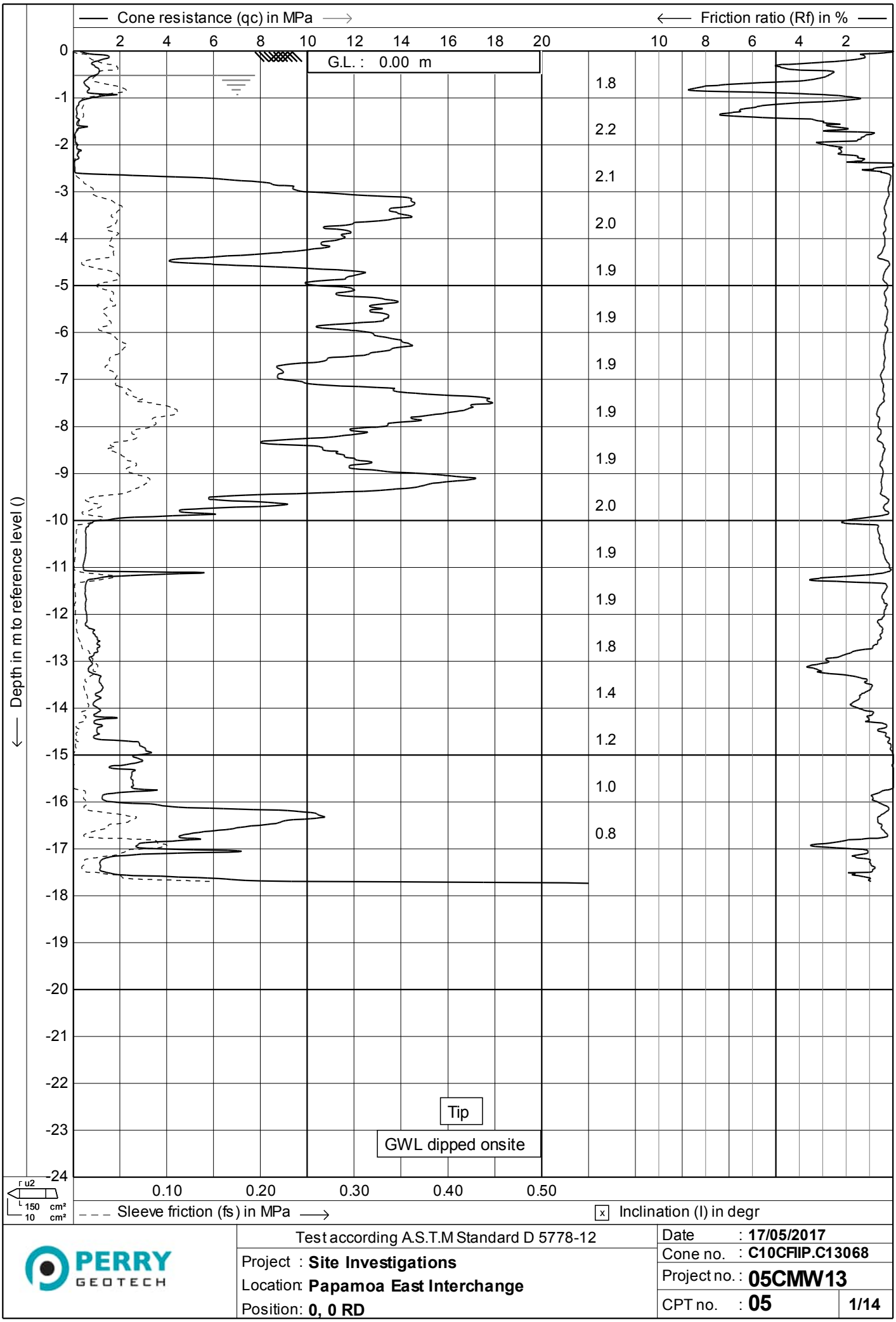
Project no. : **05CMW13**

CPT no. : **05** **9/14**

1.43

NZGD ID: 126069

NZGD ID: 233188



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

Project no. : **05CMW13**

CPT no. : **05**

1/14

1.43

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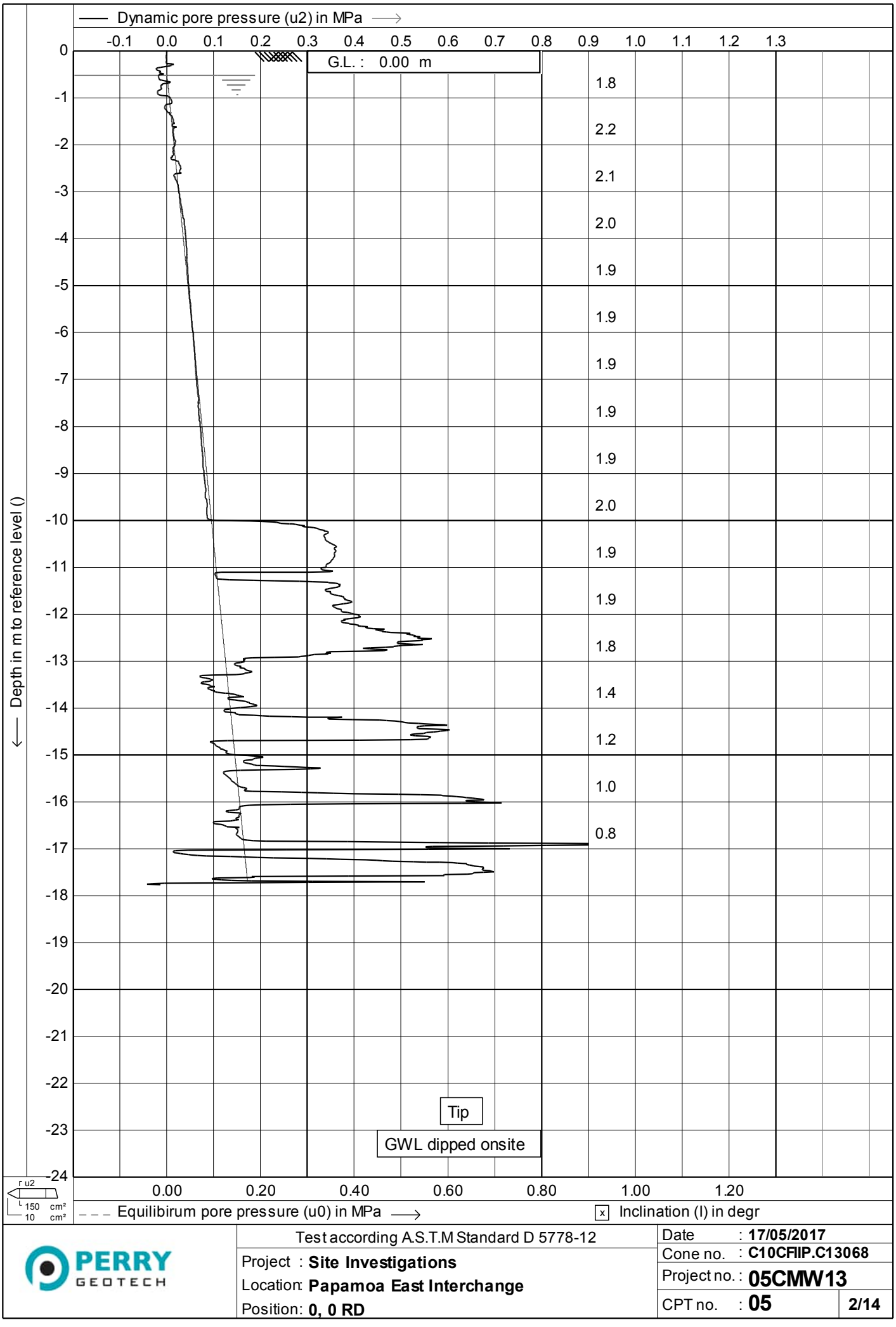

PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date	: **17/05/2017**
Cone no.	: **C10CFIIP.C13068**
Project no.	: **05CMW13**
CPT no.	: **05**

1.43

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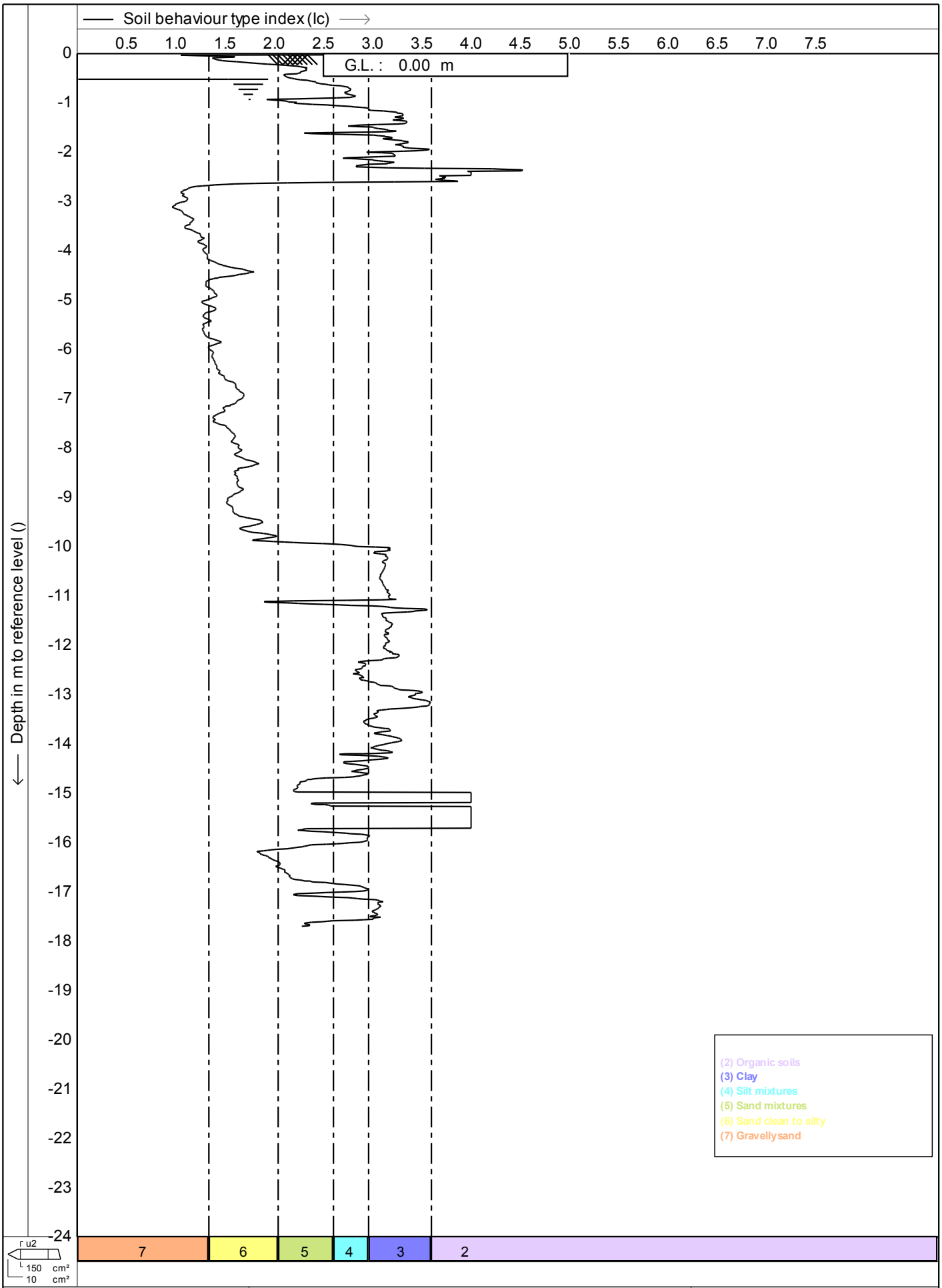


PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Papamoa East Interchange**

Position: **0, 0 RD**

Date : **17/05/2017**

Cone no. : **C10CFIIP.C13068**

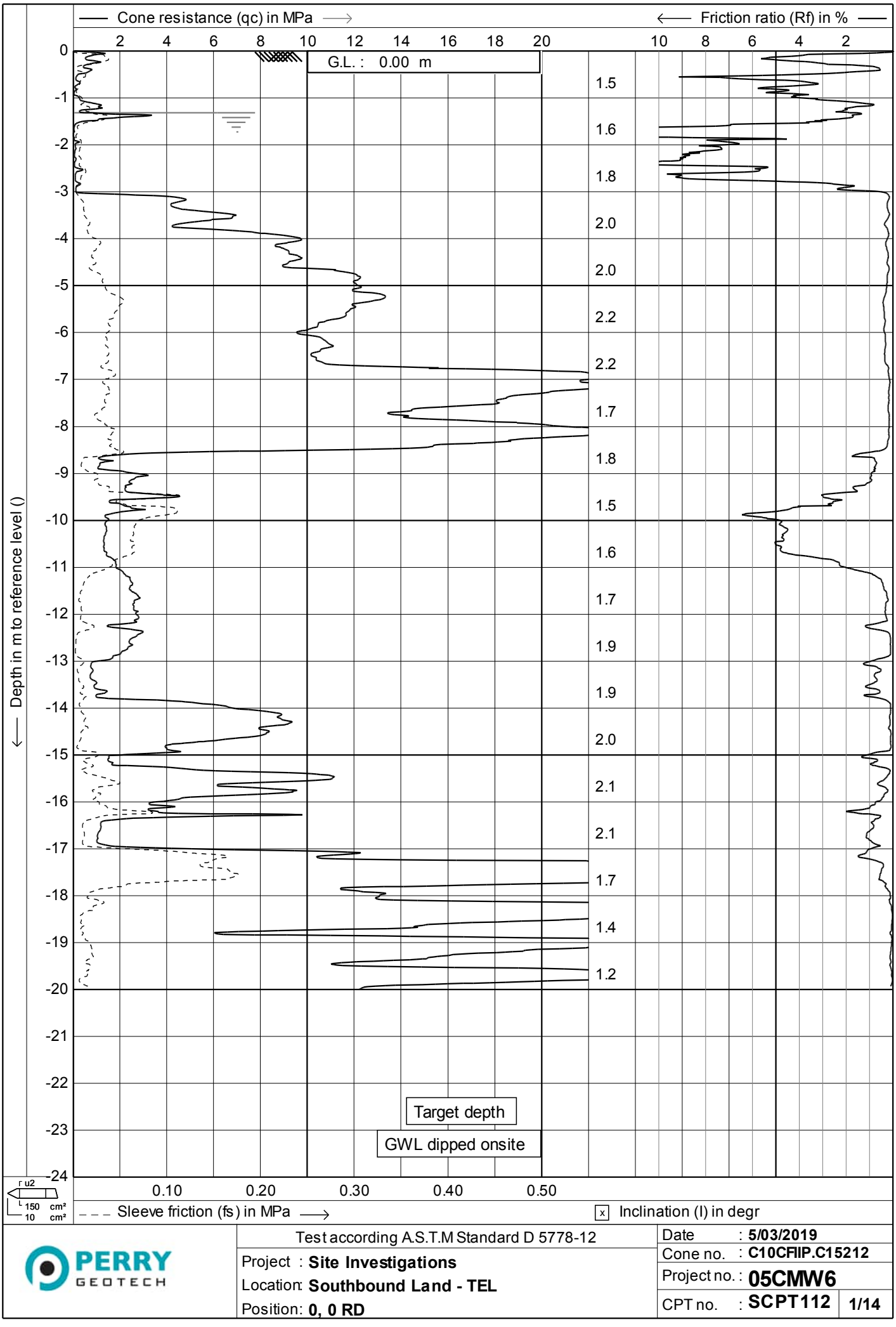
Project no. : **05CMW13**

CPT no. : **05** **9/14**

1.43

NZGD ID: 233188

NZGD ID: 233338



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date : **5/03/2019**

Cone no. : **C10CFIIP.C15212**

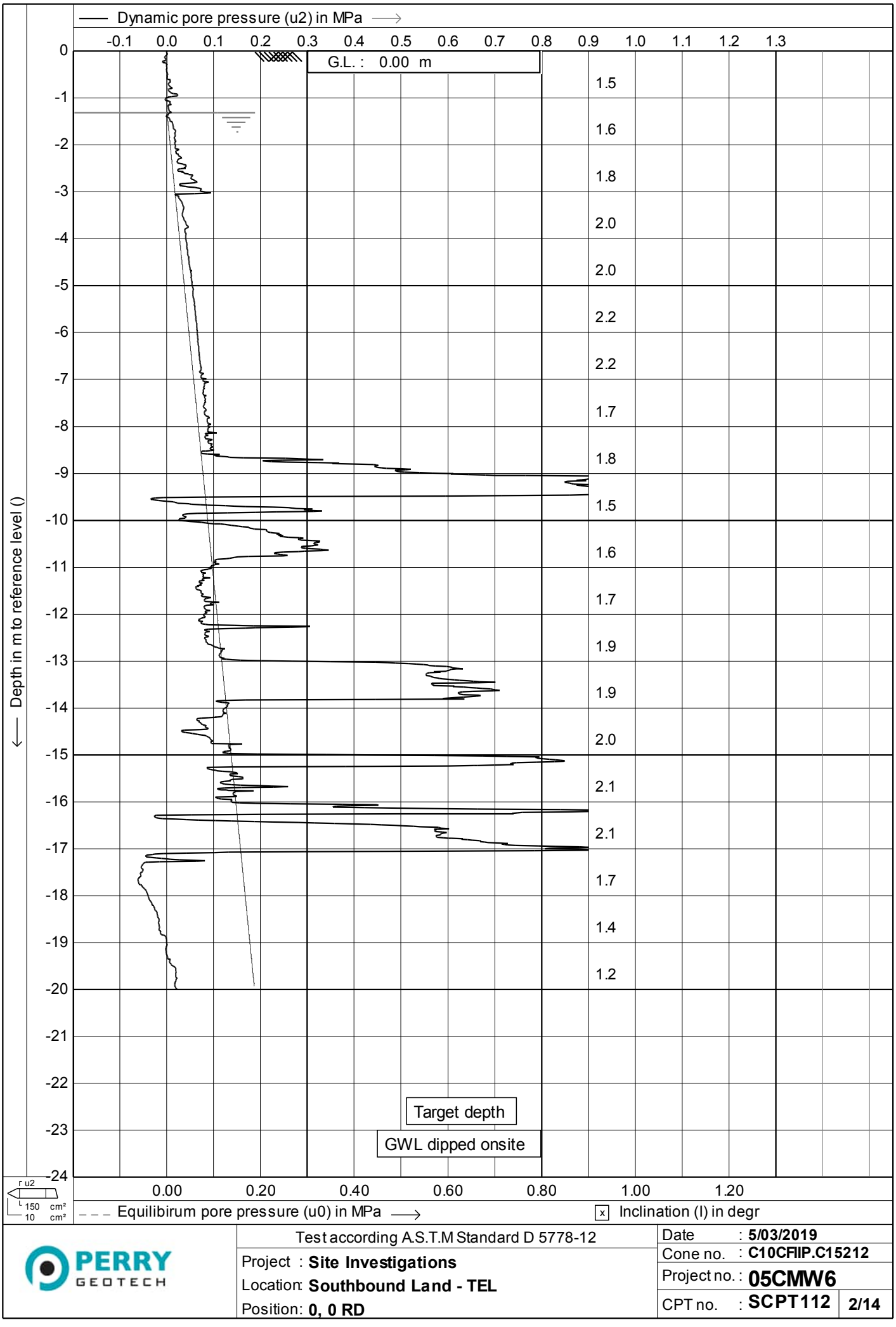
Project no. : **05CMW6**

CPT no. : **SCPT112** **1/14**

1.47

NZGD ID: 233338

NZGD ID: 233338



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

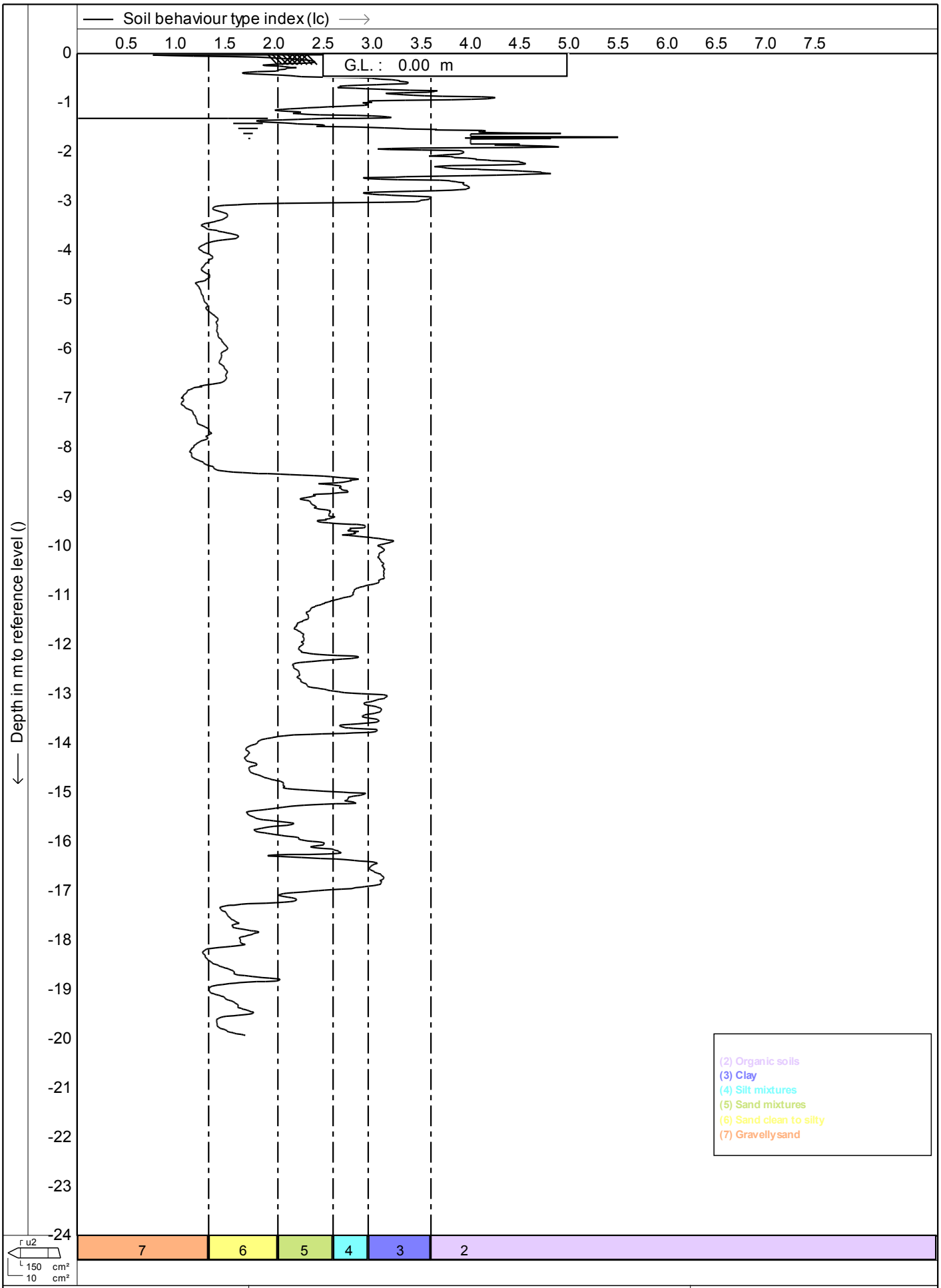
Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date	: **5/03/2019**
Cone no.	: **C10CFIIP.C15212**
Project no.	: **05CMW6**
CPT no.	: **SCPT112** **2/14**

1.47

NZGD ID: 233338



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

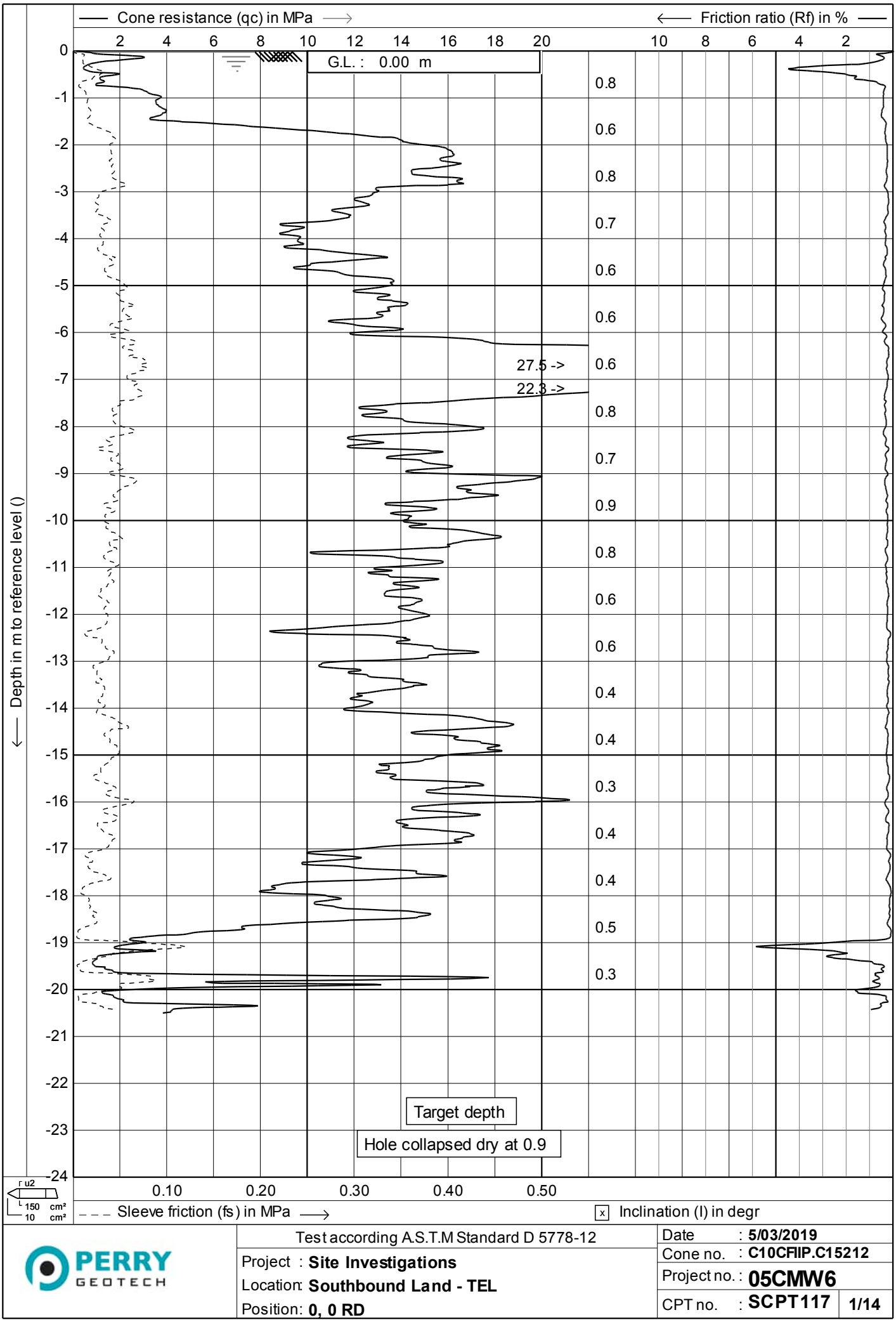
Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date	: **5/03/2019**
Cone no.	: **C10CFIIP.C15212**
Project no.	: **05CMW6**
CPT no.	: **SCPT112** **9/14**

1.47

NZGD ID: 233393



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date : **5/03/2019**

Cone no. : **C10CFIIP.C15212**

Project no. : **05CMW6**

CPT no. : **SCPT117** **1/14**

1.47

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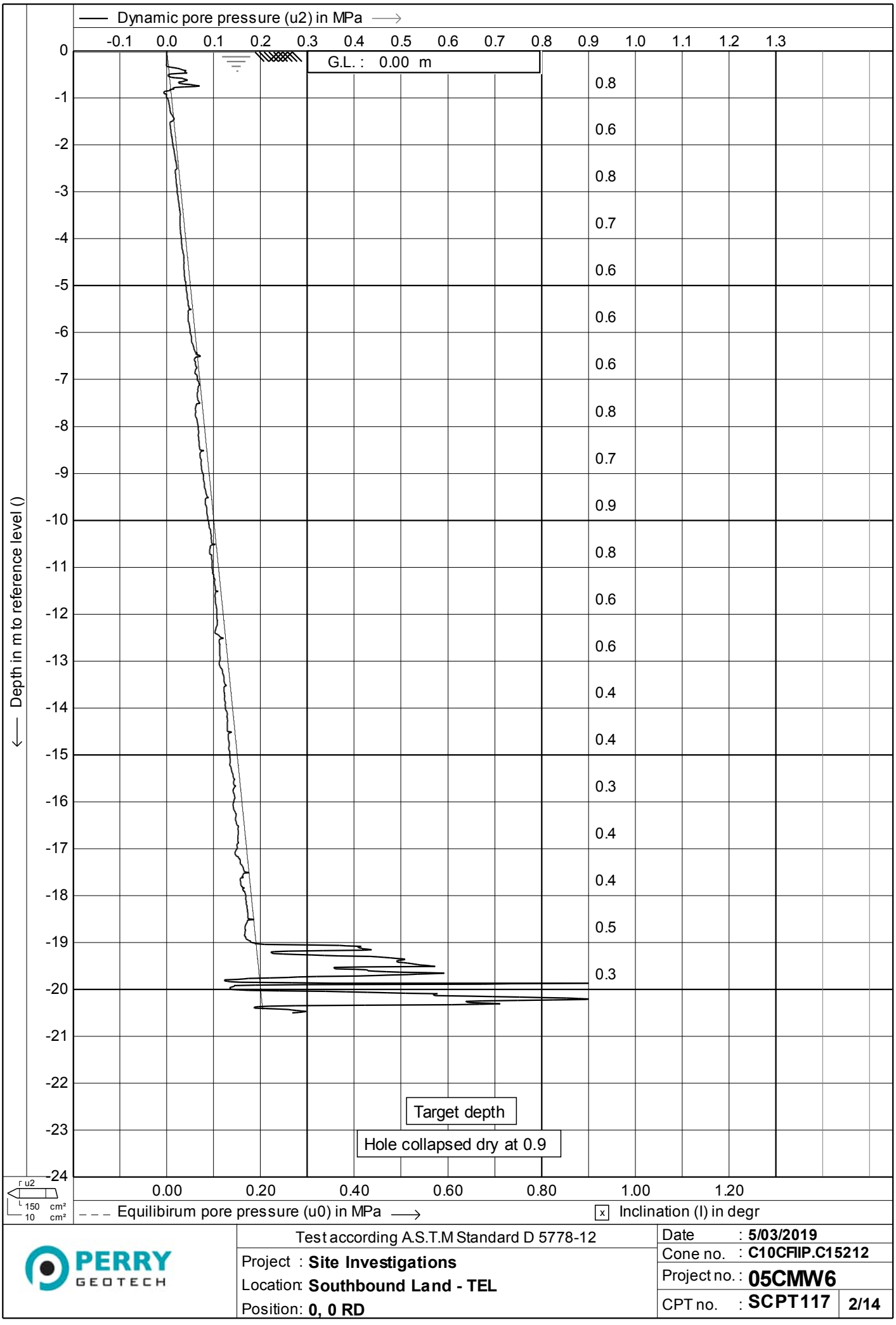
NZGD ID: 233393



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

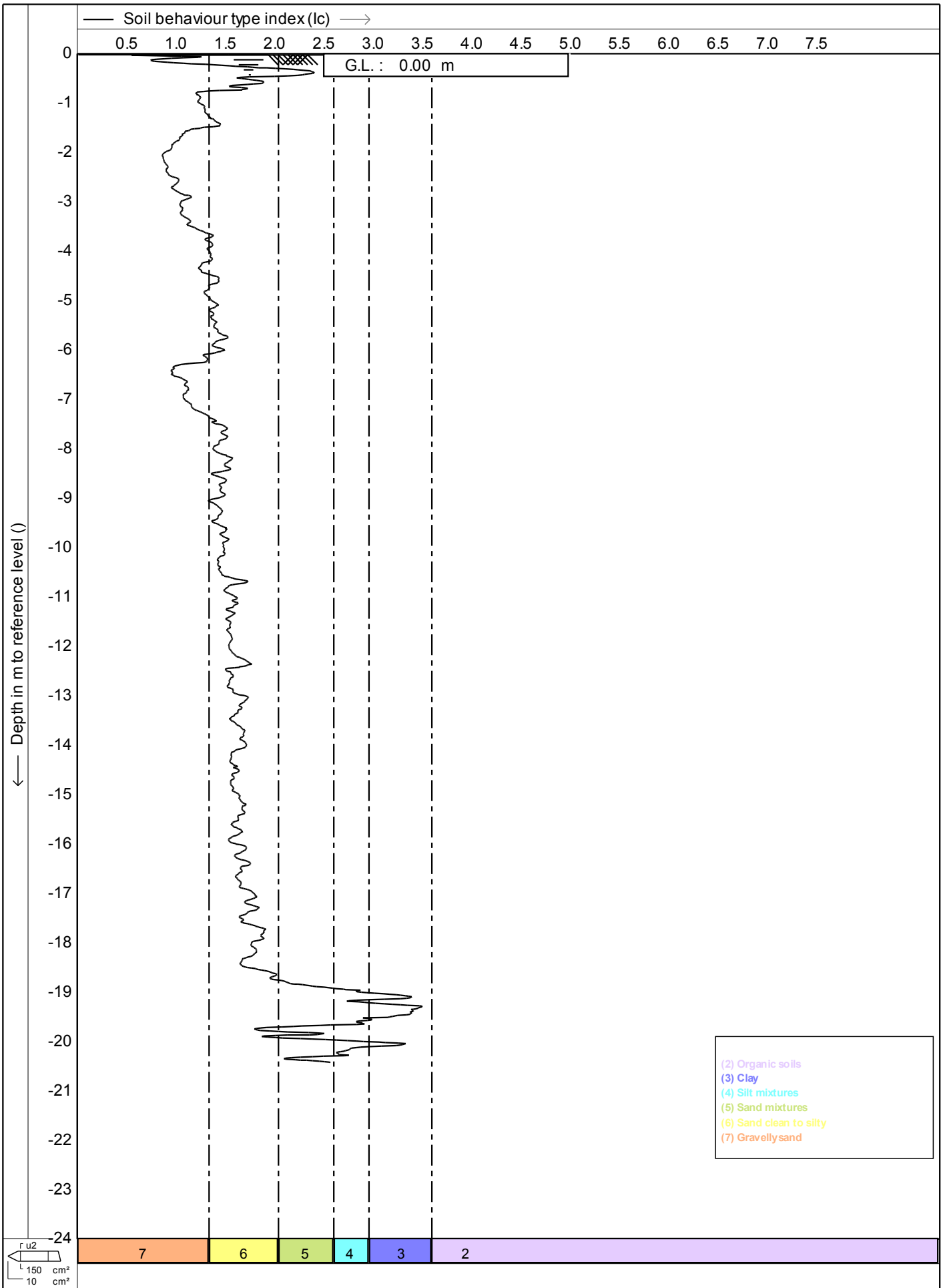
Position: **0, 0 RD**

Date	: **5/03/2019**
Cone no.	: **C10CFIIP.C15212**
Project no.	: **05CMW6**
CPT no.	: **SCPT117** **2/14**

1.47

NZGD ID: 233393

NZGD ID: 233393



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date : **5/03/2019**

Cone no. : **C10CFIIP.C15212**

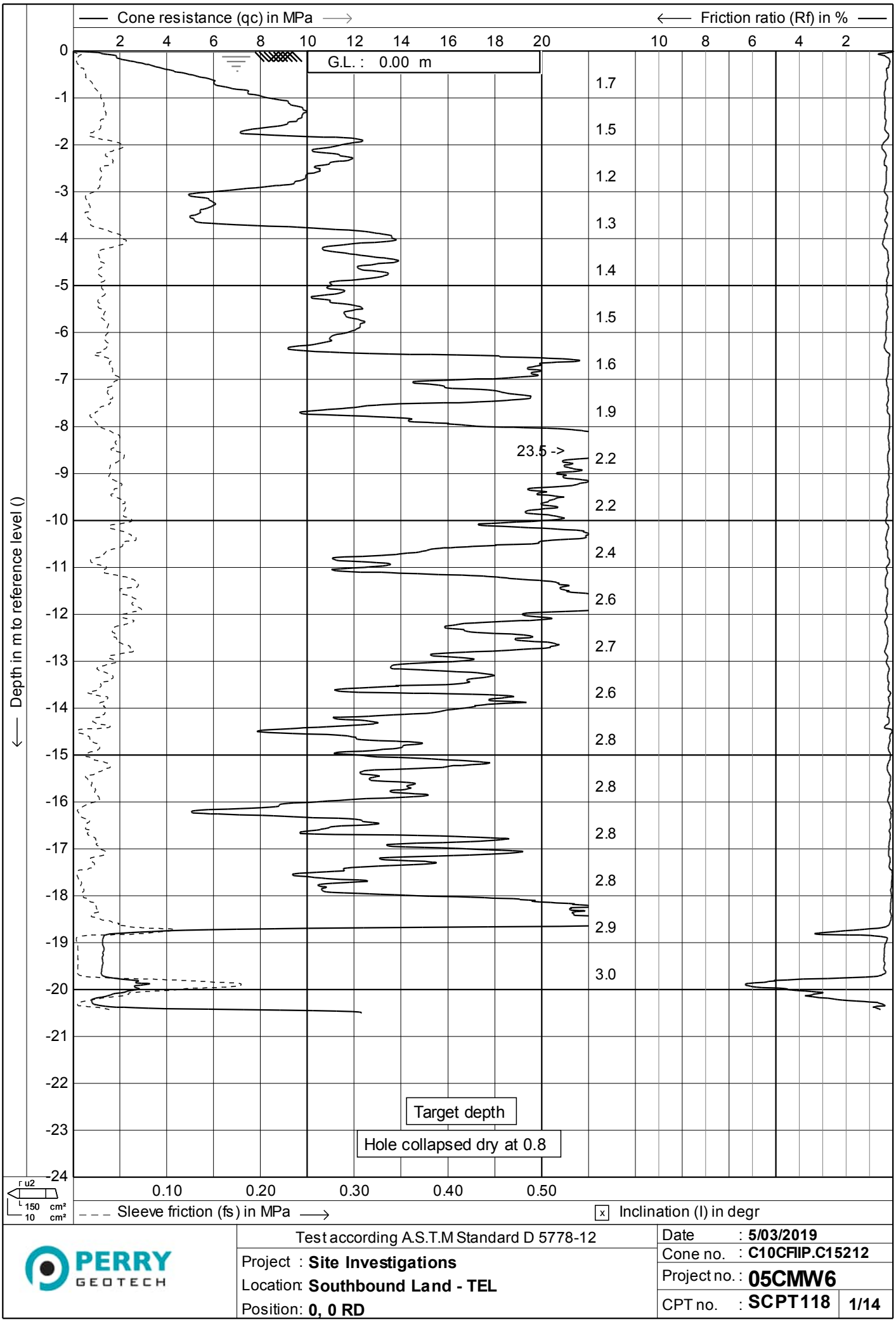
Project no. : **05CMW6**

CPT no. : **SCPT117** **9/14**

1.47

NZGD ID: 233393

NZGD ID: 233394



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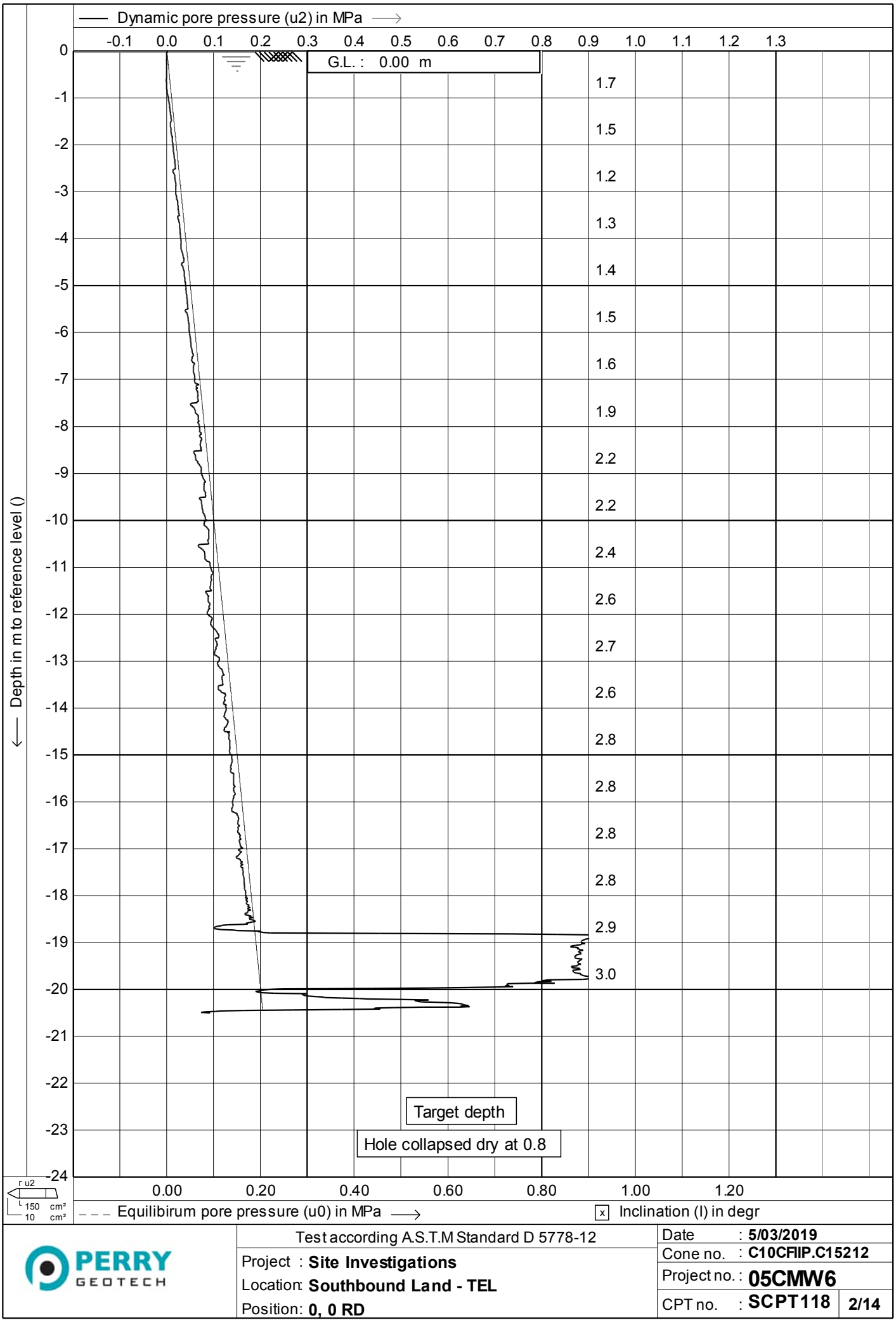
NZGD ID: 233394



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

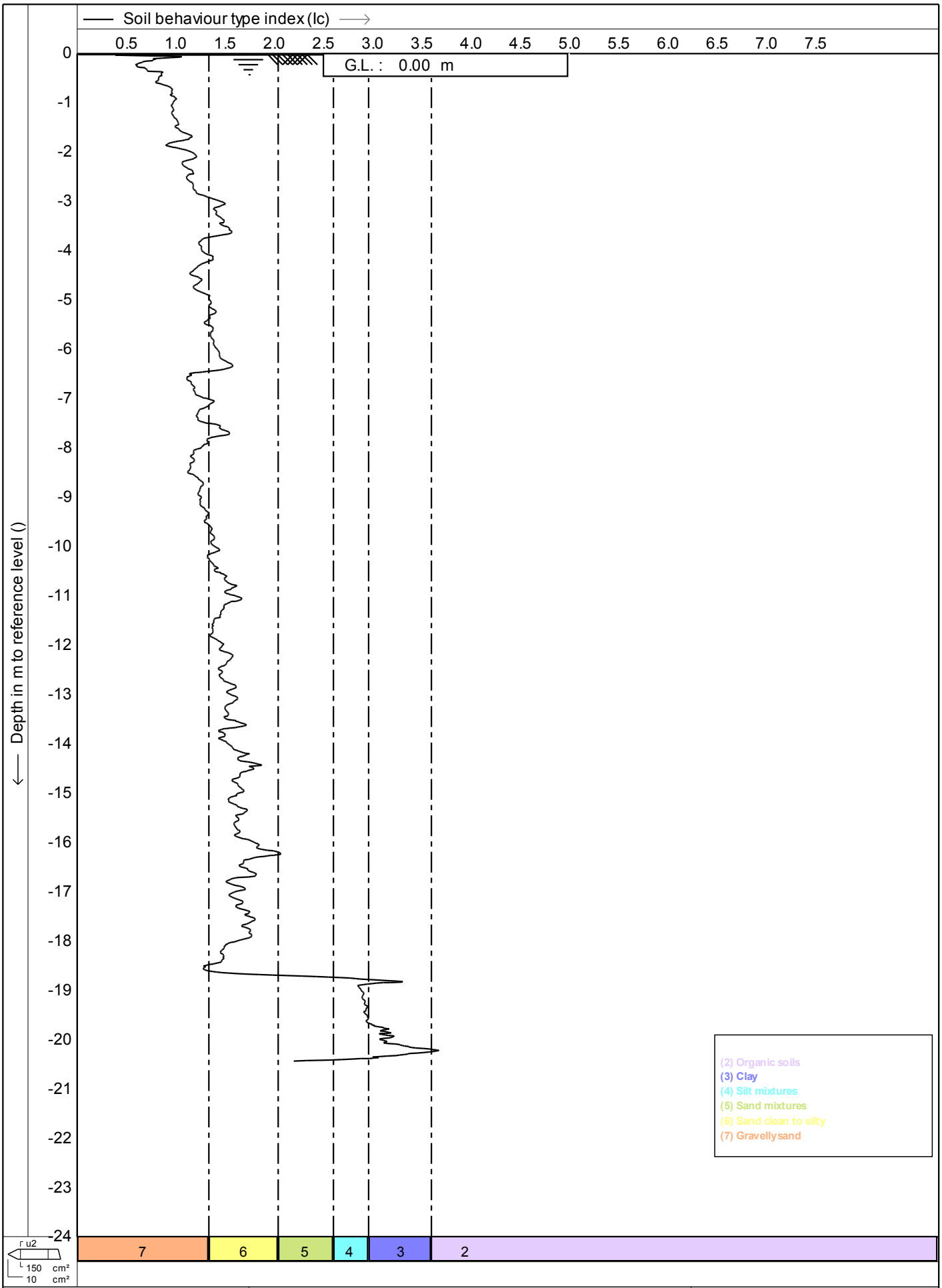
Position: **0, 0 RD**

Date	: **5/03/2019**
Cone no.	: **C10CFIIP.C15212**
Project no.	: **05CMW6**
CPT no.	: **SCPT118** **2/14**

1.47

NZGD ID: 233394

NZGD ID: 233394



PERRY GEOTECH

Test according A.S.T.M Standard D 5778-12

Project : **Site Investigations**

Location: **Southbound Land - TEL**

Position: **0, 0 RD**

Date	: **5/03/2019**
Cone no.	: **C10CFIIP.C15212**
Project no.	: **05CMW6**
CPT no.	: **SCPT118** **9/14**

1.47

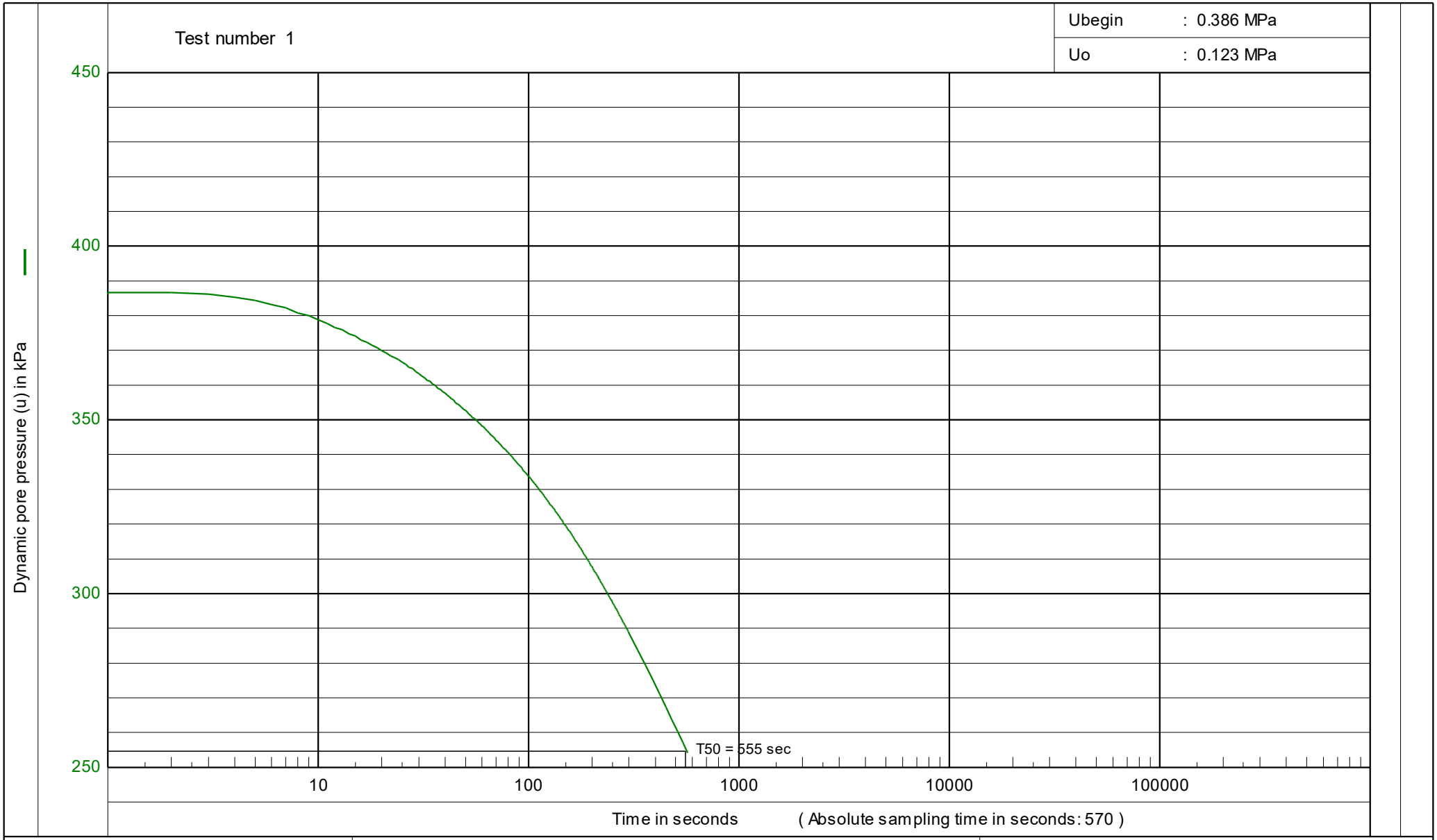
NZGD ID: 233394

APPENDIX 4:

CPT Dissipation Testing

Test number 1

Ubegin	: 0.386 MPa
Uo	: 0.123 MPa



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

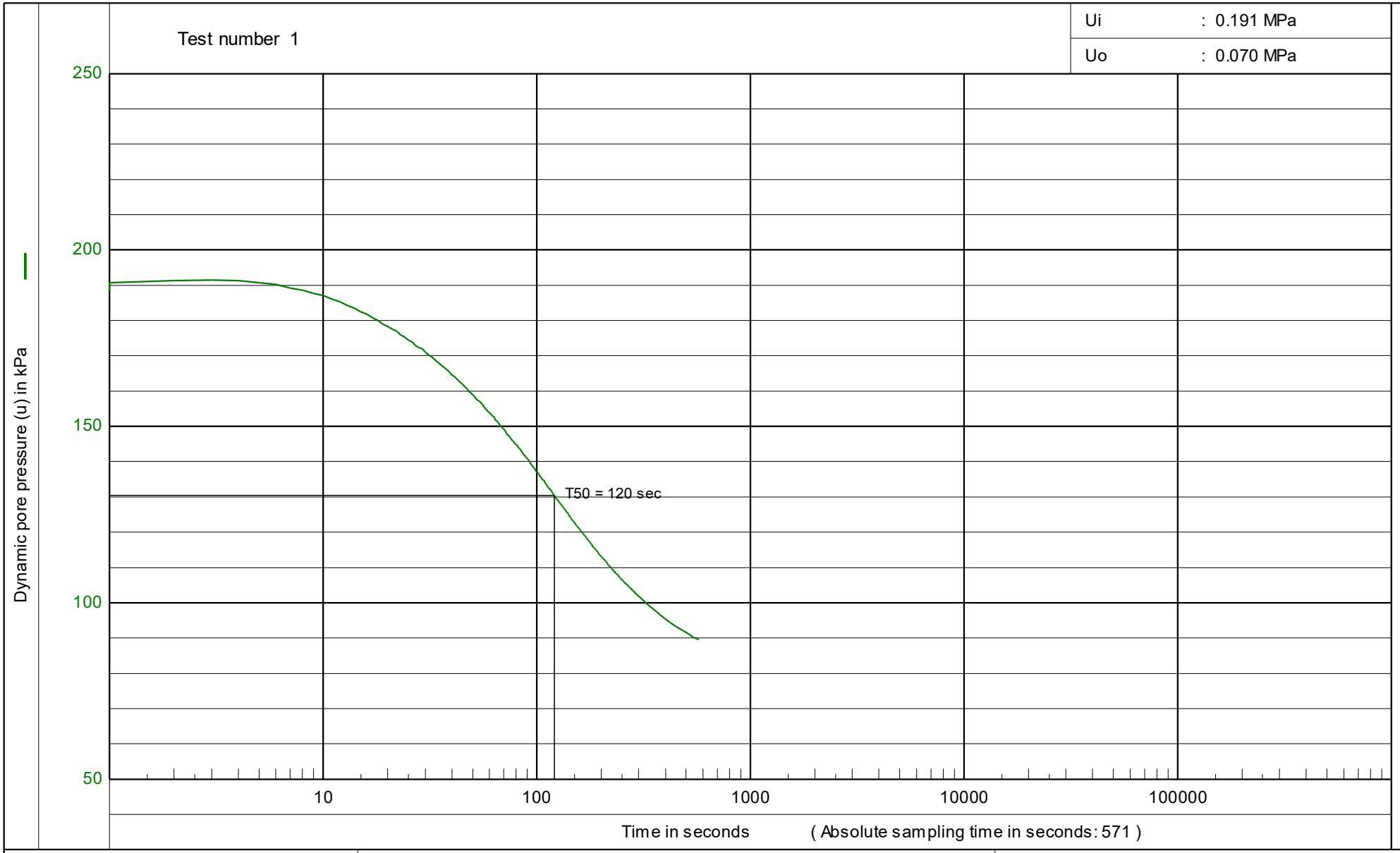
Project : Site Investigations

Location : Bell Rd - Papamoa

Date	: 7/08/2025	
Project no.	: 05EGO020	
CPT no.	: CPT130	
Test depth	: 13.00	[m] - G.L.
Water level	: 0.70	[m] - G.L.

Test number 1

Ui	: 0.191 MPa
Uo	: 0.070 MPa



PERRY GEOTECH

Test in accordance with ASTM D5778-12 :2012

Project : Site Investigations

Location : Bell Rd - Papamoa

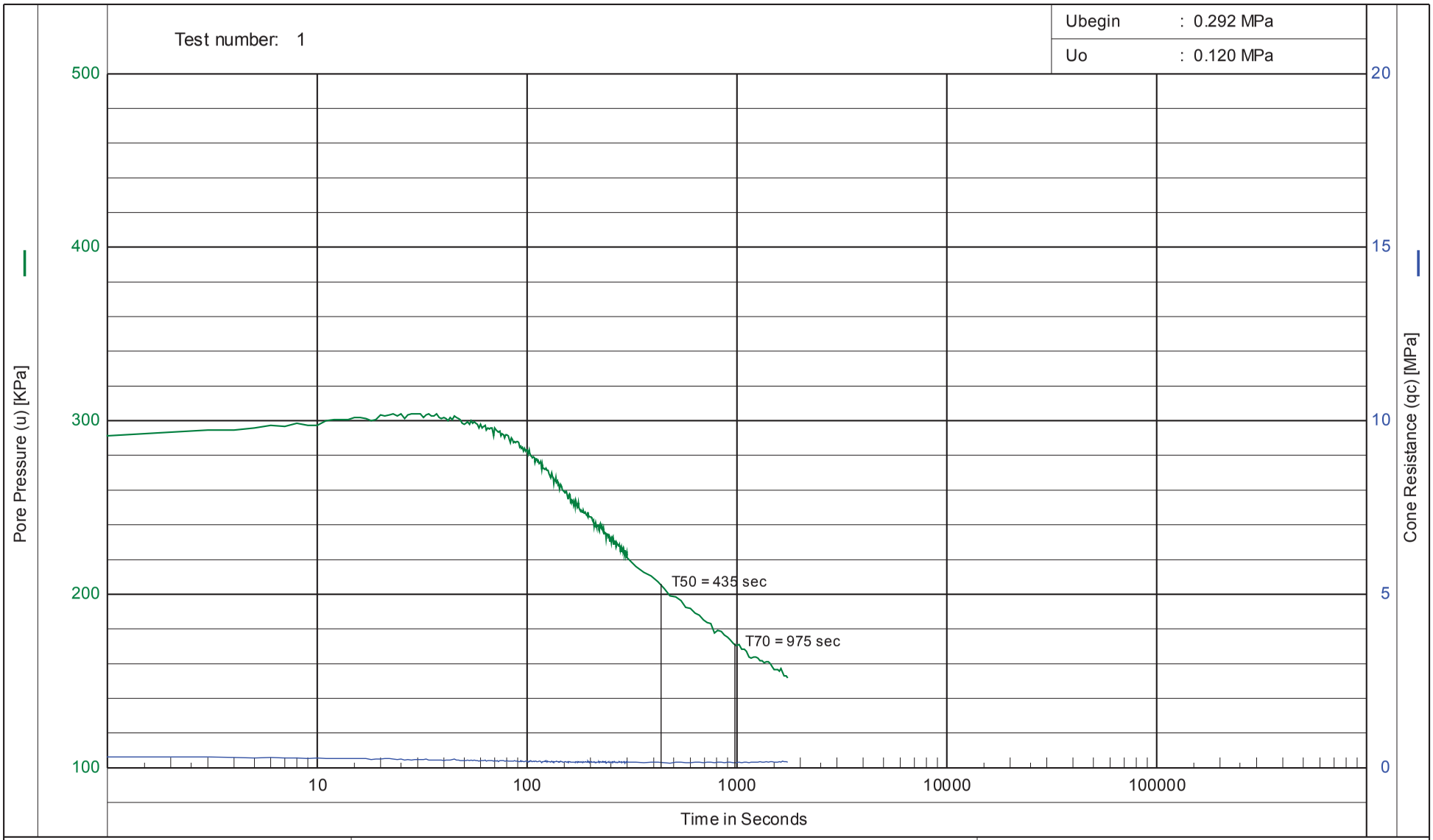
Date	: 6/08/2025	
Project no.	: 05EGO020	
CPT no.	: CPT133	
Test depth	: 7.50	[m] - G.L.
Water level	: 0.50	[m] - G.L.

NZGD ID: CPT_92240

NZGD ID: CPT_92240

Test number: 1

Ubegin	: 0.292 MPa
Uo	: 0.120 MPa



Test according A.S.T.M. standard D 5778-95

Project : TAURANGA EASTERN MOTORWAY

Location : Bell Road - Papamoa

Date	: 12/12/2006
Project no.	: BC16
CPT no.	: 62
Test depth	: 14 m [m] -
Water level	: -2 [m] -

APPENDIX 5:

sCPT VS30 Report

Seismic Data Analysis Report

Perry Geotech Ltd
Tauranga – New Zealand

Date: May 31, 2025

Report 025-003-04

Perry Reference: 05EGO005

1. Introduction

This report has been prepared by BCE on behalf of Perry Geotech Ltd on May 31, 2025. It contains the results of the analysis of seismic cone penetration testing at Bell Road in Papamoa, New Zealand, which was performed with the BCE SC3-RAV software (version 2020). It should be noted that the number of decimal places shown in the report does not necessarily reflect the accuracy of the results, but are solely included to allow others to replicate the analysis process.

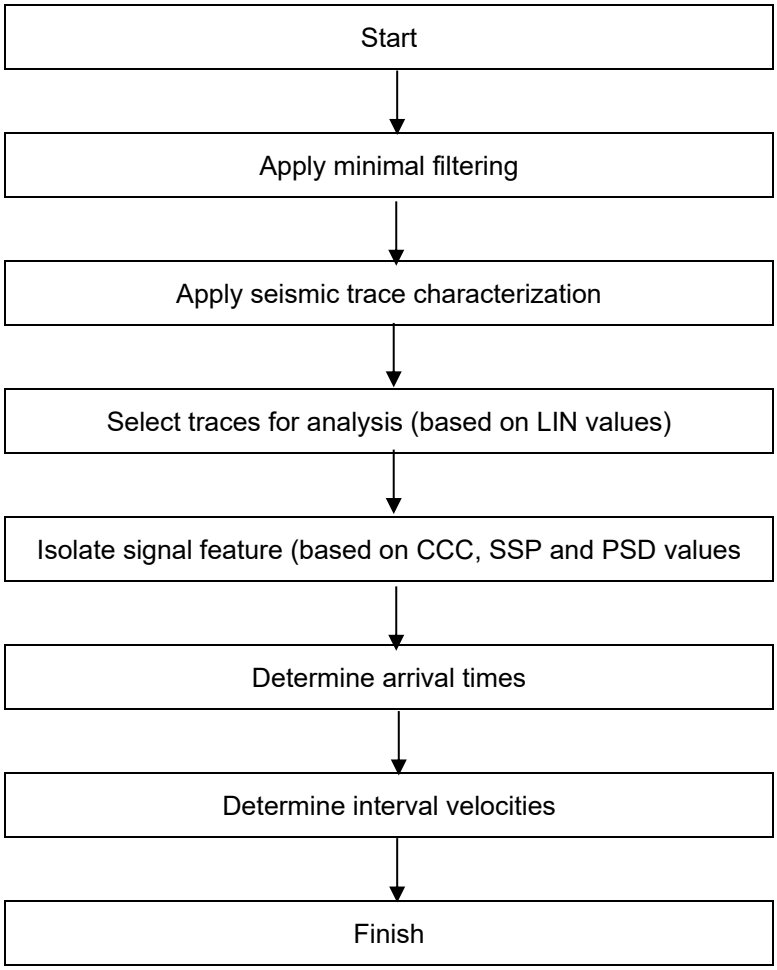
BCE has invested considerable resources into the development of techniques and algorithms to characterize acquired Downhole Seismic Testing (DST) data sets for shear wave velocity assessment, and to use that characterization as a guide for the processing of those data sets to calculate interval velocities. The characterization is based on various independent parameters of the acquired DST data at a particular depth. As described in BCE Technical Note 15, currently five parameters are considered:

- Parameter 1: the linearity estimates (LIN) from polarization analysis. The LIN trace metric quantifies the correlation between X, Y and Z axis responses.
- Parameter 2: the Cross Correlation Coefficient (CCC) of the full waveforms at the particular depth and the preceding depth. The CCC trace metric gives an indication of the similarity between the two waves being correlated when deriving relative arrival times.
- Parameter 3: the Signal Shape Parameter (SSP). The SSP trace metric quantifies the deviation of the shape of the frequency spectrum from an ideal bell shape
- Parameter 4: the Peak Symmetry Differential (PSD) trace metric facilitates the identification of traces whose peak source wave responses have been significantly skewed due to measurement noise or source wave reflection interference.
- Parameter 5: Signal to Noise Ratio (SNR). The SNR trace metric is solely provided to quantify what portion of the spectral content of the recorded seismogram resides within the desired source frequency spectrum irrespective of source wave distortions such as near-field effects, reflections, refractions, and “dirty sources”.

These parameters are then converted into a Seismic Trace Characterization (STC) grade ranging from A to F, where A is highly desirable and F is unacceptable without corrective action. Next they are used as a guide for the data analysis and seismic signal processing as described in BCE Technical Note 21. A central part of this processing is the Source Wave Signature Isolation to clearly identify the source wave in the seismic trace by applying an exponential decay function to the remainder of the trace. This can be performed in three different ways:

- ASD or Automatic Signal Decay, where the the program identifies the absolute maximum amplitude on all trace under analysis and then applies the decay function on either side of that feature.
- GSD or Guided Signa Decay, where the user identifies a specific feature for the traces under analysis and the program then applies the decay function on either side of that feature.
- ISD or Individual Signal Decay, where the user identifies a specific feature for each trace under analysis and the program then applies the decay function on either side of that feature on that particular trace.

The analysis process can then be visualized as follows:



BCE's mission is to provide our clients around the world with state-of-the-art seismic data acquisition and analysis systems, which allow for better and faster diagnostics of the sub-surface.

The company provides state-of-the-art hardware and software solutions for a wide variety of seismic engineering applications. If necessary, BCE will customize their products to suit the requirements of their clients even better.

BCE's products and services consist of

- Seismic Data Acquisition and Signal Conditioning Hardware
- Seismic Data Processing Software
- Applied Seismology Consulting Services
- Seismic Data Processing
- Professional Seminars

For more information, including a more elaborate description of the seismic trace characterization please visit BCE's website (www.bcengineers.com) and for clarifications or additional information please contact our offices:

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USA

BCE
Erick Baziw
3943 West 32nd Avenue
Vancouver BC
Canada V6S 1Z4

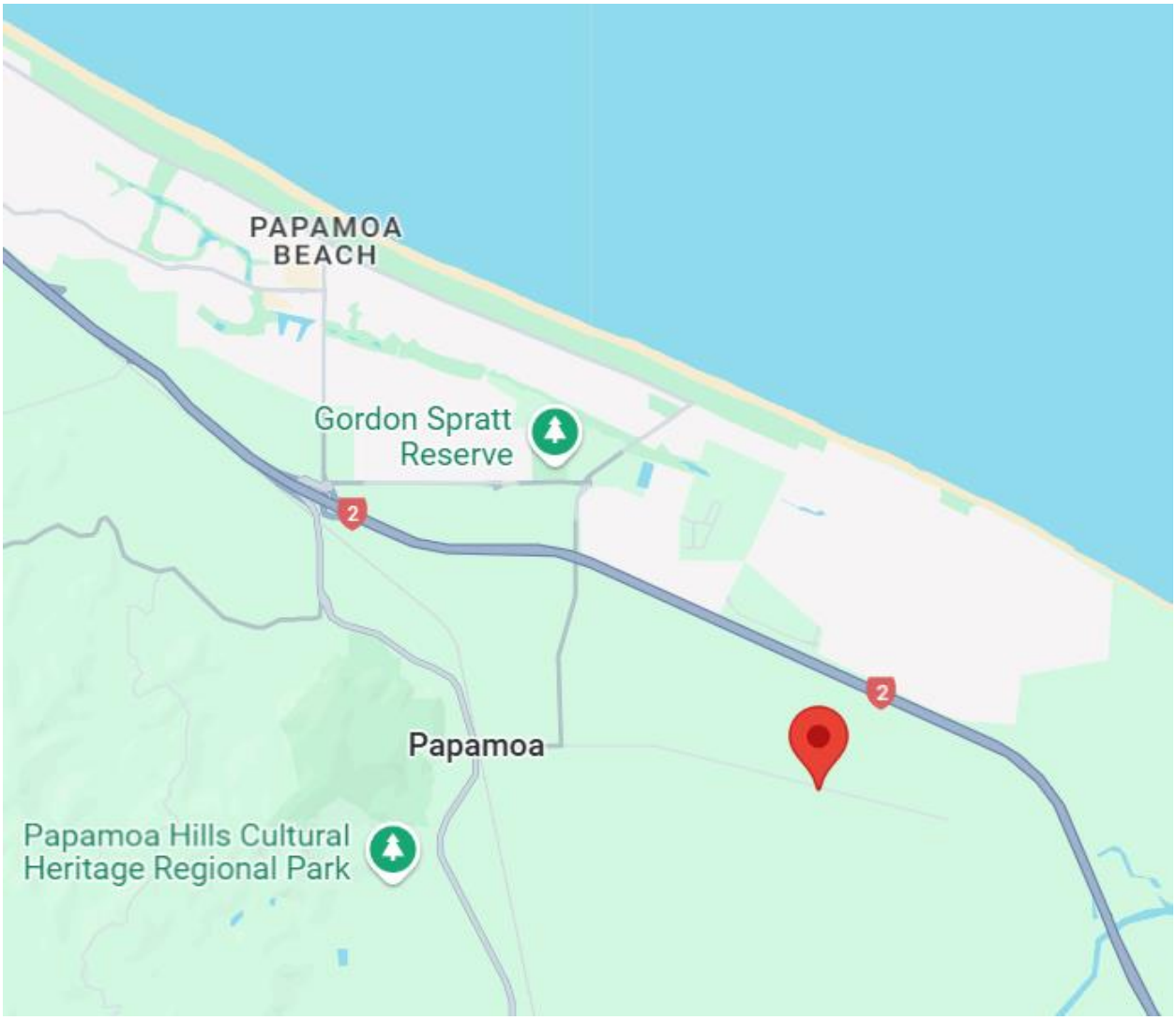
WARNING:

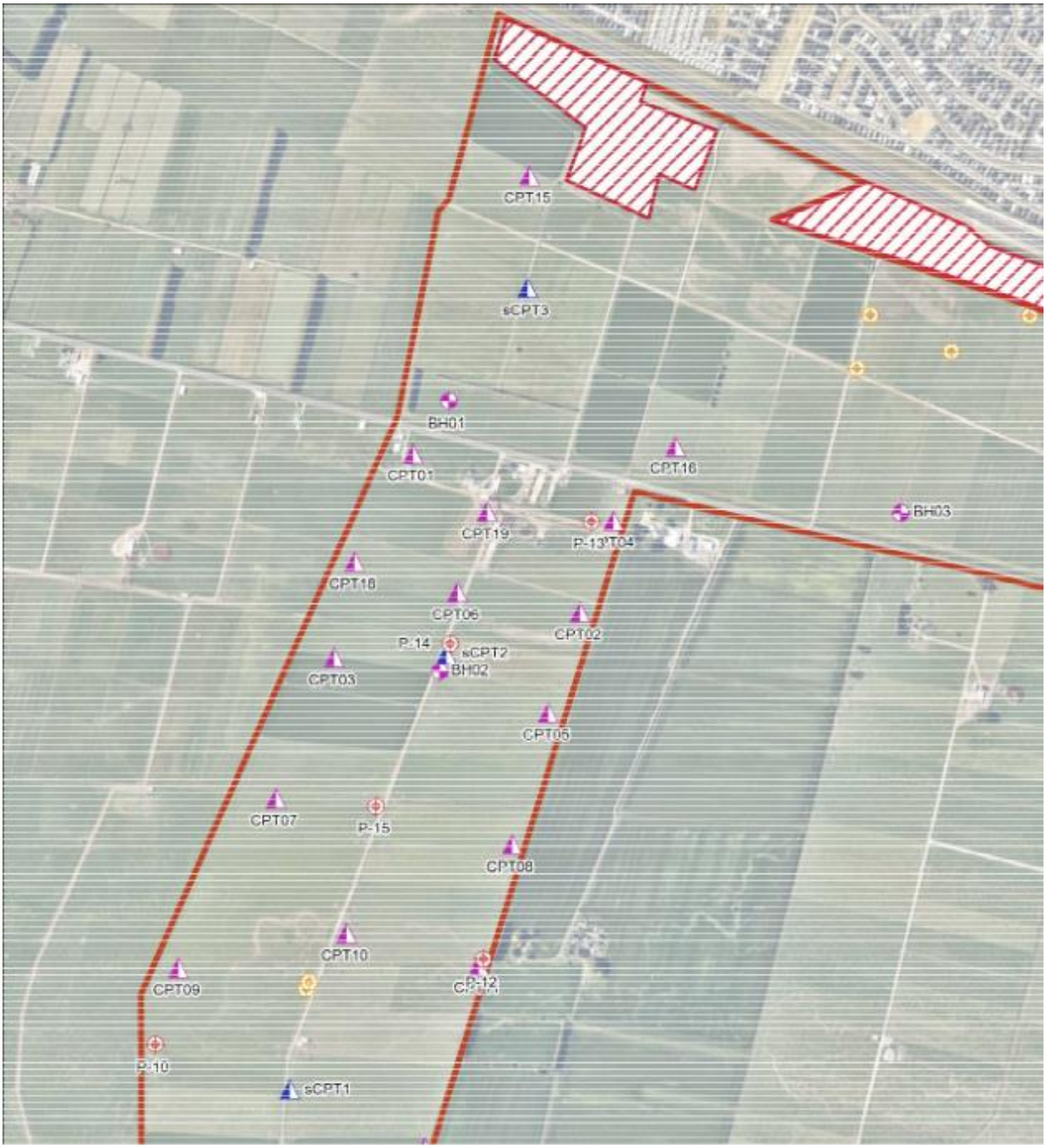
- **BCE is a registered firm with the Engineers and Geoscientists in British Columbia, Canada (permit number 1001142)**
- **BCE warrants and guarantees that the study has been and will be performed and completed in a workmanlike manner, satisfactory, and acceptable to Perry Geotech.**
  In case Perry Geotech considers (part of) the work by BCE to be unacceptable, BCE shall be given the opportunity to resubmit the work in question. BCE shall not invoice Perry Geotech for such rework.
- **The liability of BCE for this work shall be limited to the amount paid by Perry Geotech for this study**

2. Summary and Conclusions

Perry Geotech has performed seismic cone penetration testing at Bell Road in Papamoa, New Zealand. This report contains the results of the seismic data analysis, which was performed with the BCE SC3-RAV software (version 2020).

After analysis of all the seismic traces, there is generally very good correlation between the LS and RS arrival times. Therefore we would suggest that the avarage values are used for engineering, albeit with some care where the spread exceeds 10 %.




CPT15
sCPT3
BH01
CPT01
CPT16
BH03
CPT19
P-13
CPT04
CPT18
CPT06
CPT02
P-14
sCPT2
BH02
CPT03
CPT05
CPT07
P-15
CPT08
CPT10
CPT09
CP-12
P-10
sCPT1

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Document Control

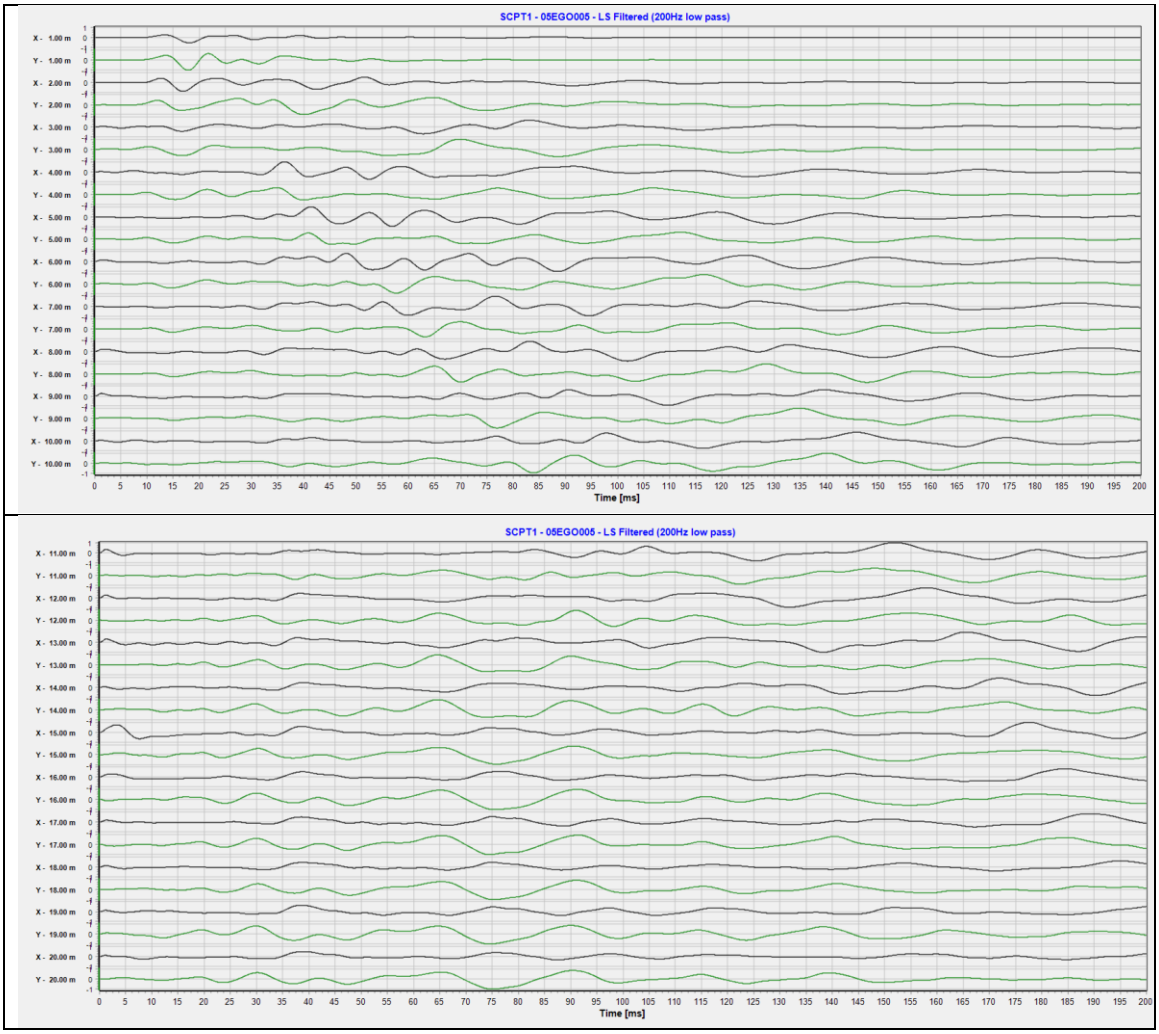
Revision	0		
Analysis by	EB		
Checked by	GV		
Checked on	5/31/25		
Changes	none		

4. Location SCPT01

Seismic Data Analysis

The seismic data collected was processed as follows:

1. The data from the left side were filtered (a low pass filter of 200 Hz).

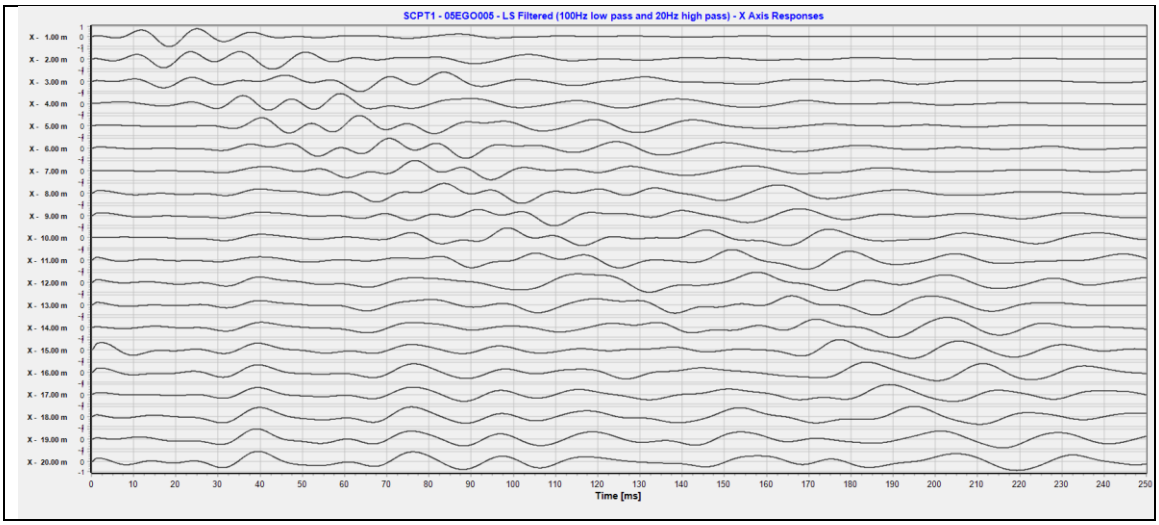


2. The seismic trace characterization of the full wave form responses was as follows:

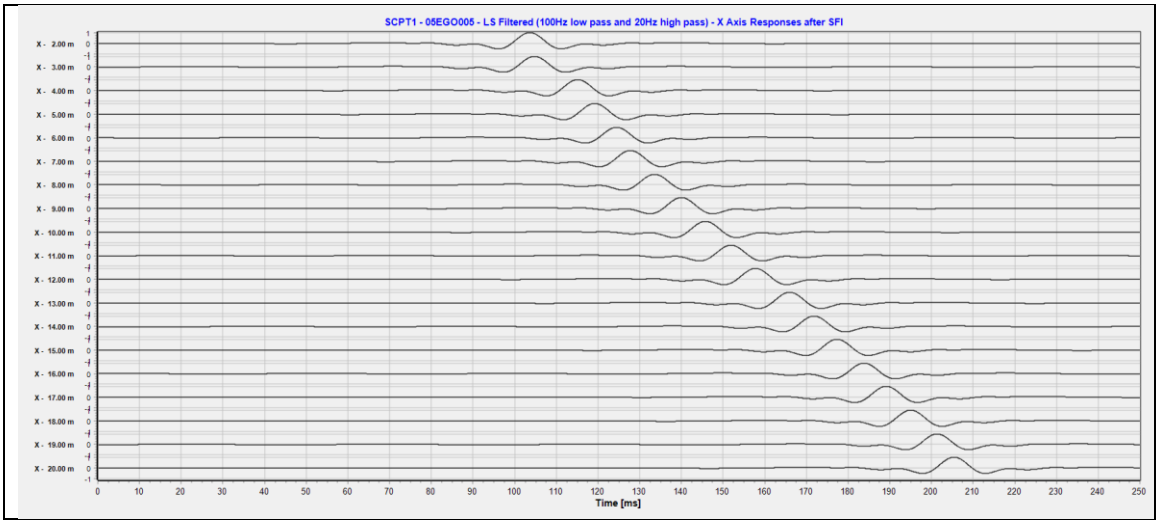
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.8831	0.698	0	0.92	0.98	N/A
2	0.725	0.486	0.4113	0.34	0.98	F
3	0.5353	0.391	0.6643	0.01	0.98	F
4	0.5144	0.381	0.5857	0.87	0.98	F
5	0.729	0.448	0.7413	0.01	0.98	F
6	0.4117	0.386	0.8468	0.93	0.98	F
7	0.4356	0.436	0.8855	0.01	0.98	F
8	0.4932	0.343	0.8542	0.85	0.98	F
9	0.7297	0.44	0.7572	0.67	0.98	D
10	0.7786	0.422	0.8933	0.43	0.98	D
11	0.875	0.335	0.9338	0.46	0.98	D
12	0.8339	0.313	0.9428	0.03	0.98	F
13	0.8535	0.315	0.9625	0.18	0.98	F
14	0.8931	0.332	0.5167	0.72	0.98	F
15	0.6721	0.474	0.7006	0.38	0.98	D
16	0.9145	0.351	0.8353	0.01	0.98	F
17	0.8937	0.311	0.9913	0.01	0.91	F
18	0.9213	0.374	0.9922	0.01	0.96	F
19	0.8934	0.314	0.9848	0.01	0.94	F
20	0.9148	0.354	0.993	0.48	0.97	F

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	X-axis	~~Y-axis~~	20 - 100Hz band pass	~~ASD~~	GSD	~~ISD~~
Traces dropped			1 m			

3. The following traces were used for analysis.



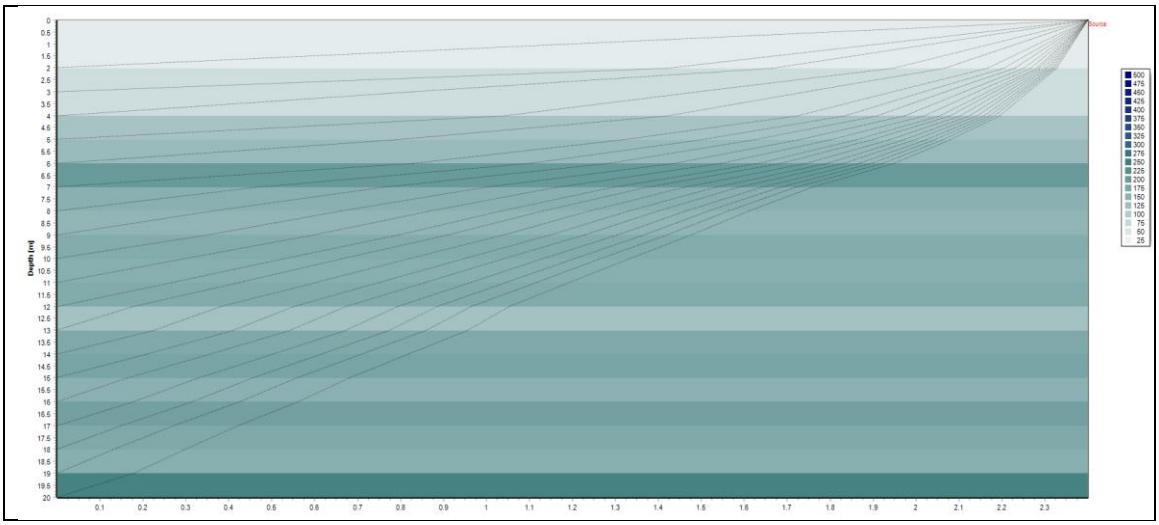
4. On the traces shown above signal feature isolation was applied.



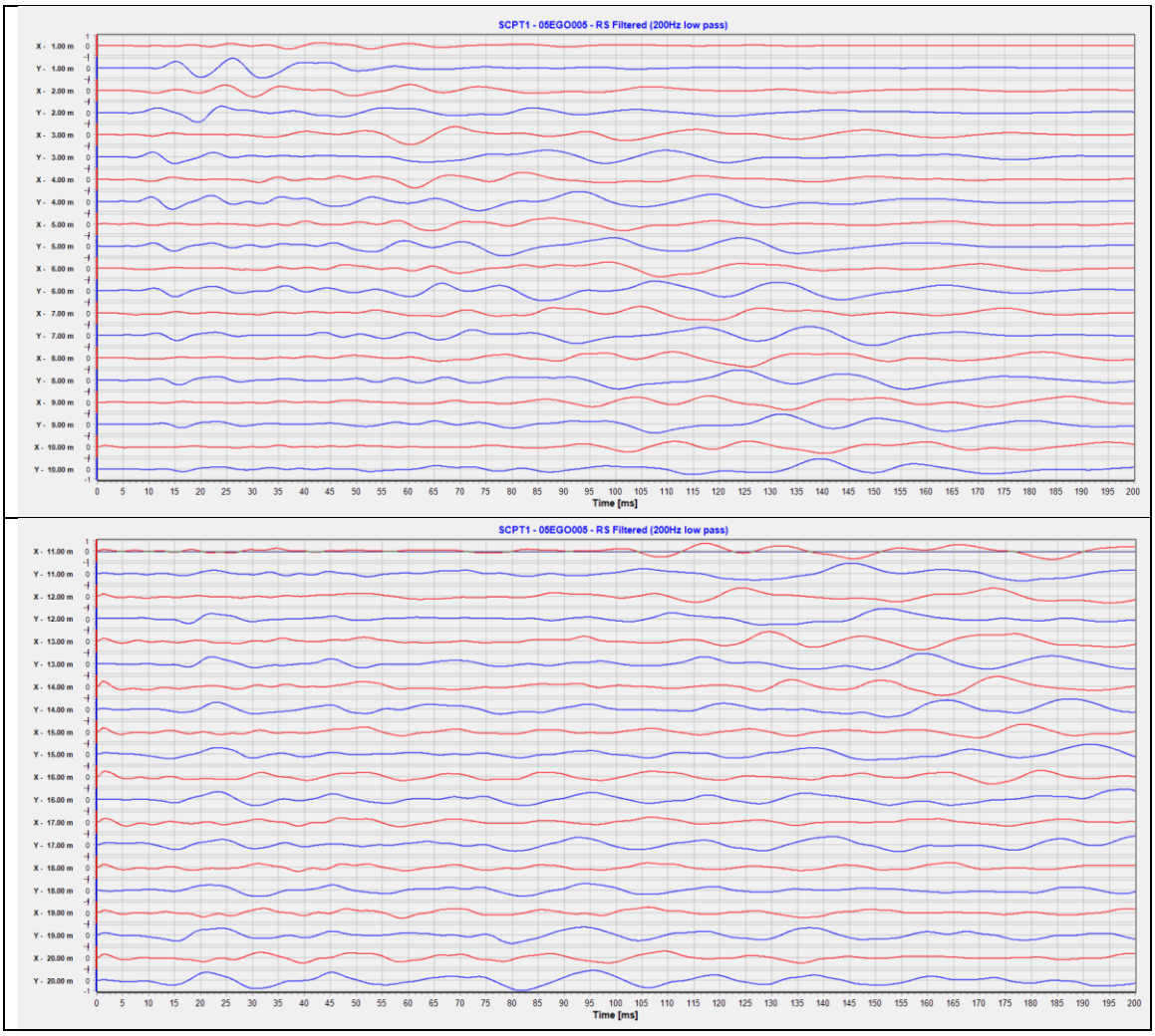
5. For the left side the reference arrival time at 18 m of 180 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Left Arrival Time [ms]	Left Interval FMDSM Velocity [m/s]
2	88.6366	35.2
3	89.7322	65.9
4	100.1305	65.8
5	104.2141	115.8
6	109.4431	133.3
7	112.7797	196.2
8	118.5565	153.2
9	124.9808	144.5
10	130.7476	162
11	136.873	155.5
12	142.7495	163.3
13	150.9665	119.2
14	156.7931	167.3
15	162.3209	176.2
16	168.795	151.7
17	174.1236	184.2
18	180	167.5
19	186.3147	156.5
20	190.3784	241.9

FMDSM results left side:



6. The data from the right side were filtered (a low pass filter of 200 Hz).

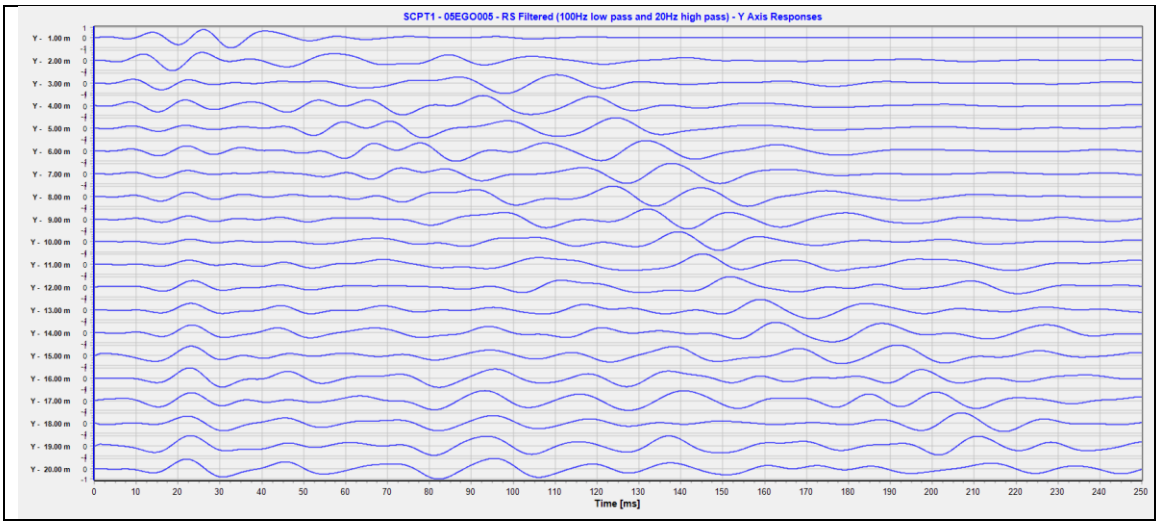


7. The seismic trace characterization of the full wave form responses was as follows:

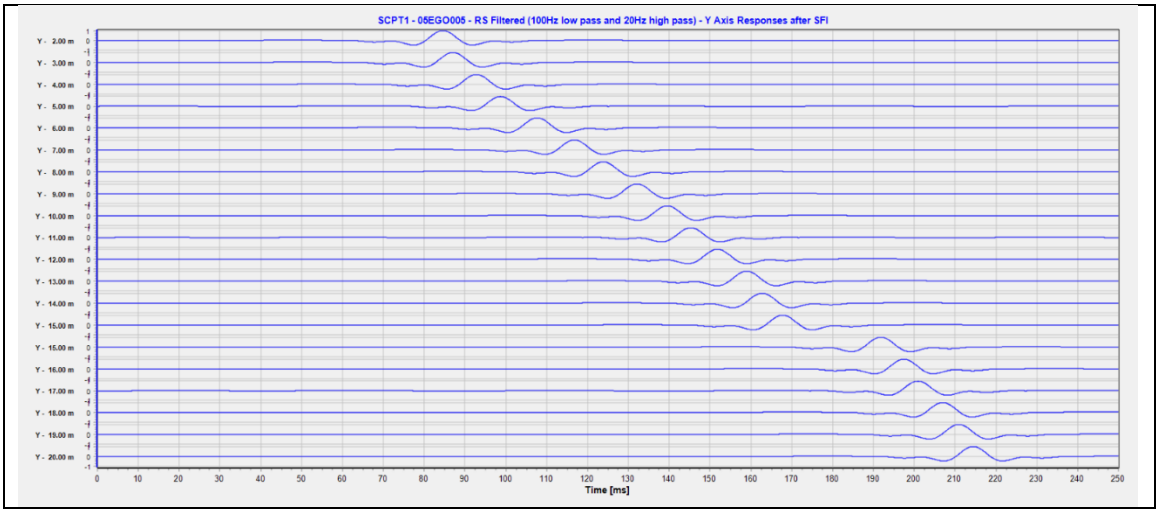
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.8688	0.746	0	0.51	0.98	N/A
2	0.5301	0.462	0.5628	0.36	0.94	F
3	0.3507	0.55	0.9674	0.01	0.98	F
4	0.6374	0.473	0.6593	0.13	0.98	F
5	0.4761	0.404	0.7891	0.02	0.98	F
6	0.701	0.469	0.8526	0.62	0.98	F
7	0.6416	0.479	0.8723	0.7	0.98	D
8	0.6459	0.423	0.6093	0.01	0.98	F
9	0.6021	0.559	0.9737	0.01	0.98	F
10	0.6552	0.513	0.9624	0.93	0.98	F
11	0.6419	0.345	0.9329	0.01	0.98	F
12	0.6467	0.423	0.9187	0.21	0.98	F
13	0.6327	0.466	0.6797	0.75	0.98	D
14	0.5974	0.45	0.9352	0.01	0.98	F
15	0.5309	0.414	0.7838	0.84	0.98	F
16	0.6584	0.434	0.9662	0.01	0.98	F
17	0.3916	0.347	0.9875	0.29	0.98	F
18	0.5148	0.453	0.5832	0.75	0.98	F
19	0.611	0.429	0.7783	0.79	0.95	D
20	0.69	0.412	0.5287	0.77	0.92	F

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	~~X-axis~~	Y-axis	20 – 100 Hz band pass	~~ASD~~	GSD	~~ISD~~
Traces dropped			1 m			

8. The following traces were used for analysis.



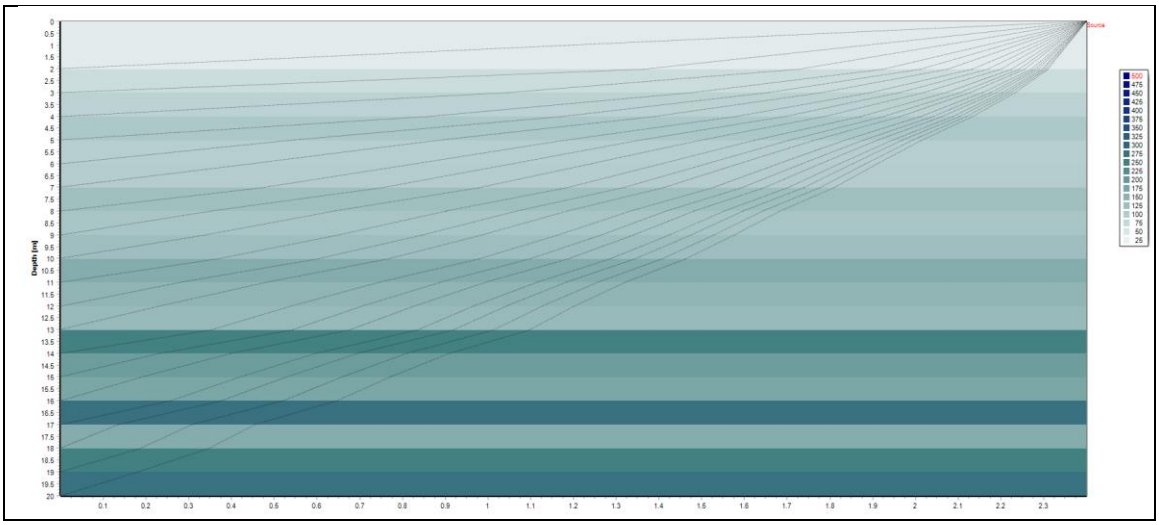
9. On the traces shown above signal feature isolation was done.



10. For the right side the reference arrival time at 18 m of 180 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Right Arrival Time [ms]	Right Interval FMDSM Velocity [m/s]
2	81.7044	38.2
3	84.1346	67.4
4	89.8716	87.3
5	95.7978	108.6
6	104.7618	95
7	113.8653	98.2
8	120.9369	124.9
9	129.2038	112.7
10	136.614	126.6
11	142.351	161.5
12	148.8848	145.8
13	156.056	135
14	159.8408	245.4
15	164.8607	191.6
16	170.4882	173.3
17	173.9244	278.8
18	180	161.6
19	183.9342	248.9
20	187.4401	278

FMDSM results right side:



11. The estimated interval velocities are then as follows:

Depth [m]		LS Interval Velocity [m/s]	RS Interval Velocity [m/s]	Avg. Interval Velocity [m/s]	Spread
0	2	35.2	38.2	36.7	4%
2	3	65.9	67.4	66.7	1%
3	4	65.8	87.3	76.6	14%
4	5	115.8	108.6	112.2	3%
5	6	133.3	95	114.2	17%
6	7	196.2	98.2	147.2	33%
7	8	153.2	124.9	139.1	10%
8	9	144.5	112.7	128.6	12%
9	10	162	126.6	144.3	12%
10	11	155.5	161.5	158.5	2%
11	12	163.3	145.8	154.6	6%
12	13	119.2	135	127.1	6%
13	14	167.3	245.4	206.4	19%
14	15	176.2	191.6	183.9	4%
15	16	151.7	173.3	162.5	7%
16	17	184.2	278.8	231.5	20%
17	18	167.5	161.6	164.6	2%
18	19	156.5	248.9	202.7	23%
19	20	241.9	278	260.0	7%

[1] The spread is defined as ½ x (LS Interval Velocity – RS Interval Velocity)/Avg. Interval Velocity

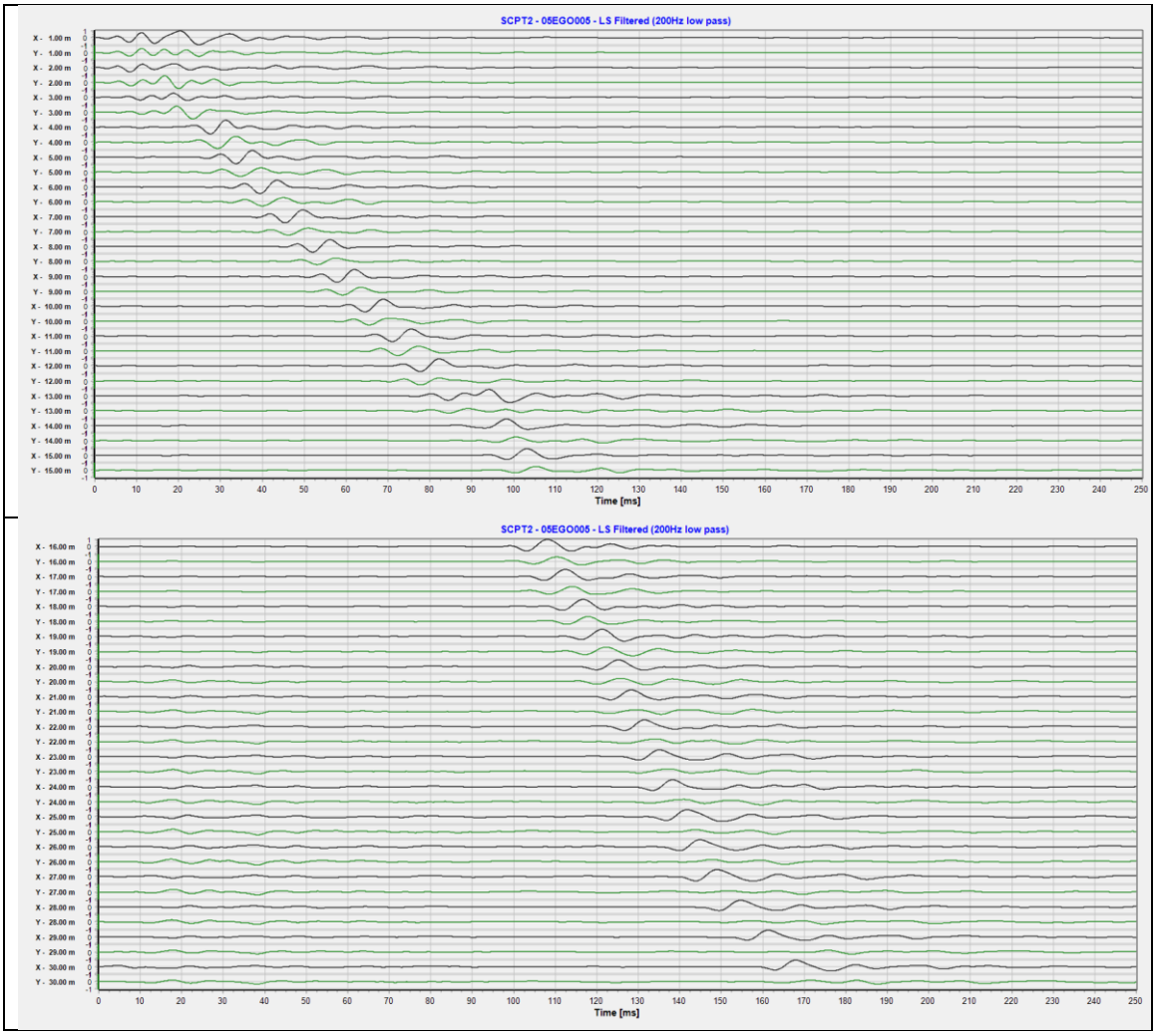
There is generally very good correlation between the LS and RS results, and we would therefore suggest that the average values are used for engineering, albeit with some care where the spread exceeds 10 %.

5. Location SCPT02

Seismic Data Analysis

The seismic data collected was processed as follows:

1. The data from the left side were filtered (a low pass filter of 200 Hz).

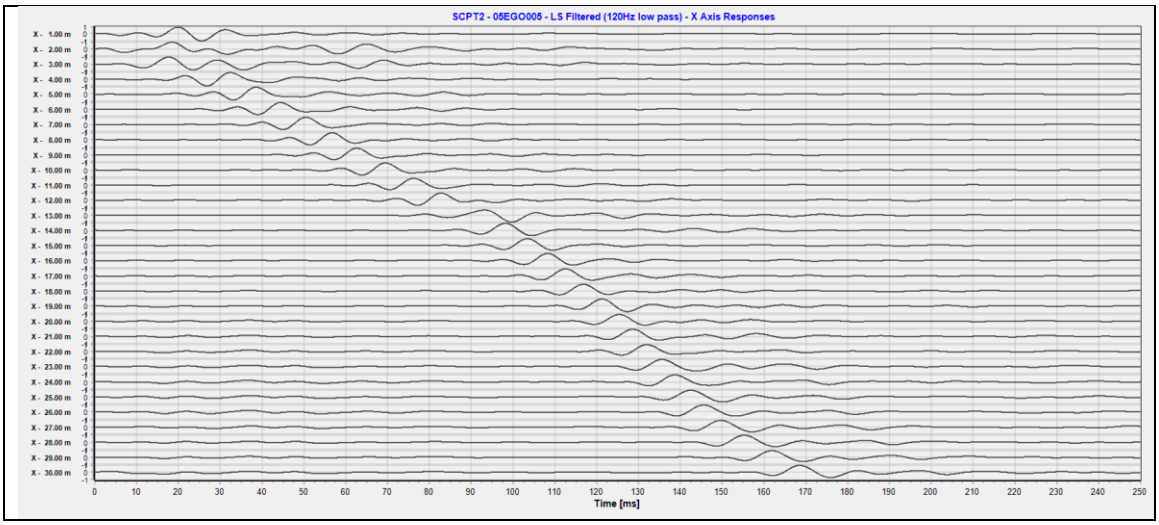


2. The seismic trace characterization of the full wave form responses was as follows:

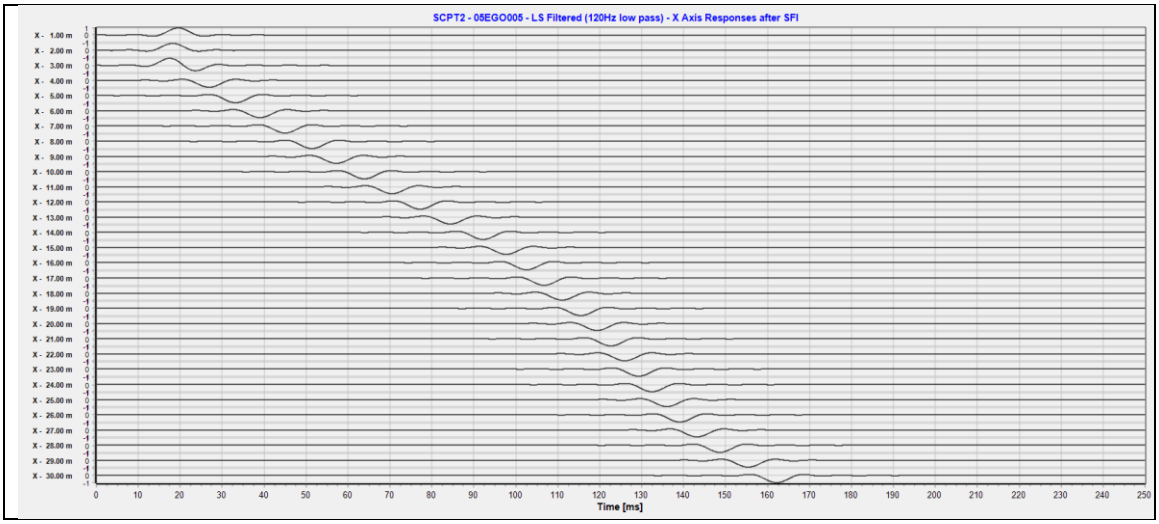
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.819	0.624	0	0.27	0.72	N/A
2	0.4543	0.439	0.6673	0.75	0.52	D
3	0.8	0.662	0.5836	0.74	0.77	F
4	0.329	0.681	0.6831	0.62	0.74	D
5	0.689	0.695	0.7991	0.64	0.76	D
6	0.8543	0.771	0.7806	0.45	0.88	D
7	0.8566	0.793	0.9722	0.58	0.95	A
8	0.8108	0.864	0.9751	0.72	0.98	A
9	0.721	0.799	0.9891	0.7	0.98	D
10	0.7309	0.762	0.9734	0.68	0.98	D
11	0.7156	0.761	0.975	0.56	0.98	D
12	0.8563	0.774	0.9324	0.57	0.98	D
13	0.8461	0.588	0.5202	0.01	0.98	F
14	0.6286	0.682	0.7092	0.93	0.98	F
15	0.6754	0.763	0.9673	0.87	0.98	D
16	0.642	0.752	0.9207	0.88	0.98	D
17	0.8172	0.692	0.9809	0.93	0.98	D
18	0.7888	0.717	0.8899	0.93	0.98	B
19	0.7937	0.723	0.945	0.93	0.98	B
20	0.7738	0.718	0.9232	0.93	0.98	B
21	0.8191	0.62	0.9532	0.8	0.98	B
22	0.752	0.643	0.9252	0.42	0.98	D
23	0.8866	0.512	0.9366	0.53	0.98	D
24	0.7277	0.569	0.9488	0.53	0.98	D
25	0.8784	0.577	0.953	0.44	0.98	D
26	0.8005	0.544	0.9741	0.32	0.98	D
27	0.8511	0.569	0.9826	0.48	0.98	D
28	0.8799	0.62	0.9883	0.48	0.98	D
29	0.8758	0.601	0.9917	0.53	0.98	A
30	0.8522	0.598	0.9874	0.49	0.98	A

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	X-axis	~~Y-axis~~	200 Hz low pass	~~ASD~~	GSD	ISD
Traces dropped			none			

3. The following traces were used for analysis.



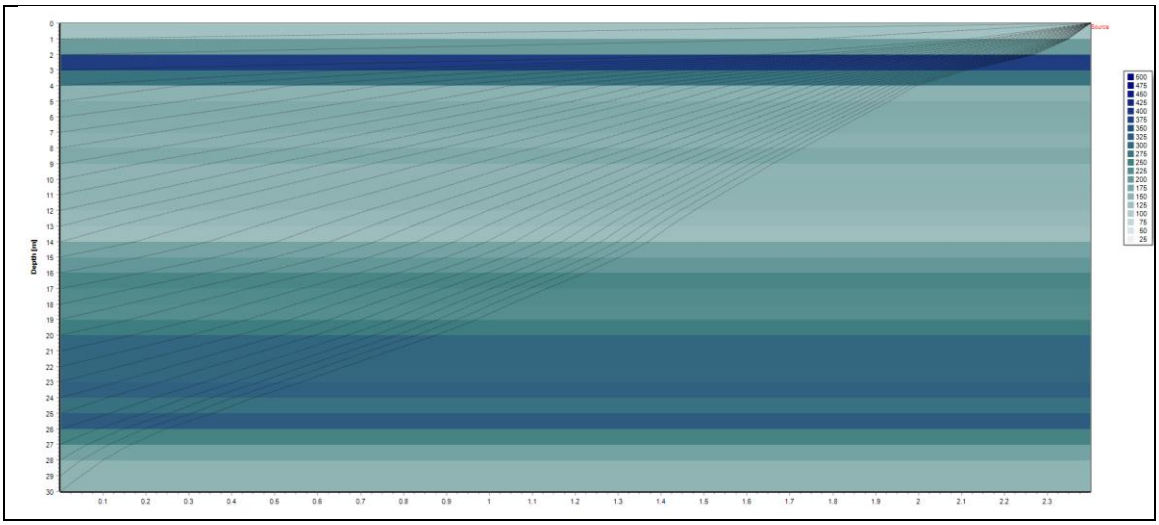
4. On the traces shown above signal feature isolation was applied.



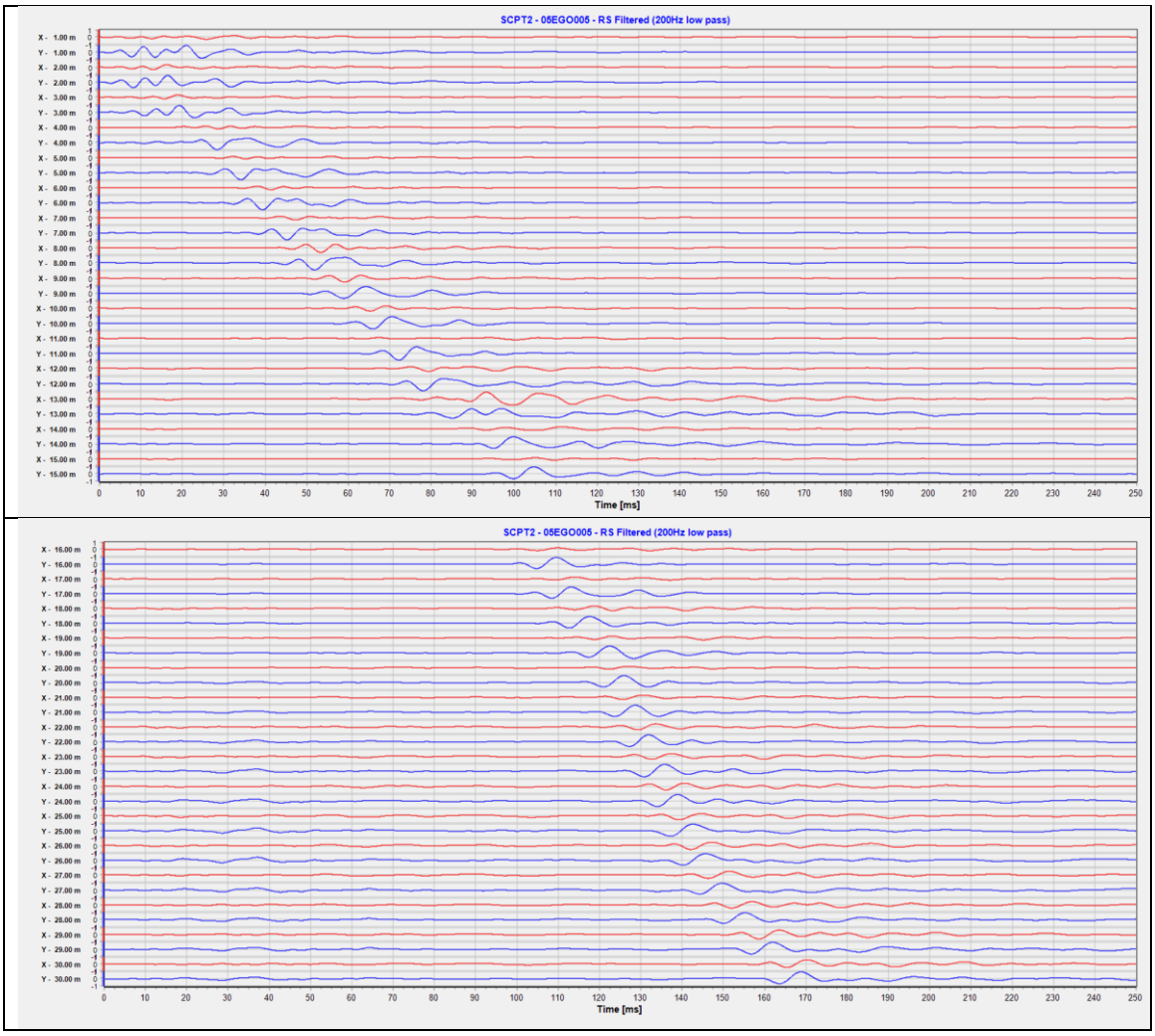
5. For the left side the reference arrival time at 8 m of 47 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Left Arrival Time [ms]	Left Interval FMDSM Velocity [m/s]
1	21.7414	119.6
2	20.4067	194
3	19.5203	380.2
4	22.4585	275.6
5	28.7731	151
6	34.5998	164.7
7	40.5758	161.7
8	47	151.7
9	52.8167	167.7
10	59.4899	147.1
11	66.0735	149.6
12	72.7865	147
13	79.9976	137.2
14	87.7863	127.3
15	93.3142	179.2
16	98.1846	202.5
17	102.328	237.4
18	106.6606	227.4
19	111.0928	222.9
20	114.9772	254.3
21	118.2641	299.8
22	121.5608	299.1
23	124.8875	297
24	128.0747	310.4
25	131.6105	280.2
26	134.6981	321.3
27	138.7817	243
28	144.2697	181.2
29	150.9927	148.2
30	157.7755	147.2

FMDSM results left side:



6. The data from the right side were filtered (a low pass filter of 200 Hz).

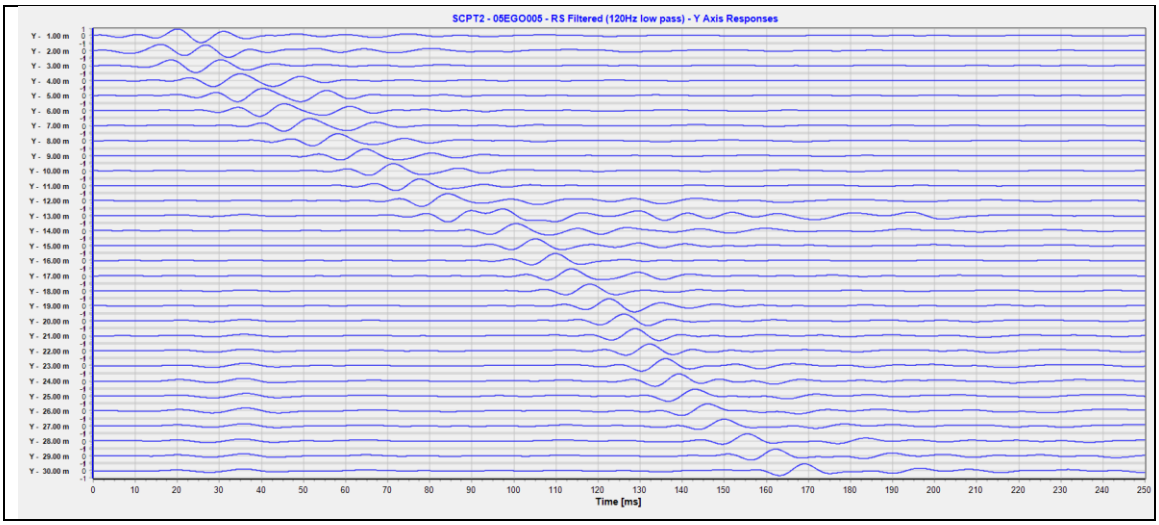


7. The seismic trace characterization of the full wave form responses was as follows:

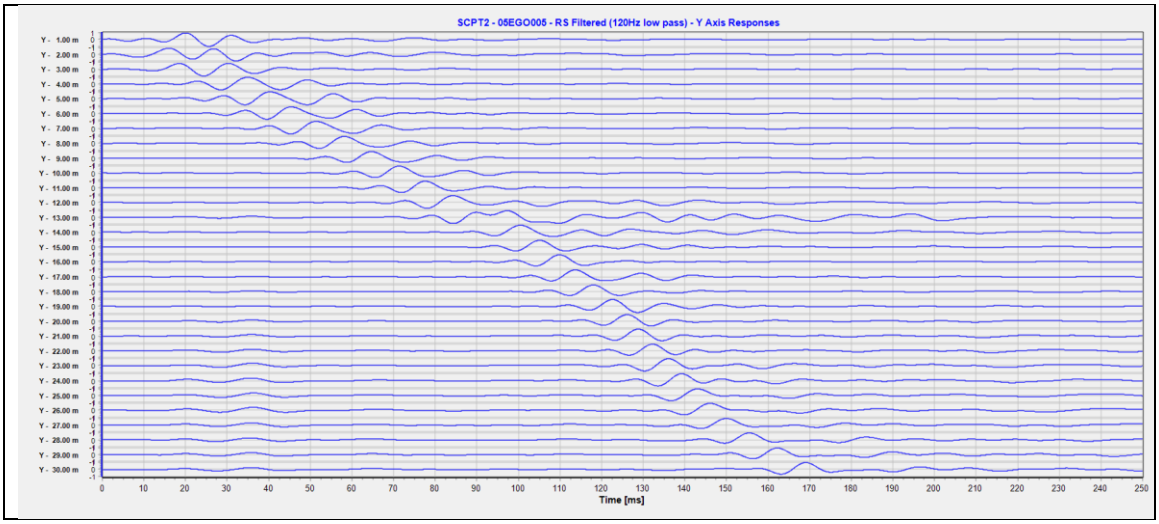
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.9254	0.499	0	0.13	0.48	N/A
2	0.8801	0.548	0.7434	0.86	0.09	D
3	0.9174	0.461	0.8666	0.36	0.32	D
4	0.9156	0.526	0.703	0.93	0.65	D
5	0.9027	0.628	0.9496	0.93	0.77	D
6	0.8832	0.6	0.9781	0.93	0.82	A
7	0.8617	0.57	0.984	0.93	0.93	D
8	0.7275	0.606	0.9495	0.4	0.91	D
9	0.8643	0.695	0.8278	0.58	0.98	D
10	0.8803	0.633	0.9874	0.25	0.98	A
11	0.9198	0.737	0.9726	0.01	0.98	F
12	0.768	0.562	0.9054	0.93	0.98	F
13	0.6196	0.561	0.8042	0.85	0.98	D
14	0.8246	0.551	0.7703	0.39	0.98	D
15	0.9056	0.722	0.8789	0.8	0.98	D
16	0.9145	0.799	0.9383	0.79	0.98	A
17	0.9265	0.655	0.9227	0.57	0.98	A
18	0.8316	0.726	0.9007	0.64	0.98	B
19	0.8751	0.746	0.949	0.52	0.98	A
20	0.8912	0.731	0.9432	0.88	0.98	A
21	0.7718	0.711	0.9653	0.93	0.98	A
22	0.6872	0.676	0.9385	0.76	0.98	D
23	0.7462	0.65	0.81	0.51	0.98	D
24	0.6343	0.594	0.87	0.62	0.98	D
25	0.7171	0.548	0.9005	0.16	0.97	D
26	0.6951	0.521	0.9629	0.01	0.98	F
27	0.6968	0.587	0.9436	0.67	0.98	F
28	0.5986	0.526	0.9562	0.73	0.98	D
29	0.6143	0.606	0.9687	0.71	0.98	D
30	0.6867	0.639	0.9851	0.77	0.98	D

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	~~X-axis~~	Y-axis	120 Hz low pass	~~ASD~~	GSD	ISD
Traces dropped			none			

8. The following traces were used for analysis.



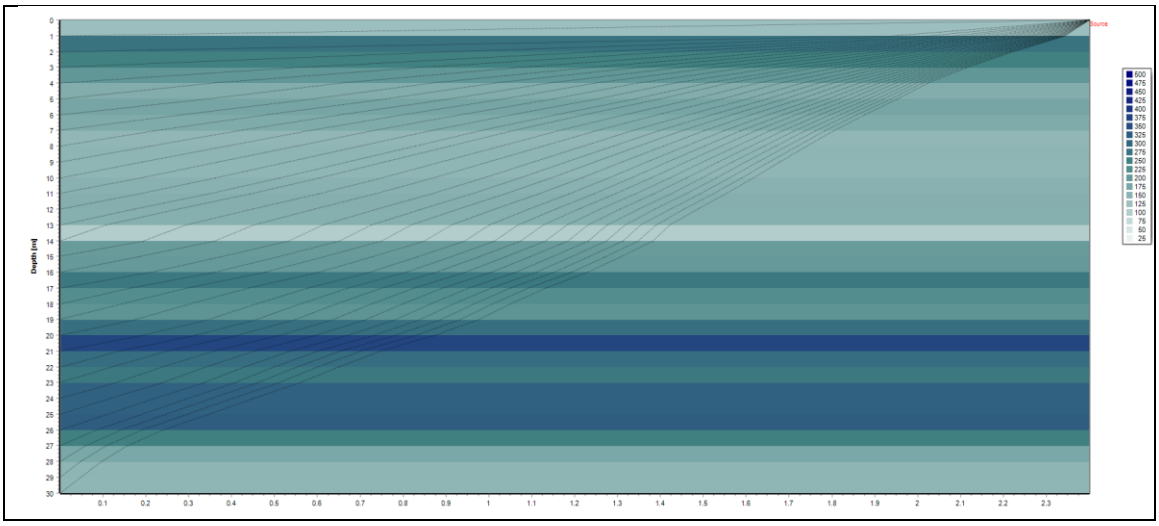
9. On the traces shown above signal feature isolation was done.



10. For the right side the reference arrival time at 8 m of 47 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Right Arrival Time [ms]	Right Interval FMDSM Velocity [m/s]
1	20.2872	128.2
2	16.5422	276.3
3	19.2513	247.9
4	23.4146	205.1
5	29.1417	162.7
6	34.4105	178.2
7	40.1873	165.7
8	47	142.8
9	53.5836	148.4
10	60.3564	144.8
11	66.7707	153.2
12	72.9559	159
13	79.1908	158.1
14	89.111	99.9
15	94.1508	196.8
16	99.0711	200
17	102.7662	265
18	107.1487	224.5
19	111.8398	210.7
20	115.3159	283.7
21	118.0151	362.8
22	121.4513	286.7
23	125.1863	265
24	128.3834	309.8
25	131.5806	309.6
26	134.6981	317.9
27	138.6821	249.1
28	144.3992	173.9
29	151.1919	146.7
30	158.0345	145.9

FMDSM results right side:



11. The estimated interval velocities are then as follows:

Depth [m]		LS Interval Velocity [m/s]	RS Interval Velocity [m/s]	Avg. Interval Velocity [m/s]	Spread
0	1	119.6	128.2	123.9	3%
1	2	194	276.3	235.2	17%
2	3	380.2	247.9	314.1	21%
3	4	275.6	205.1	240.4	15%
4	5	151	162.7	156.9	4%
5	6	164.7	178.2	171.5	4%
6	7	161.7	165.7	163.7	1%
7	8	151.7	142.8	147.3	3%
8	9	167.7	148.4	158.1	6%
9	10	147.1	144.8	146.0	1%
10	11	149.6	153.2	151.4	1%
11	12	147	159	153.0	4%
12	13	137.2	158.1	147.7	7%
13	14	127.3	99.9	113.6	12%
14	15	179.2	196.8	188.0	5%
15	16	202.5	200	201.3	1%
16	17	237.4	265	251.2	5%
17	18	227.4	224.5	226.0	1%
18	19	222.9	210.7	216.8	3%
19	20	254.3	283.7	269.0	5%
20	21	299.8	362.8	331.3	10%
21	22	299.1	286.7	292.9	2%
22	23	297	265	281.0	6%
23	24	310.4	309.8	310.1	0%
24	25	280.2	309.6	294.9	5%
25	26	321.3	317.9	319.6	1%
26	27	243	249.1	246.1	1%
27	28	181.2	173.9	177.6	2%
28	29	148.2	146.7	147.5	1%
29	30	147.2	145.9	146.6	0%

[1] The spread is defined as ½ x (LS Interval Velocity – RS Interval Velocity)/Avg. Interval Velocity

There is very good correlation between the LS and RS results, and we would therefore suggest that the average values are used for engineering, albeit with some care where the spread exceeds 10 %.

Alternatively the traces at 2 m can be dropped, which would generate the following results:

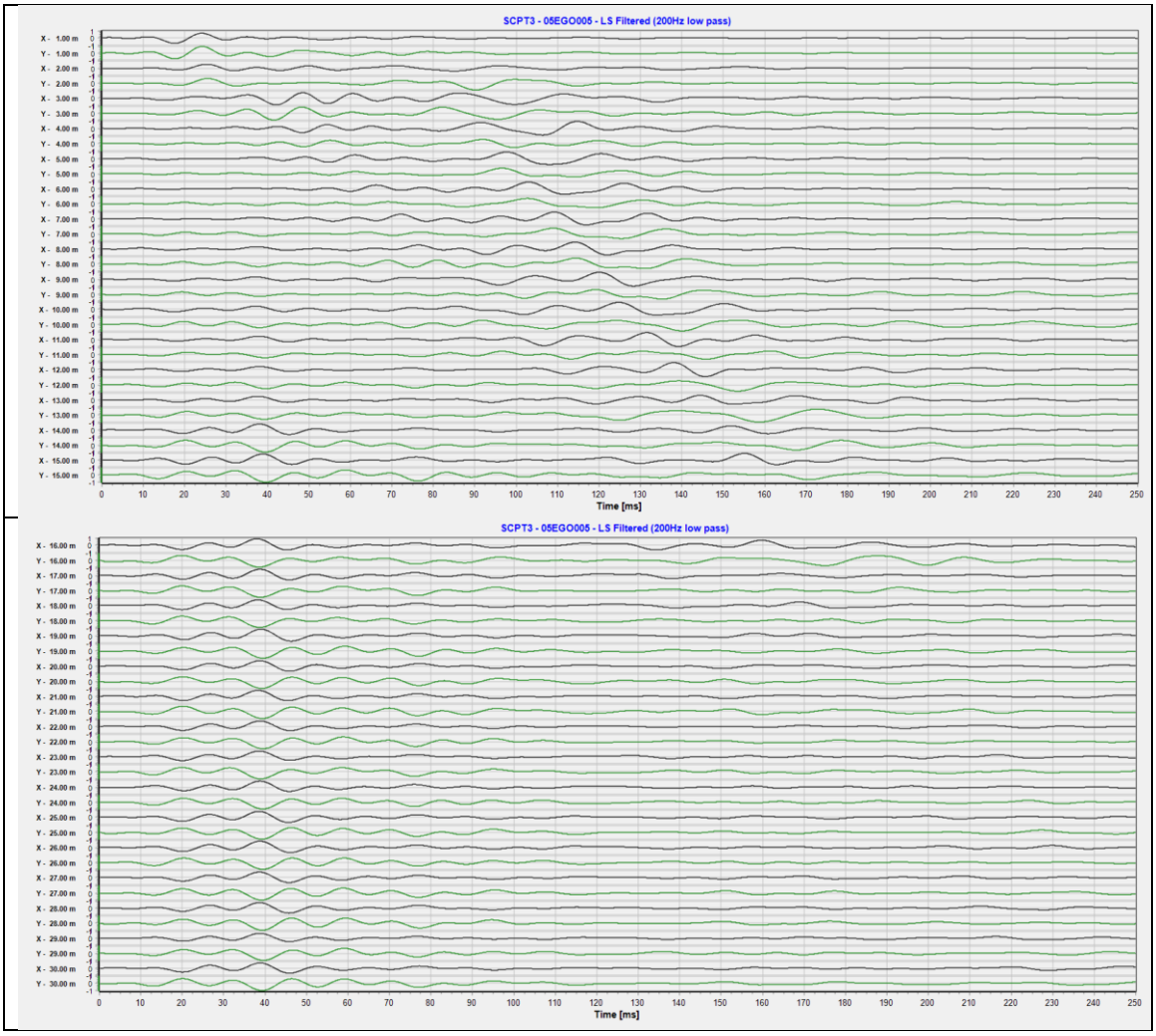
Depth [m]		LS Interval Velocity [m/s]	RS Interval Velocity [m/s]	Avg. Interval Velocity [m/s]	Spread
0	1	119.6	128.2	123.9	3%
1	2	270	261.8	265.9	2%
2	3	270	261.8	265.9	2%
3	4	263	204.8	233.9	12%
4	5	149.9	162.6	156.3	4%
5	6	163.6	178.1	170.9	4%
6	7	161.1	165.6	163.4	1%
7	8	151.3	142.8	147.1	3%
8	9	167.3	148.4	157.9	6%
9	10	147	144.8	145.9	1%
10	11	149.5	153.2	151.4	1%
11	12	146.9	159	153.0	4%
12	13	137.1	158.1	147.6	7%
13	14	127.3	99.9	113.6	12%
14	15	179.1	196.8	188.0	5%
15	16	202.3	200	201.2	1%
16	17	237.2	265	251.1	6%
17	18	227.3	224.5	225.9	1%
18	19	222.8	210.7	216.8	3%
19	20	254.2	283.7	269.0	5%
20	21	299.7	362.8	331.3	10%
21	22	299	286.7	292.9	2%
22	23	296.9	265	281.0	6%
23	24	310.3	309.8	310.1	0%
24	25	280.2	309.6	294.9	5%
25	26	321.2	317.9	319.6	1%
26	27	243	249.1	246.1	1%
27	28	181.2	173.9	177.6	2%
28	29	148.2	146.7	147.5	1%
29	30	147.2	145.9	146.6	0%

6. Location SCPT03

Seismic Data Analysis

The seismic data collected was processed as follows:

1. The data from the left side were filtered (a low pass filter of 200 Hz).

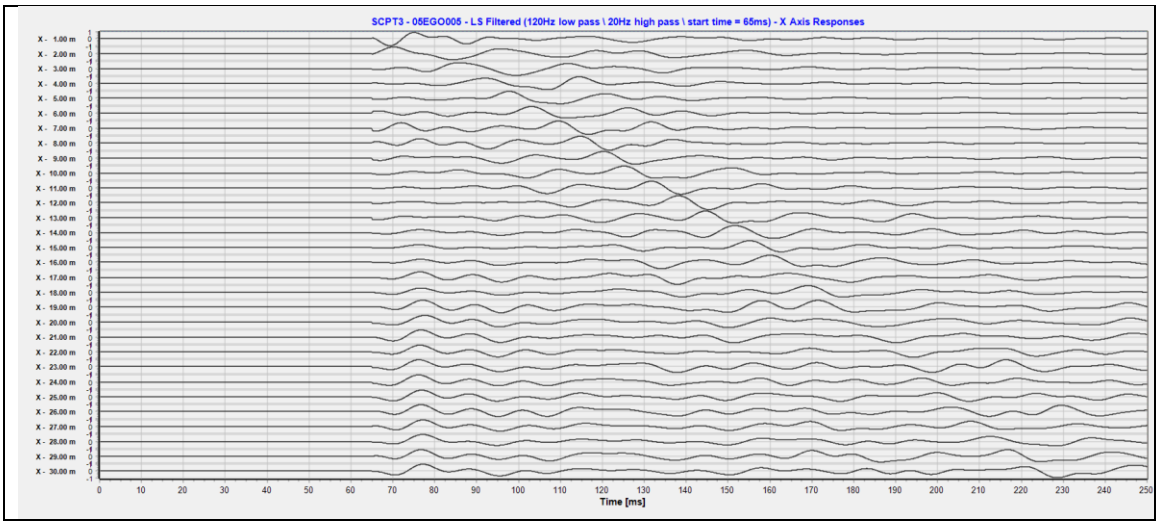


2. The seismic trace characterization of the full wave form responses was as follows:

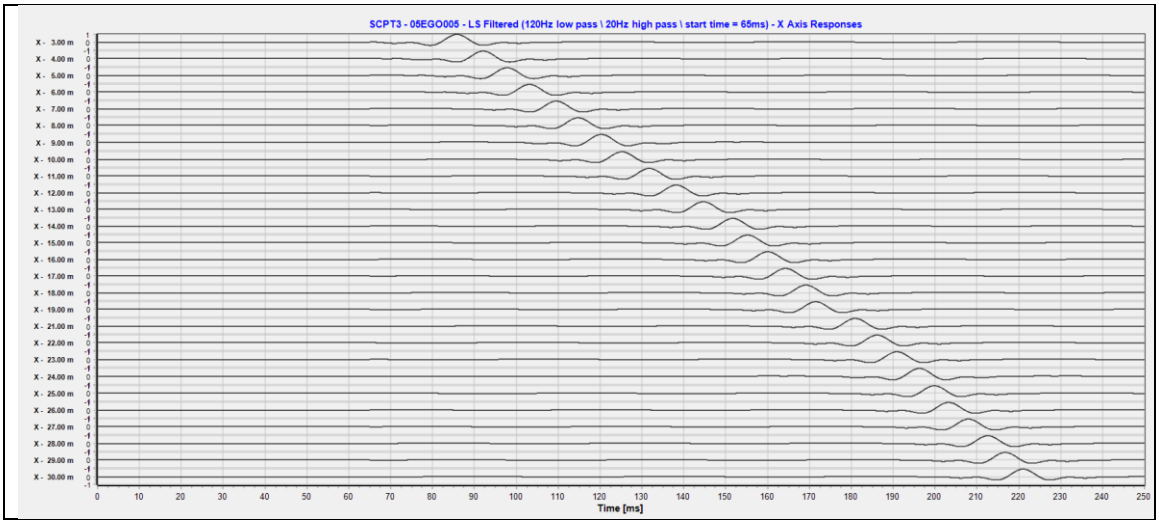
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.8814	0.571	0	0.35	0.83	N/A
2	0.8932	0.463	0.6797	0.93	0.82	D
3	0.8571	0.531	0.6614	0.57	0.98	D
4	0.822	0.562	0.6389	0.76	0.97	D
5	0.8299	0.526	0.8997	0.46	0.98	D
6	0.7535	0.495	0.9723	0.8	0.98	D
7	0.7136	0.512	0.9684	0.01	0.97	F
8	0.695	0.467	0.9456	0.01	0.98	F
9	0.673	0.495	0.9647	0.01	0.93	F
10	0.8123	0.412	0.8037	0.53	0.98	F
11	0.484	0.548	0.8197	0.01	0.98	F
12	0.3518	0.514	0.62	0.01	0.98	F
13	0.6864	0.338	0.4597	0.93	0.98	F
14	0.8367	0.467	0.4146	0.82	0.86	F
15	0.8703	0.363	0.9731	0.73	0.9	D
16	0.8431	0.466	0.9576	0.72	0.91	D
17	0.8551	0.398	0.9695	0.93	0.94	D
18	0.8739	0.422	0.9782	0.84	0.94	D
19	0.86	0.383	0.9527	0.58	0.96	D
20	0.886	0.317	0.9857	0.54	0.98	D
21	0.8872	0.368	0.9888	0.66	0.96	D
22	0.8901	0.37	0.9793	0.73	0.98	D
23	0.8922	0.353	0.9827	0.93	0.82	D
24	0.8992	0.372	0.9745	0.78	0.98	D
25	0.903	0.366	0.9624	0.71	0.97	D
26	0.9027	0.371	0.9875	0.7	0.97	D
27	0.9107	0.324	0.991	0.66	0.98	D
28	0.9005	0.372	0.9895	0.57	0.95	D
29	0.8897	0.399	0.9476	0.87	0.93	D
30	0.898	0.381	0.9557	0.62	0.86	D

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	X-axis	~~Y-axis~~	200 Hz low pass	~~ASD~~	GSD	~~ISD~~
Traces dropped			1 m, 2 m and 20 m			

3. The following traces were used for analysis.



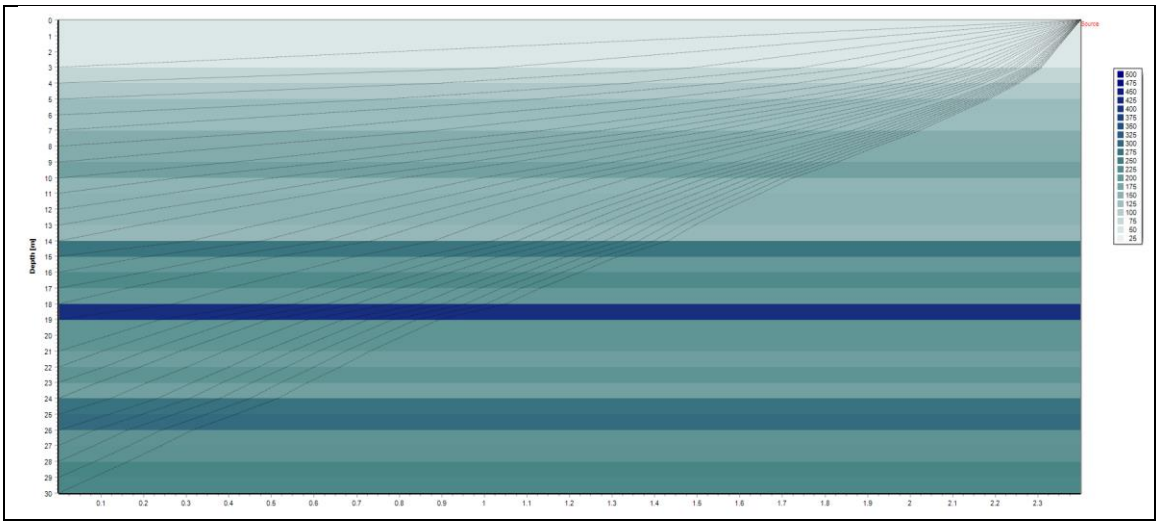
4. On the traces shown above signal feature isolation was applied.



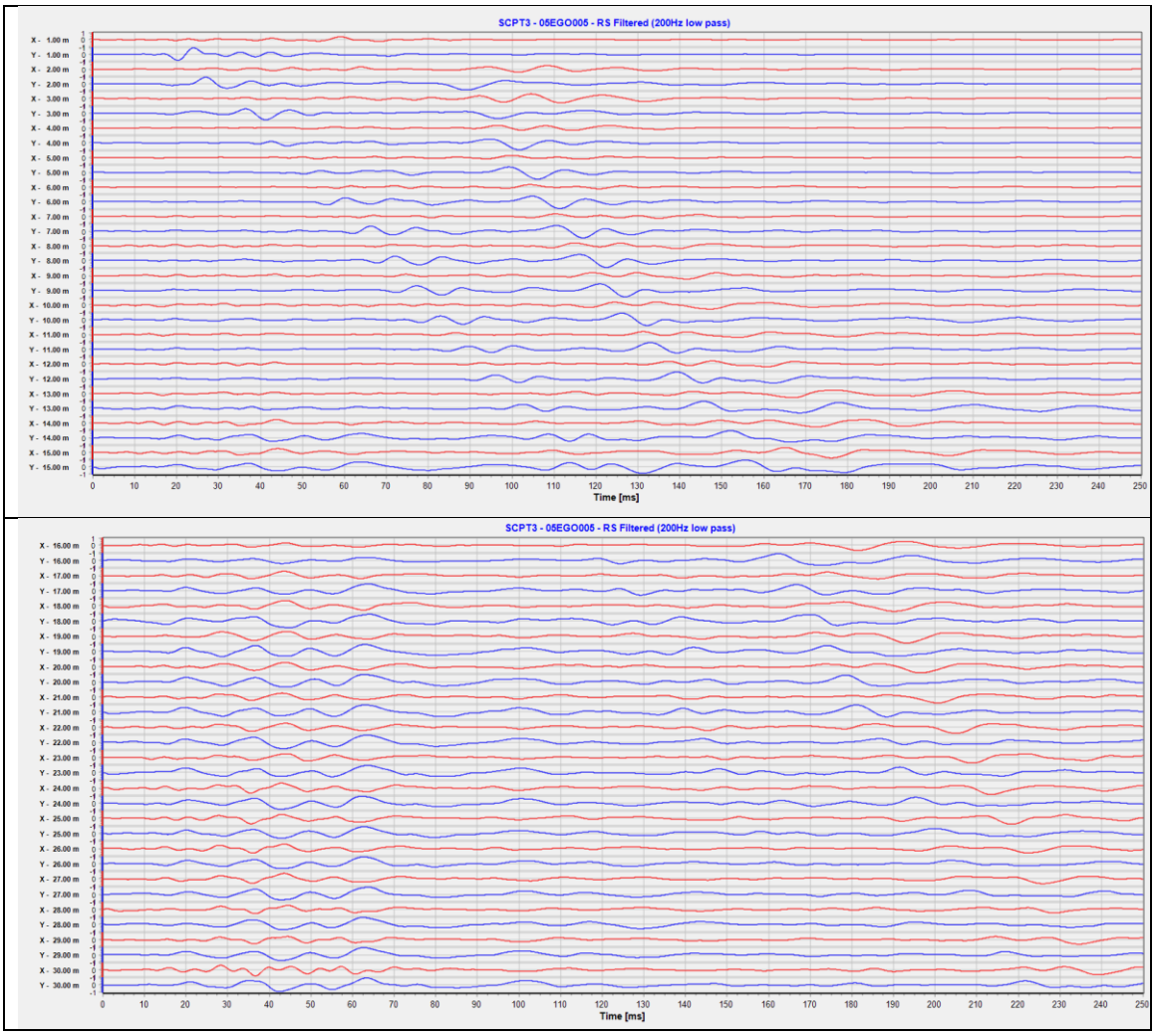
5. For the left side the reference arrival time at 4 m of 90 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Left Arrival Time [ms]	Left Interval FMDSM Velocity [m/s]
3	83.7451	45.9
4	90	79.8
5	95.7171	106.1
6	101.0457	131.8
7	107.4599	130.5
8	112.679	161.6
9	118.2168	161.9
10	123.137	184.5
11	129.6509	146.6
12	136.0851	149.9
13	142.5491	150.2
14	149.571	139.3
15	153.0968	268.8
16	157.9274	201
17	162.1704	229.4
18	167.0409	201.3
19	169.3815	407.6
21	178.8136	209
22	184.0327	189.8
23	188.7538	210.1
24	194.1122	185.1
25	197.6879	277.6
26	201.0843	291.1
27	205.8053	209.9
28	210.4367	214.7
29	214.6	238.9
30	218.853	233.7

FMDSM results left side:



6. The data from the right side were filtered (a low pass filter of 200 Hz).

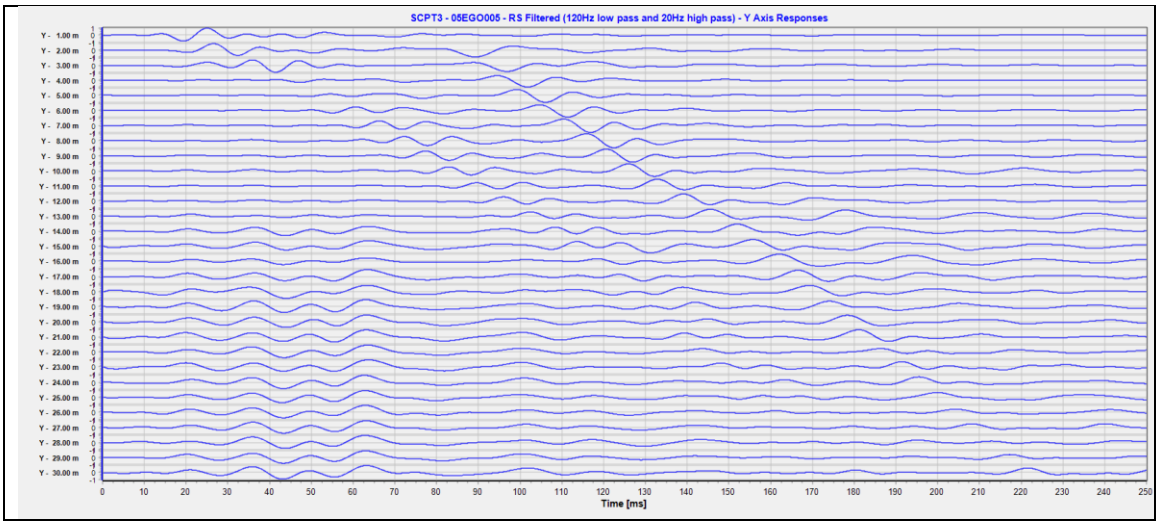


7. The seismic trace characterization of the full wave form responses was as follows:

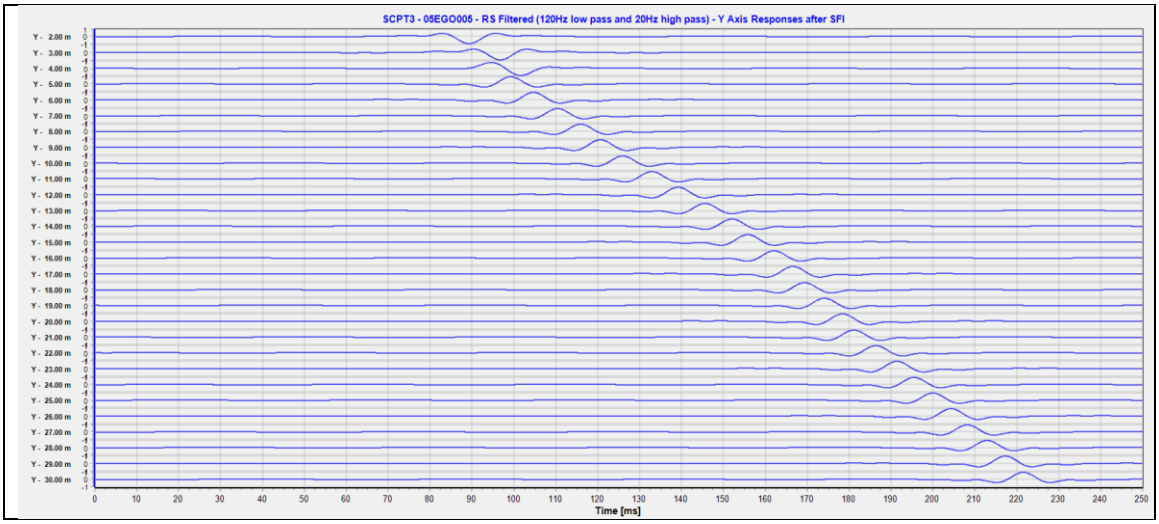
Depth [m]	LIN [0-1]	SSP [0-1]	CCC [0-1]	PSD [0-1]	SNR [0-1]	STC [A-F]
1	0.8889	0.642	0	0.01	0.84	N/A
2	0.8877	0.539	0.6495	0.68	0.81	F
3	0.8727	0.537	0.8125	0.81	0.98	D
4	0.8111	0.537	0.694	0.84	0.98	D
5	0.8571	0.655	0.9529	0.21	0.98	D
6	0.8521	0.597	0.9691	0.01	0.98	F
7	0.831	0.531	0.9624	0.01	0.98	F
8	0.7299	0.529	0.9801	0.01	0.98	F
9	0.6574	0.549	0.9291	0.32	0.98	F
10	0.5359	0.503	0.8236	0.24	0.98	D
11	0.7352	0.457	0.978	0.78	0.98	D
12	0.7128	0.451	0.9805	0.65	0.98	D
13	0.6943	0.351	0.9464	0.68	0.98	D
14	0.5626	0.406	0.4643	0.01	0.98	F
15	0.487	0.378	0.6984	0.01	0.98	F
16	0.6344	0.416	0.5968	0.36	0.98	F
17	0.8148	0.449	0.6498	0.65	0.96	D
18	0.8652	0.311	0.9346	0.83	0.89	D
19	0.7889	0.552	0.4901	0.93	0.98	F
20	0.7963	0.509	0.7504	0.26	0.91	D
21	0.4782	0.49	0.765	0.6	0.98	D
22	0.8706	0.477	0.6495	0.62	0.96	D
23	0.8524	0.465	0.968	0.66	0.91	D
24	0.8762	0.455	0.9535	0.3	0.95	D
25	0.8759	0.463	0.9811	0.53	0.98	D
26	0.8616	0.437	0.9651	0.82	0.98	D
27	0.8928	0.444	0.9763	0.89	0.97	D
28	0.8886	0.483	0.9761	0.48	0.95	D
29	0.8591	0.511	0.9751	0.3	0.96	D
30	0.7382	0.452	0.9679	0.53	0.74	D

Traces used			**Filtering applied**	**Signal Feature Isolation**		
~~FW~~	~~X-axis~~	Y-axis	20 – 120 Hz band pass	~~ASD~~	GSD	ISD
Traces dropped			1 m			

8. The following traces were used for analysis.



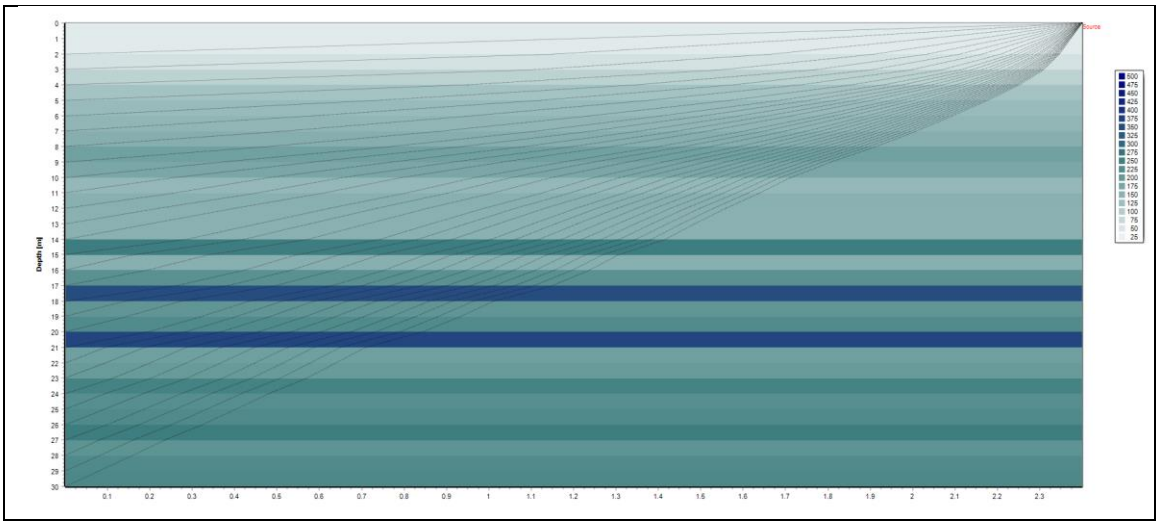
9. On the traces shown above signal feature isolation was done.



10. For the right side the reference arrival time at 4 m of 90 ms was used to derive the arrival times. Forward Modeling / Downhill Simplex Method (which takes into account ray path refraction) was then used for these intervals to determine the estimated interval velocities.

Depth [m]	Right Arrival Time [ms]	Right Interval FMDSM Velocity [m/s]
2	77.5798	40.3
3	85.0598	57.7
4	90	87.3
5	94.8306	117.5
6	100.2489	134.4
7	106.0157	143
8	111.5037	157.7
9	116.2347	185.5
10	121.5634	173.6
11	128.4955	138.8
12	134.7604	154.1
13	141.1846	151.3
14	147.6088	152
15	151.3837	252.9
16	157.6585	156.2
17	162.1804	216.4
18	164.9194	348.7
19	169.6504	207.3
20	173.9731	228
21	176.6523	363.9
22	181.9212	187.3
23	186.9609	197
24	191.0446	242.9
25	195.5266	221.2
26	199.8592	229.1
27	203.7336	256.2
28	208.4547	210.3
29	212.7973	229.1
30	217.0901	231.7

FMDSM results right side:



11. The estimated interval velocities are then as follows:

Depth [m]		LS Interval Velocity [m/s]	RS Interval Velocity [m/s]	Avg. Interval Velocity [m/s]	Spread
0	1	45.9	40.3	43.1	6%
1	2	45.9	40.3	43.1	6%
2	3	45.9	57.7	51.8	11%
3	4	79.8	87.3	83.6	4%
4	5	106.1	117.5	111.8	5%
5	6	131.8	134.4	133.1	1%
6	7	130.5	143	136.8	5%
7	8	161.6	157.7	159.7	1%
8	9	161.9	185.5	173.7	7%
9	10	184.5	173.6	179.1	3%
10	11	146.6	138.8	142.7	3%
11	12	149.9	154.1	152.0	1%
12	13	150.2	151.3	150.8	0%
13	14	139.3	152	145.7	4%
14	15	268.8	252.9	260.9	3%
15	16	201	156.2	178.6	13%
16	17	229.4	216.4	222.9	3%
17	18	201.3	348.7	275.0	27%
18	19	407.6	207.3	307.5	33%
19	20	209	228	218.5	4%
20	21	209	363.9	286.5	27%
21	22	189.8	187.3	188.6	1%
22	23	210.1	197	203.6	3%
23	24	185.1	242.9	214.0	14%
24	25	277.6	221.2	249.4	11%
25	26	291.1	229.1	260.1	12%
26	27	209.9	256.2	233.1	10%
27	28	214.7	210.3	212.5	1%
28	29	238.9	229.1	234.0	2%
29	30	233.7	231.7	232.7	0%

[1] The spread is defined as ½ x (LS Interval Velocity – RS Interval Velocity)/Avg. Interval Velocity

There is very good correlation between the LS and RS results, and we would therefore suggest that the average values are used for engineering, albeit with (some) care where the spread exceeds 10 %.

Alternatively the traces at 18 m can be dropped, which would generate the following results:

Depth [m]		LS Interval Velocity [m/s]	RS Interval Velocity [m/s]	Avg. Interval Velocity [m/s]	Spread
0.00	1.00	45.9	40.30	40.3	6%
1.00	2.00	45.9	40.3	40.3	6%
2.00	3.00	45.9	57.7	51.8	11%
3.00	4.00	79.8	87.3	83.6	4%
4.00	5.00	106.1	117.5	111.8	5%
5.00	6.00	131.8	134.4	133.1	1%
6.00	7.00	130.5	143	136.8	5%
7.00	8.00	161.6	157.7	159.7	1%
8.00	9.00	161.9	185.5	173.7	7%
9.00	10.00	184.5	173.6	179.1	3%
10.00	11.00	146.6	138.8	142.7	3%
11.00	12.00	149.9	154.1	152.0	1%
12.00	13.00	150.2	151.3	150.8	0%
13.00	14.00	139.3	152	145.7	4%
14.00	15.00	268.8	252.9	260.9	3%
15.00	16.00	201	156.2	178.6	13%
16.00	17.00	229.4	216.4	222.9	3%
17.00	18.00	269.8	260.7	265.3	2%
18.00	19.00	269.8	260.7	265.3	2%
19.00	20.00	209.1	227.4	218.3	4%
20.00	21.00	209.1	363.5	286.3	27%
21.00	22.00	189.7	187.3	188.5	1%
22.00	23.00	210	196.9	203.5	3%
23.00	24.00	185.1	242.9	214.0	14%
24.00	25.00	277.5	221.1	249.3	11%
25.00	26.00	291	229.1	260.1	12%
26.00	27.00	209.9	256.2	233.1	10%
27.00	28.00	214.7	210.3	212.5	1%
28.00	29.00	238.9	229.1	234.0	2%
29.00	30.00	233.7	231.7	232.7	0%

APPENDIX 6:

Test Pit Logs

TEST PIT: TP101

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 803090.5 E: 388672.1 (Bay of Plenty 2000)
SURFACE RL: 1.36 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.60 m
START: 03/06/25 08:15
END: 03/06/25 08:45

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	1.0		W			
1.0	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered.	0.0		S	▼		
			Terminated at 1.60 m. Machine limit.						
2.0				-1.0					
3.0									

DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm: 0, 5, 10, 15, 20

Trial Pit Photographs

TP101

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: B3-TP2 ; Depth of sand inferred at 1.6 m by resistance of DCP pushed through base of test pit.

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 08:45	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP102

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802977.1 E: 388643.8 (Bay of Plenty 2000)
SURFACE RL: 1.14 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 2.00 m
START: 03/06/25 08:45
END: 03/06/25 09:15

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	1.0		W			
1.0	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered. 0.70 m: Thin lense of ash. (Kaharoa Ash) 0.80 m: Hard to excavate due to wood inclusions.	0.0		S	▼		
2.0			Terminated at 2.00 m. Machine limit.	-1.0					
3.0									

DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm: 0, 5, 10, 15, 20

Trial Pit Photographs

TP102

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: B3-TP1 ; Depth of sand inferred at 2.0 m by resistance of DCP pushed through base of test pit.

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 09:15	1.20m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP103

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 803014.0 E: 388845.5 (Bay of Plenty 2000)
SURFACE RL: 1.18 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.00 m
START: 03/06/25 09:15
END: 03/06/25 09:30

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	1.0		W			0 5 10 15 20
			Silty fine to medium SAND; yellow brown. Poorly graded. Low plasticity. (Kaharoa Ash)			W			
	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered.			W			
1.0	(4b) LAS		Fine to coarse SAND; dark grey. Well graded.	0.0		S	▼		
			Terminated at 1.00 m. Target depth.						
2.0				-1.0					
3.0									

Trial Pit Photographs

TP103

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: B3-TP3 ; LAS = LOOSE ALLUVIAL SANDS

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 09:30	1.00m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP104

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 803089.3 E: 389012.8 (Bay of Plenty 2000)
SURFACE RL: 2.41 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.10 m
START: 03/06/25 09:30
END: 03/06/25 10:00

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.			D			
	(4a) DUNE SANDS		Fine to medium SAND; yellow. Poorly graded.	2.0		D			
1.0			Silty fine to medium SAND with trace rootlets; light brown. Poorly graded. Low plasticity.			D			
			Terminated at 1.10 m. Target depth.	1.0					
2.0									
3.0				0.0					

DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm: 0, 5, 10, 15, 20

Trial Pit Photographs

TP104

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: B3-TP4

Groundwater Observations		
Date/Time	Depth	Event

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP105

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802706.9 E: 388123.7 (Bay of Plenty 2000)
SURFACE RL: 1.14 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.45 m
START: 03/06/25 10:15
END: 03/06/25 10:45

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity. 0.20 m: Thin ash lense. (Kaharoas Ash)	1.0		M			
1.0	(4b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered. 1.20 m: Harder to excavate due to wood inclusions.	0.0		S			
2.0			Terminated at 1.45 m. Machine limit.	-1.0					
3.0									

DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm: 0, 5, 10, 15, 20

Trial Pit Photographs

TP105

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: TP-SD ; Depth of sand inferred at 1.45 m by resistance of DCP pushed through base of test pit.

Groundwater Observations

Date/Time	Depth	Event
03/06/2025 10:45	0.50m	Water Inflow
03/06/2025 10:45	1.30m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP106

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 802722.0 E: 387884.4 (Bay of Plenty 2000)
SURFACE RL: 2.33 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 2.20 m
START: 03/06/25 11:00
END: 03/06/25 11:30

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	2.0		M			0 5 10 15 20
	(1) FILL		[FILL] Fine to medium SAND; brown. Poorly graded.			M			
	(2) TOPSOIL		[BTS] Organic SILT; dark brown. Low plasticity.						
1.0	(3b) PEAT		[PEAT] Organic SILT; brown. Low plasticity. Amorphous. 0.90 m: Thin ash layer. (Kaharoa Ash)	1.0		S			
2.0			Terminated at 2.20 m. Machine limit.	0.0					
3.0									

Trial Pit Photographs

TP106

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: A3-TP1 ; Excavator reached machine limit.

Groundwater Observations

Date/Time	Depth	Event
03/06/2025 11:30	0.70m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP107

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801671.6 E: 387474.4 (Bay of Plenty 2000)
SURFACE RL: 1.82 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.20 m
START: 03/06/25 11:30
END: 03/06/25 12:00

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	1.0		M			0 5 10 15 20
			Fine to medium SAND; white. Poorly graded. (Kaharoa Ash)			M			
	(3a) PUMICE AIRFALL DEPOSITS		Fine to medium GRAVEL; yellow grey. Poorly graded. Gravel is sub rounded pumice.			M			
1.0	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered.	0.0		S			
			Terminated at 1.20 m. Machine limit.						
2.0				-1.0					
3.0									

Trial Pit Photographs

TP107

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: A1-TP1 ; Depth of sand inferred at 1.2 m by resistance of DCP pushed through base of test pit.

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 12:00	0.70m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP108

Sheet 1 of 1

CLIENT:	Bell Road Limited Partnership	COORDS: N: 801657.4 E: 387468.2 (Bay of Plenty 2000)		EXCAVATION EQUIPMENT: 1.7T Excavator
PROJECT:	Bell Road - Wairakei South	SURFACE RL: 1.83 m (NZVD2016)		CONTRACTOR: Bay Civil
LOCATION:	Bell Road, Papamoa	PIT WIDTH: 1m	START: 03/06/25 12:00	LOGGED: DRT
JOB NO:	019630.000.001	PIT MAX DEPTH: 1.90 m	END: 03/06/25 12:15	CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TS		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.			M			0 5 10 15 20
	(3a) PUMICE AIRFALL DEPOSITS		Fine to medium GRAVEL; brown. Poorly graded. Gravel is sub rounded pumice.	1.0		M			
1.0						S			
	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Wood inclusions are fresh to slightly weathered.	0.0					
2.0			Terminated at 1.90 m. Hole Collapse.	-1.0					
3.0									

Trial Pit Photographs

TP108

General Notes:

Coordinate Method: Hand Held GPS

Surface Elevation Method: Maven Survey (07/08/25)

ENGEO ENVIRO NAME: A1-TP2 ; TS = TOPSOIL

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 12:15	1.10m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP109

Sheet 1 of 1

CLIENT:	Bell Road Limited Partnership	COORDS: N: 801574.7 E: 387176.7 (Bay of Plenty 2000)		EXCAVATION EQUIPMENT: 1.7T Excavator
PROJECT:	Bell Road - Wairakei South	SURFACE RL: 2.24 m (NZVD2016)		CONTRACTOR: Bay Civil
LOCATION:	Bell Road, Papamoa	PIT WIDTH: 1m	START: 03/06/25 12:15	LOGGED: DRT
JOB NO:	019630.000.001	PIT MAX DEPTH: 1.00 m	END: 03/06/25 12:45	CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	2.24		M			0 5 10 15 20
	(3a) PUMICE AIRFALL DEPOSIT		Fine to coarse SAND; yellow. Well graded. (Kaharoa Ash)			M			
			Silty fine to medium SAND; reddish orange. Poorly graded. Low plasticity.	2.0		M			
1.0	(4b) LAS		Fine to coarse SAND; grey. Well graded.			W	▼		
			Terminated at 1.00 m. Target depth.	1.0					
2.0				0.0					
3.0									

Trial Pit Photographs

TP109

General Notes:

Coordinate Method: Hand Held GPS

Surface Elevation Method: Maven Survey (07/08/25)

ENGEO ENVIRO NAME: TP-2.35 ; LAS = LOOSE ALLUVIAL SANDS

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 12:45	1.00m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

TEST PIT: TP110

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801569.5 E: 387310.0 (Bay of Plenty 2000)
SURFACE RL: 2.35 m (NZVD2016)
PIT WIDTH: 1m
PIT MAX DEPTH: 1.10 m
START: 03/06/25 12:45
END: 03/06/25 01:00

EXCAVATION EQUIPMENT: 1.7T Excavator
CONTRACTOR: Bay Civil
LOGGED: DRT
CHECKED: GMS

DEPTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	STRENGTH / CONSISTENCY	MOISTURE CONDITION	GROUNDWATER LEVELS	Shear Vane (Peak / Residual) & Samples	DCP TEST (NZS4402 Test 6.5.2) Blows / 100 mm
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.	2.0		M			0 5 10 15 20
			Fine to coarse SAND; yellow. Well graded.			M			
	(3a) PUMICE AIRFALL DEPOSITS		Fine to medium GRAVEL; grey brown. Well graded. Gravel is sub rounded pumice.			M			
			Sandy SILT; orange red. Low plasticity. Sand is fine to medium.			M			
1.0	(4b) LAS		Fine to coarse SAND; grey. Well graded.	1.0		W	▼		
			Terminated at 1.10 m. Target depth.						
2.0				0.0					
3.0									

Trial Pit Photographs

TP110

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
ENGEO ENVIRO NAME: TP-2.41 ; LAS = LOOSE ALLUVIAL SANDS

Groundwater Observations		
Date/Time	Depth	Event
03/06/2025 13:00	1.00m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

NZGD ID: 93105

Beca

TEST PIT LOG

TEST PIT No: **TP 261**

SHEET 1 of 1

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/240

SITE LOCATION: Te Puke / Papamoa — CLIENT: Transit New Zealand

TESTPIT LOCATION: Papamoa Taylor

COORDINATES: N 803,767 m, E 387,860 m — R L: 7.9 m, DATUM: Moturiki

GEOLOGICAL UNIT	R L (m)	DEPTH (m)	WATER LEVEL	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL DESCRIPTION	SAMPLES	Scala (Blows/150mm)	SV (kPa)	τ (kPa)
Topsoil					SP	M	L	Loose fine to medium SAND, some rootlets, dark brown; moist, non plastic.		2		
					SP	M	L	Loose silty fine SAND, minor to trace organics, brown to light brown; moist, non plastic.		4		
Alluvial Sands					SP	M	D	Dense fine to medium SAND, trace rootlets, light brown; moist to dry, non plastic. Brownish orange mottled black; bioturbated.		11		
							VD	Very dense.	B1	22, 25+		
	7	1						Heavily bioturbated.		5		
									B2	10, 13		
								1.35-2.5m Dark orange staining.		12, 15, 18		
	6	2								25+		
									B3			
	5	3						Dark brown to dark orange brown.				
	4	4						End of Test Pit 3.9 m.				
	3											

DATE DRILLED: 2/4/08 — EXCAVATION METHOD: 8 Tonne Excavator

LOGGED BY: BYC — CONTRACTOR: Barry Heke Excavators Ltd

PILCON VANE No:

COMMENTS: Coordinate System is BOP 2000

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_TP P:\3931\393203\6VTGE\10 INVESTIGATIONS\GINT\TAURANGA EASTEN MOTORWAY TP LOGS.GPJ BCHFMB2.GDT 18/11/08

NZGD ID: 93105

NZGD ID: 93106

Beca

TEST PIT LOG

TEST PIT No: **TP 262**

SHEET 1 of 1

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/240

SITE LOCATION: Te Puke / Papamoa — CLIENT: Transit New Zealand

TESTPIT LOCATION: Papamoa South

COORDINATES: N 803,628 m, E 388,176 m — R L: 5.78 m, DATUM: Moturiki

GEOLOGICAL UNIT	R L (m)	DEPTH (m)	WATER LEVEL	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL DESCRIPTION	SAMPLES	Scala (Blows/150mm)	SV (kPa)	τ (kPa)
Topsoil					ML	M	L	Loose fine sandy SILT, minor rootlets, dark brown; moist, non plastic.		4		
Alluvial Sands					SM	M	D	Organics: rootlets.		3		
								Dense silty SAND, minor to trace rootlets, light greyish brown; moist, non plastic.		4		
					SW	D	D	Dense fine to coarse SAND, greyish white speckled black and orange; dry, non plastic.		4		
	5								B1	8		
		1								7		
					SP	D	D	Dense to very dense fine to medium SAND, trace rootlets, brownish orange; moist to dry, non plastic. Some bioturbation.		2		
										4		
										9		
									B2	13		
	4									14		
		2								10		
										9		
										8		
	3									10		
		3								8		
								Trace fibrous organics (wood fragments).				
	2							End of Test Pit 3.9 m.				
		4										
	1											

DATE DRILLED: 2/4/08 — EXCAVATION METHOD: 8 Tonne Excavator

LOGGED BY: BYC — CONTRACTOR: Barry Heke Excavators Ltd

PILCON VANE No:

COMMENTS: Coordinate System is BOP 2000

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_TP P:\3931\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTEN MOTORWAY TP LOGS.GPJ BCHFMB2.GDT 18/11/08

NZGD ID: 93106

NZGD ID: 93107

Beca

TEST PIT LOG

TEST PIT No: **TP 263**

SHEET 1 of 1

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/240

SITE LOCATION: Te Puke / Papamoa — CLIENT: Transit New Zealand

TESTPIT LOCATION: Papamoa South Bell Rd

COORDINATES: N 803,436 m, E 388,594 m — R L: 8.89 m, DATUM: Moturiki

GEOLOGICAL UNIT	R L (m)	DEPTH (m)	WATER LEVEL	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL DESCRIPTION	SAMPLES	Scala (Blows/150mm)	SV (kPa)	τ (kPa)
Topsoil					SM	M	L	Loose fine to medium SAND, some silt, some rootlets, dark brown; moist, non plastic.		3		
Alluvial Sands					SP	M	D	Dense fine to medium SAND, some rootlets, light orange brown; moist, non plastic.		4		
								Dense, brownish orange speckled black.		11		
								Trace rootlets.		21		
								0.6 -0.7 m bioturbated.	B1	21		
	8	1						Light orange brown.		13		
								Bioturbated.		15		
										11		
										7		
							MD	Medium dense.		7		
	7	2					VL	Very loose.		7		
										4		
										3		
										6		
							MD	Medium dense.		5		
	6	3										
								End of Test Pit 3.5 m.	B2			
	5	4										
	4											

DATE DRILLED: 3/4/08 — EXCAVATION METHOD: 8 Tonne Excavator

LOGGED BY: BYC — CONTRACTOR: Barry Heke Excavators Ltd

PILCON VANE No:

COMMENTS: Coordinate System is BOP 2000

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_TP P:\393\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTEN MOTORWAY TP LOGS.GPJ BCHFMB2.GDT 18/11/08

NZGD ID: 93107

NZGD ID: 93108

Beca

TEST PIT LOG

TEST PIT No: **TP 264**

SHEET 1 of 1

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/240

SITE LOCATION: Te Puke / Papamoa — CLIENT: Transit New Zealand

TESTPIT LOCATION: Papamoa South Bell Rd by Delay

COORDINATES: N 803,242 m, E 389,028 m — R L: 7.1 m — DATUM: Moturiki

GEOLOGICAL UNIT	R L (m)	DEPTH (m)	WATER LEVEL	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL DESCRIPTION	SAMPLES	Scala (Blows/150mm)	SV (kPa)	τ (kPa)
Topsoil	7				ML	M	S	Stiff fine sandy SILT, some rootlets, dark brown; moist, non plastic.		4		
Alluvial Sands					SM	M	VL	Very loose silty fine SAND, some to minor rootlets, dark brown; moist, non plastic.		3		
					SM	M	VL	Very loose fine to medium SAND, minor rootlets, light brownish white; moist, non plastic.		2		
					SP	M	VL	Very loose fine silty SAND, trace rootlets, light brown; moist, non plastic.		3		
								Very loose fine to medium SAND, trace rootlets, orange brown speckled black; moist, non plastic.	B1	3		
	6	1					L	Loose; bioturbated.		1		
										4		
										6		
					SP	M	MD	Medium dense light brown/white speckled orange and black.		4		
	5	2								7		
										8		
										8		
										6		
									B2	6		
	4	3								7		
								End of Test Pit 3.4 m.				
	3	4										

DATE DRILLED: 2/4/08 — EXCAVATION METHOD: 8 Tonne Excavator

LOGGED BY: BYC — CONTRACTOR: Barry Heke Excavators Ltd

PILCON VANE No:

COMMENTS: Coordinate System is BOP 2000

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

BIL_TP P:\3933\3932036\TGE\10 INVESTIGATIONS\GINT\TAURANGA EASTEN MOTORWAY TP LOGS.GPJ BCHFMB2.GDT 18/11/08

NZGD ID: 93108

NZGD ID: 93142

Beca

TEST PIT LOG

TEST PIT No: **TP210**

SHEET 1 of 1

PROJECT: Tauranga Eastern Motorway — JOB NUMBER: 3932036/126

SITE LOCATION: Tauranga to Te Puke — CLIENT: Transit New Zealand

TESTPIT LOCATION: Next to Bell rd, Niccols Farm

COORDINATES: N 389,958 m — R L: m

E 802,266 m — DATUM: BOP2000

GEOLOGICAL UNIT	R L (m)	DEPTH (m)	WATER LEVEL	GRAPHIC LOG	CLASSIFICATION	MOISTURE	CONSISTENCY	SOIL DESCRIPTION	SAMPLES	Scala (Blows/150mm)	SV (kPa)	τ (kPa)
TOPSOIL					SM	D	VL	Very loose medium brown Silty fine SAND, minor amorphous organics, trace clay, trace rootlets; dry, slightly plastic.		1 2	60/15	82/18
Alluvial Sands					SW	D	VL	Very loose light grey/white mottled light brown, fine to medium SAND, trace silt, trace rootlets; dry, non plastic.		1 2		
PEAT			7/12/2006		OL	W	VS	Very soft dark brown Organic SILT, some sand, minor clay, trace rootlets; wet, moderately plastic. (H6 PEAT)	BS1	5 5 6	20/0 8/2	25/0 10/2
Alluvial Sands/Clays		2			CH	S	VS	Very soft light green Silty CLAY, minor sand; saturated, highly plastic.		4 4 3 4 6 7 11	8/2	10/2
					SW	S	MD	Medium dense greenish grey, fine to coarse SAND, trace fine to medium gravel, trace silt; saturated, non plastic.	BS2	9 15 19 19 21 23 22 25 29 28	42/18 62/22	55/22 85/27
								End of Test Pit 3.4 m.				
		4										
		6										
		8										

DATE DRILLED: 7/12/06 — EXCAVATION METHOD: Hitachi Excavator

LOGGED BY: EC2 — CONTRACTOR: C. Amrein Contracting

PLOT PLANE No: DR28 33

COMMENTS:
Refer to attached descriptive table for organic soil rank. Hole collapsed at 3.4m

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

P:\3933932036\TGE\10 INVESTIGATIONS\GINT\TAURAN~1.GPJ BCHFMB2.GDT 26/02/07

NZGD ID: 93142

TP 210 Photo A

TP 210 Photo B

TP 210 Photo C

NZGD ID: 95362

Beca

BOREHOLE No: **TP520**

TEST PIT LOG

SHEET 1 of 1

PROJECT: Tauranga Eastern Link
JOB NUMBER: 3933032/401
SITE LOCATION: Tauranga
CLIENT: NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,720.72 m
E 387,950.43 m
TEST PIT LOCATION: In paddock East of Parton Rd Interchange
R L: 8.8 m
DATUM: Mean Sea Level

DEPTH (m)	WATER LEVEL	GRAPHIC LOG	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SV	τ (kPa)	SAMPLES	R L (m)
			ML	M	Loose sandy SILT, trace rootlets; grey; moist. (Topsoil).		4				8.8
			ML	D	Loose fine sandy SILT; grey; dry.	Alluvial Sands	5				
							4				8.5
							4				
0.5			SP	D	Medium dense fine SAND; orange brown mottled grey; dry. Locally weakly cemented.		4				
							3				
1.0							3				8.0
							4				
							4				
							5			B1	7.5
1.5			SP	M	"Loose" fine SAND; light mottled light grey and orange; moist, non plastic.						
											7.0
2.0											
											6.5
2.5											
											6.0
3.0										B2	
											5.5
3.5											
			SW		3.7m, fine to medium grained.						5.0
					3.9m, grey mottled orange brown, medium grained.						
4.0					END OF LOG @ 4 m						
											4.5
4.5											
											4.0

DATE EXCAVATED: 9/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 4.0m, stable.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

NZGD ID: 95362

NZGD ID: 95362

Photo 1

Photo 2

NZGD ID: 95362

NZGD ID: 95362

Photo 3

NZGD ID: 95362

NZGD ID: 95363

BECA

BOREHOLE No: **TP521**

TEST PIT LOG

SHEET 1 of 1

PROJECT:	Tauranga Eastern Link	JOB NUMBER:	3933032/401
SITE LOCATION:	Tauranga	CLIENT:	NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,565.89 m
E 388,316.38 m

TEST PIT LOCATION: In paddock East of Parton Rd Interchange
R L: 10.35 m
DATUM: Mean Sea Level

DEPTH (m)	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SV	(kPa)	SAMPLES	R L (m)
0.0	ML	D	Loose fine sandy SILT, trace rootlets; brown; dry. (Topsoil).		2				10.0
0.5	ML	D	Loose fine sandy SILT, trace rootlets; light grey; dry. Weakly cemented. Sand and silt: pumiceous.	Alluvial Sands	2 2 2 1 1 1				9.5
1.0	SP	D	Medium dense fine SAND; orange brown mottled grey; dry. Locally weakly cemented.		3			B1	9.0
1.5	SW	M	1.2m, fine to medium grained. 1.5m, mottled grey; moist.						8.5
2.0			1.9m, orange brown mottled greenish grey.						8.0
2.5	SP	M	"Loose" medium SAND; yellowish brown mottled orange and grey; moist, non plastic.					B2	7.5
3.0									7.0
3.5									6.5
4.0									6.0
4.2			END OF LOG @ 4.2 m						5.5
4.5									

DATE EXCAVATED: 9/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 4.2m, stable.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

NZGD ID: 95363

Photo 1

Photo 2

NZGD ID: 95363

NZGD ID: 95363

Photo 3

NZGD ID: 95363

NZGD ID: 95364

BOREHOLE No: **TP522**

TEST PIT LOG

SHEET 1 of 1

PROJECT:	Tauranga Eastern Link	JOB NUMBER:	3933032/401
SITE LOCATION:	Tauranga	CLIENT:	NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,520.73 m
E 388,418.43 m

TEST PIT LOCATION: In paddock East of Parton Rd Interchange
R L: 8.8 m
DATUM: Mean Sea Level

DEPTH (m)	WATER LEVEL	GRAPHIC LOG	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SV	τ (kPa)	SAMPLES	R L (m)
0.0			SM	D	Loose silty fine SAND, trace rootlets; greyish brown; dry. (Topsoil).						8.8
			SP	D	Loose fine SAND; yellow brown mottled grey; dry.	Alluvial Sands	2 2 2 2 1 1 1 1				
0.5											8.5
1.0										B1	8.0
1.5			SP	W	"Loose" fine SAND; brownish grey; wet, non plastic.						7.5
2.0					2.0m, greenish grey.						7.0
2.5											6.5
3.0										B2	6.0
3.5											5.5
4.0					3.8m, grey mottled orange.						5.0
4.2					END OF LOG @ 4.2 m						4.5
4.5											4.0

DATE EXCAVATED: 9/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 4.2m, stable.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

TEST_PIT P:\3933933032\TGE\GINT\TEL TEST PITS.GPJ BECA.GDT 22/06/10

NZGD ID: 95364

NZGD ID: 95364

Photo 1

Photo 2

NZGD ID: 95364

NZGD ID: 95364

Photo 3

NZGD ID: 95364

NZGD ID: 95365

Beca

BOREHOLE No: **TP523**

TEST PIT LOG

SHEET 1 of 1

PROJECT: Tauranga Eastern Link
JOB NUMBER: 3933032/401
SITE LOCATION: Tauranga
CLIENT: NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,403.78 m
E 388,683.57 m
TEST PIT LOCATION: In paddock East of Parton Rd Interchange
R L: 8.35 m
DATUM: Mean Sea Level

DEPTH (m)	GRAPHIC LOG	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SAMPLES	R L (m)
0.0		ML	M	Loose fine sandy SILT, trace rootlets; dark brown; moist, non plastic.	Topsoil	3		8.0
			D	0.15m, grey; dry.		3		
0.5		SP	D	Loose fine SAND; yellow brown mottled orange and grey; dry.	Alluvial Sands	2 2 1 2 2		
						7	B1	7.5
1.0		SP	D	Dense fine SAND; orange brown mottled greenish grey; dry. Locally weakly cemented.		7 5		
1.5		SP	M	"Loose" fine SAND; yellowish brown; moist, non plastic.				7.0
2.0								6.5
2.5								6.0
3.0		SP	M	"Loose" medium SAND; brown mottled grey; moist, non plastic.				5.5
3.5				3.5m, greenish grey mottled orange.			B2	5.0
				3.8m, greenish grey.				4.5
4.0				END OF LOG @ 4 m				
4.5								4.0
								3.5

DATE EXCAVATED: 9/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 4.0m, stable.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

NZGD ID: 95365

NZGD ID: 95365

Photo 1

Photo 2

NZGD ID: 95365

NZGD ID: 95365

Photo 3

NZGD ID: 95365

NZGD ID: 95366

BOREHOLE No: **TP524**

TEST PIT LOG

SHEET 1 of 1

PROJECT: Tauranga Eastern Link
JOB NUMBER: 3933032/401
SITE LOCATION: Tauranga
CLIENT: NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,275.23 m
E 388,956.61 m
TEST PIT LOCATION: In paddock West of Bell Rd
R L: 6.05 m
DATUM: Mean Sea Level

DEPTH (m)	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SAMPLES	R L (m)
0.0	SM	D	Loose silty fine SAND, trace rootlets; brown; dry. (Topsoil).		2		6.0
	SP	D	Medium dense fine SAND; yellowish brown mottled orange and grey; dry.	Alluvial Sands	3 5 7 7		
0.5			0.55m, grey mottled orange and yellowish brown.		6 5 5 4 4	B1	5.5
1.0							5.0
1.5	SW		1.5m, fine to medium grained.				4.5
2.0						B2	4.0
2.5							3.5
3.0	SP		3.0m, medium grained.				3.0
3.5							2.5
			END OF LOG @ 3.7 m				
4.0							2.0
4.5							1.5

DATE EXCAVATED: 12/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 3.7m, hole collapsing.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

TEST_PIT P:\3933933032\TGE\GINT\TEL TEST PITS.GPJ BECA.GDT 22/06/10

NZGD ID: 95366

NZGD ID: 95366

Photo 1

Photo 2

NZGD ID: 95366

NZGD ID: 95367

Beca

BOREHOLE No: **TP525**

TEST PIT LOG

SHEET 1 of 1

PROJECT: Tauranga Eastern Link
JOB NUMBER: 3933032/401
SITE LOCATION: Tauranga
CLIENT: NZTA

CIRCUIT: BOP 2000
COORDINATES: N 803,127.78 m
E 389,235.55 m
TEST PIT LOCATION: In paddock West of Bell Rd
R L: 8.1 m
DATUM: Mean Sea Level

DEPTH (m)	WATER LEVEL	GRAPHIC LOG	USCS	MOISTURE	SOIL / ROCK DESCRIPTION	GEOLOGICAL UNIT	Scala (Blows/100mm)	SV	τ (kPa)	SAMPLES	R L (m)
0.0			ML	D	Loose fine sandy SILT, trace rootlets; brown; dry.	Topsoil	2 2				8.0
0.5			SP	D	Loose fine SAND; yellowish brown mottled grey and orange; dry. Weakly cemented.	Alluvial Sands	3 2 2 3 2 2 6			B1	7.5
1.0			SP	D	"Loose" fine SAND; orange brown; dry. Weakly cemented.						7.0
1.5			SW	M	"Loose" fine to medium SAND; yellowish brown; moist, non plastic. Weakly cemented.						6.5
2.0											6.0
2.5			SP	M	"Loose" medium SAND; light brown mottled orange and grey; moist, non plastic.						5.5
3.0					2.7m, grey mottled orange brown.					D2 & 3	5.0
3.5											4.5
4.0											4.0
4.5					END OF LOG @ 4.3 m						3.5

DATE EXCAVATED: 12/4/10
LOGGED BY: DG
SHEAR VANE No: Geo 613
CONTRACTOR: Colin Amrein Contracting
EQUIPMENT: 360 Tracked Excavator
METHOD:

COMMENTS:
No groundwater observed. Terminated at 4.3m, stable.

FOR EXPLANATION OF SYMBOLS AND ABBREVIATIONS SEE KEY SHEET

Revision 1

TEST_PIT P:\3933933032\TGE\GINT\TEL TEST PITS.GPJ BECA.GDT 22/06/10

NZGD ID: 95367

NZGD ID: 95367

Photo 1

Photo 2

NZGD ID: 95367

NZGD ID: 95367

Photo 3

Photo 4

NZGD ID: 95367

NZGD ID: 125950

TEST PIT - TP03

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389614.6m N.802827.0m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 2.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments Rock: Weathering; colour; fabric; rock name; strength; additional comments	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
Topsoil	▼	2.0			OL: TOPSOIL - Organic SILT, with some rootlets: black. Non plastic.	W to S				
Peat		1.5	1		Pt: PEAT, with some roots and trace stumps and fine sand: black. Non-plastic, fibrous, spongy; roots 0-100mm diameter; contains inclusions of silt around stumps.	S				
RA-S		-0.5	2		SW: Fine to coarse SAND: grey. Well graded, quartz rich.					
					Borehole terminated at 2.7 m					
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code RA-S denotes Recent Alluvium Sands.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125950

NZGD ID: 125952

TEST PIT - TP04

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389728.4m N.802716.1m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 2.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description (Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments. Rock: Weathering; colour; fabric; rock name; strength; additional comments)	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm)	Comments
TS		2.0			OL: TOPSOIL - Organic SILT, with some fine sand: black. Non-plastic.	W to S			5 10 15 20	
		1.8			ML: Sandy SILT, with trace roots: dark brown. Low plasticity, slight organic odour, sand is fine grained.					
		1.5			SW: Fine to coarse SAND, with trace roots: brown-grey. Well graded.		L to MD			
Recent Alluvium-Sands			1			S				
							MD			
			2		Borehole terminated at 2.0 m					
							D			
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code TS denotes Top Soil.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125952

NZGD ID: 125955

TEST PIT - TP06

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389539.2m N.802873.3m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 2.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments Rock: Weathering; colour; fabric; rock name; strength; additional comments	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
Topsoil		2.0	0		OL: TOPSOIL - Organic SILT, with some rootlets and trace fine sand: black. Non-plastic.	W				
RA-S		1.6			SP: Fine SAND: pale grey. Poorly graded.					
Peat		1.5	1		Pt: PEAT, with minor silt and some roots and logs: black. Non-plastic, fibrous, spongy.	W to S				
Recent Alluvium-Sands	▼	0.3	2		SW: Fine to coarse SAND: grey. Well graded, quartz rich.	S				
					Borehole terminated at 2.8 m					
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code RA-S denotes Recent Alluvium Sands.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125955

NZGD ID: 125957

TEST PIT - TP07

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389471.2m N.802946.6m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 4.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description (Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments. Rock: Weathering; colour; fabric; rock name; strength; additional comments)	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
TS		4.0	0		OL: TOPSOIL - Organic SILT, with minor rootlets: black. Non-plastic.					
		3.8			SP: Fine to medium SAND: pale grey-brown, mottled orange. Poorly graded.	M	L to MD			
Holocene Dune Sands	▼		1		*...becoming grey.*	W				
						S				
			2		Borehole terminated at 2.0 m		MD			
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: DCP number 09. Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code TS denotes Top Soil.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125957

NZGD ID: 125959

TEST PIT - TP08

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389353.2m N.803066.4m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 6.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description (Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments. Rock: Weathering; colour; fabric; rock name; strength; additional comments)	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
TS		6.0			OL: TOPSOIL - Organic SILT, with minor rootlets and trace fine sand: black. Non-plastic.					
		5.8			SP: Fine to medium sand: pale grey, mottled brown. Poorly graded.					
					...becoming grey, mottled dark grey, thinly to moderately thinly bedded.	M	MD			
Holocene Dune Sands	▼		1			W	L to MD			
						S				
			2		Borehole terminated at 2.0 m		MD			
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: DCP number 09. Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code TS denotes Top Soil.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125959

NZGD ID: 125960

TEST PIT - TP09

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 17/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389176.7m N.803149.7m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 7.00m
Datum: BOP2000

Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments Rock: Weathering; colour; fabric; rock name; strength; additional comments	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
TS		7.0			OL: TOPSOIL - Organic SILT, with some fine sand and minor rootlets: black. Non-plastic.					
		6.8			SP: Fine to medium SAND: brown, mottled grey. Poorly graded, contains lenses of grey sand.					
					...becoming grey, thinly to moderately thinly bedded.	M				
Holocene Dune Sands	▼		1			W	MD			
						S				
					Borehole terminated at 1.7 m		L to MD			
			2				MD to D			
			3							
			4							
			5							

Termination reason: Hole Collapse

Remarks: DCP number 09. Elevation is approximate only, based on BOPRC GIS maps. Stratigraphic code TS denotes Top Soil.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 125960

APPENDIX 7:

Hand Auger Boreholes

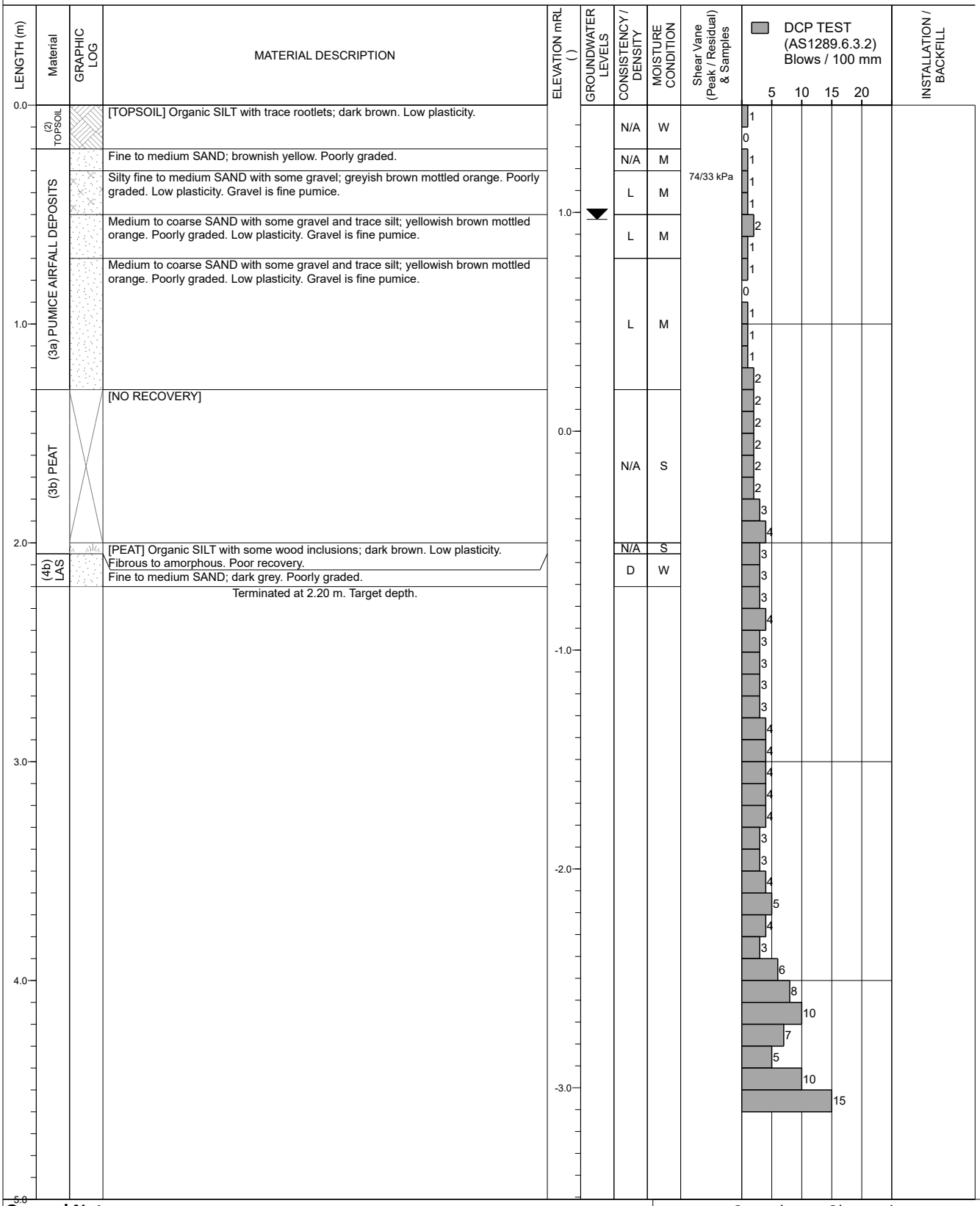
BOREHOLE: HA01

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801783.3 E: 388290.0 (Bay of Plenty 2000)
SURFACE RL: 1.49 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 08/08/25
HOLE DEPTH: 2.20 m
LOGGED: DRT
CHECKED: GMS



General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
LAS = LOOSE ALLUVIAL SANDS

Groundwater Observations

Date/Time	Depth bgl	Event
08/08/2025 10:00	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: HA02

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801745.3 E: 388201.4 (Bay of Plenty 2000)
SURFACE RL: 1.08 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 08/08/25
HOLE DEPTH: 2.80 m
LOGGED: DRT
CHECKED: GMS

LENGTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	GROUNDWATER LEVELS	CONSISTENCY / DENSITY	MOISTURE CONDITION	Shear Vane (Peak / Residual) & Samples	DCP TEST (AS1289.6.3.2) Blows / 100 mm	INSTALLATION / BACKFILL
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; black. Low plasticity.	1.0		St	W	74/15 kPa		
	(3a) PAD		Clayey SILT with some gravel; brown mottled orange. Low plasticity. Gravel is fine sub rounded pumice. 0.50 m: Becomes light brown.			F	W	42/15 kPa		
	(3b) PEAT		Organic SILT with trace rootlets; dark brown. Low plasticity. Has an organic odour. 0.70 m: Wood inclusion.			N/A	W			
			SILT with some fine sand; light grey. Low plasticity.			F	W	UTP		
1.0			[NO RECOVERY]	0.0				30/30 kPa		
								15/15 kPa		
						S	N/A	15/15 kPa		
2.0				-1.0				15/15 kPa		
								15/15 kPa		
			2.60 m: Scala sunk from 2.8 - 3.0 m							
	(4b) LAS		Fine to medium SAND; dark grey. Poorly graded.			MD	S			
			Terminated at 2.80 m. Target depth.							
3.0				-2.0					3	
									4	
									8	
									6	
									8	
									10	
									10	
									8	
4.0				-3.0					7	
									4	
									6	
									7	
									9	
									7	
									9	
									10	
									10	
5.0									10	

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
LAS = LOOSE ALLUVIAL SANDS ; PAD = PUMICE AIRFALL DEPOSITS

Groundwater Observations

Date/Time	Depth bgl	Event
08/08/2025 10:45	0.40m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

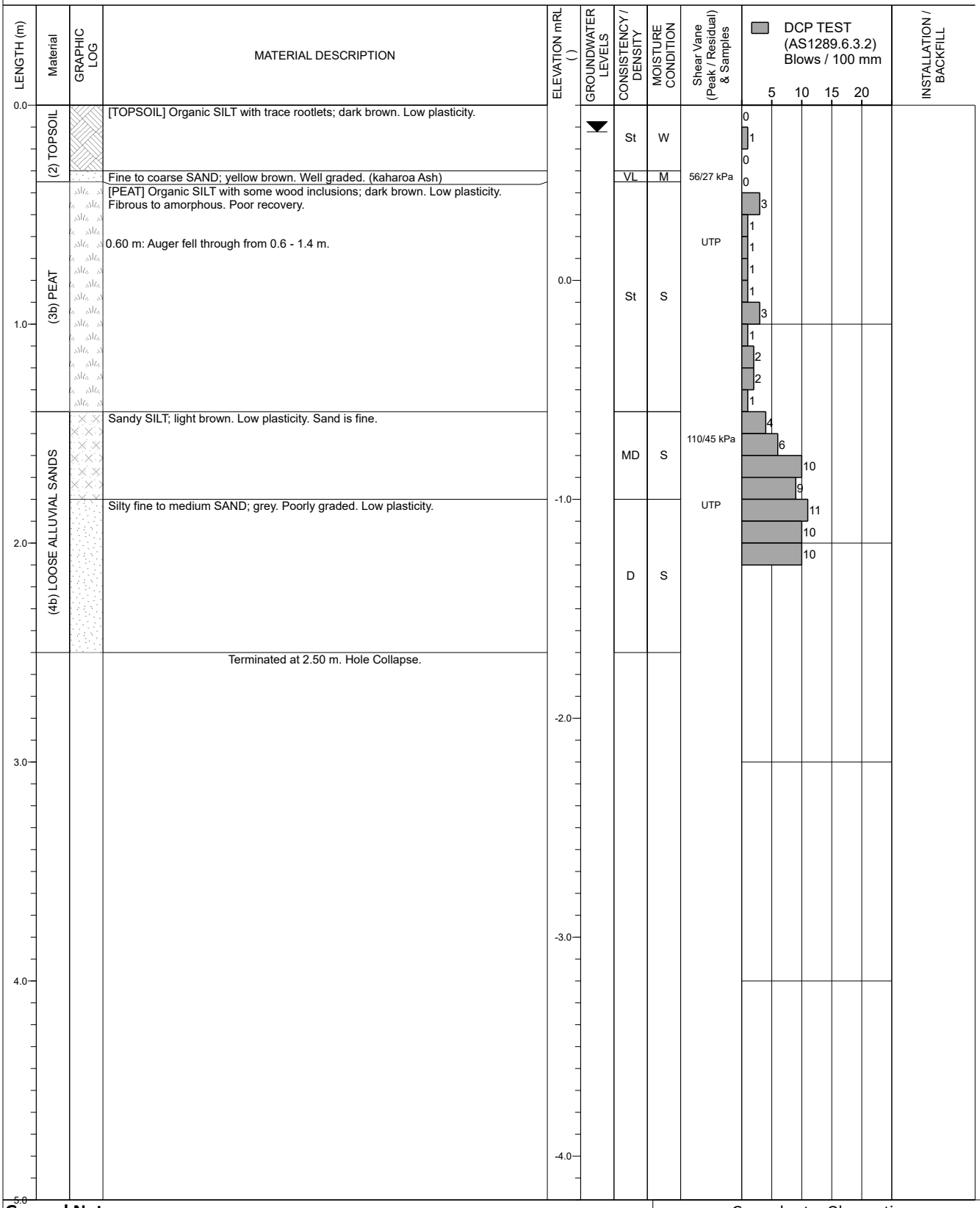
BOREHOLE: HA03

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801079.0 E: 387981.0 (Bay of Plenty 2000)
SURFACE RL: 0.80 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 07/08/25
HOLE DEPTH: 2.50 m
LOGGED: DRT
CHECKED: GMS



General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)

Groundwater Observations

Date/Time	Depth bgl	Event
08/08/2025 15:45	0.10m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: HA04

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801696.0 E: 388351.0 (Bay of Plenty 2000)
SURFACE RL: 0.86 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 08/08/25
HOLE DEPTH: 2.20 m
LOGGED: DRT
CHECKED: GMS

LENGTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	GROUNDWATER LEVELS	CONSISTENCY / DENSITY	MOISTURE CONDITION	Shear Vane (Peak / Residual) & Samples	DCP TEST (AS1289.6.3.2) Blows / 100 mm	INSTALLATION / BACKFILL
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with trace rootlets; dark brown. Low plasticity.			F	W			
			Fine to coarse SAND; brownish yellow. Well graded.			VL	M			
	(3a) PAD		SILT with some fine pumice; reddish brown. Low plasticity			F	W	48/21 kPa		
			0.50 m: Becomes light brown.							
	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Poor recovery.	0.0				UTP		
1.0								59/30 kPa		
								30/18 kPa		
						F	S			
								27/18 kPa		
				-1.0				30/30 kPa		
2.0										
	(4b) LAS		Fine to medium SAND; grey. Poorly graded.			L	S			
			Terminated at 2.20 m. Target depth.							
3.0				-2.0						
				-3.0						
4.0										
				-4.0						
5.0										

DCP TEST (AS1289.6.3.2) Blows / 100 mm: 5 10 15 20

3 6 8 7 7 6 7 7 5 7 7 7 8 6 6 6 5 5 4 6 6 8 13 11 13

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
LAS = LOOSE ALLUVIAL SANDS ; PAD = PUMICE AIRFALL DEPOSITS

Groundwater Observations

Date/Time	Depth bgl	Event
08/08/2025 09:15	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: HA05

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801652.5 E: 387360.2 (Bay of Plenty 2000)
SURFACE RL: 2.08 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 07/08/25
HOLE DEPTH: 4.30 m
LOGGED: JP
CHECKED: GMS

LENGTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	GROUNDWATER LEVELS	CONSISTENCY / DENSITY	MOISTURE CONDITION	Shear Vane (Peak / Residual) & Samples	DCP TEST (AS1289.6.3.2) Blows / 100 mm	INSTALLATION / BACKFILL
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with some fine sand and rootlets; dark brown. Low plasticity.	2.0		St	M		1 1 2	
			Fine to coarse SAND; grey to light grey. Well graded.			L	M	89/33 kPa	2 2	
	(3a) PAD		Sandy SILT; greyish brown mottled orange. Low plasticity. Sand is fine to coarse.			F	M		2 1 1 1	
			0.60 m: Shear Vane fell through.							
1.0			Fine to coarse pumiceous SAND with minor gravel; light grey and white. Well graded. Gravel is fine sub angular pumice.			F	W	33/15 kPa	1 1 2	
			Clayey SILT with trace fine sand; dark grey. Low plasticity.	1.0		F	W		3	
			SILT; light grey. Low plasticity.			F	W	UTP	4 2	
			[NO RECOVERY]						3	
			1.50 m: Shear Vane fell through.						1 1	
2.0	(3b) PEAT							33/15 kPa	2 2 3	
			2.10 m: Bits of wood recovered. 2.11 m: Shear Vane fell through.	0.0					4 3 4	
			2.40 m: Shear Vane fell through.						2 3 2	
						F	S	27/18 kPa	2 2 3 4	
3.0			3.00 m: Small amount of peat recovered.	-1.0				18/18 kPa	3 3 4	
								33/30 kPa	3 4	
									3	
								27/18 kPa	2 3 2	
4.0	(4b) LOOSE ALLUVIAL SANDS		SILT; grey. Low plasticity.			St	S	77/56 kPa	5	
			Fine to medium SAND; grey and white specks. Poorly graded. Poor recovery.	-2.0		MD	S		7 9 8 9 9 10 10 8 12	
			Terminated at 4.30 m. Hole Collapse.							
5.0										

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
PAD - PUMICE AIRFALL DEPOSITS

Groundwater Observations

Date/Time	Depth bgl	Event
07/08/2025 13:00	0.50m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

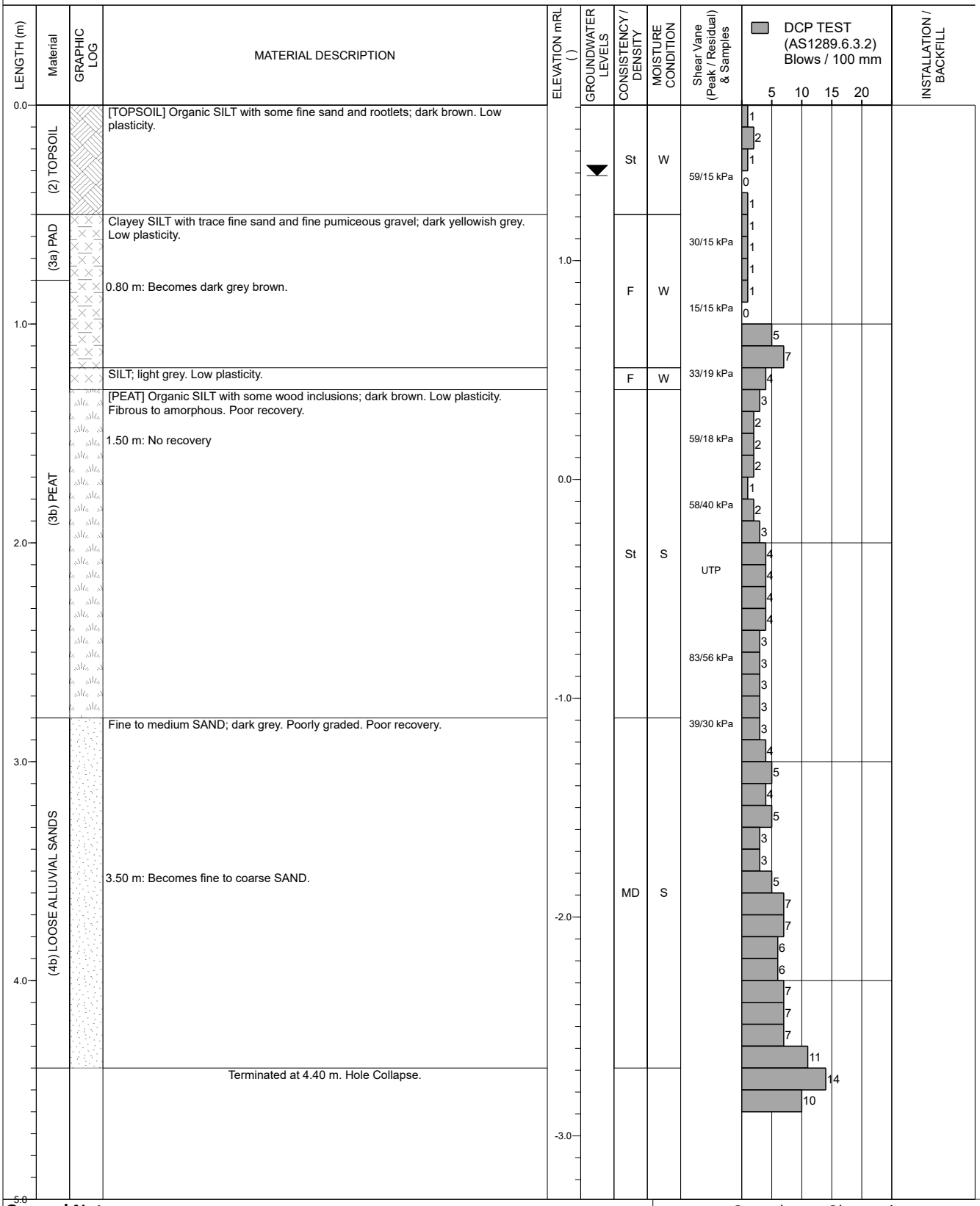
BOREHOLE: HA06

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801738.3 E: 387448.3 (Bay of Plenty 2000)
SURFACE RL: 1.71 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 07/08/25
HOLE DEPTH: 4.40 m
LOGGED: JP
CHECKED: GMS



General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
PAD - PUMICE AIRFALL DEPOSITS

Groundwater Observations

Date/Time	Depth bgl	Event
07/08/2025 14:00	0.30m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: HA07

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801583.7 E: 387641.4 (Bay of Plenty 2000)
SURFACE RL: 1.43 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 04/08/25
HOLE DEPTH: 1.80 m
LOGGED: DRT
CHECKED: GMS

LENGTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	GROUNDWATER LEVELS	CONSISTENCY / DENSITY	MOISTURE CONDITION	Shear Vane (Peak / Residual) & Samples	DCP TEST (AS1289.6.3.2) Blows / 100 mm	INSTALLATION / BACKFILL
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with some fine sand and rootlets; brown. Low plasticity.	1.0		F	W		1	
			Sandy SILT; yellowish grey. Low plasticity. Sand is fine.			F	W		2	
			Fine to coarse SAND; whitish grey. Well graded.			L	W		3	
	(3a) PUMICE AIRFALL DEPOSITS		SILT; brown. Low plasticity.			F	W		3	
			Fine to coarse SAND; reddish orange brown. Well graded.			L	W		0	
1.0	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Poor recovery.	0.0		St	S	39/12 kPa	3	
									2	
									1	
									1	
									1	
								UTP	2	
									3	
									1	
								59/45 kPa	2	
									3	
									2	
									3	
									4	
								UTP	5	
2.0			Terminated at 1.80 m. Practical refusal.	-1.0					7	
									3	
									3	
									4	
									4	
									3	
									3	
									5	
									4	
									5	
									4	
3.0				-2.0					5	
									6	
									8	
									8	
									10	
									10	
									10	
4.0				-3.0						
5.0										

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
Hand Auger refused on wood.

Groundwater Observations

Date/Time	Depth bgl	Event
04/08/2025 15:00	0.30m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

BOREHOLE: HA08

Sheet 1 of 1

CLIENT: Bell Road Limited Partnership
PROJECT: Bell Road - Wairakei South
LOCATION: Bell Road, Papamoa
JOB NO: 019630.000.001

COORDS: N: 801667.8 E: 387955.4 (Bay of Plenty 2000)
SURFACE RL: 1.04 m
VANE ID: 2666
HOLE DIAMETER: 50 mm

DATE: 08/08/25
HOLE DEPTH: 2.40 m
LOGGED: DRT
CHECKED: GMS

LENGTH (m)	Material	GRAPHIC LOG	MATERIAL DESCRIPTION	ELEVATION mRL ( )	GROUNDWATER LEVELS	CONSISTENCY / DENSITY	MOISTURE CONDITION	Shear Vane (Peak / Residual) & Samples	DCP TEST (AS1289.6.3.2) Blows / 100 mm	INSTALLATION / BACKFILL
0.0	(2) TOPSOIL		[TOPSOIL] Organic SILT with some fine sand and rootlets; dark brown. Low plasticity.	1.0		St	W			
	(3a) PAD		Clayey SILT with some gravel; reddish brown. Low plasticity. Gravel is fine sub rounded pumice.			St	W	59/18 kPa		
			Sandy SILT; yellowish grey. Low plasticity. Sand is fine to medium.			St	W			
	(3b) PEAT		[PEAT] Organic SILT with some wood inclusions; dark brown. Low plasticity. Fibrous to amorphous. Poor recovery.		▼			45/18 kPa		
1.0				0.0				62/24 kPa		
								21/21 kPa		
						F	S			
								30/15 kPa		
								36/18 kPa		
2.0				-1.0				33/15 kPa		
	(4b) LAS		Fine to medium SAND; grey. Poorly graded.			MD	S			
			Terminated at 2.40 m. Target depth.							
3.0				-2.0						
4.0				-3.0						
5.0										

DCP TEST (AS1289.6.3.2) Blows / 100 mm — 5 10 15 20

7 6 5 4 7 5 4 5 2 3 2 5 5 6 4 3 4 4 6 7 7 7 7 9 7 7

General Notes:

Coordinate Method: Hand Held GPS
Surface Elevation Method: Maven Survey (07/08/25)
LAS = LOOSE ALLUVIAL SANDS ; PAD = PUMICE AIRFALL DEPOSITS

Groundwater Observations

Date/Time	Depth bgl	Event
08/08/2025 08:45	0.60m	After drilling

This log has been prepared for geotechnical purposes and should be read in conjunction with ENGEO's symbol and abbreviation index sheet.

NZGD ID: 89276

Opus International Consultants

Hand Auger

Hand Auger:	HA617 (Ch8320 21R)	Project Name:	Tauranga Eastern Link Stormwater Investigation
Project Number:	1-C0341.30	Site Location:	
Client:	NZTA	Vertical Scale:	1 : 31.3
Co-ords (x,y):		Elevation (m):	5.3m
G.W. Table (m):	1.50	Date:	24/5/11
Total Depth (m):	3.00	Logged By:	HF/RH

GEOLOGICAL UNIT	SOIL / ROCK DESCRIPTION	DEPTH (m)	VANE SHEAR (kPa)
FILL	Brown silty SAND, traces of fine gravel; dry, friable	0.40	21/15
ALLUVIUM (reworked ash)	Brown sandy SILT; soft, moist, brittle but plastic on remould	0.90	
	Brown to yellowish grey sandy SILT, trace of clay; firm, moist, plastic.	1.30	36/21
ORGANIC SILT	Dark brown organic silty SAND/sandy SILT; firm, wet, plastic. Less sand from 1.5m, fine vertical (in-situ?) rootlets. ▽	1.55	45/22
ALLUVIUM (reworked ash)	White to light grey SAND; loose, wet (ignimbritic)	1.70	
PEAT	Black organic SILT/PEAT; stiff, wet. Fibrous organics, low density. Little or no recovery from 2.7m (able to push auger to 3m without augering). Handauger Completed @ 3.0m		69/17
			55/22
		3.00	84/42

SCALA PROBE blows per 50mm

0 10 Vane Shear (kPa) 0 150

Vane Shear (KPa)

▲Remoulded ✕Undisturbed

Vane shear strength is corrected Pilcon vane head reading. The BS correction factor is: 1.40
The Vane Head Number is: DR4498

The information shown in this log is accurate at the test position only; variations in soil type may occur at the site.

Checked: RH

LOG OF POSTHOLE TEL_SW_HANDAUGER.GPJ OPUS.GDT 31/5/11

NZGD ID: 89276

NZGD ID: 89277

Opus International Consultants

Hand Auger

Hand Auger:	HA618 (Ch8720 25R)	Project Name:	Tauranga Eastern Link Stormwater Investigation
Project Number:	1-C0341.30	Site Location:	
Client:	NZTA	Vertical Scale:	1 : 31.3
Co-ords (x,y):		Elevation (m):	7.7m
G.W. Table (m):	1.60	Date:	25/5/11
Total Depth (m):	4.30	Logged By:	HF/RH

GEOLOGICAL UNIT	SOIL / ROCK DESCRIPTION	DEPTH (m)	VANE SHEAR (kPa)
FILL	Dark brown sandy SILT; firm, dry, friable	0.40	
TOPSOIL	Dark brown SILT; firm, moist with traces of fine rootlets.	0.50	36/17
ALLUVIUM (reworked ash)	Dark brown sandy SILT with layers of light grey medium to coarse (ignimbritic) sand; firm, moist, brittle but plastic when remoulded.		38/18
		1.30	
ORGANIC SILT	Dark brown to black organic SILT; soft, moist.	1.40	21/24
ALLUVIUM (reworked ash)	Light grey/white silty SAND; loose, brittle, ignimbritic. Sand fraction becomes coarser with increasing depth. ▽	1.65	49/13
PEAT	Dark brown PEAT/organic SILT; firm, wet with fibrous organics	1.80	
	Dark brown to black PEAT; firm, wet, fibrous. From 2.15m: lenses medium to coarse (ignimbritic) sand. Decayed wood encountered at 2.2m, becomes saturated with poor recovery. Handauger completed @3.0m		60/22
			36/15
		3.00	

SCALA PROBE blows per 50mm

Vane Shear (kPa)

0 10

0 150

Vane Shear (KPa)

▲Remoulded ✕Undisturbed

Vane shear strength is corrected Pilcon vane head reading. The BS correction factor is: 1.40
The Vane Head Number is: DR4498

The information shown in this log is accurate at the test position only; variations in soil type may occur at the site.

Checked: RH

LOG OF POSTHOLE TEL_SW_HANDAUGER.GPJ OPUS.GDT 31/5/11

NZGD ID: 89277

NZGD ID: 89278

Opus International Consultants

Hand Auger

Hand Auger:	HA619 (Ch9040 37R)	Project Name:	Tauranga Eastern Link Stormwater Investigation
Project Number:	1-C0341.30	Site Location:	
Client:	NZTA	Vertical Scale:	1 : 31.3
Co-ords (x,y):		Elevation (m):	6.0m
G.W. Table (m):	3.55	Date:	25/5/11
Total Depth (m):	3.00	Logged By:	HF/RH

GEOLOGICAL UNIT	SOIL / ROCK DESCRIPTION	DEPTH (m)	VANE SHEAR (kPa)
FILL	Dark brown, mottled grey brown SILT/sandy SILT; firm, dry, friable	0.20	
TOPSOIL	Dark brown to black sandy loam; dry to moist, friable.	0.30	
ALLUVIAL TERRACE DEPOSITS	Light grey silty SAND/sandy SILT; stiff, moist, brittle but plastic on remoulding. From1.3m: becomes finer grained		67/17
			80/15
		1.50	42/15
	Becomes light grey sandy CLAY; firm, moist to wet, plastic	1.70	
	Light grey, some yellowish staining, becomes predominantly sandy SILT; firm, wet, brittle, plastic on remould, (relict sandy texture).	2.00	55/25
	Sand fraction becomes coarser (igmimbritic/pumiceous).	2.40	
	Coarse sandy SILT; firm to stiff, wet, brittle but plastic when remoulded.	3.10	48/22
	Dark yellowish brown coarse sandy to fine gravelly SILT; firm to stiff, saturated, plastic on remould (Limonite stained).	3.55	57/25
	Brown fine sandy SILT; stiff, saturated, plastic on remould. Traces of fine organics at 3.6m. Handauger Completed @ 4.3m	4.30	67/38
			70/35

SCALA PROBE blows per 50mm

0 10 Vane Shear (kPa) 0 150

Vane Shear (KPa)

▲Remoulded ✕Undisturbed

Vane shear strength is corrected Pilcon vane head reading. The BS correction factor is: 1.40
The Vane Head Number is: DR4498

The information shown in this log is accurate at the test position only; variations in soil type may occur at the site.

Checked: RH

LOG OF POSTHOLE TEL_SW_HANDAUGER.GPJ OPUS.GDT 31/5/11

NZGD ID: 89278

NZGD ID: 126045

HAND AUGER BOREHOLE - HA19

Client: Tauranga City Council
Project: Papamoa East Interchange
Site Address: Papamoa
Project: TGA2017_0009
Date: 18/05/2017
Borehole Location: TEL South Shoulder

CMW Geosciences

1:25 Sheet 1 of 1

Logged by: LYK
Checked by: RT

Position: E.389715.9m N.802704.9m (NZTM)
Survey Source: Hand Held GPS

Elevation: RL 2.00m
Datum: BOP2000

Hole Diameter: 50mm
Angle from horizontal: 90°

Unit	Groundwater	RL (m)	Depth (m)	Graphic Log	Material Description Soil: USC; Soil type; colour; structure; strength; moisture; bedding; plasticity; sensitivity; additional comments Rock: Weathering; colour; fabric; rock name; strength; additional comments	Moisture Condition	Consistency/ Relative Density	Shear Strengths (kPa) Peak (Residual)	Dynamic Cone Penetrometer (Blow/100 mm) 5 10 15 20	Comments
Topsoil		2.0			OL: TOPSOIL - Organic SILT, with trace fine sand: black. Low plasticity.	W				
		1.7			ML: Sandy SILT: dark brown. Low plasticity, sand is fine to medium grained.	W to S				
Recent Alluvium	▼	1.0	1		SW: Fine to coarse SAND, with trace silt: grey-brown. Well graded.	S				
					Borehole terminated at 1.5 m					
			2							
			3							
			4							
			5							

Termination reason: Target Depth Reached

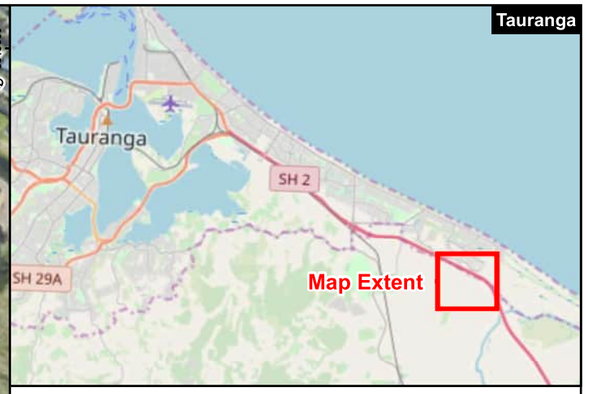
Remarks: Elevation is approximate only, based on BOPRC GIS maps.

This report is based on the attached field description for soil and rock, New Zealand, Geotechnical Society Inc 2005.

NZGD ID: 126045

APPENDIX 8:

MASW Testing and Results



LEGEND

- Site boundary
- MASW - chainage (m)
- Test pit
- CPT data from LDE - 2019

DRAFT

NOTES

1. Aerial: LINZ 2019, CC-BY-3.0-NZ.
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0 250 500
METRES

REFERENCE SCALE: 1:8,000 (at A3)

PROJECTION: NZGD 2000 New Zealand Transverse Mercator

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT

TITLE
GEOPHYSICS/GEOTECHNICAL TESTING LOCATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-07
PREPARED	AE
REVIEW	MH
APPROVED	XX

PROJECT NO.	REPORT	REV.	FIGURE
19135525	001	A	**D01**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM A3
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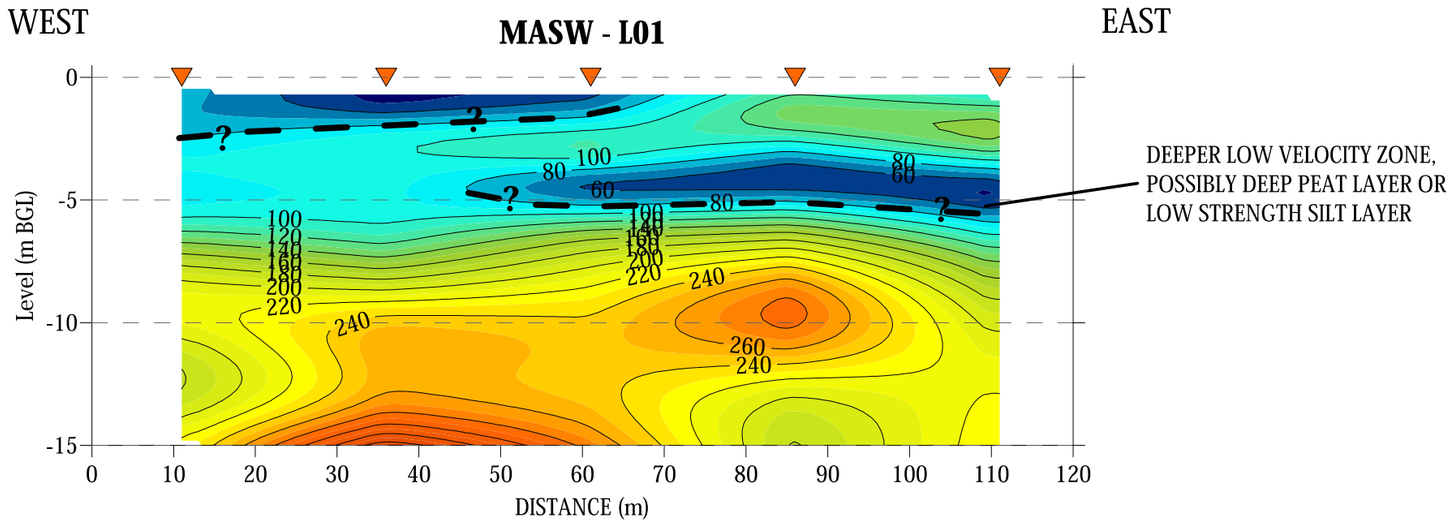

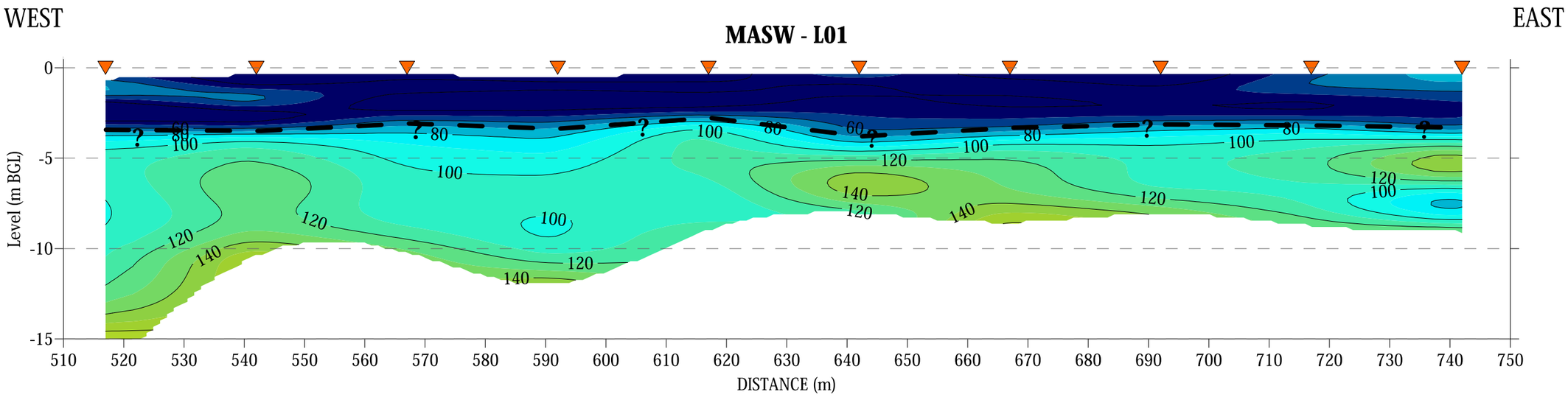

LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L01: 0 m to 120 m and 510 m to 750 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D02

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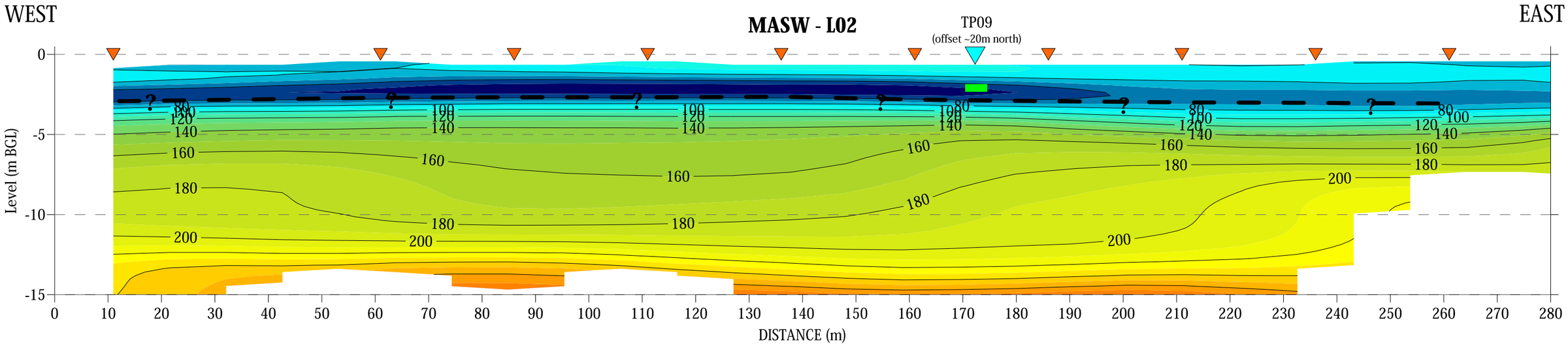

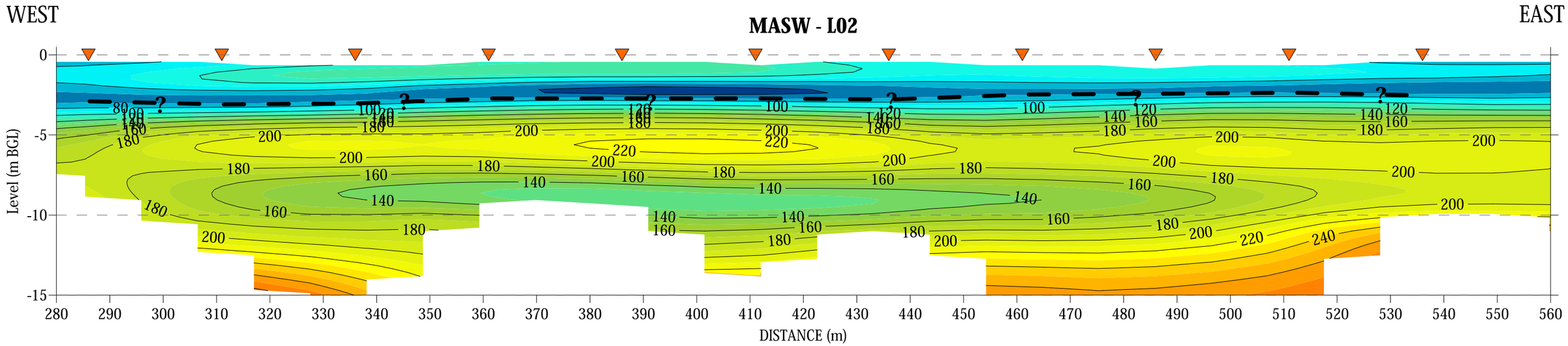

LEGEND

- COMPLETED MASW SOUNDING LOCATION
- COMPLETED TEST PIT (TP) LOCATION
- BASE OF PEAT FROM TP
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

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CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L02: 0 m to 560 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D03

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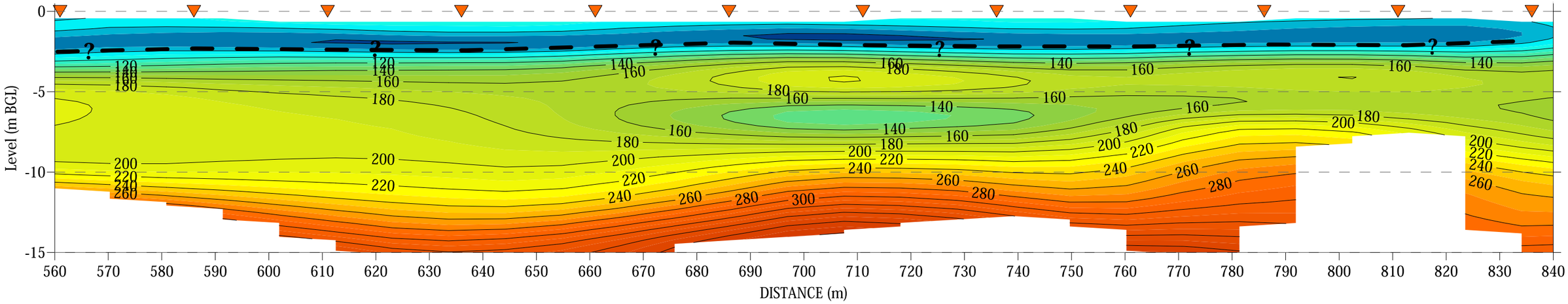
WEST

EAST

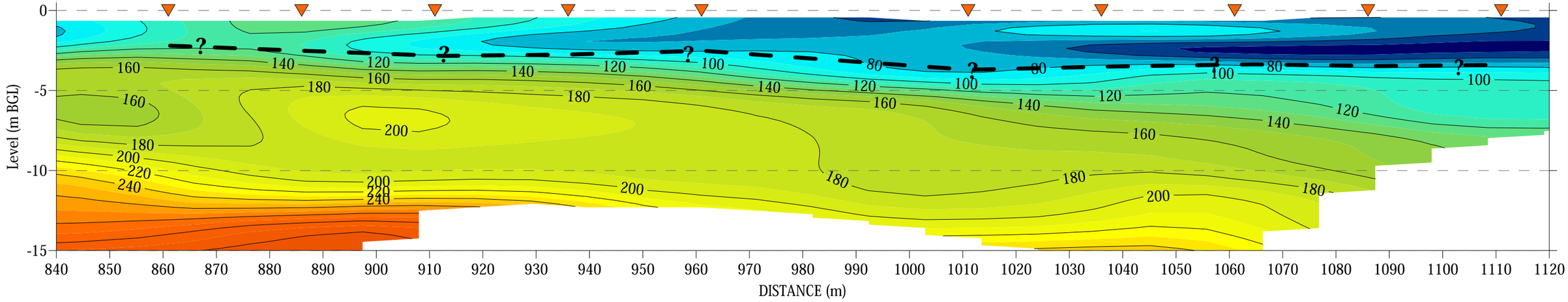
MASW - L02



WEST

EAST

MASW - L02



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L02: 560 m to 1120 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D04

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

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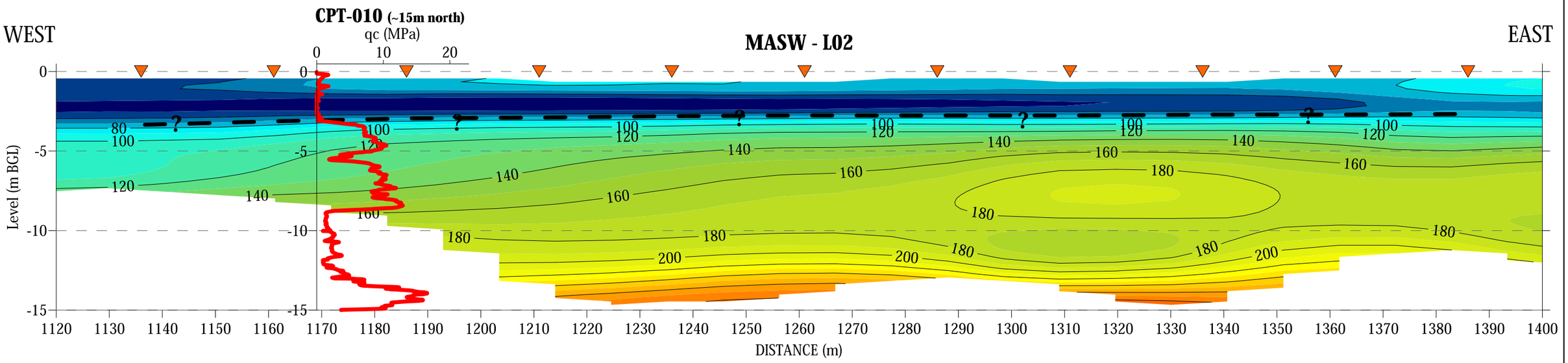

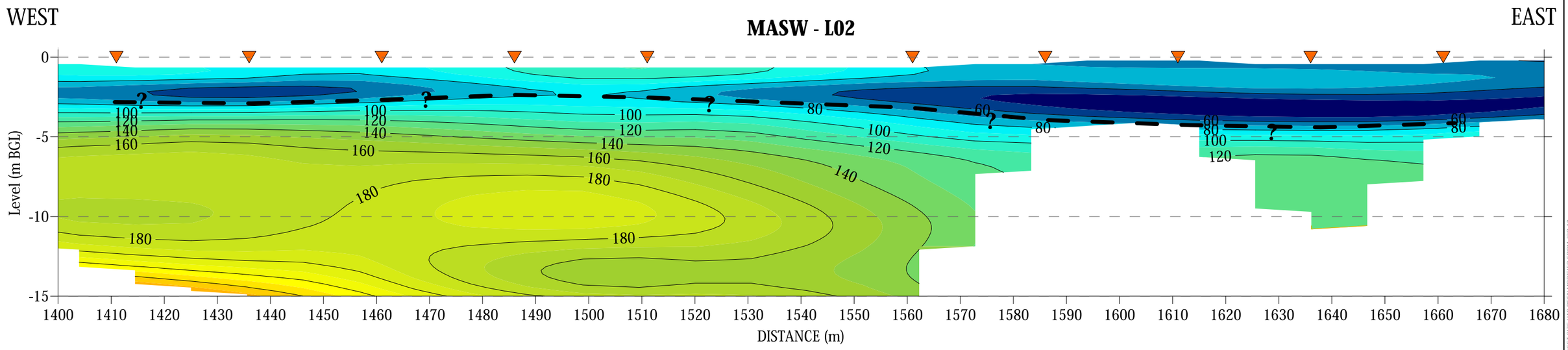

LEGEND

- COMPLETED MASW SOUNDING LOCATION
- CPT CONE RESISTANCE qc (MPa)
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L02: 1120 m to 1680 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D05

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25 mm

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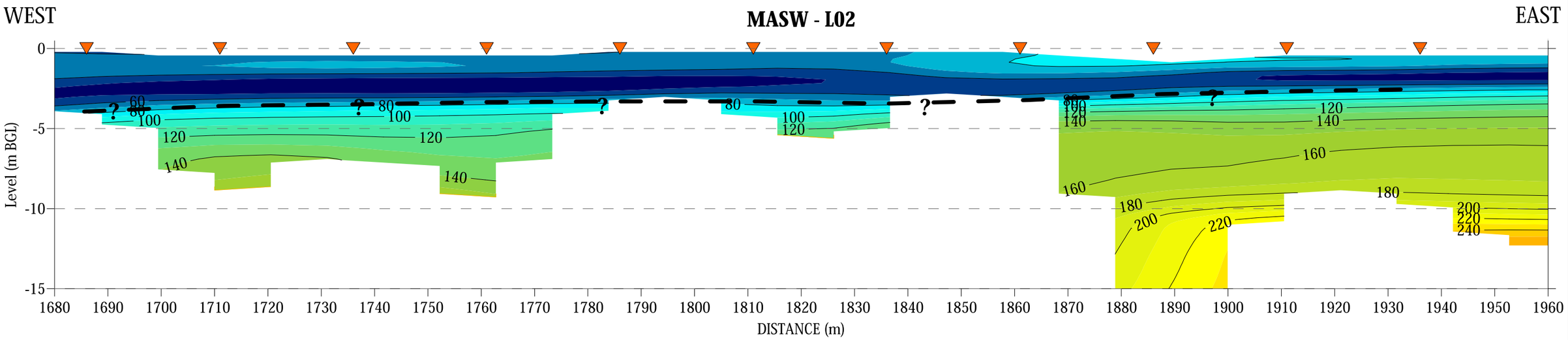
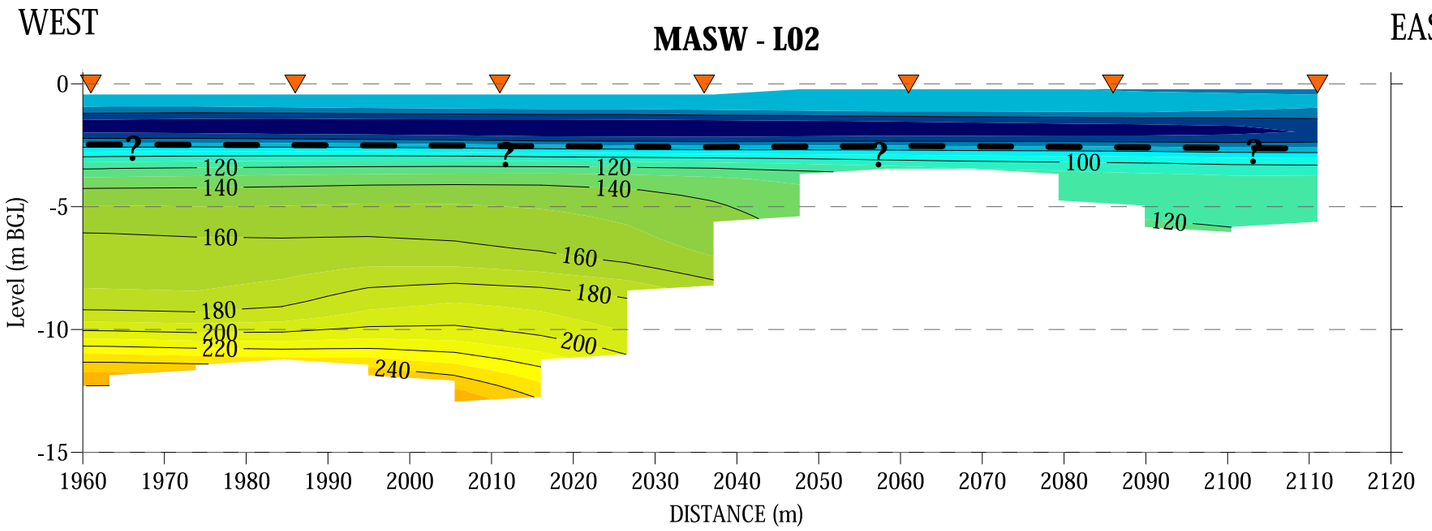




LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L02: 1680 m to 2120 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D06

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
0

- Geotechnical: test pitting (10 test pits), sampling by push tubes for peats, in-situ vane shear testing and laboratory testing on collected peat samples.

The information can be used in the statutory consenting processes to assist Bluehaven in assessing the feasibility of the proposed development.

Descriptions of methodologies and results are presented in the following sections.

4.0 EXISTING DATA

A total of 17 nos. of Cone Penetrometer Tests (CPTs) were performed in December 2019 by Land Development and Engineering Ltd. (LDE). The investigation report titled Ground Investigation Report for Bell Road Properties, Papamoa (dated 10 Dec 2019) is included in Appendix C. In the following context, this report is considered in conjunction with our observations obtained from current geotechnical investigations.

5.0 GEOPHYSICAL INVESTIGATION

5.1 Methodology

The MASW technique is a seismic method which utilises the dispersive properties of surface waves for shear wave velocity (Vs) profiling. MASW measures variations in surface wave velocity with increasing distance and wavelength and can be used to infer variation in ground stiffness.

The relationship between surface-wave velocity and wavelength is used to obtain the Vs profile of the medium with depth. Vs is directly proportional to the small strain shear modulus that is, in turn, a direct indicator of the stiffness (or rigidity) of ground materials.

The geophysical survey was performed on site between 28 January and 02 February 2020. The MASW survey was completed along a total of nine lines, along with four soundings collected as individual 23 m spreads. The completed MASW test locations cover 6272 m, as shown in Figure D01 (Appendix D). Test locations were revised in the field based on available information. Most significantly, we learned that the proposed Line 1 was located along a stop bank and therefore not on natural ground. As such, we elected to survey instead on additional available tracks, along with some short lines across paddocks in the south of the site.

MASW data were acquired using a 24-channel Geometrics Geode seismograph. This was connected to a spread of 24 geophones (4.5 Hz) arranged at 1 m spacing to form a 23 m array. The geophones were attached to steel plates connected by Kevlar-reinforced nylon webbing, forming a land-streamer which was towed behind a 4WD vehicle, as shown in Figure 1. MASW soundings were spaced at 25 m intervals in nominally straight lines.

Details on the MASW methodology are presented in Appendix E.

Figure 1: MASW surveying with land-streamer (Line 02)

Data were acquired digitally on a laptop computer in SEG-2 format. Record lengths of 3.0 seconds were used in order to capture the slow-moving surface waves along the spread of geophones. A sampling interval of 0.25 ms (4000 Hz) was employed. The seismic source was a 3.6 kg sledgehammer striking a steel plate, located 15 m beyond the end of the geophone array.

A Garmin GPS60 handheld GPS device, accurate to ± 5 m or better, was used to record the locations of the start and end of each MASW line, and positions at 25 m intervals along the lines.

The positional details of the MASW line and soundings are summarised below in Table 1.

Table 1: MASW Survey Location Summary.

Line/ Sounding	Orientation	Start of Line (SOL)		End of Line (EOL)		Survey length
		Easting	Northing	Easting	Northing	Actual (m)
L01	W-E	1894294	5818054	1895024	5817843	754
L02	W-E	1893244	5818807	1895179	5817922	2123
L03	S-N	1893122	5818374	1893326	5819113	773
L04	S-N	1893610	5818235	1893790	5818804	598
L05	S-N	1894002	5818119	1894314	5818685	723
L06	S-N	1894662	5817937	1894879	5818385	498

Line/ Sounding	Orientation	Start of Line (SOL)		End of Line (EOL)		Survey length
		Easting	Northing	Easting	Northing	Actual (m)
L07	S-N	1893329	5818413	1893468	5818839	448
L08	S-N	1893859	5818162	1894030	5818711	573
L09	S-N	1893691	5818640	1893700	5818663	23
L10	S-N	1894956	5818039	1894973	5818109	73
TP03	W-E	1893709	5818570	1893740	5818558	23
TP05	W-E	1894114	5818440	1894132	5818427	23
MASW-17	S-N	1895042	5817884	1895049	5817907	23

NOTE: All coordinates are in NZTM coordinate system

5.2 Data Processing

MASW data were analysed using Surfseis (ver. 5.3.0.32) software developed by Kansas Geological Survey (KGS). Data processing consisted of three parts:

- Generating kgs group files and applying line geometry;
- Generating dispersion spectra and picking dispersion curves;
- Inversion of the picked dispersion curves.

After removing any “noisy” traces from the seismic record, the acquired data was transformed into the frequency-phase velocity domain and the spectrum of the fundamental-mode surface wave (Rayleigh wave; M_0) was separated from other seismic waves (e.g. body waves). A dispersion curve was then picked following the trend of energy of the fundamental mode surface wave. The inversion process in Surfseis converts the picked dispersion curve to a one-dimensional (1D) solution of Vs versus depth at the mid-point of the spread being analysed. The 1D solutions from each spread location were then contoured as 2D cross-sections of Vs to facilitate interpretation. Due to the mostly flat topography on site and lack of LiDAR data, topography was not considered during processing. For locations with single spreads, rather than lines, these are presented as 1D soundings.

5.3 Results

The processed MASW seismic velocity sections are shown in Figures D02 to D16, with the MASW velocity sections presented with a vertical exaggeration of 3:1. The distance shown (on the x-axis) refers to the plan distance from the beginning of the line. The y-axis indicates depth from the ground surface. For MASW lines acquired on tracks, the ground surface was typically about 0.3 m above the natural ground surface of the surrounding fields. Where only a single sounding was acquired along a test line, the data has been represented as a 1D plot of Vs against depth at that location (Figure D16).

Due to the nature of MASW processing the resulting seismic section is half a spread length shorter than the surveyed line both at the start of the line and at the end of the line. This results in the final Vs sections being a full spread length (23 m) shorter than the surveyed line extents shown in Figure D01.

Recorded MASW data quality was generally good and considered adequate for further analysis, except for a small number of spreads that could not be used to generate reasonable dispersion spectra. Depth of penetration was up to 15 m below ground level (bgl). Modelled S-wave velocities typically range from 50 m/s to about 250 m/s, but up to 500 m/s.

In the provided colour contour sections lower velocity areas are shown with blue colours, moderate velocity areas are shown with green to yellow colours, and higher velocity areas with orange to red colours.

The 2D MASW Vs sections show horizontal layering of velocity contours, generally displaying increasing velocity with depth, however some zones show evidence of the presence of a velocity inversion, where a lower velocity layer underlies a higher velocity layer. Locations where a velocity inversion is observed include L01 from 80 m to 110 m, L02 from 310 m to 430 m, 880 m to 930 m, and 1480 m to 1550 m, L03 from 110 m to 160 m, 210 m to 360 m, and 740 m to 760 m, L04 from 110 m to 160 m, 190 m to 420 m, and from 480 m to 540 m, L05 from 10 m to 90 m, and 510 m to 560 m, L06 from 440 m to 480 m, and L08 from 70 m to 210 m. Deeper (>5 m bgl) velocity inversions are also observed at L02 from 340 m to 460 m, and 680 m to 750 m, L03 from 335 m to 365 m, L04 from 10 m to 140 m, L07 from 370 m to 400 m, and L08 from 220 m to 370 m.

5.4 Interpretation

There were 13 MASW spreads located within 25 m of an intrusive test location. The modelled Vs values from the MASW at these locations were compared with intrusive information from test pits and CPTs, as shown in Table 2.

The TP findings and CPT data show a distinct change at the base of peat. This is characterised by a material boundary in test pits, and a sharp increase in q_c in CPTs (q_c>1.0 MPa).

The average modelled S-wave velocity (V_S) at the base of peat as identified by intrusive testing was found to be 74 m/s +/- 17 m/s. This is based on the modelled V_S value at the depth of base of peat as interpreted in each of the 13 CPTs and test pits located within 25 m of the MASW survey lines.

Table 2: Correlated Vs at Intrusive Test Locations

Line Number	TP/CPT	Depth to Base of Peat (m) in TP/CPT	Correlated Vs (m/s) for Base of Peat Depth	Depth offset of the mean correlated Vs* (m)
L02	TP03	1.7	63	-0.5
L02	CPT10	3.2	85	0.3
L02	TP09	2.1	56	-1.9
L03	CPT01	1.9	70	-1.1
L04	TP03	1.7	52	-0.5
L05	CPT14	3.6	107	1.0
L05	TP05	1.9	83	0.3
L06	CPT16	2.7	74	-0.7
L06	TP09	2.1	64	-1.4
L08	CPT04	1.4	89	N/A

Line Number	TP/CPT	Depth to Base of Peat (m) in TP/CPT	Correlated Vs (m/s) for Base of Peat Depth	Depth offset of the mean correlated Vs* (m)
MASW-17	CPT17	2.0	57	-0.4
MASW-17	TP10	1.9	57	-0.5
MASW-TP3	TP03	1.7	100	0.2

* negative values indicate that the inferred depth to base of peat based on MASW results is deeper than the depth to base of peat as observed in intrusive tests.

An example of how the V_S was correlated to the base of the peat is shown below in Figure 2, between CPT-010 and MASW L02.

The depth offset of mean correlated V_S represents the vertical distance between the intercepted base of peat and the 74 m/s contour. The root mean square (RMS) average of these depth offsets is 0.9 m. More specifically, for the seven tests located within 20 m of MASW lines (and therefore less affected by lateral variations in ground conditions), the RMS average is 0.6 m, which can be considered a reasonable measure of the uncertainty in the inferred peat depth.

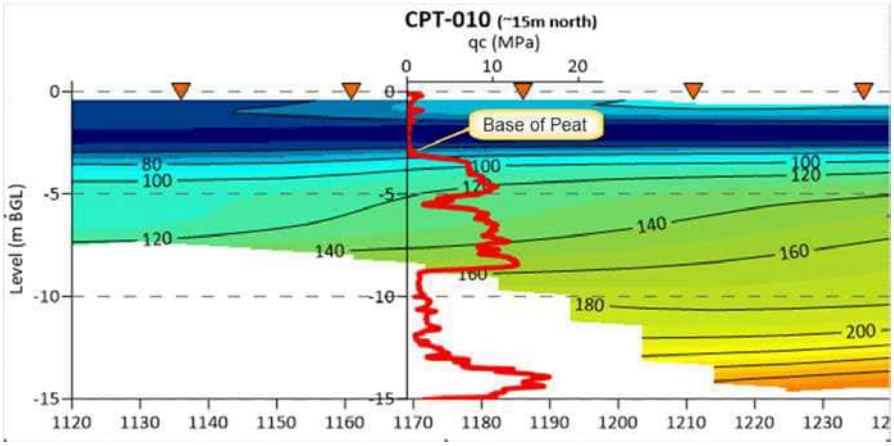


Figure 2: An example of correlation of the base of peat between CPT-010 and MASW L02

The average velocity determined from the correlation in Table 2 was used to guide interpretation of the modelled MASW sections and the inference of the depth to the base of the peat layer. The inferred base of peat layer is shown in Figures D02 to D16 as a dashed black line.

5.5 Key Findings from MASW Survey

The interpreted MASW results show inferred depth to base of the peat layer to range from 0 m to 5.5 m across the site, with an average depth of 2.4 m. Inferred peat depths are typically thinner in the north and west, and thicker toward the south and east.

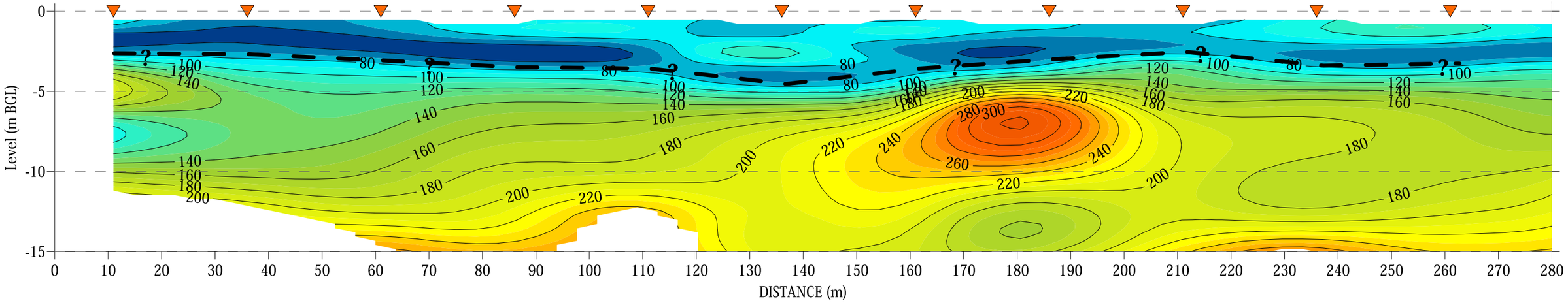
There is likely to be some internal stiffness/material variability in the peat layer given that velocity inversions can be observed.

At L01, from 50 m to 111 m chainage, a low velocity layer is observed down to approximately 5 m depth. This has been interpreted as peat, though it may also represent a soft silt layer or similar. This area is worthy of further investigation.

SOUTH

MASW - L03

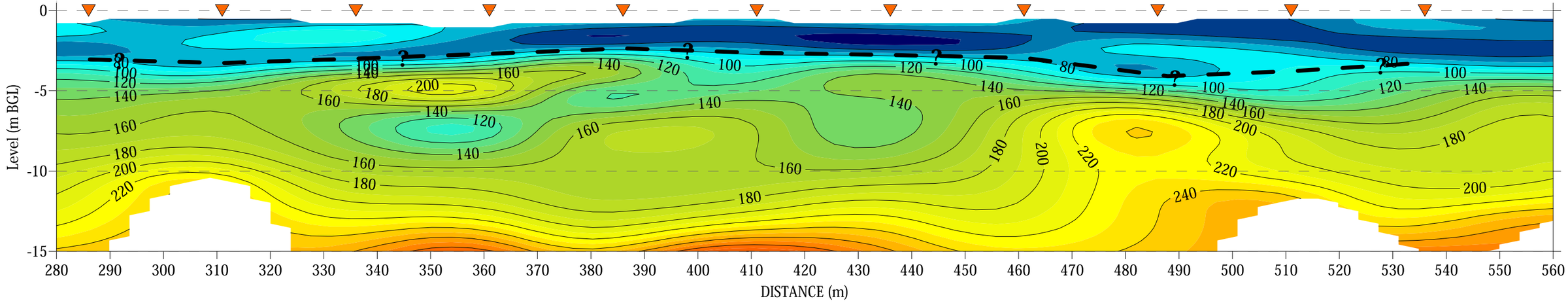
NORTH



SOUTH

MASW - L03

NORTH



LIMITATIONS

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LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

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APPROVED	--

TITLE
MASW SURVEY RESULTS
L03: 0 m to 560 m

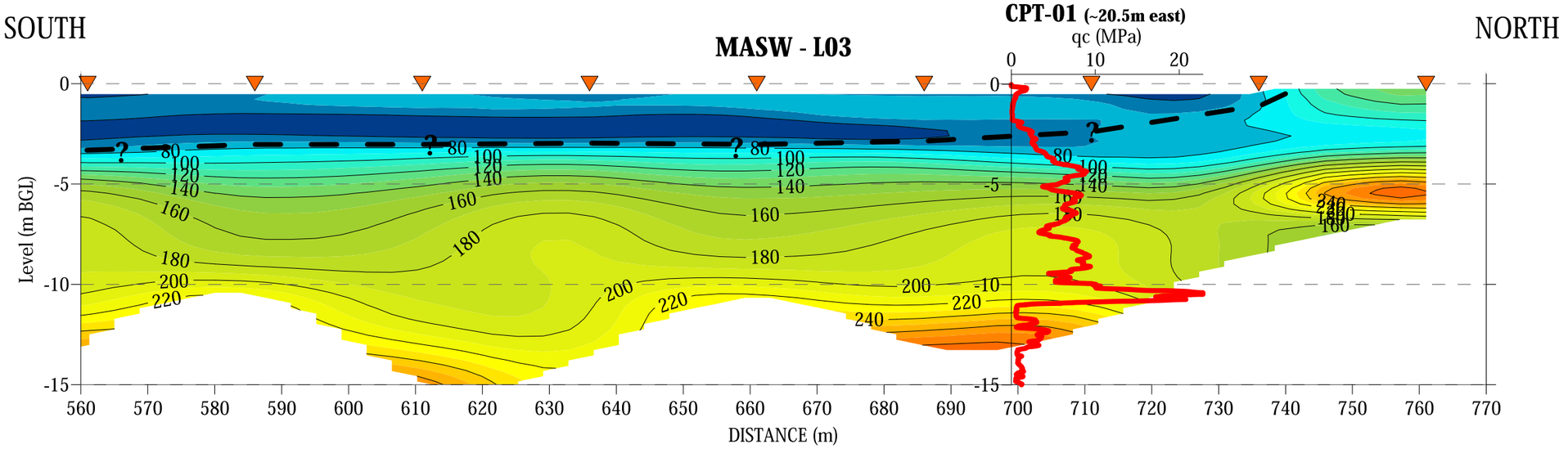
PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D07

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

0 25 mm

SOUTH

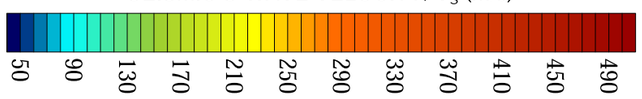
NORTH



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- CPT CONE RESISTANCE qc (MPa)
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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TITLE
MASW SURVEY RESULTS
L03: 560 m to 770 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D08

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25 mm
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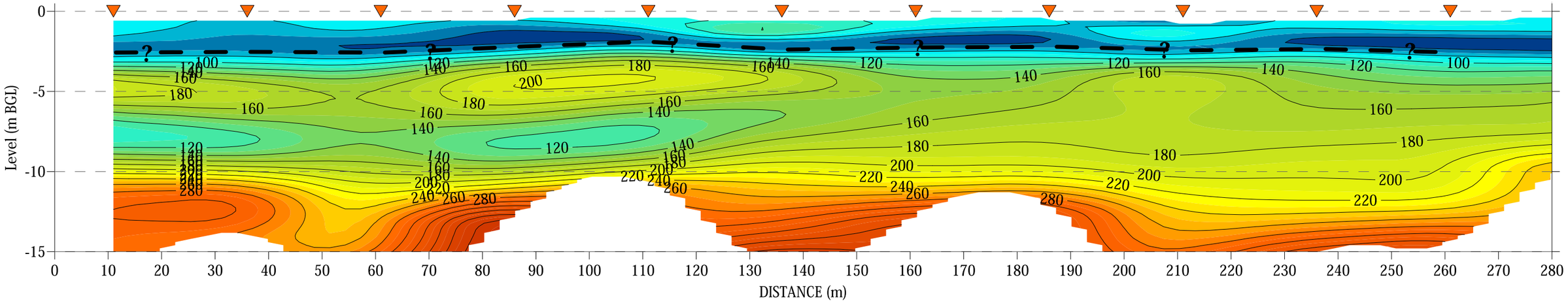
SOUTH

MASW - L04

NORTH

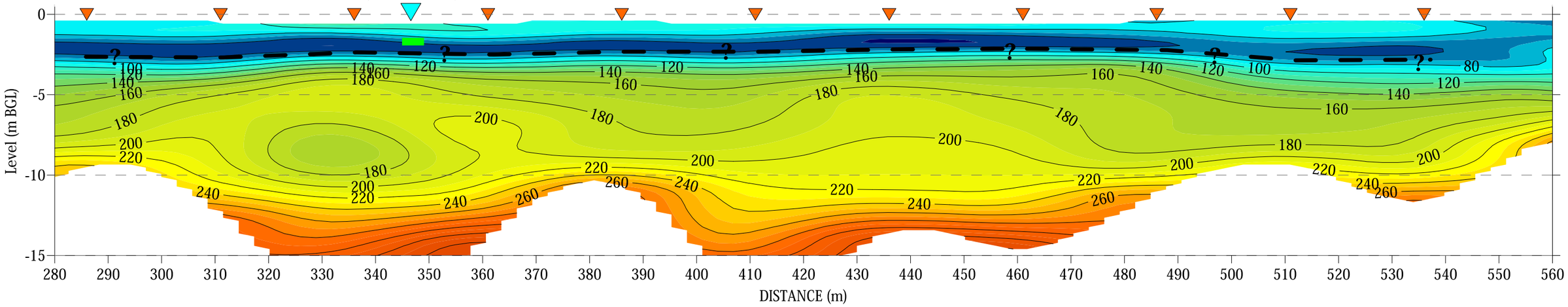


SOUTH

TP03
(offset ~11.5m east)

MASW - L04

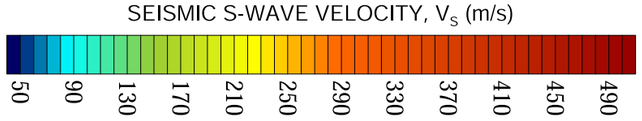
NORTH



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- COMPLETED TEST PIT (TP) LOCATION
- BASE OF PEAT FROM TP
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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APPROVED	--

TITLE
MASW SURVEY RESULTS
L04: 0 m to 560 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D09

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25 mm
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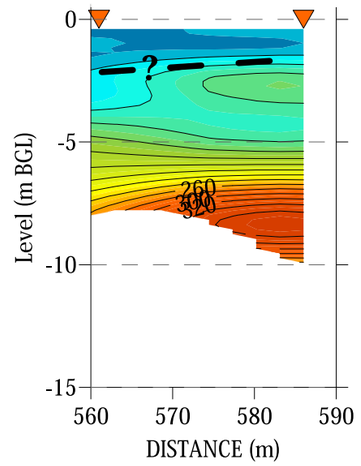
SOUTH

MASW - L04

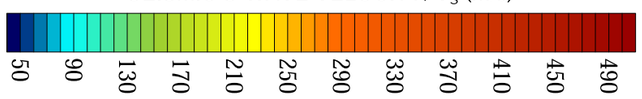
NORTH



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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TITLE
MASW SURVEY RESULTS
L04: 560 m to 590 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D10

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25 mm
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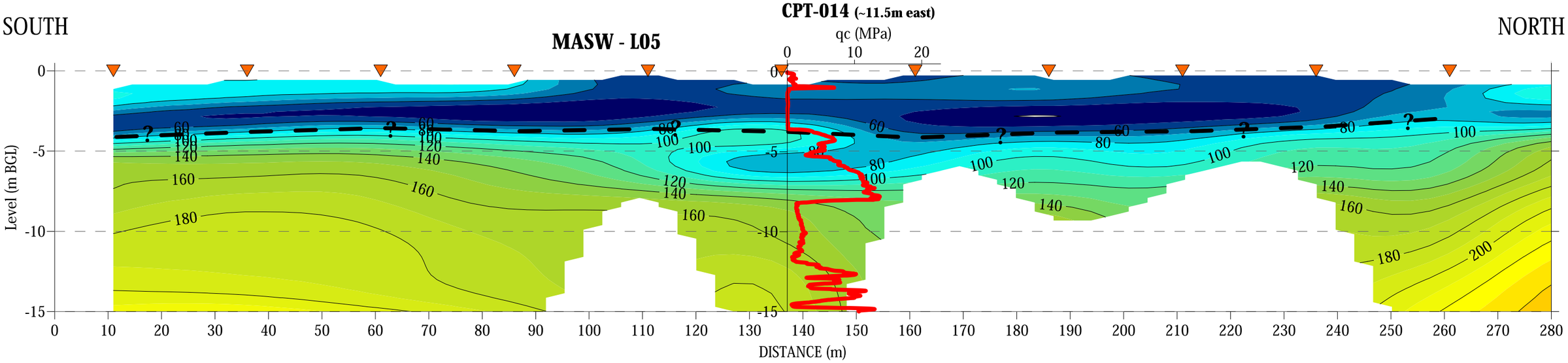
SOUTH

NORTH

MASW - L05

CPT-014 (~11.5m east)

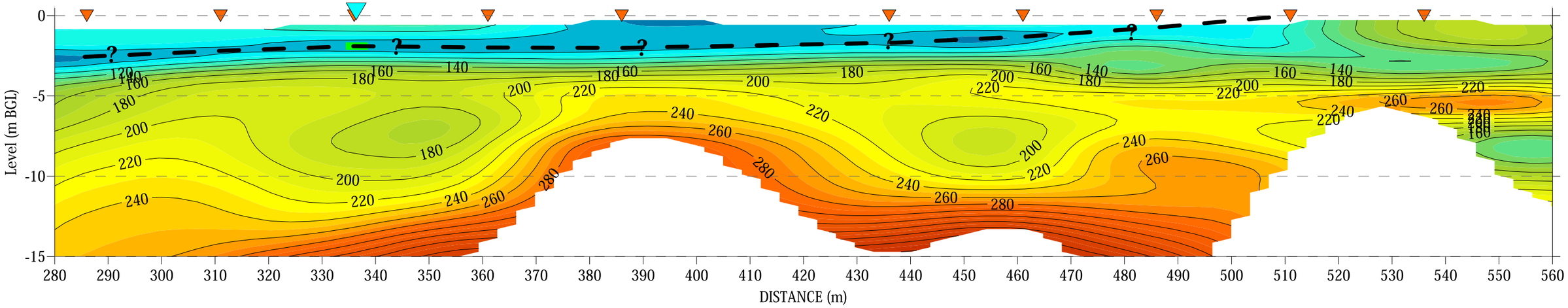


SOUTH

NORTH

MASW - L05

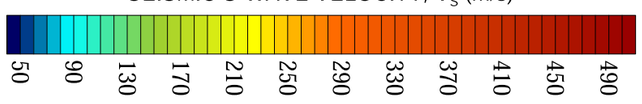
TP05
(offset ~25m east)



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- COMPLETED TEST PIT (TP) LOCATION
- BASE OF PEAT FROM TP
- CPT CONE RESISTANCE qc (MPa)
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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TITLE
MASW SURVEY RESULTS
L05: 0 m to 560 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D11

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
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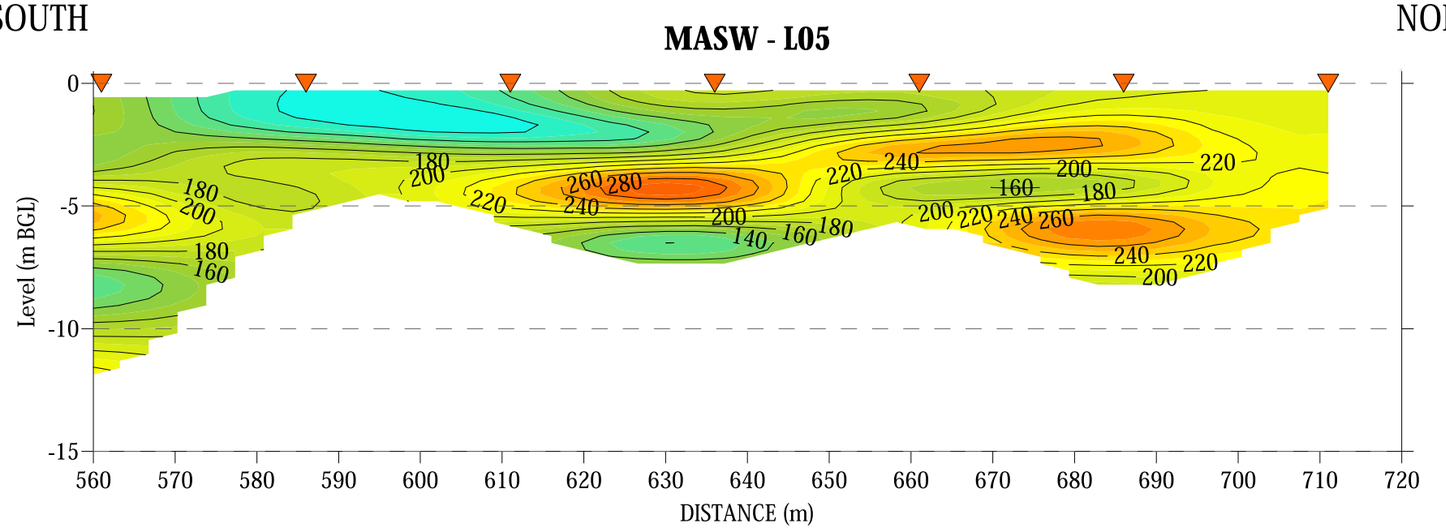
SOUTH

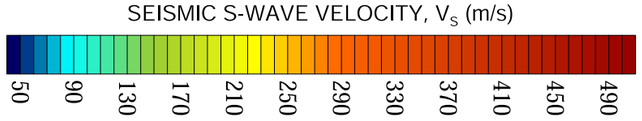
NORTH



LEGEND

▼ COMPLETED MASW SOUNDING LOCATION

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L05: 560 m to 720 m

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D12

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
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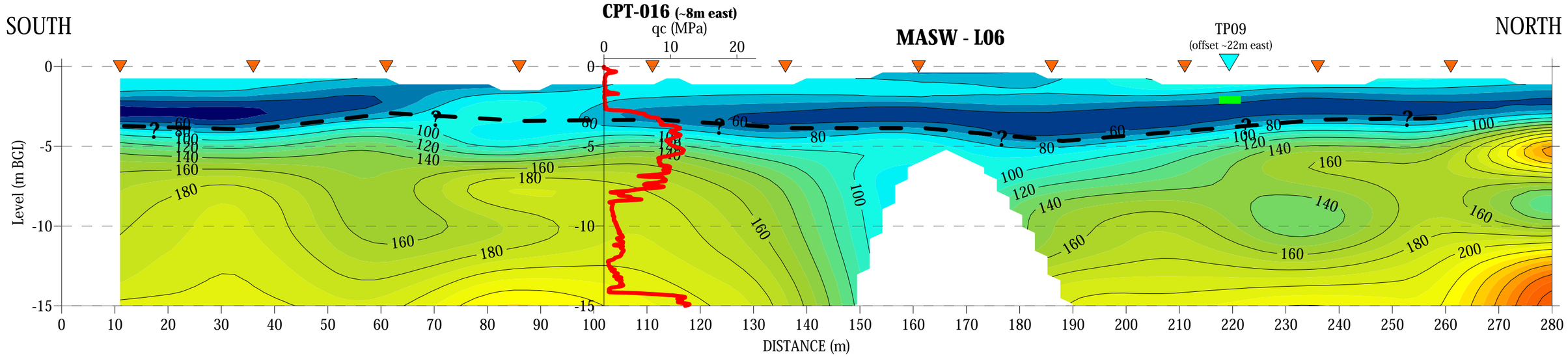

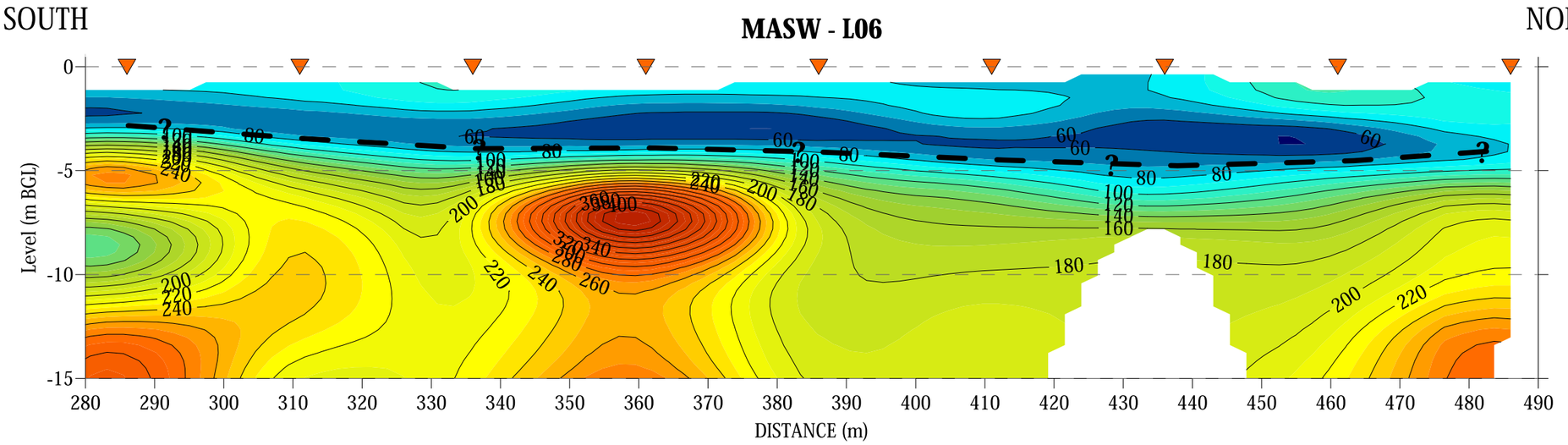

LEGEND

- COMPLETED MASW SOUNDING LOCATION
- COMPLETED TEST PIT (TP) LOCATION
- BASE OF PEAT FROM TP
- CPT CONE RESISTANCE qc (MPa)
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

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TITLE
MASW SURVEY RESULTS
L06: 0 m to 490 m

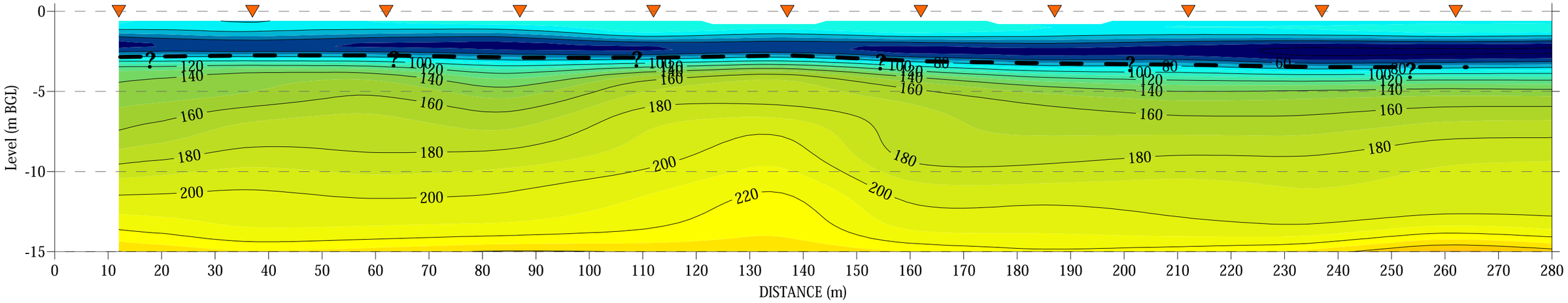
PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D13

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
25 mm
0

SOUTH

MASW - L07

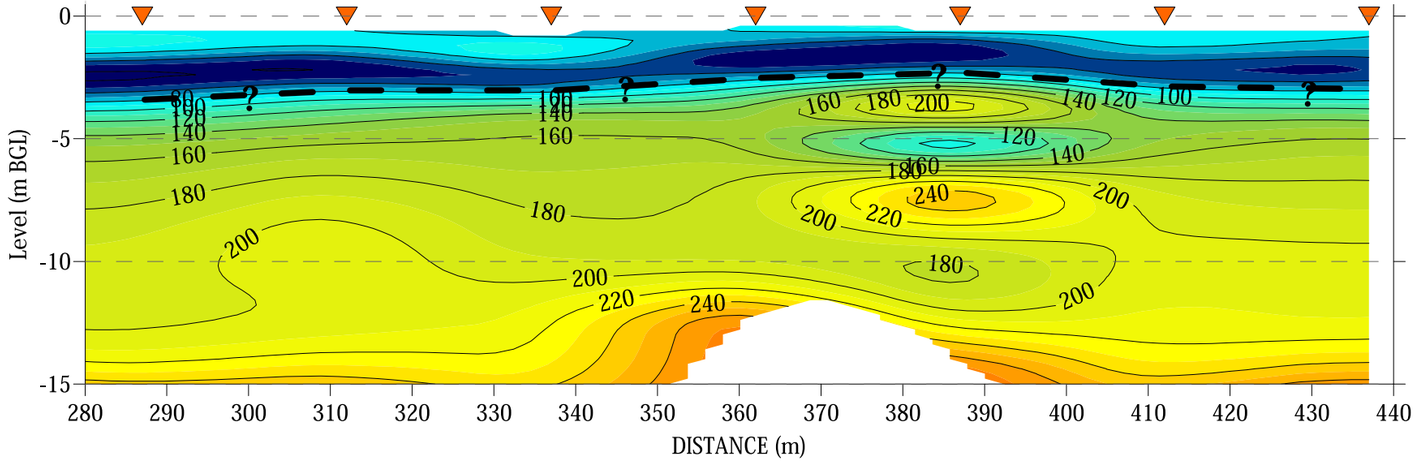
NORTH



SOUTH

MASW - L07

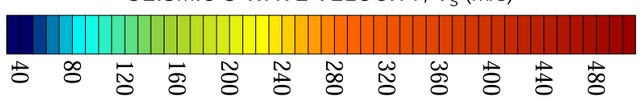
NORTH



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



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YYYY-MM-DD	2020-02-03
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PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L07: 0 m to 440 m

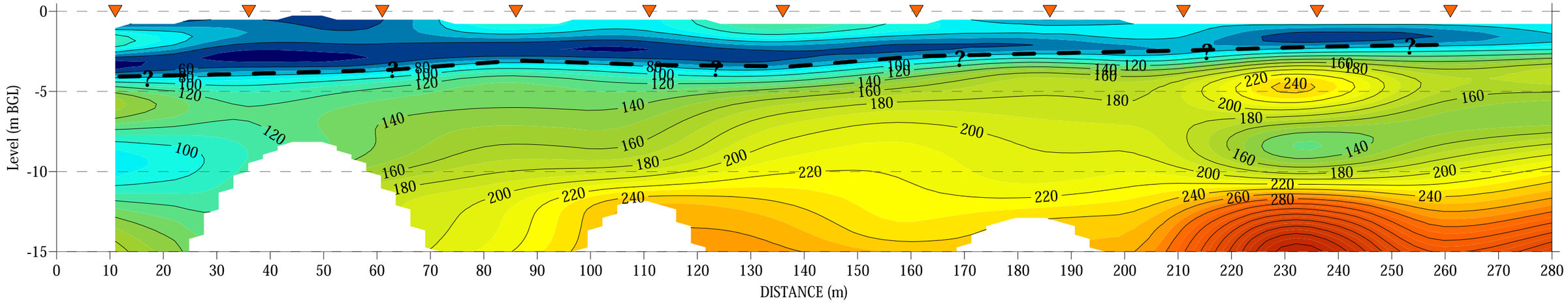
PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D14

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3
0 25 mm

SOUTH

MASW - L08

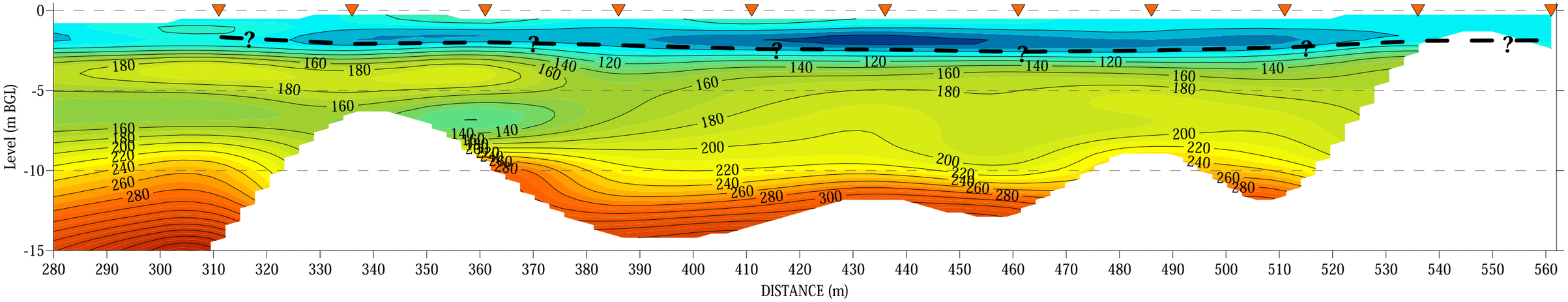
NORTH



SOUTH

MASW - L08

NORTH



LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

LEGEND

- COMPLETED MASW SOUNDING LOCATION
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)

50 90 130 170 210 250 290 330 370 410 450 490

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L08: 0 m to 562 m

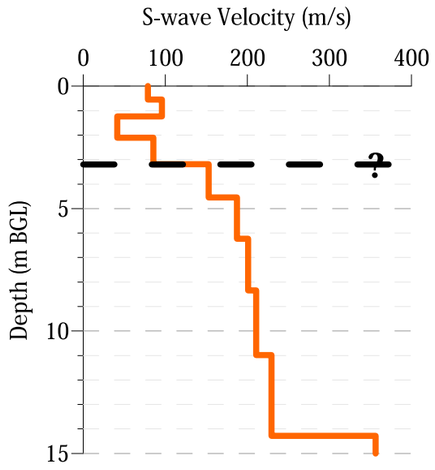
PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D15

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ISO A3

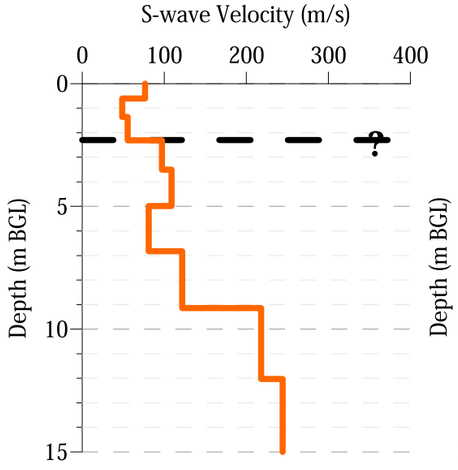
25 mm

0

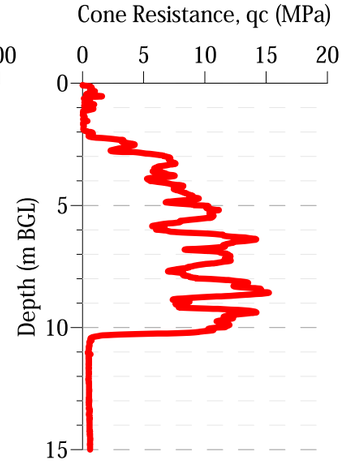
L09 MASW Sounding



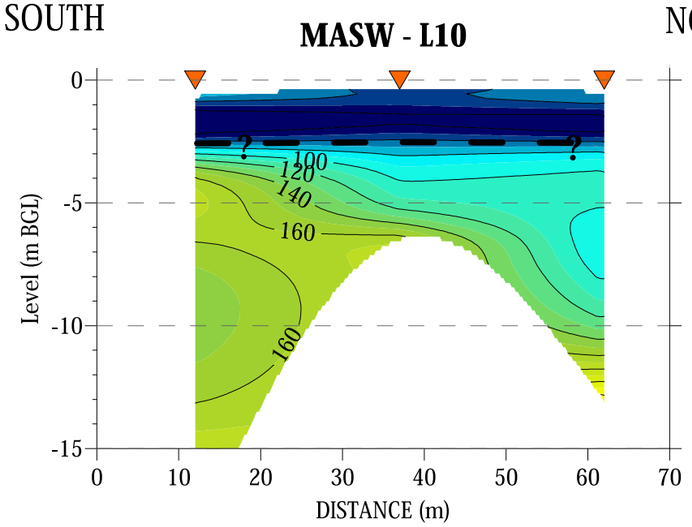
MASW17 Sounding



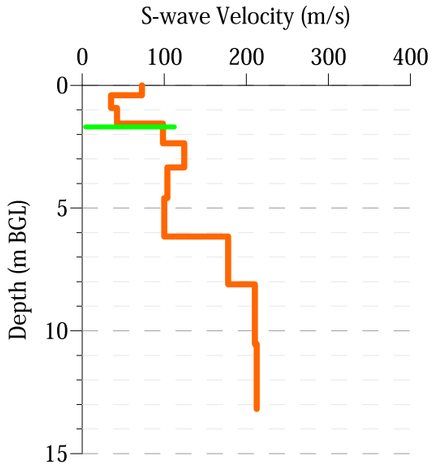
CPT-017 (~1m north-west)



MASW - L10



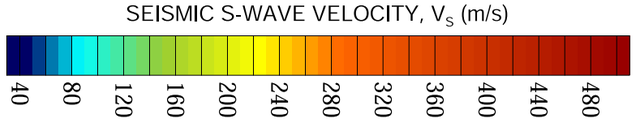
TP03 MASW Sounding



LEGEND

- COMPLETED MASW SOUNDING LOCATION
- BASE OF PEAT FROM TP
- CPT CONE RESISTANCE, qc
- MASW S-WAVE VELOCITY PROFILE, V_S
- INFERRED BASE OF PEAT LAYER (+/-0.6 m)

SEISMIC S-WAVE VELOCITY, V_S (m/s)



LIMITATIONS

MASW is a remote sensing geophysical method that may not detect all subsurface features. Depth of penetration is dependent on the nature of the subsurface, acquisition parameters and data quality. Furthermore, it is possible that interpreted features such as stratigraphic boundaries, top of bedrock, faults, voids, other geologic hazards and utilities may, upon intrusive sampling, prove to have been misinterpreted.

MASW data are analysed using an inversion method based on interpreted dispersion curves to provide a model of the subsurface conditions and geologic structure. This process does not necessarily produce a unique solution, i.e. a single geophysical dataset can produce multiple model outputs that meet the specified constraints. Different modelling methods and software may produce different results. This inherent uncertainty in the MASW results should be considered during the interpretation process.

Accurate interpretation of geophysical data relies on the site-specific correlation of information with that obtained from CPT, test pits or other direct observation methods.

CLIENT
BLUEHAVEN MANAGEMENT LIMITED

PROJECT
GOLDEN SANDS DEVELOPMENT, PAPAMOA
GEOPHYSICAL AND GEOTECHNICAL INVESTIGATIONS

CONSULTANT
GOLDER

YYYY-MM-DD	2020-02-03
DESIGNED	RR
PREPARED	RR
REVIEWED	--
APPROVED	--

TITLE
MASW SURVEY RESULTS
L09, L10, CPT-017, and TP03

PROJECT NO.	DELIVERABLE	REV.	FIGURE
19135525	001-R-Rev0	0	D16

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ISO A3
0 25 mm

1.0 MULTI-CHANNEL ANALYSIS OF SURFACE WAVES (MASW)

1.1 Methodology

The Multi-channel Analysis of Surface Waves (MASW) technique is a seismic method that utilises the dispersive properties of surface waves for the purpose of shear wave (S-wave) velocity profiling. MASW measures variations in surface wave velocity with increasing distance and wavelength and can be used to infer the rock/soil types, stratigraphy and soil conditions. A seismic source (e.g. a sledgehammer or drop weight) is used to generate surface-waves, and multiple geophone receivers are used to measure the ground response at some distance from the source.

Surface waves are a type of seismic wave whose propagation is confined to the near surface medium. The depth of penetration of a surface-wave into a medium is directly proportional to its wavelength. In a non-homogeneous medium surface-waves are dispersive, i.e. each wavelength has a characteristic velocity owing to the subsurface heterogeneities within the depth interval that a particular wavelength of surface-wave propagates through. The relationship between surface-wave velocity and wavelength is used to obtain the S-wave velocity and attenuation profile of the medium with increasing depth. S-wave velocity is directly proportional to the small strain shear modulus that is, in turn, a direct indicator of the stiffness (or rigidity) of ground materials.

The depth of penetration is related to the lowest frequency that can be clearly identified, and the shear-wave velocity at that frequency. The lowest frequency that can be identified can be influenced by a number of factors including the ground conditions, source type, site noise, array length and geophone spacing.

1.2 Acquisition

MASW data are acquired with a Geometrics Geode 24-channel engineering seismograph (Figure 1) connected to a spread of geophones, as shown in Figure 2. Data are acquired digitally on a laptop computer in SEG 2 format and backed up and stored daily for processing. Reasonably long record lengths (e.g. 2 to 4 seconds) are required in order to capture the slow moving surface waves along the spread of geophones. In each spread, the twenty-four 4.5 Hz geophones are coupled to the ground at pre-determined intervals (e.g. 0.5 to 3 m) and connected together via a 24-channel multi-core cable.

Seismic energy is typically provided by a sledgehammer which is impacted on a metal or plastic plate. A seismic trigger switch taped to the top of the sledgehammer handle is used for triggering. If necessary, signals from each “shot” can be stacked several times to minimise the effect of background noise and improve signal quality.

Trials are performed at the beginning of site work to determine the optimum shot offset which produces the cleanest dispersion spectra and achieves the required penetration depth. This helps to minimise the influence of higher-modes on the data, which can affect dispersion curve picking and thus the modelled S wave velocities.

Figure 1: Geometrics Geode seismographs.

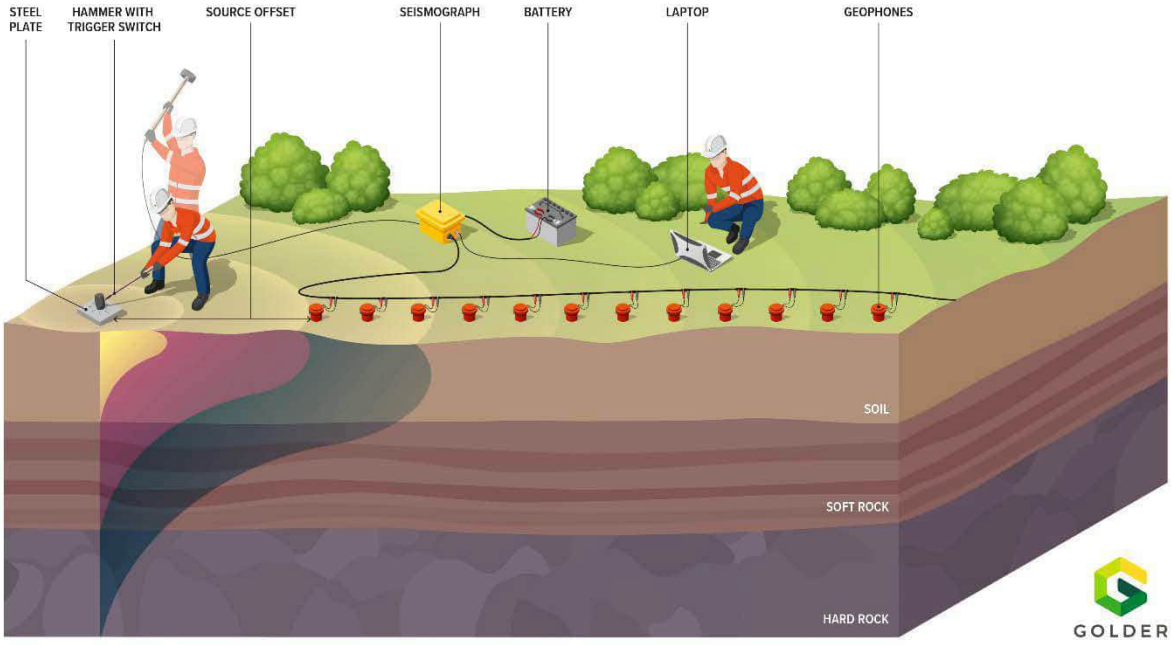


Figure 2: Acquisition of MASW data.

1.3 Data Processing

Data processing consists of two parts: dispersion-curve picking and inversion. The acquired data are transformed into the frequency-phase velocity domain and the spectrum of the fundamental-mode surface wave (Rayleigh wave; M_0) is separated from other seismic waves (e.g. body waves). A dispersion curve is then picked following the trend of energy of the fundamental mode surface wave (Figure 3). The inversion process converts the picked dispersion curve to a one-dimensional (1D) solution of depth versus S-wave

velocity at the mid-point of the dataset being analysed (Figure 4). The 1D solutions are then contoured as 2D cross-sections of S-wave velocity to facilitate interpretation (Figure 8).

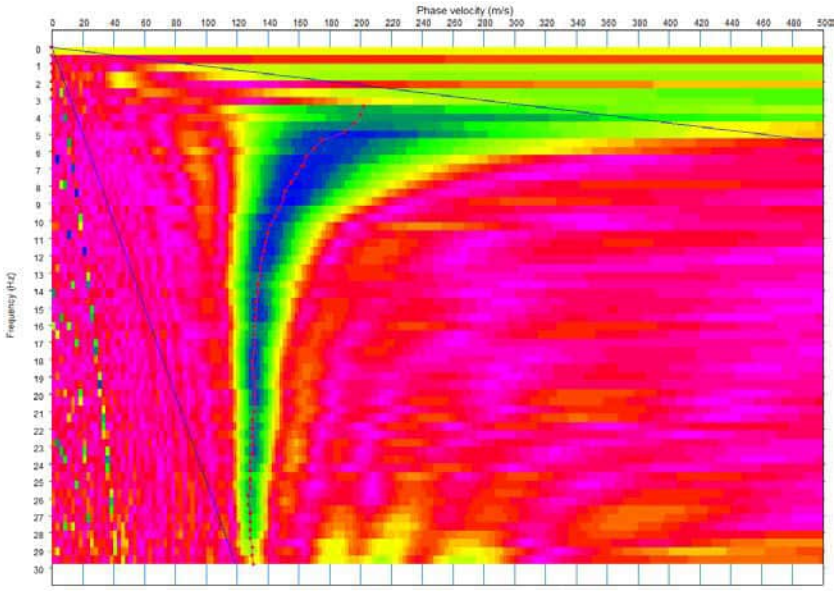


Figure 3: Example MASW dispersion curve

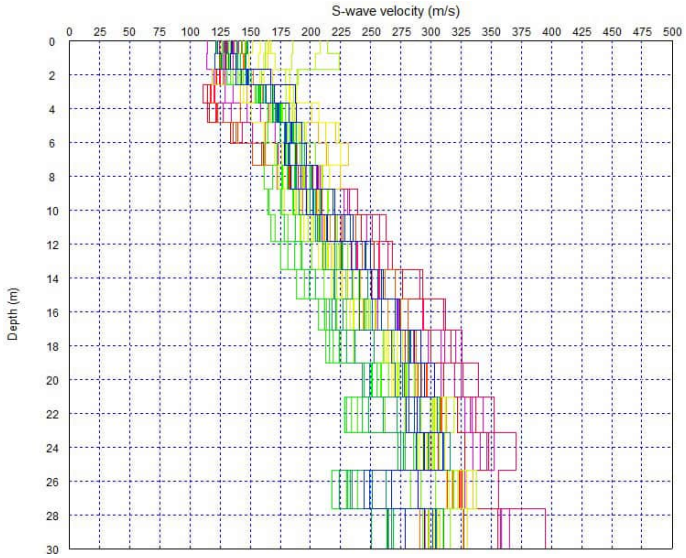


Figure 4: Example S-wave velocity models.

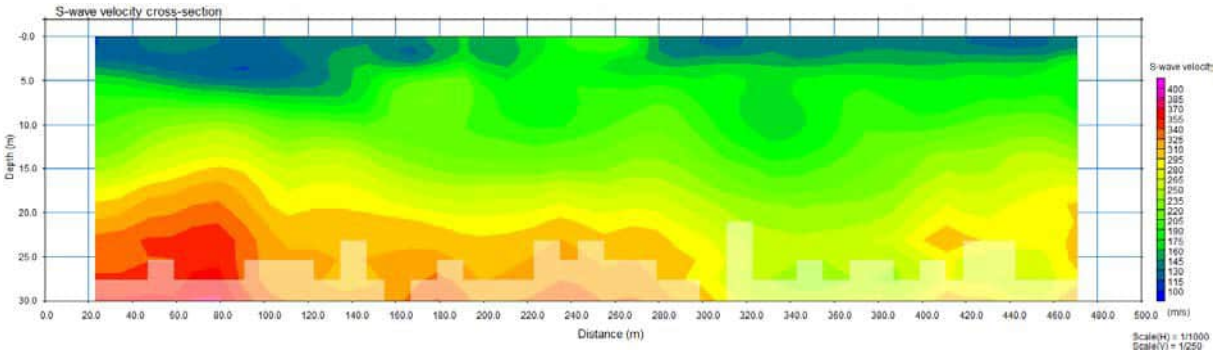


Figure 5: S-wave Velocity Cross-section.

1.4 MASW Limitations

A number of factors can affect the quality of MASW measurements and depth of penetration, including topography, site noise and subsurface velocity structure. The degree of influence these factors will have on the measured data cannot always be determined in advance of surveying.

MASW data must undergo inverse modelling (inversion) to estimate a model of the physical properties of the subsurface, a process which does not necessarily produce a unique solution. The inherent uncertainty in geophysical results should be considered during the interpretation process. To help reduce uncertainties in the interpretation, the interpreter will typically make use of prior knowledge and any external complementary datasets, such as existing geologic information, drilling data, the location of underground services, borehole geophysical logs and other geophysical datasets.

APPENDIX 9:

Laboratory Testing

ORGANIC MATTER CONTENT TEST REPORT

Project :	Golden SandS - Lab Testing
Location :	Unknown
Client :	Golder Associates (NZ) Ltd
Contractor :	-
Sampled by :	Client
Date sampled :	Unknown
Sampling method :	Pushtube
Sample condition :	As received

Project No :	2-68135.00
Lab Ref No :	HA5500_1_6_OC
Client Ref No :	

Test Results

Lab Ref No :	HA550_1	HA550_2	HA550_3	HA550_4	HA550_5	HA550_6
Location ID :	TP03 S10	TP05 S06	TP07 S08	TP08 S04	TP10 S01	TP10 S02
Sample Depth (m) :	0.4-1.0	0.3-0.9	0.3-0.9	1.0-1.6	0.3-0.9	0.3-0.9
Organic Matter (%) :	55	70	85	50	40	50
Water Content (%) :	270.0	255.0	404.0	424.0	317.0	461.0

Test Methods		Notes
Organic Matter Content :	NZS 4402 : 1986, Test 3.1.2	
Water Content :	NZS 4402 : 1986, Test 2.1	

Date tested : 03-04/02/20
Date reported : 05/02/20

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
This report may only be reproduced in full

IANZ Approved Signatory

Designation : *Assistant Laboratory Manager*
Date : 05/02/20

IANZ ACCREDITED LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

WSP Opus
Hamilton Laboratory
Quality Management Systems Certified to ISO 9001

Fox Street
Private Bag 3057, Waikato Mail Centre,
Hamilton 3240, New Zealand

Telephone +64 7 856 2870
Website www.wsp-opus.co.nz

DETERMINATION OF THE DENSITY OF A SOIL
TEST REPORT

Project :	Golden Sands - Lab Testing
Location :	-
Client :	Golder Associates (NZ) Limited
Contractor :	N/A
Sample description :	Fibrous PEAT
Sampled by :	Client
Date sampled :	Unknown
Sampling method :	Sampling Tube Method
Sample condition :	As received
Tested by:	JDV

Project No :	2-681351.00
Lab Ref No :	HA5500_1_5_PTD
Client Ref No :	-

Test Results

Solid Density (t/m³): 2.40 Assumed

Sample No:	TP03	TP05	TP07	TP08	TP10
Test No:	S10	S06	S08	S04	S01
Offset:	-	-	-	-	-
Depth below surface (mm):	0.4-1.0	0.3-0.9	0.3-0.9	1.0-1.6	0.3-0.9
Wet Density Pb (t/m³):	1.06	1.00	1.04	1.16	1.04
Water Content (%):	270.5	254.7	405.2	424.3	316.5
Dry Density (t/m³):	0.28	0.28	0.20	0.22	0.24
Air Voids (%)	11	16	8.7	-3.8	11

Test Methods	Notes
Determination of the Density of a soil - Sampling Tube Method NZS 4402: 1986, Test 5.1.3 Water Content: NZS 4402 : 1986, Test 2.1	

Date tested : 31/01/20
Date reported : 05/02/20

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
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IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*
Date : 05/02/20

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Tests indicated as not accredited are outside the scope of the laboratory's accreditation

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DETERMINATION OF THE DENSITY OF A SOIL
TEST REPORT

Project :	Golden Sands - Lab Testing
Location :	Unknown
Client :	Golder Associates (NZ) Limited
Contractor :	N/A
Sample description :	Fibrous PEAT
Sampled by :	Client
Date sampled :	Unknown
Sampling method :	Sampling Tube Method
Sample condition :	As received
Tested by:	JDV

Project No :	2-681351.00
Lab Ref No :	HA5500_6_PTD
Client Ref No :	-

Test Results

Solid Density (t/m³):	2.40 Assumed				
Sample No:	TP10	-	-	-	-
Test No:	S02	-	-	-	-
Offset:	-	-	-	-	-
Depth below surface (mm):	0.3-0.9	-	-	-	-
Wet Density Pb (t/m³):	0.92	-	-	-	-
Water Content (%):	461.3	-	-	-	-
Dry Density (t/m³):	0.16	-	-	-	-
Air Voids (%)	17	-	-	-	-

Test Methods	Notes
Determination of the Density of a soil - Sampling Tube Method NZS 4402: 1986, Test 5.1.3 Water Content: NZS 4402 : 1986, Test 2.1	

Date tested : 31/01/20
Date reported : 05/02/20

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
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IANZ Approved Signatory

Designation : *Senior Civil Engineering Technician*
Date : 05/02/20

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ONE DIMENSIONAL CONSOLIDATION PROPERTIES
TEST RESULT REPORT

Project :	Golden Sands Development
Location:	Papamoa, Tauranga
Client :	Golder Associates (NZ) Ltd
BH/TP/Sample ID:	TP01 -S12 0.5-1.1
Specimen depth:	0.95-1.00m
Sampled by :	Golder
Date sampled:	29/01/2020
Sampling method :	Pushtube
Sample condition :	As received
Sample description :	Fibrous PEAT, Black, moist, firm-stiff, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_7_oed
Client Ref:	

OEDOMETER APPARATUS No: Five

SOIL PROPERTIES

Specimen Dimensions:	
Diameter (mm):	50.07
Initial height (mm):	19.03
Final height (mm):	9.62
Initial mass of sample (g):	34.38

Initial Wet Density	pbi (t/m³)	0.92
Initial Dry Density	pdi (t/m³)	0.18
Final Dry Density	pdf (t/m³)	0.36
Initial Void Ratio	eo	9.29
Final Void Ratio	ef	4.20
Initial Degree of Saturation	Si (%)	82
Final Degree of Saturation	Sf (%)	100
Solid Particle Density (Assumed)	Gs (t/m³)	1.85
INITIAL Water Content	Wi (%)	410.3
FINAL Water Content	Wf (%)	227.4

CONSOLIDATION PROPERTIES

PRESSURE RANGE (kPa)	Pressure Increment (dp)	Void Ratio (e)	Intercept t90 (min)	Volume Compressibilty Mv=m²/MN	Coeff. of Consolidation Cv=m²/year	Coeff. of Permeability k=m/year	
0 - 5	5	9.268	-	-	-		
5 - 12.5	7.5	9.179	0.542	1.20	74	8.3 x10 -1	
12.5 - 25	12.5	8.991	0.966	1.50	41	5.9 x10 -1	
25 - 50	25	8.597	0.706	1.60	54	8.3 x10 -1	
50 - 100	50	7.592	4.210	2.10	8.3	1.7 x10 -1	
100 - 200	100	5.999	3.208	1.90	8.7	1.6 x10 -1	
200 - 400	200	4.506	5.902	1.10	3.2	3.3 x10 -2	
400 - 800	400	3.384	1.077	0.51	11	5.3 x10 -2	
800 - 5	-	4.200	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

Test Methods:		Notes:
One Dimensional Consolidation Test.	NZS 4402:1986 Test 7.1	Sample is saturated during test.
Water Content	NZS 4402:1986 Test 2.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
This report may only be reproduced in full

IANZ Approved Signatory

Designation : *Laboratory Manager*
Date : 7/02/2020

IANZ ACCREDITED LABORATORY
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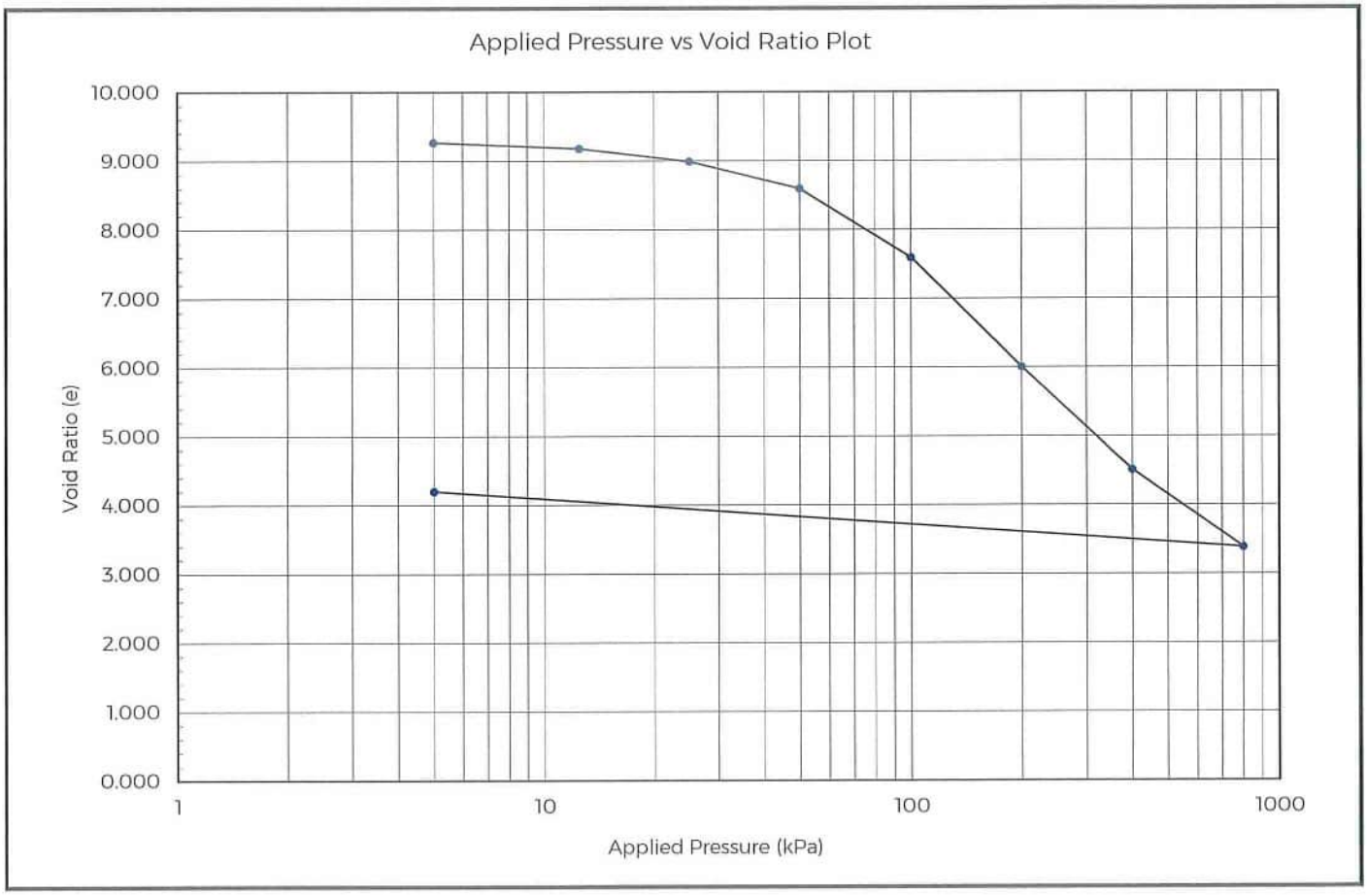
ONE DIMENSIONAL CONSOLIDATION PROPERTIES
Applied Pressure vs Void Ratio TEST REPORT

Project :	Golden Sands Development
Location:	Papamoa, Tauranga
Client :	Golder Associates (NZ) Ltd
BH/TP/Sample ID:	TP01 -S12 0.5-1.1 Specimen depth: 0.95-1.00m
Sampled by :	Golder
Date sampled:	29/01/2020
Sampling method :	Pushtube
Sample condition :	As received
Sample description :	Fibrous PEAT, Black, moist, firm-stiff, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_7_oed
Client Ref:	

OEDOMETER APPARATUS No: Five



Test Method:		Notes:
One Dimensional Consolidation Test:	NZS 4402:1986 Test 7.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.

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IANZ Approved Signatory

Designation : *Laboratory Manager*
Date : 7/02/2020

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ONE DIMENSIONAL CONSOLIDATION PROPERTIES
TEST RESULT REPORT

Project : Golden Sands Development
Location: Papamoa, Tauranga
Client : Golder Associates (NZ) Ltd
BH/TP/Sample ID: TP01 -S13 1.0-1.6 Specimen depth: 1.50-1.55m
Sampled by : Client
Date sampled: 29/01/2020
Sampling method : Pushtube
Sample condition : As received
Sample description : Spongy PEAT, Black, wet, firm, slightly plastic to moderately plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_8_oed
Client Ref:	

OEDOMETER APPARATUS No: Four

SOIL PROPERTIES

Specimen Dimensions:	
Diameter (mm):	50.06
Initial height (mm):	19.00
Final height (mm):	8.95
Initial mass of sample (g):	37.29

Initial Wet Density	pbi (t/m³)	1.00
Initial Dry Density	pdi (t/m³)	0.12
Final Dry Density	pdf (t/m³)	0.26
Initial Void Ratio	eo	9.02
Final Void Ratio	ef	3.72
Initial Degree of Saturation	Si (%)	97
Final Degree of Saturation	Sf (%)	100
Solid Particle Density (Assumed)	Gs (t/m³)	1.25
INITIAL Water Content	Wi (%)	699.1
FINAL Water Content	Wf (%)	297.3

CONSOLIDATION PROPERTIES

PRESSURE RANGE (kPa)	Pressure Increment (dp)	Void Ratio (e)	Intercept t90 (min)	Volume Compressibilty Mv=m²/MN	Coeff. of Consolidation Cv=m²/year	Coeff. of Permeability k=m/year	
0 - 5	5	9.019	-	-	-		
5 - 12.5	7.5	8.874	2.370	1.90	17	3.2 x10 -1	
12.5 - 25	12.5	8.510	7.847	2.90	5	1.4 x10 -1	
25 - 50	25	7.541	7.755	4.10	4.7	1.9 x10 -1	
50 - 100	50	6.065	14.904	3.50	2	6.6 x10 -2	
100 - 200	100	4.665	22.199	2.00	0.9	1.7 x10 -2	
200 - 400	200	3.576	36.334	0.96	0.35	3.3 x10 -3	
400 - 800	400	2.761	32.961	0.45	0.25	1.1 x10 -3	
800 - 5	-	3.717	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

Test Methods:		Notes:
One Dimensional Consolidation Test.	NZS 4402:1986 Test 7.1	Sample is saturated during test.
Water Content	NZS 4402:1986 Test 2.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

Sampling is not covered by IANZ Accreditation. Results apply only to sample tested.
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IANZ Approved Signatory

Designation : *Laboratory Manager*
Date : 7/02/2020

IANZ ACCREDITED LABORATORY
All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

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Quality Management Systems Certified to ISO 9001
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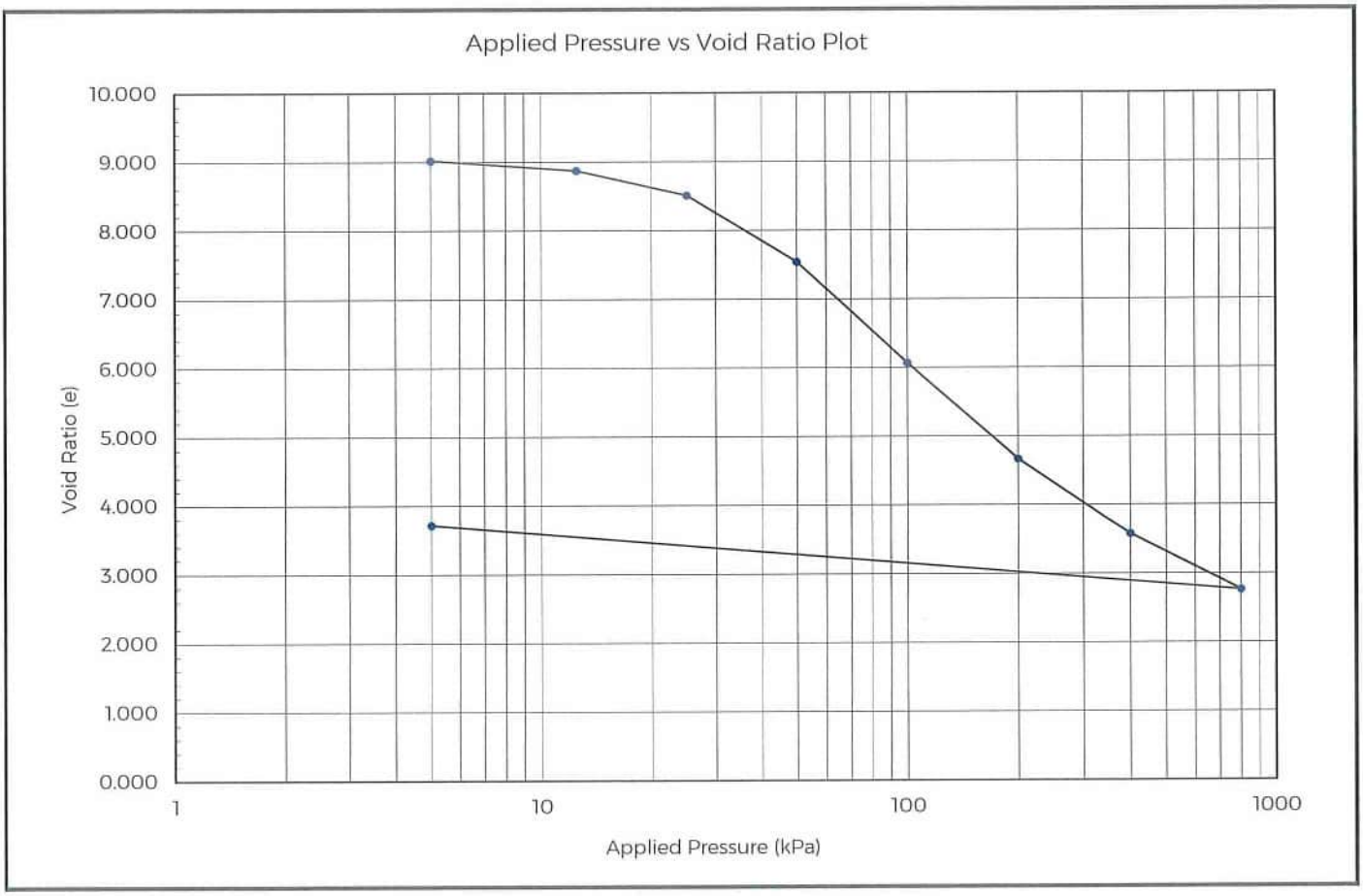
Telephone +64 7 856 2870
Website www.wsp.com/nz

ONE DIMENSIONAL CONSOLIDATION PROPERTIES
Applied Pressure vs Void Ratio TEST REPORT

Project :	Golden Sands Development
Location:	Papamoa, Tauranga
Client :	Golder Associates (NZ) Ltd
BH/TP/Sample ID:	TP01 -S13 1.0-1.6 Specimen depth: 1.50-1.55m
Sampled by :	Client
Date sampled:	29/01/2020
Sampling method :	Pushtube
Sample condition :	As received
Sample description :	Spongy PEAT, Black, wet, firm, slightly plastic to moderately plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_8_oed
Client Ref:	

OEDOMETER APPARATUS No: Four



Test Method:		Notes:
One Dimensional Consolidation Test:	NZS 4402:1986 Test 7.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

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ONE DIMENSIONAL CONSOLIDATION PROPERTIES
TEST RESULT REPORT

Project : Golden Sands Development
Location: Papamoa. Tauranga
Client : Golder Associates (NZ) Ltd
BH/TP/Sample ID: TP05-S07 0.5-1.1 Specimen depth: 1.00-1.05m
Sampled by : Client
Date sampled: 29/01/2020
Sampling method : Pushtube
Sample condition : As received
Sample description : Organic SILT, minor sand, trace rootlets, minor wood. Black, moist-wet. Firm, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_9_oed
Client Ref:	

OEDOMETER APPARATUS No: Three

SOIL PROPERTIES

Specimen Dimensions:	
Diameter (mm):	50.06
Initial height (mm):	19.03
Final height (mm):	10.62
Initial mass of sample (g):	38.72

Initial Wet Density	pbi (t/m³)	1.03
Initial Dry Density	pdi (t/m³)	0.31
Final Dry Density	pdf (t/m³)	0.56
Initial Void Ratio	eo	6.57
Final Void Ratio	ef	3.22
Initial Degree of Saturation	Si (%)	83
Final Degree of Saturation	Sf (%)	99
Solid Particle Density (Assumed)	Gs (t/m³)	2.35
INITIAL Water Content	Wi (%)	233.0
FINAL Water Content	Wf (%)	136.2

CONSOLIDATION PROPERTIES

PRESSURE RANGE (kPa)	Pressure Increment (dp)	Void Ratio (e)	Intercept t90 (min)	Volume Compressibilty Mv=m²/MN	Coeff. of Consolidation Cv=m²/year	Coeff. of Permeability k=m/year	
0 - 5	5	6.540	-	-	-		
5 - 12.5	7.5	6.456	0.983	1.50	41	5.9 x10 -1	
12.5 - 25	12.5	6.271	1.668	2.00	23	4.5 x10 -1	
25 - 50	25	5.801	1.287	2.60	29	7.3 x10 -1	
50 - 100	50	5.020	1.837	2.30	18	4.0 x10 -1	
100 - 200	100	4.175	2.381	1.40	11	1.5 x10 -1	
200 - 400	200	3.396	4.167	0.75	4.5	3.3 x10 -2	
400 - 800	400	2.705	0.812	0.39	17	6.4 x10 -2	
800 - 5	-	3.223	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

Test Methods:		Notes:
One Dimensional Consolidation Test.	NZS 4402:1986 Test 7.1	Sample is saturated during test.
Water Content	NZS 4402:1986 Test 2.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

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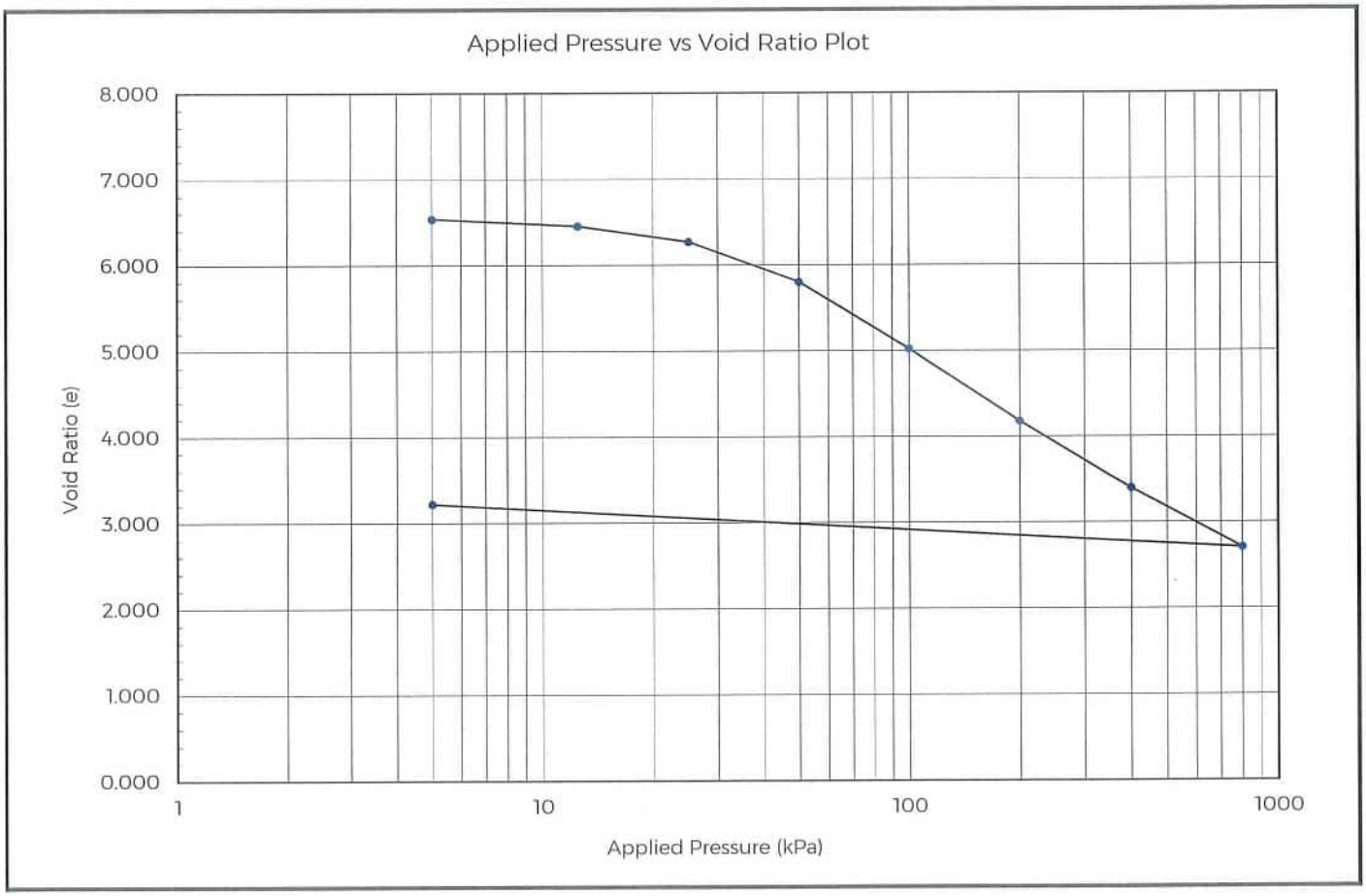
ONE DIMENSIONAL CONSOLIDATION PROPERTIES
Applied Pressure vs Void Ratio TEST REPORT

Project :	Golden Sands Development
Location:	Papamoa. Tauranga
Client :	Golder Associates (NZ) Ltd
BH/TP/Sample ID:	TP05-S07 0.5-1.1 Specimen depth: 1.00-1.05m
Sampled by :	Client
Date sampled:	29/01/2020
Sampling method :	Pushtube
Sample condition :	As received
Sample description :	Organic SILT, minor sand, trace rootlets, minor wood. Black, moist-wet. Firm, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_9_oed
Client Ref:	

OEDOMETER APPARATUS No: Three



Test Method:		Notes:
One Dimensional Consolidation Test:	NZS 4402:1986 Test 7.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-05/02/20
Date reported : 7/02/2020

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ONE DIMENSIONAL CONSOLIDATION PROPERTIES
TEST RESULT REPORT

Project : Golden Sands Development
Location: Papamoa, Tauranga
Client : Golder Associates (NZ) Ltd
BH/TP/Sample ID: TP08 -S3 0.3-0.8 Specimen depth: 0.70-0.75m
Sampled by : Client
Date sampled: 30/01/2020
Sampling method : Pushtube
Sample condition : As received
Sample description : Fibrous PEAT, Black, wet, firm, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_10_oed
Client Ref:	

OEDOMETER APPARATUS No: One

SOIL PROPERTIES

Specimen Dimensions:	
Diameter (mm):	50.02
Initial height (mm):	19.02
Final height (mm):	7.65
Initial mass of sample (g):	37.72

Initial Wet Density	pbi (t/m³)	1.01
Initial Dry Density	pdi (t/m³)	0.13
Final Dry Density	pdf (t/m³)	0.31
Initial Void Ratio	eo	13.63
Final Void Ratio	ef	4.89
Initial Degree of Saturation	Si (%)	95
Final Degree of Saturation	Sf (%)	100
Solid Particle Density (Assumed)	Gs (t/m³)	1.85
INITIAL Water Content	Wi (%)	698.3
FINAL Water Content	Wf (%)	263.2

CONSOLIDATION PROPERTIES

PRESSURE RANGE (kPa)	Pressure Increment (dp)	Void Ratio (e)	Intercept t90 (min)	Volume Compressibilty Mv=m²/MN	Coeff. of Consolidation Cv=m²/year	Coeff. of Permeability k=m/year	
0 - 5	5	13.472	10.737	2.20	3.7	8.1 x10 -2	
5 - 12.5	7.5	13.052	1.745	3.90	23	8.5 x10 -1	
12.5 - 25	12.5	11.941	6.921	6.30	5.3	3.3 x10 -1	
25 - 50	25	10.165	5.743	5.50	5.5	2.9 x10 -1	
50 - 100	50	8.058	15.781	3.80	1.5	5.5 x10 -2	
100 - 200	100	6.271	20.327	2.00	0.76	1.5 x10 -2	
200 - 400	200	4.813	24.339	1.00	0.41	4.0 x10 -3	
400 - 800	400	3.702	24.813	0.48	0.26	1.2 x10 -3	
800 - 5	-	4.885	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		
-	-	-	-	-	-		

Test Methods:		Notes:
One Dimensional Consolidation Test.	NZS 4402:1986 Test 7.1	Sample is saturated during test.
Water Content	NZS 4402:1986 Test 2.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-04/02/20
Date reported : 7/02/2020

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Designation : *Laboratory Manager*
Date : 7/02/2020

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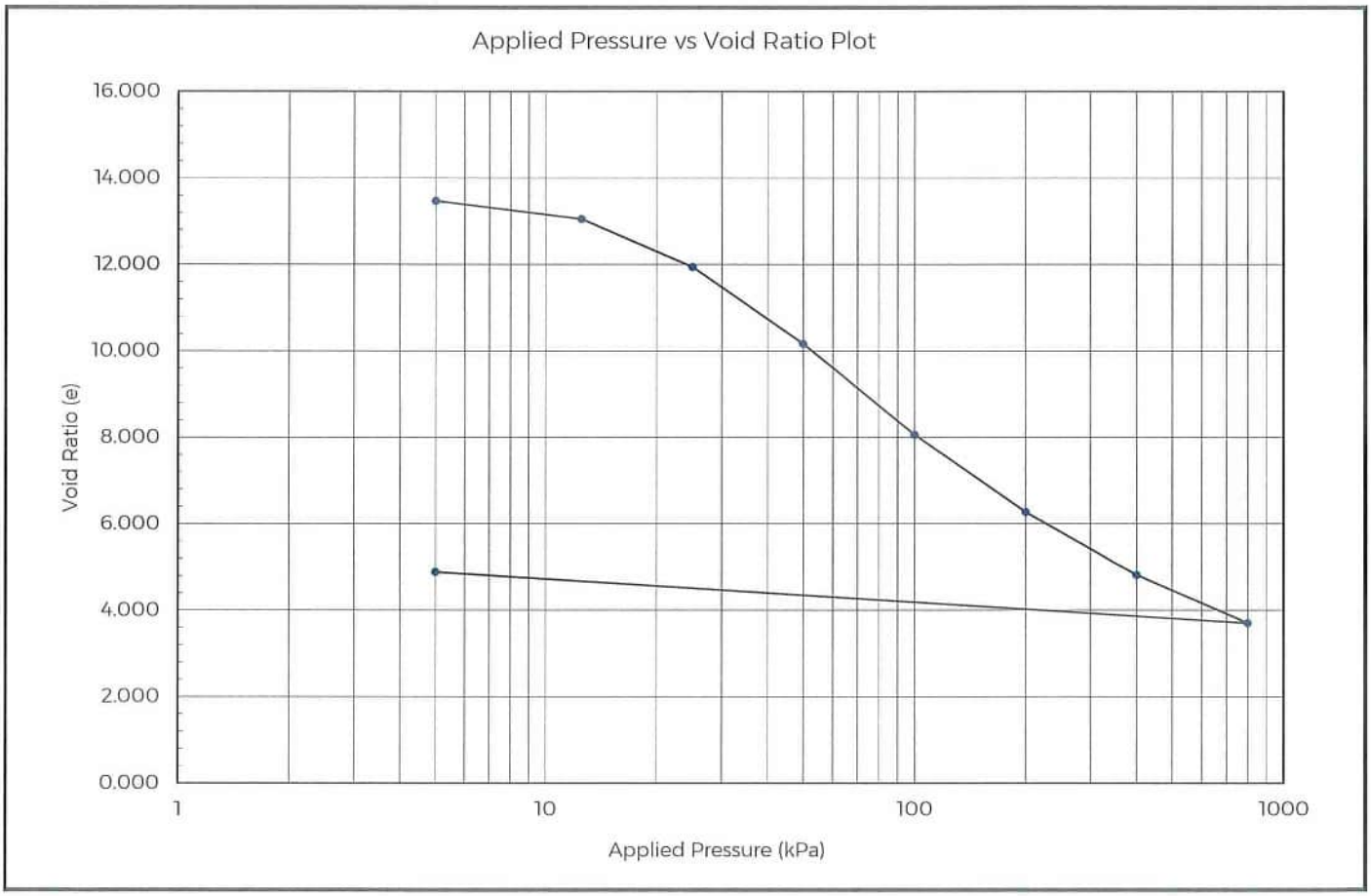
ONE DIMENSIONAL CONSOLIDATION PROPERTIES
Applied Pressure vs Void Ratio TEST REPORT

Project :	Golden Sands Development
Location:	Papamoa, Tauranga
Client :	Golder Associates (NZ) Ltd
BH/TP/Sample ID:	TP08 -S3 0.3-0.8 Specimen depth: 0.70-0.75m
Sampled by :	Client
Date sampled:	30/01/2020
Sampling method :	Pushtube
Sample condition :	As received
Sample description :	Fibrous PEAT, Black, wet, firm, slightly plastic

Project No:	2-68135.00
Lab Ref No:	HA5500_10_oed
Client Ref:	

OEDOMETER APPARATUS No: One



Test Method:		Notes:
One Dimensional Consolidation Test:	NZS 4402:1986 Test 7.1	Load Increments applied at 2.01 hr intervals

Date tested : 03-04/02/20
Date reported : 7/02/2020

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Date : 7/02/2020

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Website www.wsp.com/nz

3 October 2025
Our Ref: 1099908.0000.0.0/Rep1
Customer Ref: 19630.000.001

Engeo Limited
PO Box 25-047
Wellington 6146

Attention: Devon Halligan

Dear Devon

Wairakei South Development

Laboratory Test Report

Customer's Instructions

The detailed testing instructions were provided by the customer.

Sampling Procedure

Samples have been tested as received.

Sample Location Plan

Not applicable.

Samples

We received two push tube samples labelled with the location ID and sample depth.

Date(s) of Sample Receipt

22 August 2025

Test Method(s)

NZS 4402: 1986 Test 2.1 - Water Content

NZS 4402: 1986 Test 7.1 - Determination of the One-dimensional Consolidation Properties

Material Description

Descriptions are provided in the attached presentation pages.

Test Results

Test results are attached.

Test Remarks

Sample MBH04, 8.5 – 9.0 m

The sample contained a trace of shells. The portion we selected for testing looked smooth and had no shell on the outside of the sample. One 1 to 2 mm shell was found underneath the cutting ring in preparation. We removed it and filled with trimming to flatten the surface.

Sample MBH05, 8.5 – 9.0 m

The top of the sample contained a trace of hard lumps and shells. We selected a portion from the middle of the sample, which looked smooth and had no hard lump or shell on the outside. One 2 to 3 mm shell found underneath the cutting ring in preparation. We removed it and filled with trimming to flatten the surface.

The other test remarks are detailed on the presentation page.

General Remarks

Samples not destroyed during testing, will be retained for one month from the date of this report before being discarded.

Descriptions are enclosed for your information but are not covered under the IANZ endorsement of this report.

This report has been prepared for the benefit of Engeo Limited, with respect to the particular brief given to us and it cannot be relied upon in other contexts or for any other purpose without our prior review and agreement.

Please reproduce this report in full when transmitting to others or including in internal reports.

If we can be of any further assistance, feel free to get in touch. Contact details are provided at the bottom of the letterhead page.

GEOTECHNICS LTD

Report approved by:

.....
Helen Wang
Triaxial Laboratory Manager
Key Technical Person

Authorised for Geotechnics by:

.....
Steven Anderson
Project Director

ACCREDITED IANZ TESTING LABORATORY

All tests reported herein have been performed in accordance with the laboratory's scope of accreditation

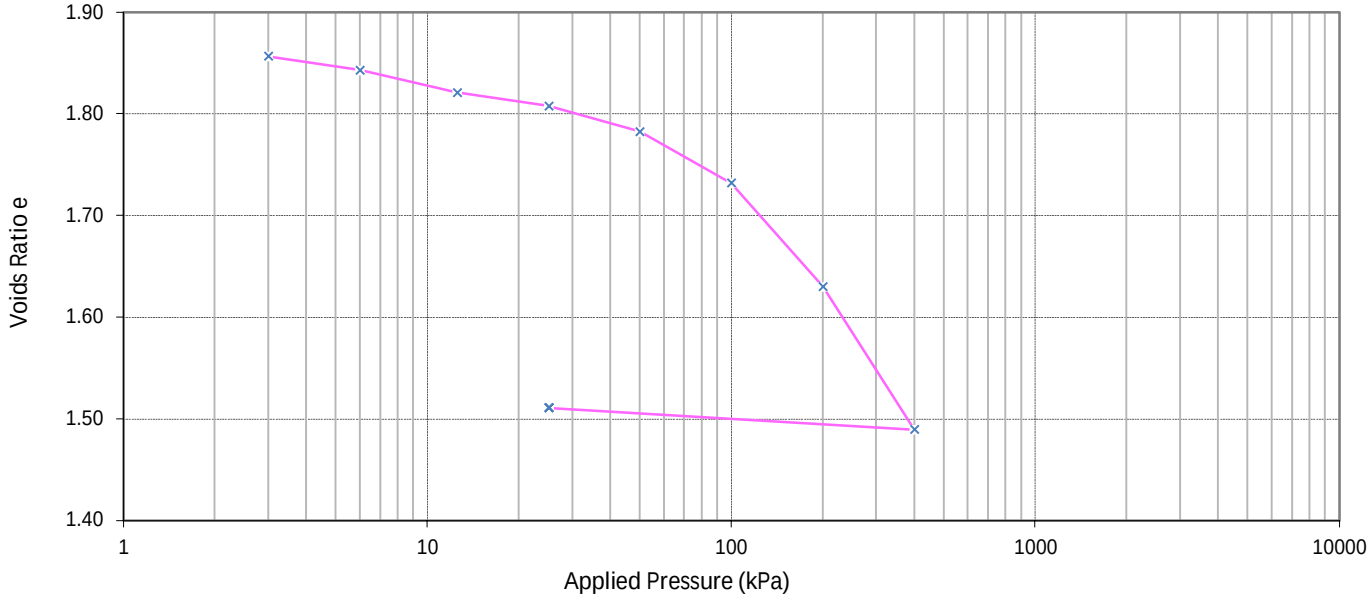
3-Oct-25
t:\geotechnicsgroup\projects\1099908\issueddocuments\20251003.wairakei south development.pihe.rep1.docx

GEOTECHNICS
1 Hill Street
Onehunga
Auckland
New Zealand
p. +64 9 356 3510

Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Testing Schedule Reference: --

Site/Location: Wairakei South Development Location ID: MBH04
Sample Ref.: -- Geotechnics ID: -- Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST



Sample Parameters

Initial Sample Height:	19.96	mm	Initial Water Content:	66.5	%
Initial Sample Diameter:	50.05	mm	Initial Saturation Degree:	94	%
Initial Bulk Density:	1.53	t/m³	Solid Density (assumed):	2.65	t/m³
Initial Dry Density:	0.92	t/m³	Temperature During Testing:	19.5 to 20.5	°C

One-Dimensional Consolidation Results

Test Status	Applied Pressure (kPa)	Void Ratio e	Pressure Increment (kPa)	Coefficient of Consolidation Cv (m^2/yr) Logarithm Time	Coefficient of Consolidation Cv (m^2/yr) Square-root Time	Coefficient of Volume Compressibility Mv
As received	0	1.879				
Loading & Unloading	3	1.856	0 to 3	130	129	2.6
	6	1.843	3 to 6	27	31	1.6
	12.5	1.821	6 to 12.5	16	29	1.2
	25	1.808	12.5 to 25	32	32	0.38
	50	1.782	25 to 50	30	27	0.36
	100	1.732	50 to 100	2.9	17	0.37
	200	1.630	100 to 200	37	36	0.37
	400	1.489	200 to 400	36	36	0.27
	25	1.511	400 to 25	NA	NA	NA

Sample History: Undisturbed core trimmed at natural water content.

Soil Description: SILT, with traces of shells and sand; bluish grey. Very soft, moist, highly dilatant. One shell with 1 to 2 mm diameter was removed and filled with trimming to get specimen surface flattened properly.

Test Remarks: Test results have been corrected for equipment deformation. The coefficients of consolidation Cv for each load stage have been derived by using a logarithm time method and a square-root time method. The calculations of void ratio are affected by the solid density value, which was assumed to be 2.65 t/m³ for the test. The Void Ratio e and the Coefficient of Volume Compressibility Mv derived for the first load stage may not be representative as the initial contact between the specimen and testing device may not be perfect, though a 1 kPa seating pressure was applied to the specimen before test commenced.

Tested by: PIHE Date: 17/09/2025 Approved by KTP: Date: 2/10/2025

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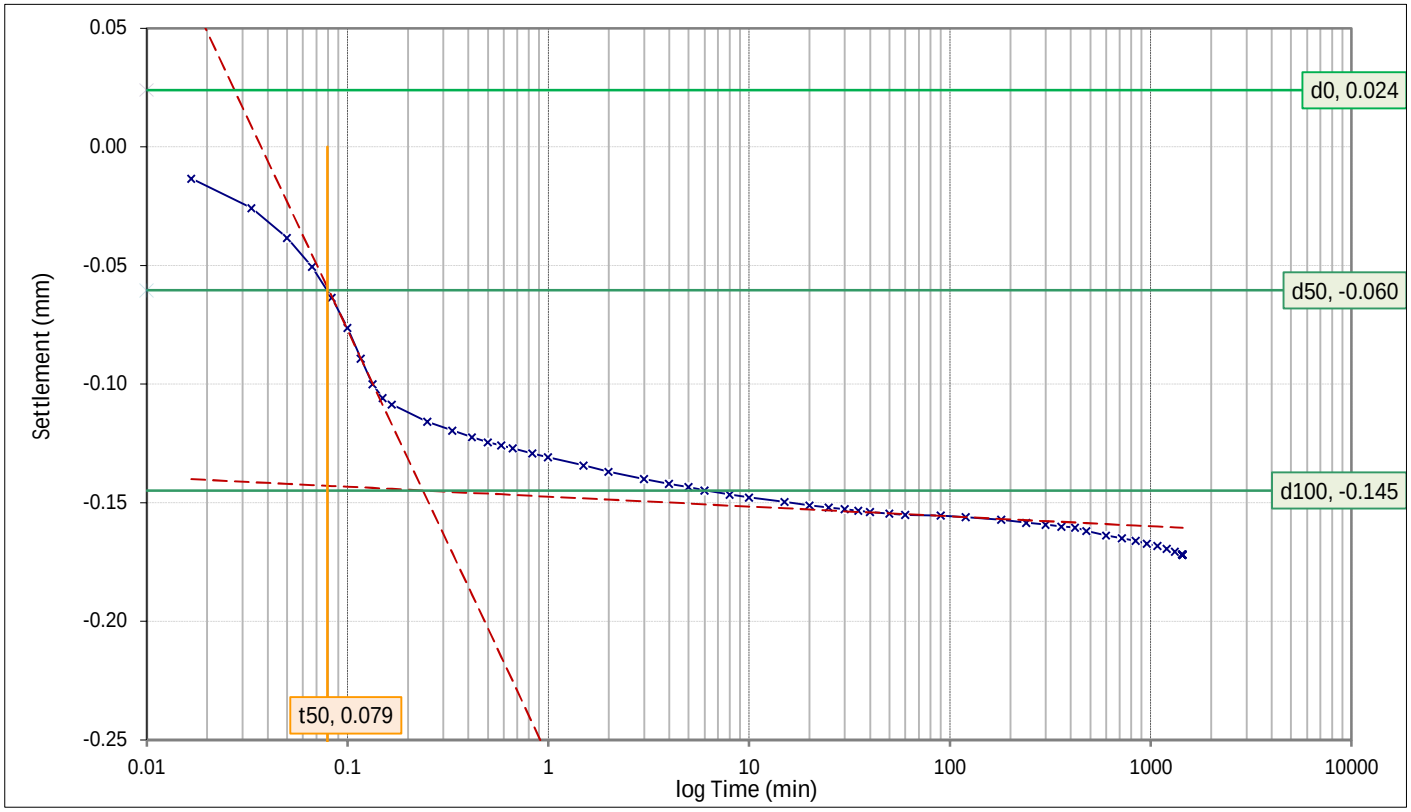
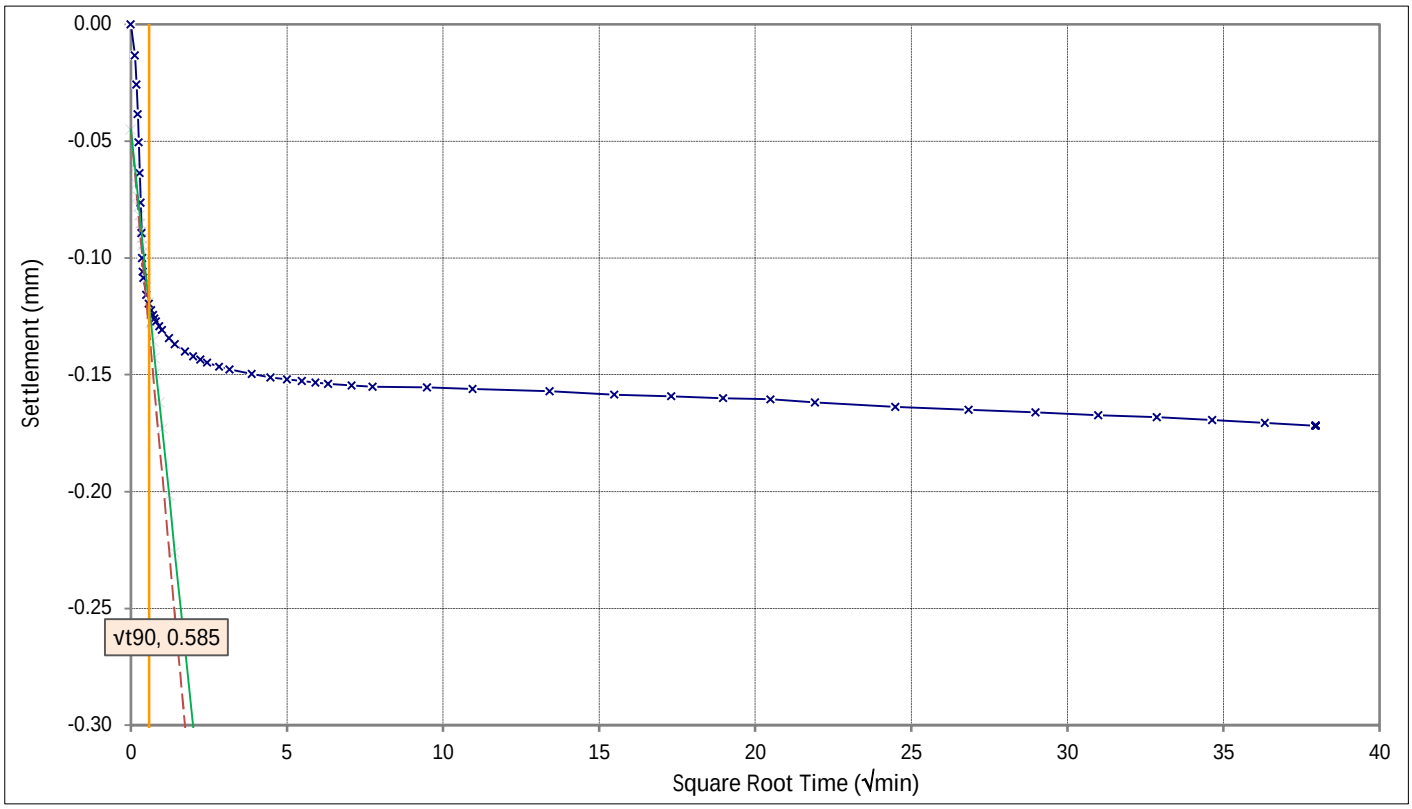
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 3 (kPa)





Tested by: PIHE Date: 17/09/2025 Approved by KTP: Date: 2/10/2025

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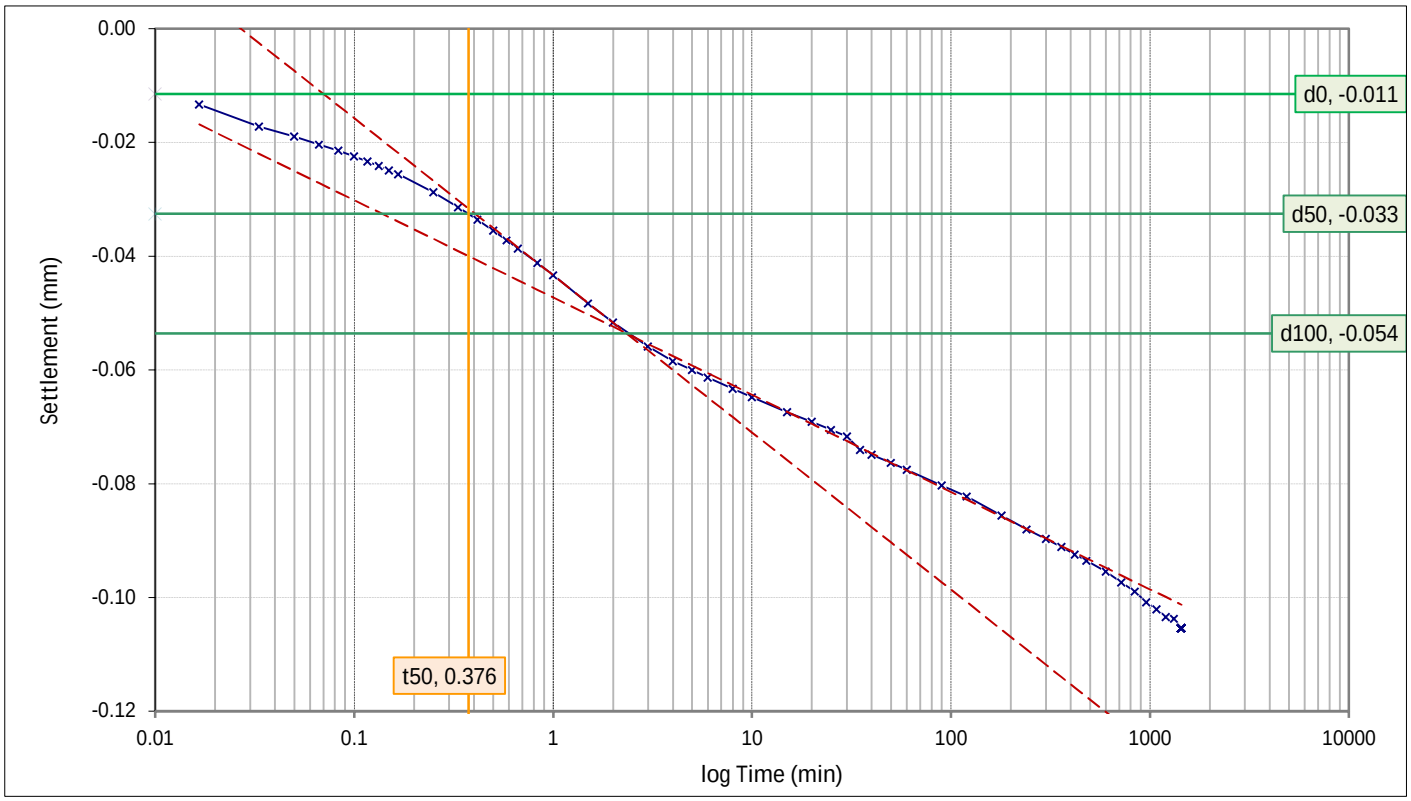
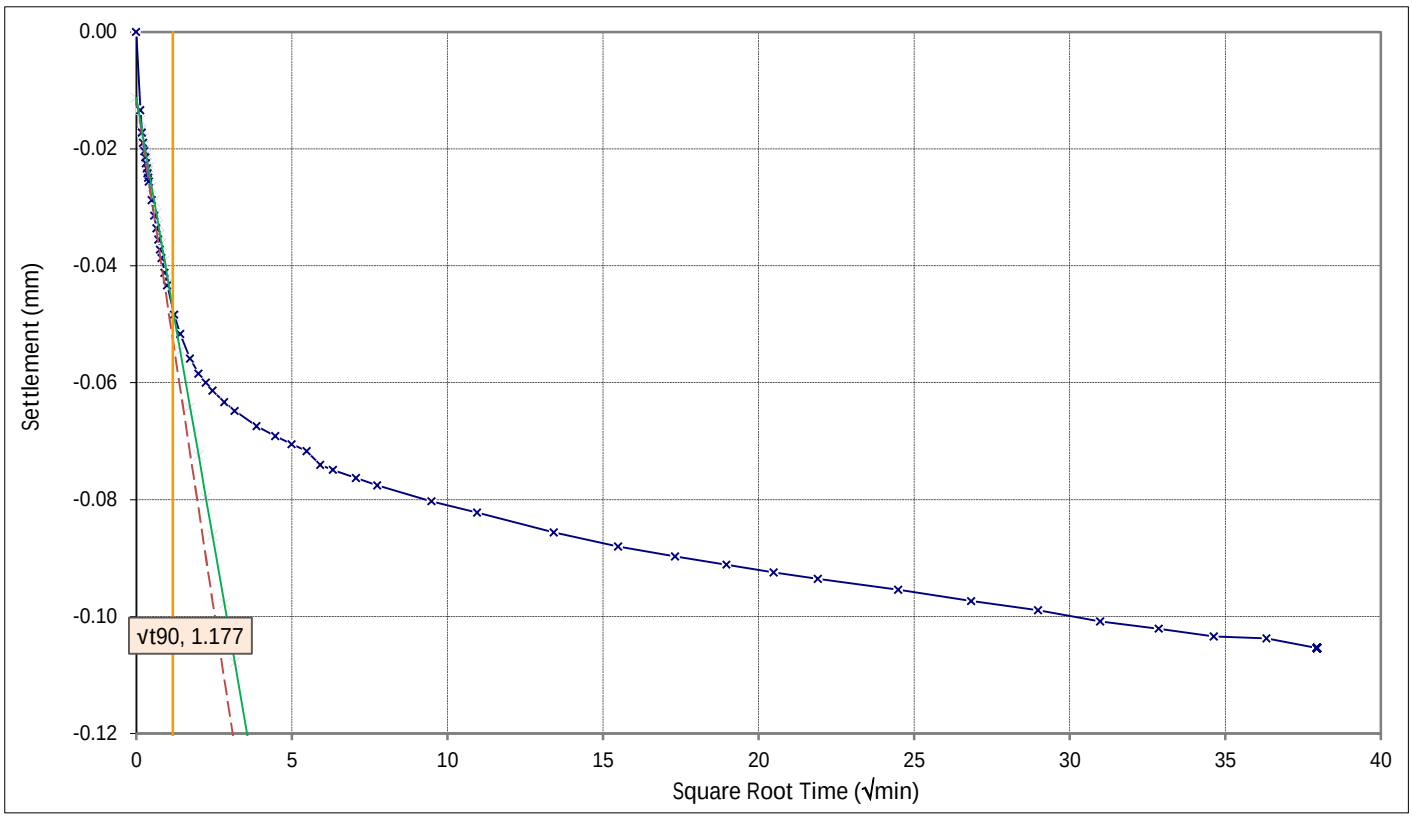
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development Location ID: MBH04
Sample Ref.: -- Geotechnics ID: -- Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 6 (kPa)





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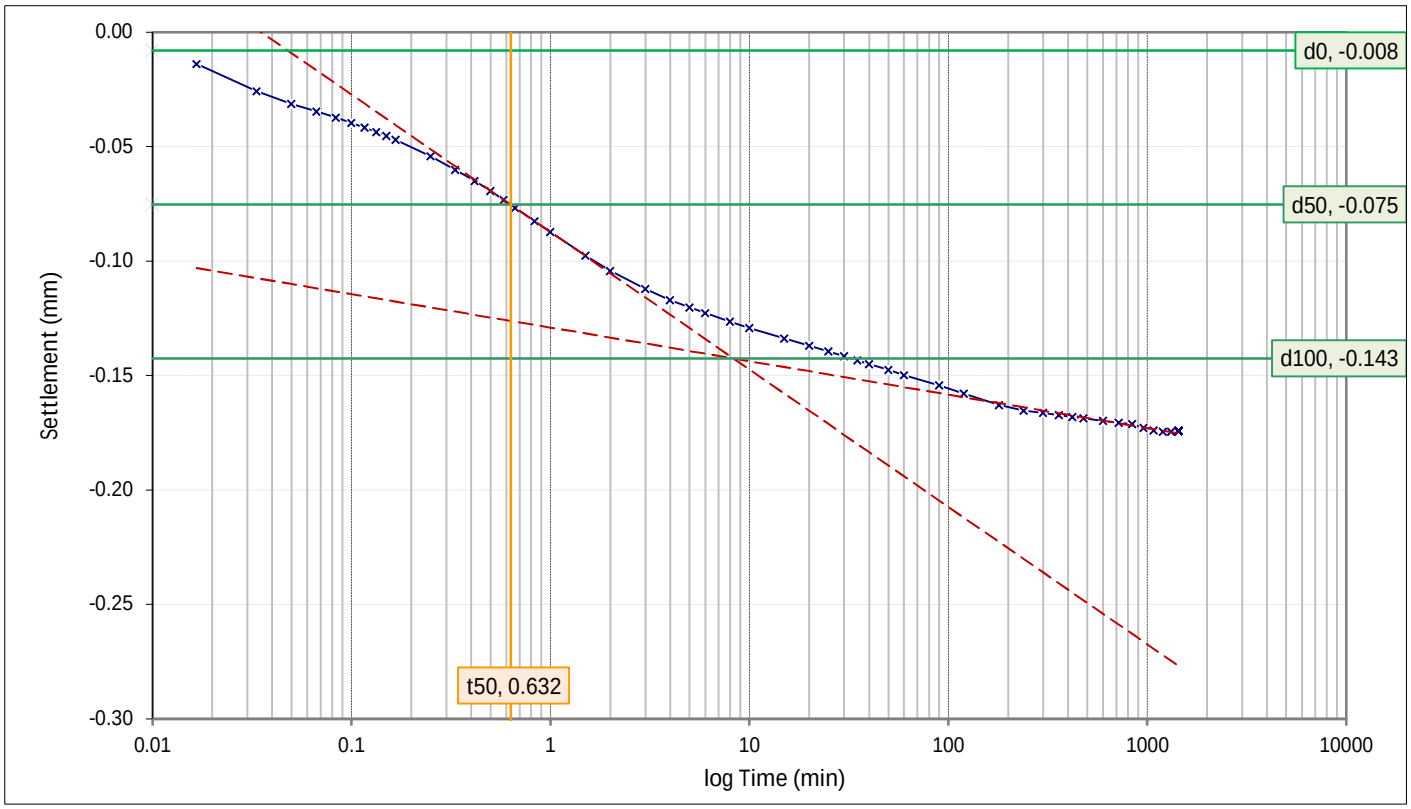
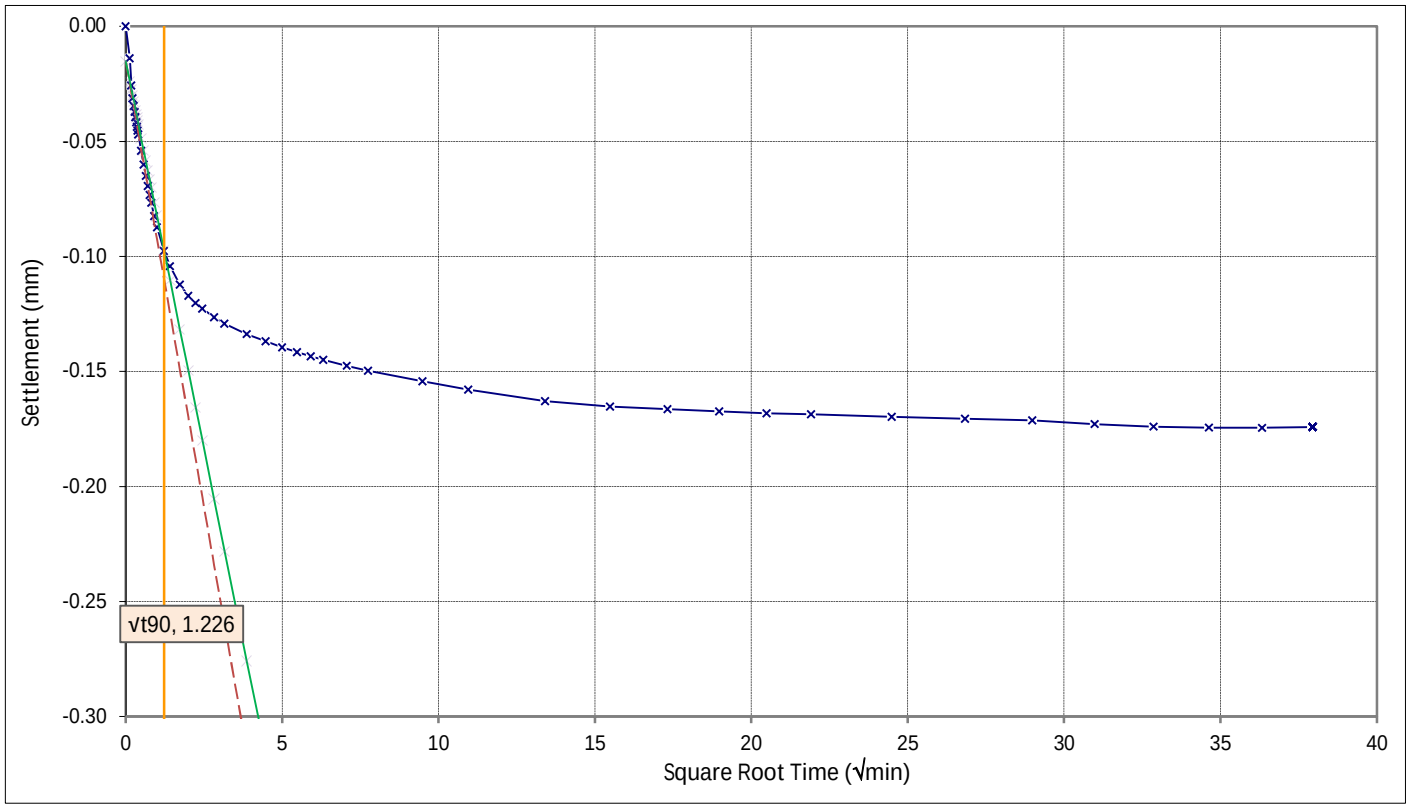
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 12.5 (kPa)





Tested by: PIHE Date: 17/09/2025 Approved by KTP: Date: 2/10/2025

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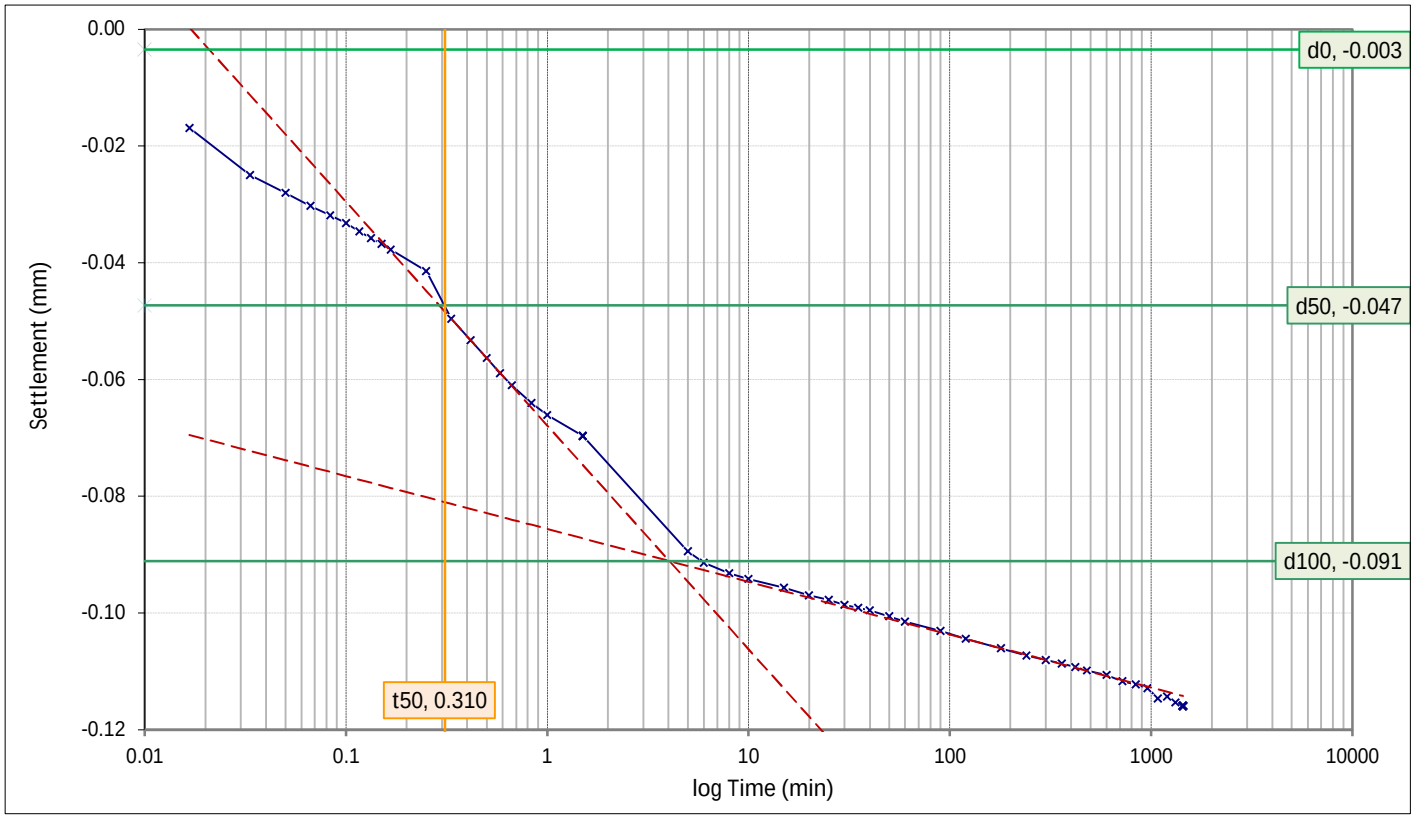
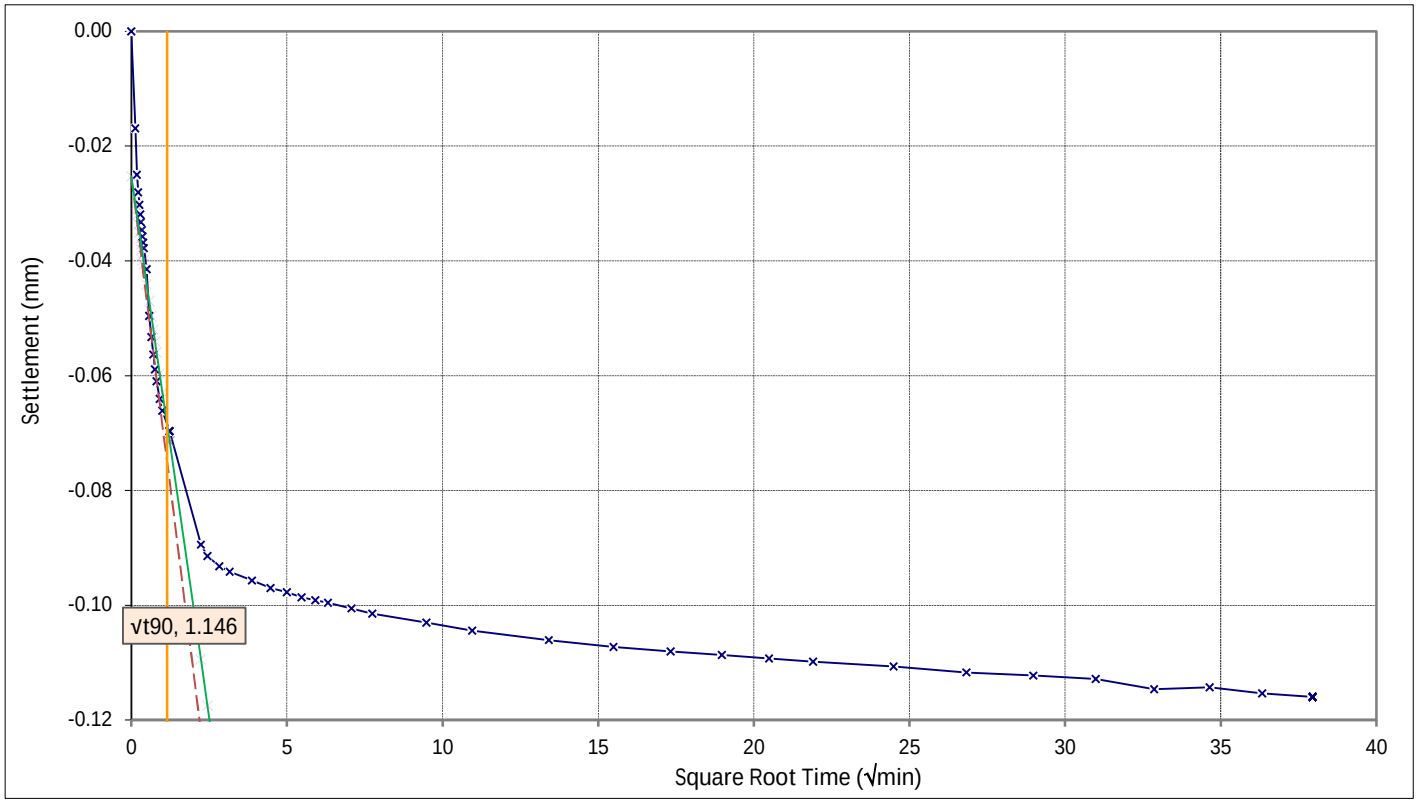
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development Location ID: MBH04
Sample Ref.: -- Geotechnics ID: -- Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 25 (kPa)





Tested by: PIHE Date: 17/09/2025 Approved by KTP: Date: 2/10/2025

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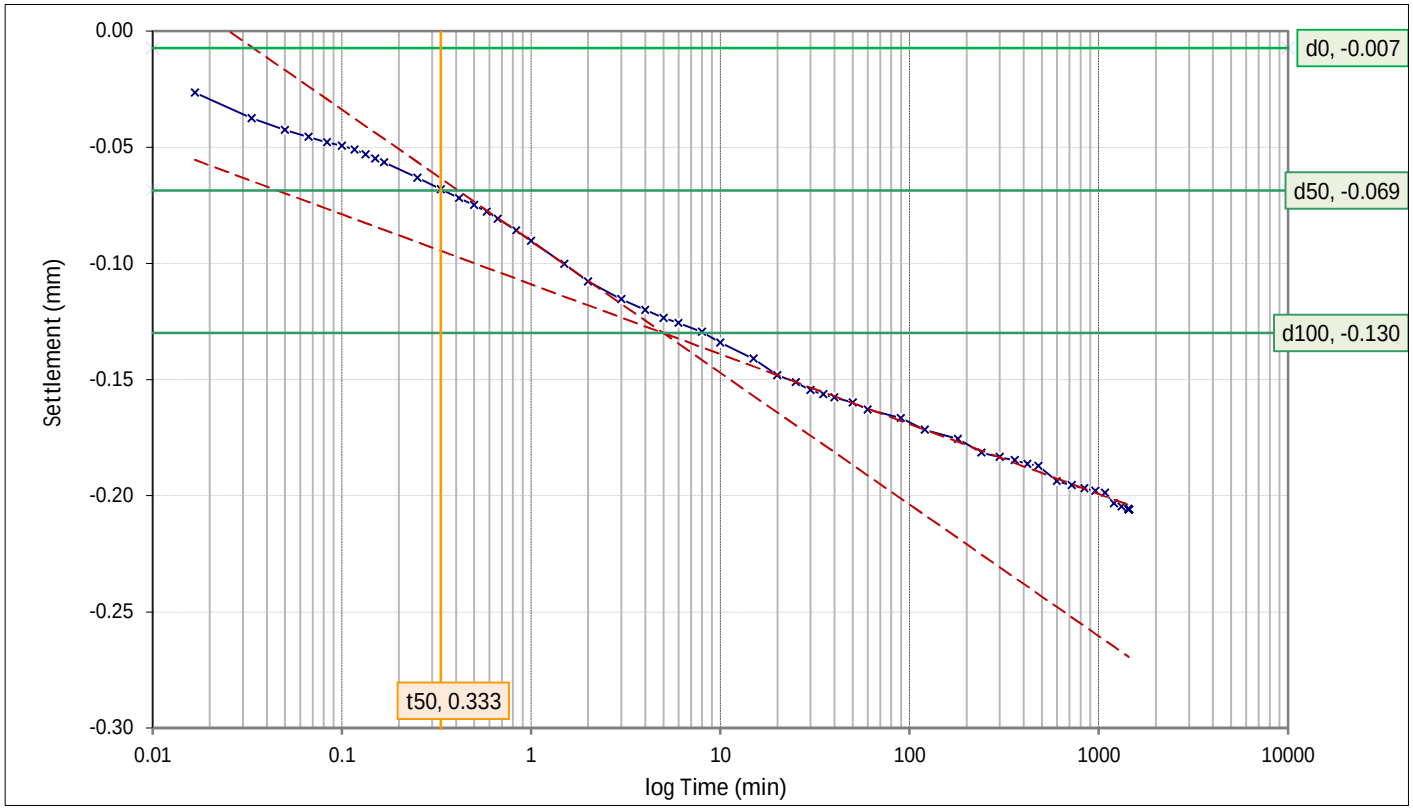
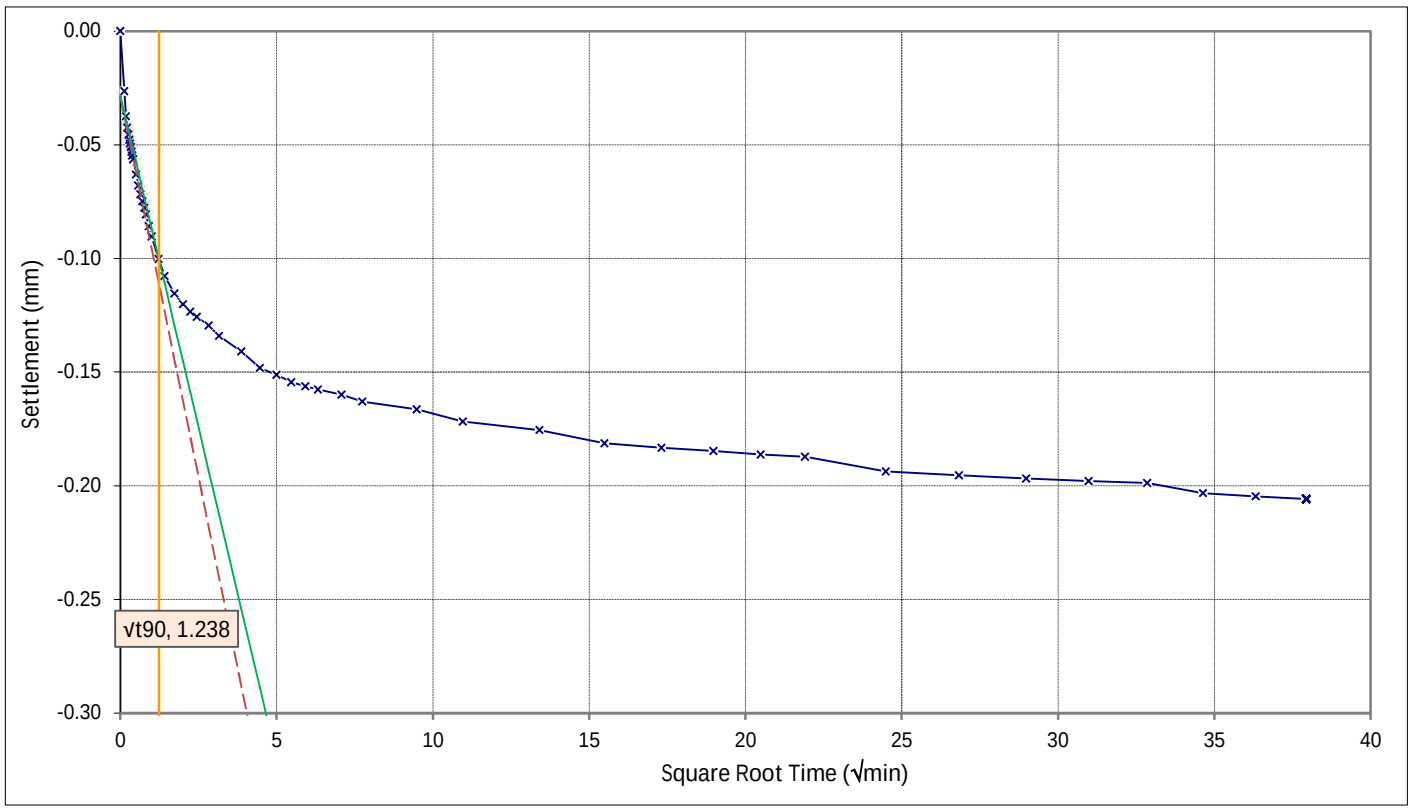
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 50 (kPa)





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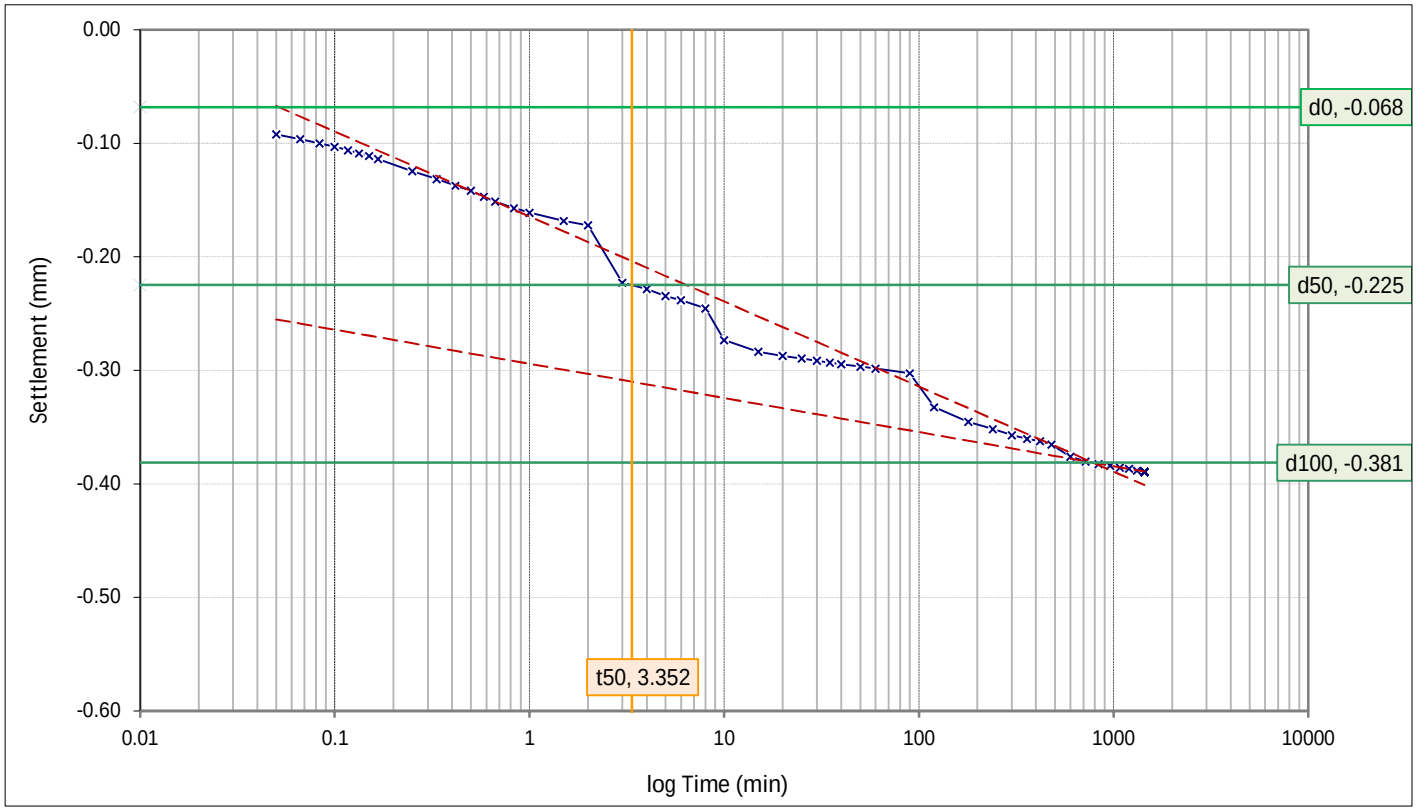
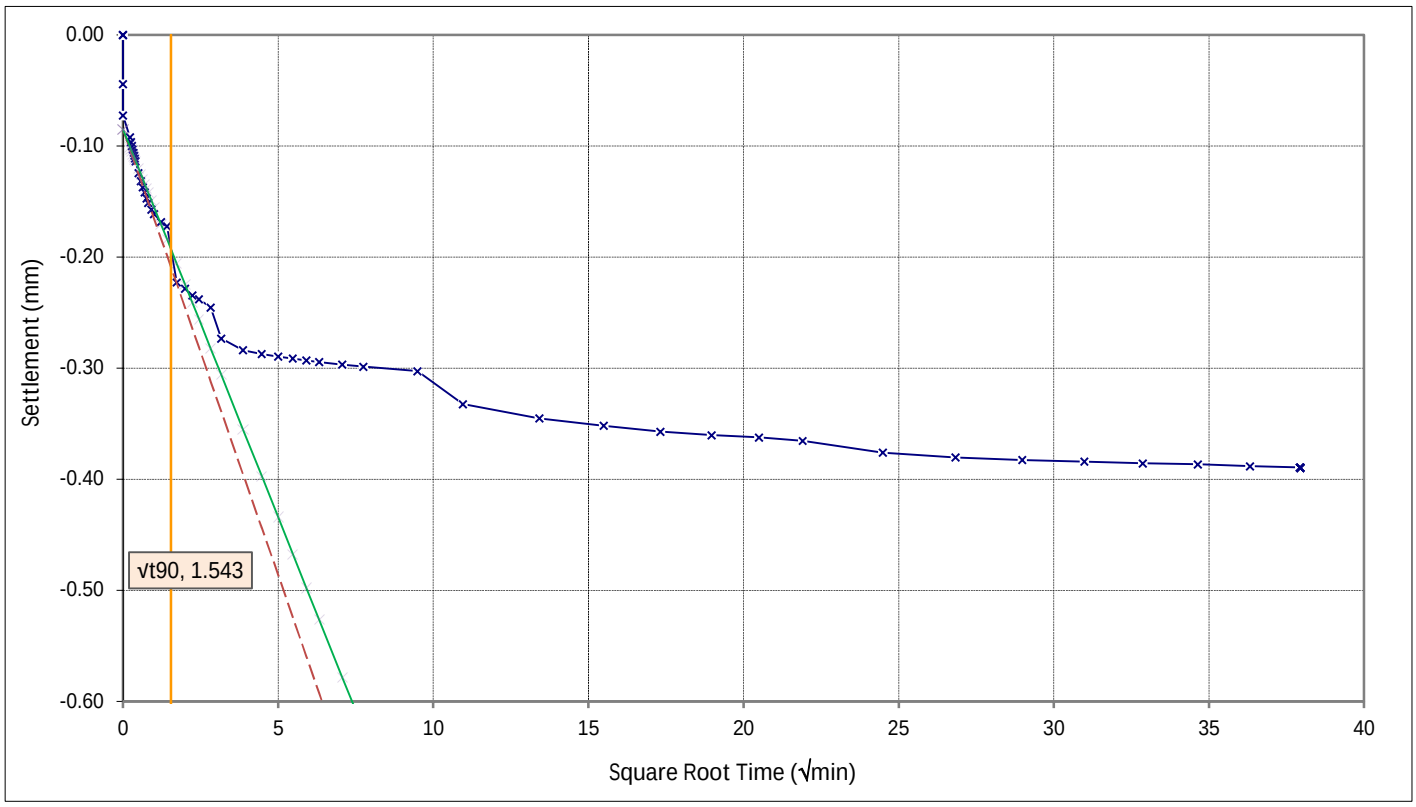
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 100 (kPa)





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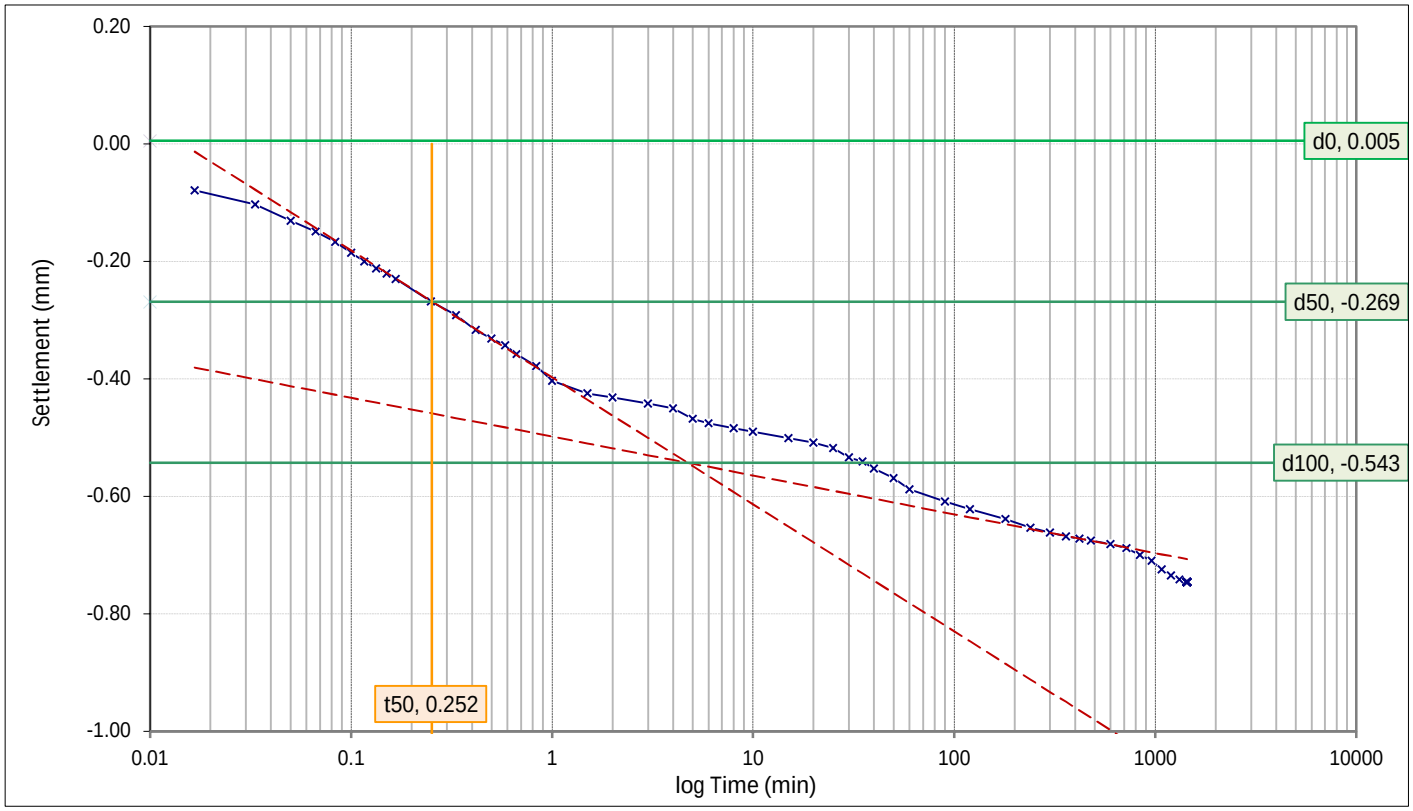
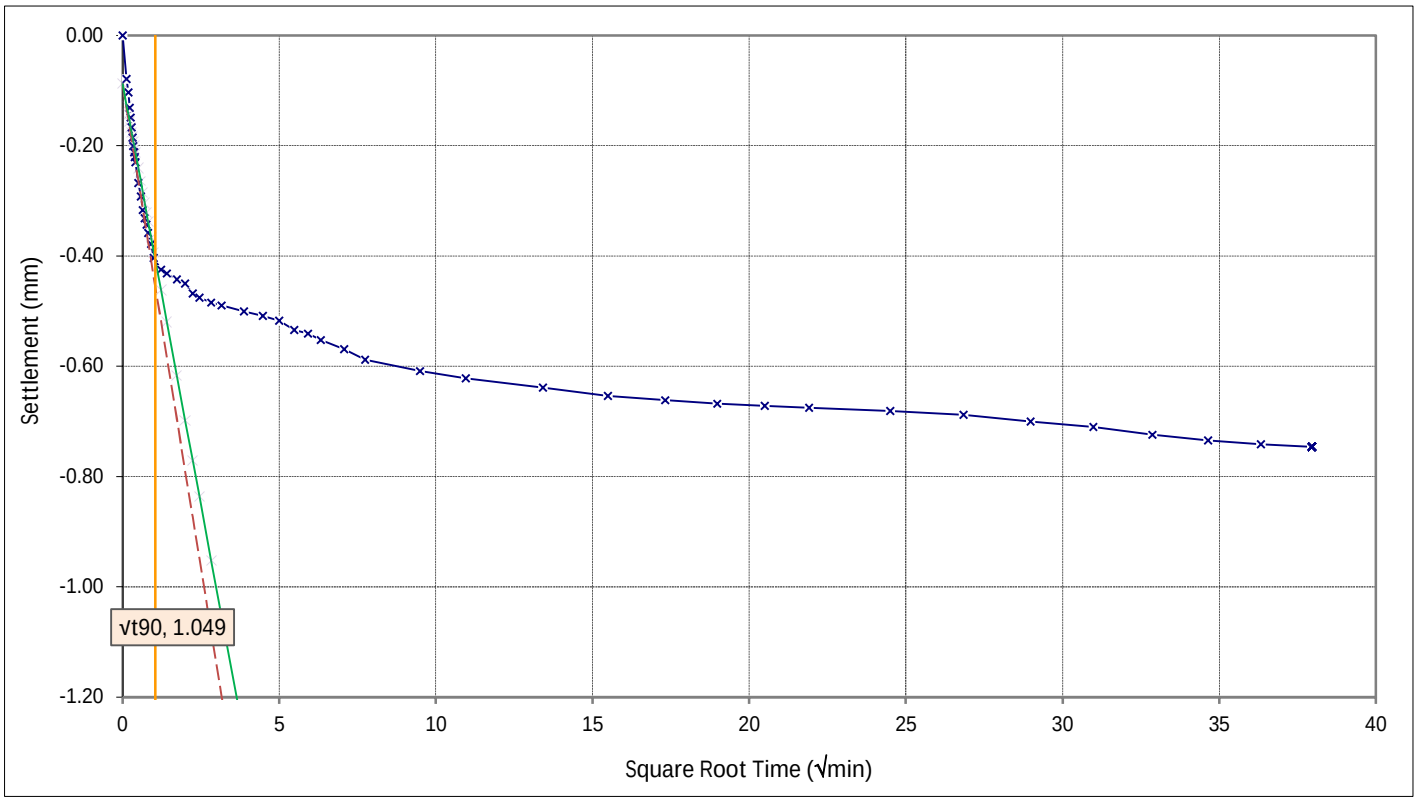
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 200 (kPa)





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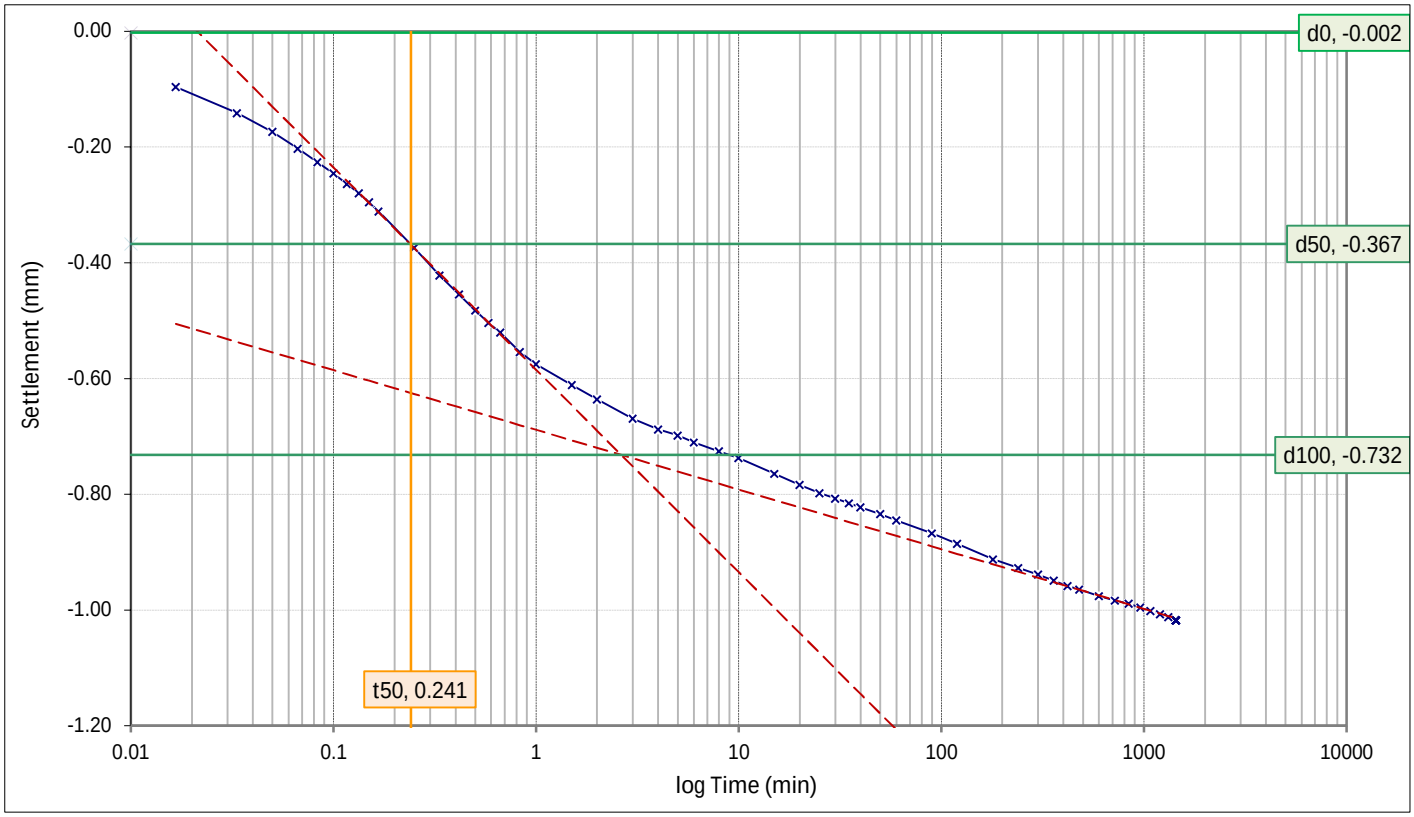
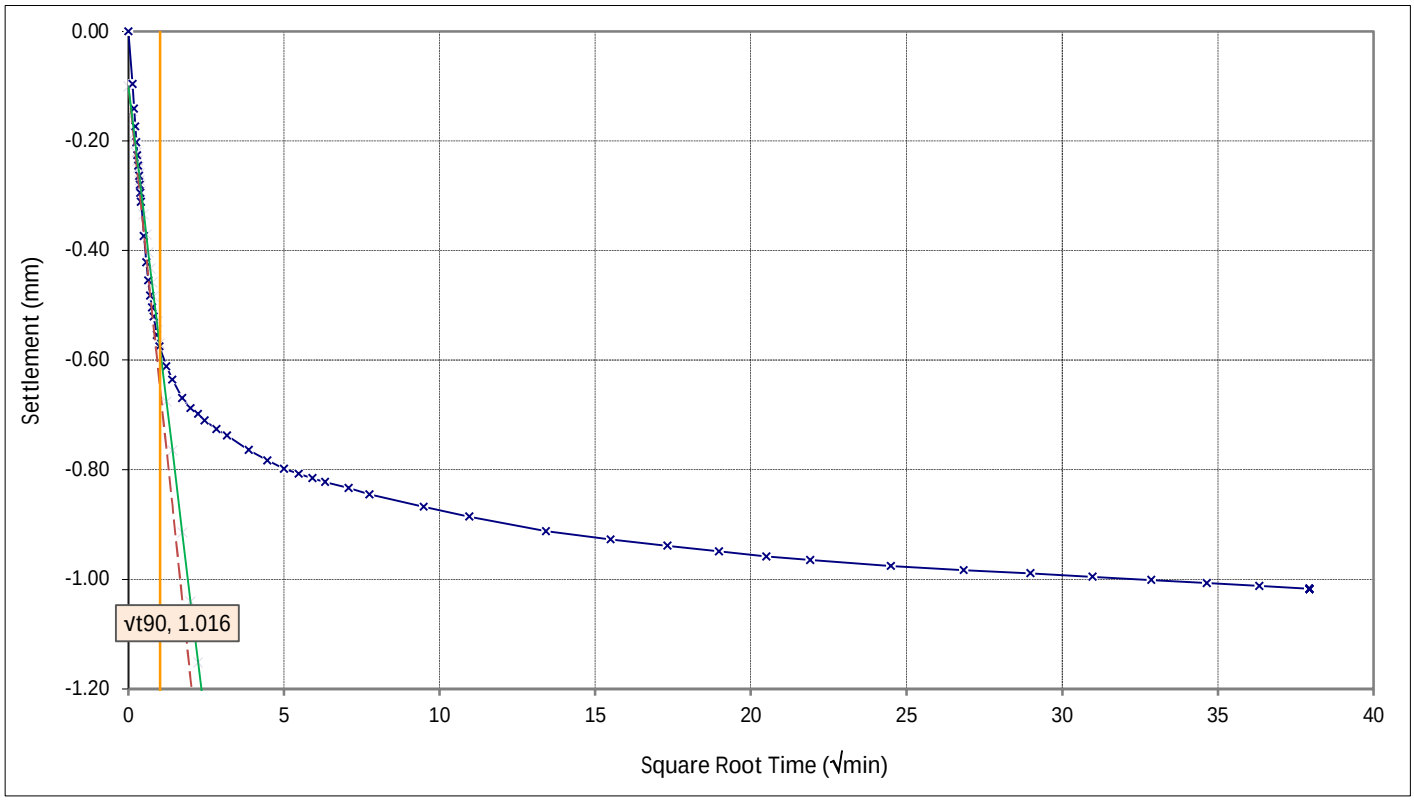
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 400 (kPa)





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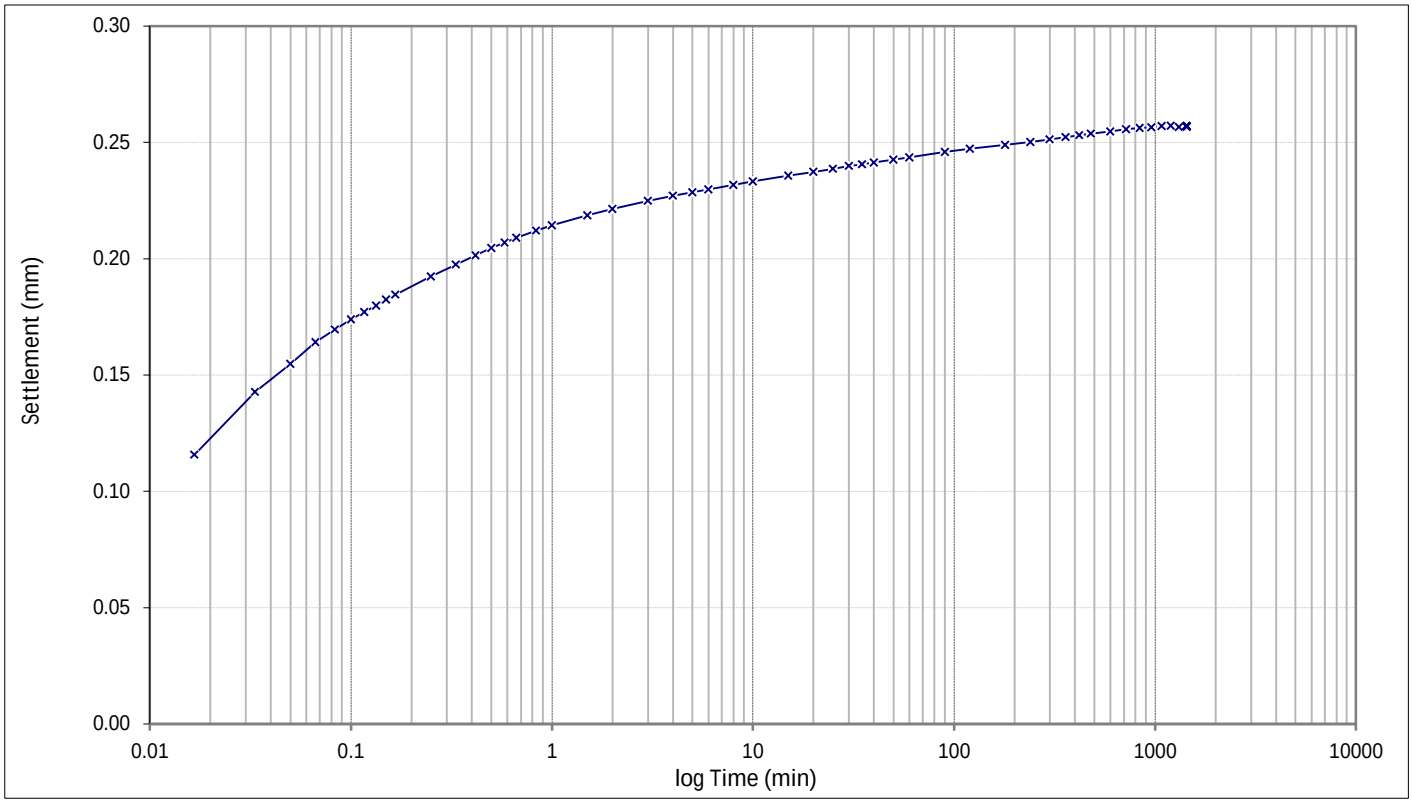
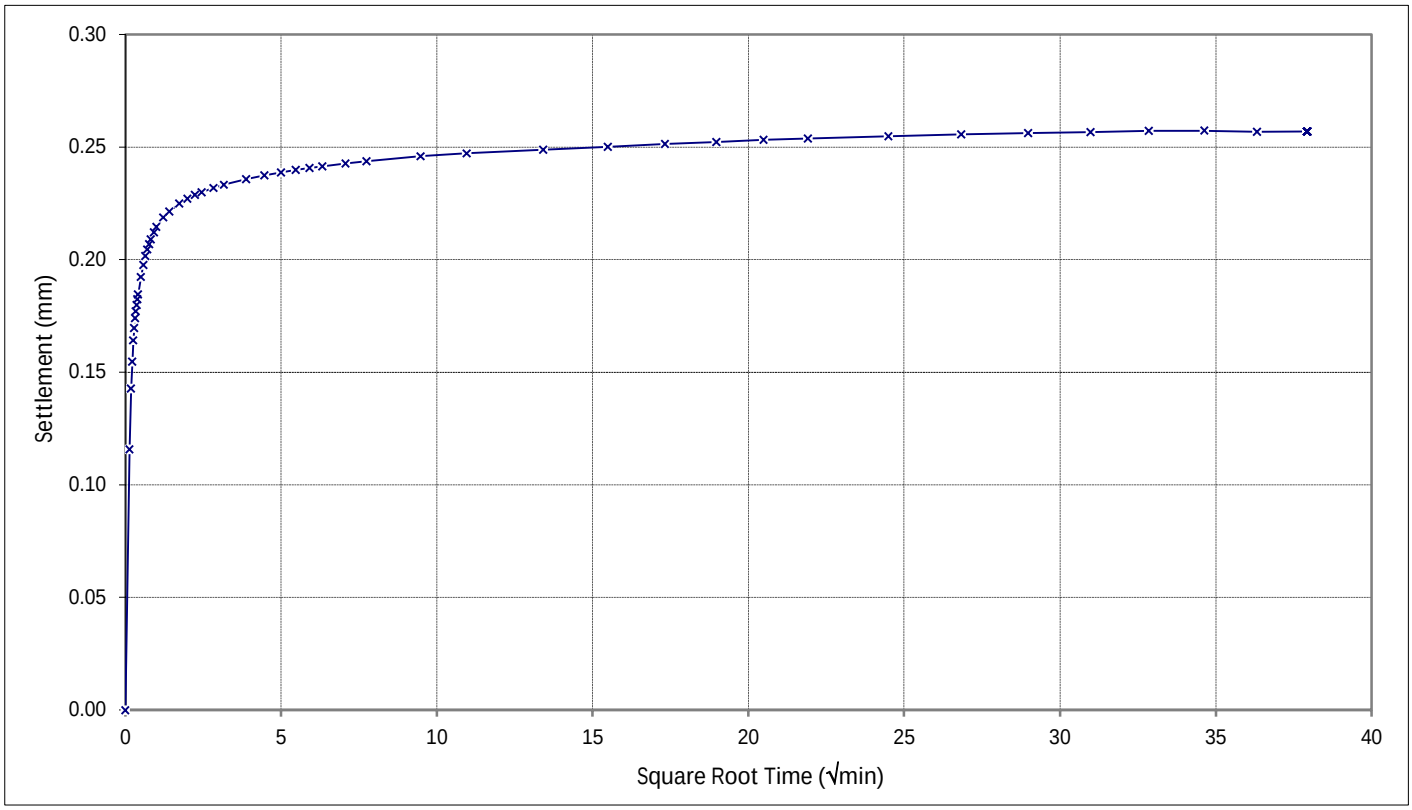
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH04
Sample Ref.: --
Geotechnics ID: --
Depth: 8.84 - 8.86 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 25 (kPa)





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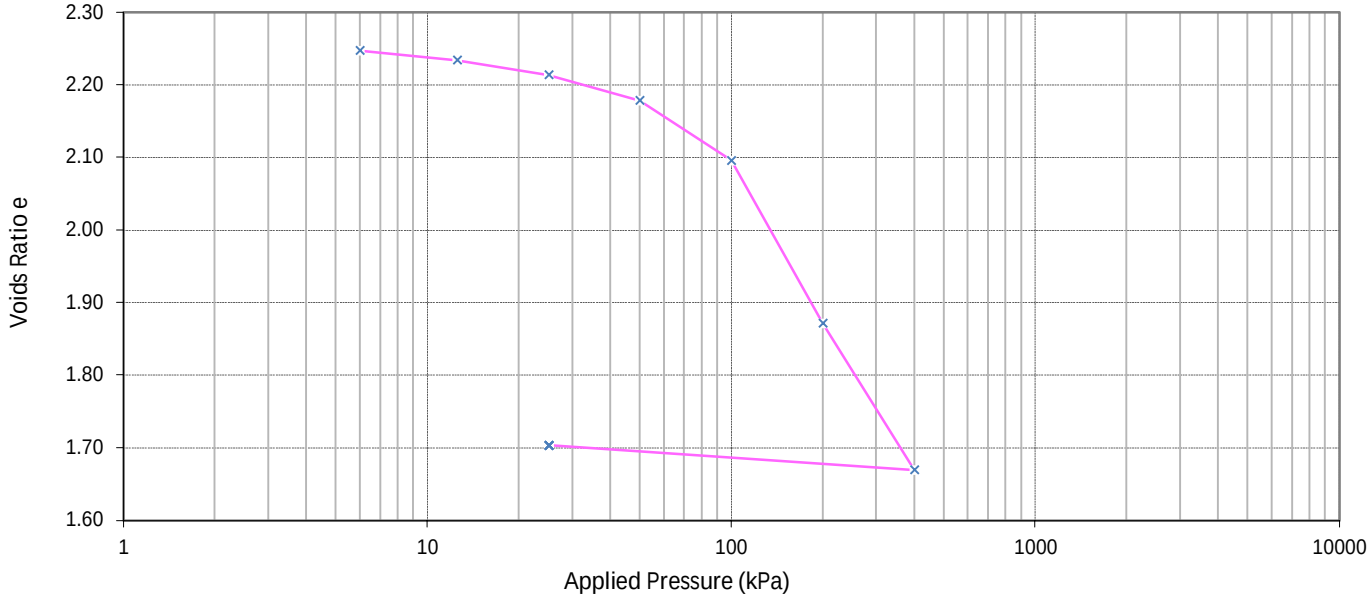
Geotechnics Project ID: 1099908.0000.0.0
Customer Project ID: 19630.000.001
Testing Schedule Reference: --

Site/Location: Wairakei South Development Location ID: MBH05
Sample Ref.: -- Geotechnics ID: -- Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST



Sample Parameters

Initial Sample Height:	19.95	mm	Initial Water Content:	79.2	%
Initial Sample Diameter:	50.05	mm	Initial Saturation Degree:	92	%
Initial Bulk Density:	1.45	t/m³	Solid Density (assumed):	2.65	t/m³
Initial Dry Density:	0.81	t/m³	Temperature During Testing:	19.5 to 20.0	°C

One-Dimensional Consolidation Results

Test Status	Applied Pressure (kPa)	Void Ratio e	Pressure Increment (kPa)	Coefficient of Consolidation Cv (m^2/yr) Logarithm Time	Coefficient of Consolidation Cv (m^2/yr) Square-root Time	Coefficient of Volume Compressibility Mv
As received	0	2.272				
Loading & Unloading	6	2.247	0 to 6	107	122	1.2
	12.5	2.234	6 to 12.5	61	72	0.63
	25	2.213	12.5 to 25	37	47	0.51
	50	2.178	25 to 50	18	37	0.44
	100	2.096	50 to 100	1.7	20	0.52
	200	1.871	100 to 200	9.6	17	0.73
	400	1.669	200 to 400	16	13	0.35
	25	1.703	400 to 25	NA	NA	NA

Sample History: Undisturbed core trimmed at natural water content.

Soil Description: SILT, with minor clay, traces of sand, and coarse sand-sized shells; brownish grey. Soft, moist, highly dilatant. One shell with 2 to 3 mm diameter was removed and filled with trimming to get specimen surface flattened properly.

Test Remarks: Test results have been corrected for equipment deformation. The coefficients of consolidation Cv for each load stage have been derived by using a logarithm time method and a square-root time method. The calculations of void ratio are affected by the solid density value, which was assumed to be 2.65 t/m³ for the test. The Void Ratio e and the Coefficient of Volume Compressibility Mv derived for the first load stage may not be representative as the initial contact between the specimen and testing device may not be perfect, though a 1 kPa seating pressure was applied to the specimen before test commenced.

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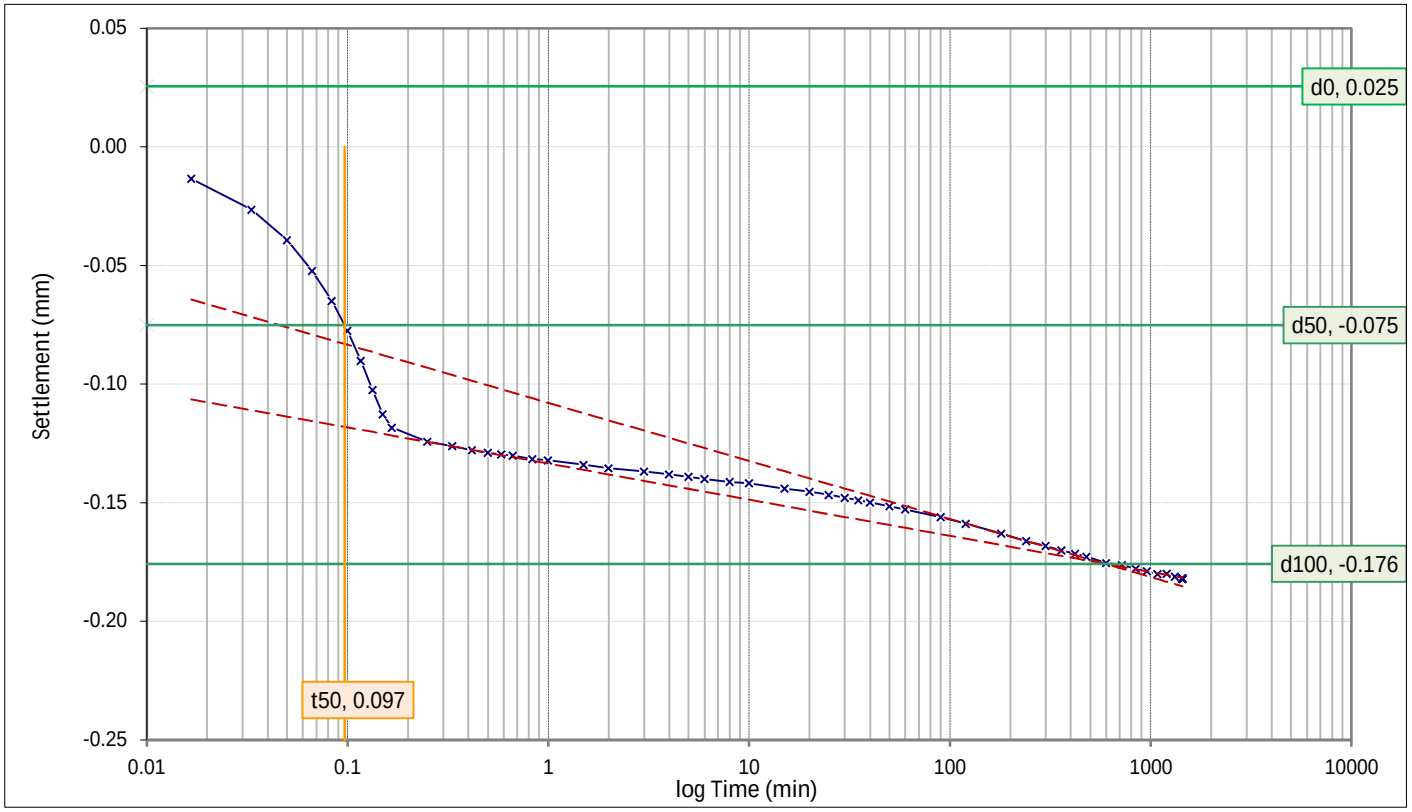
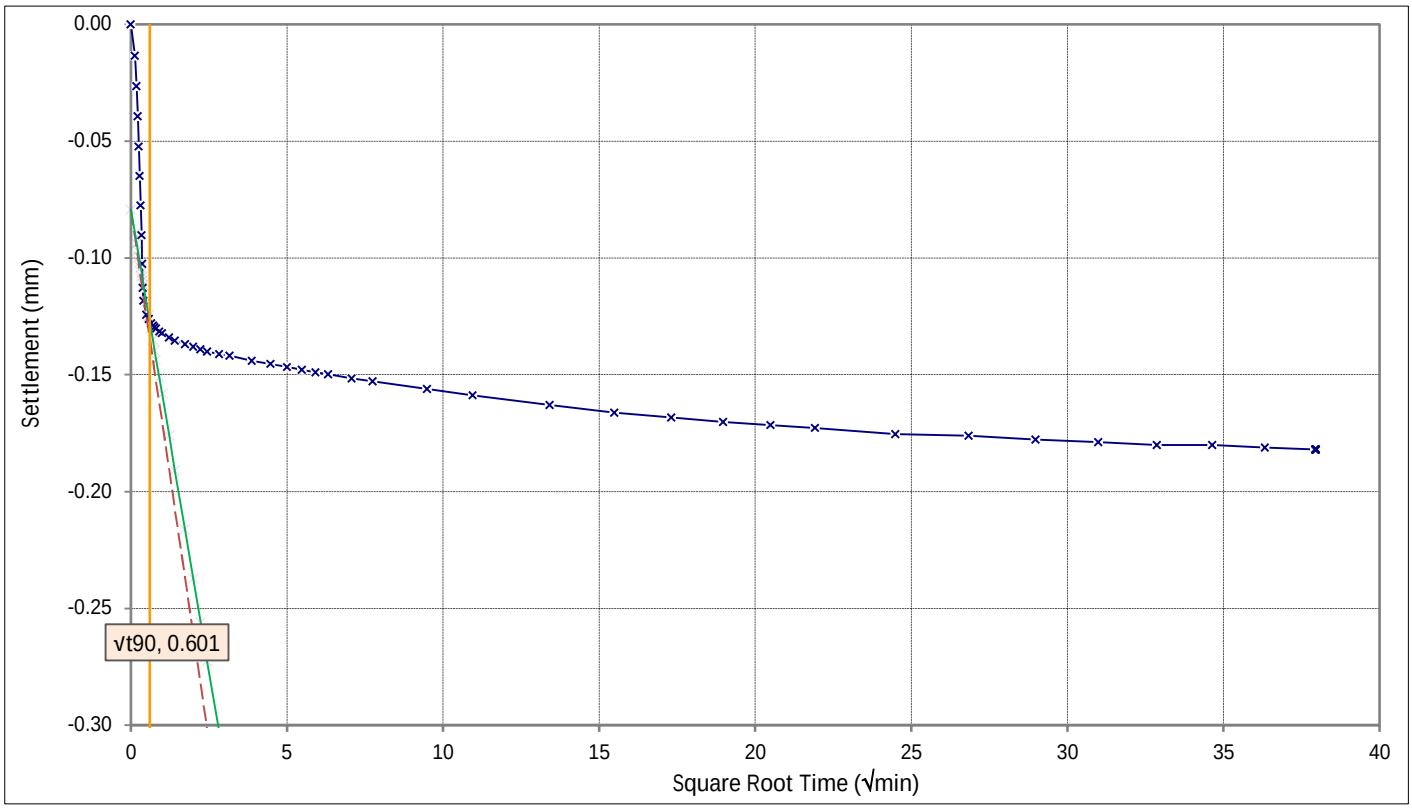
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 6 (kPa)





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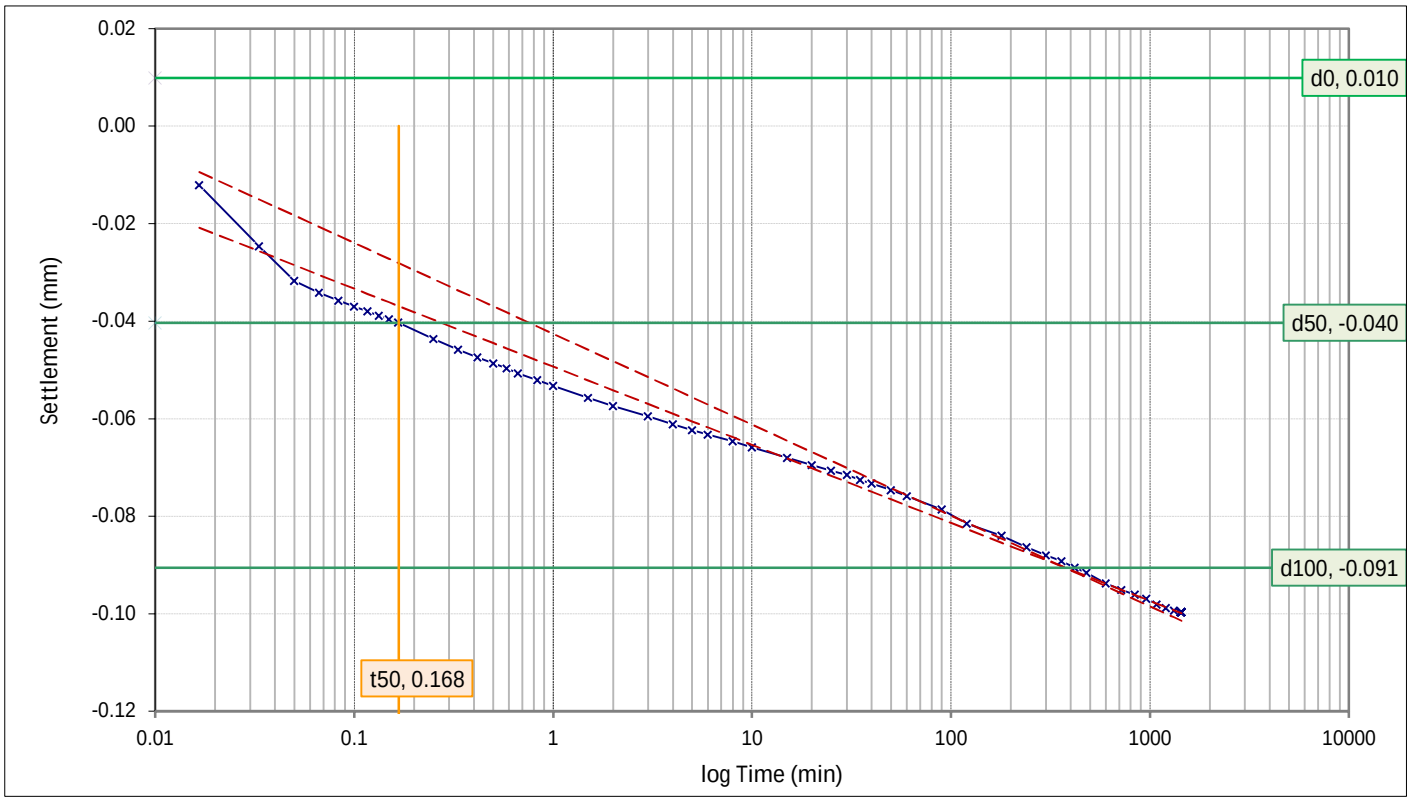
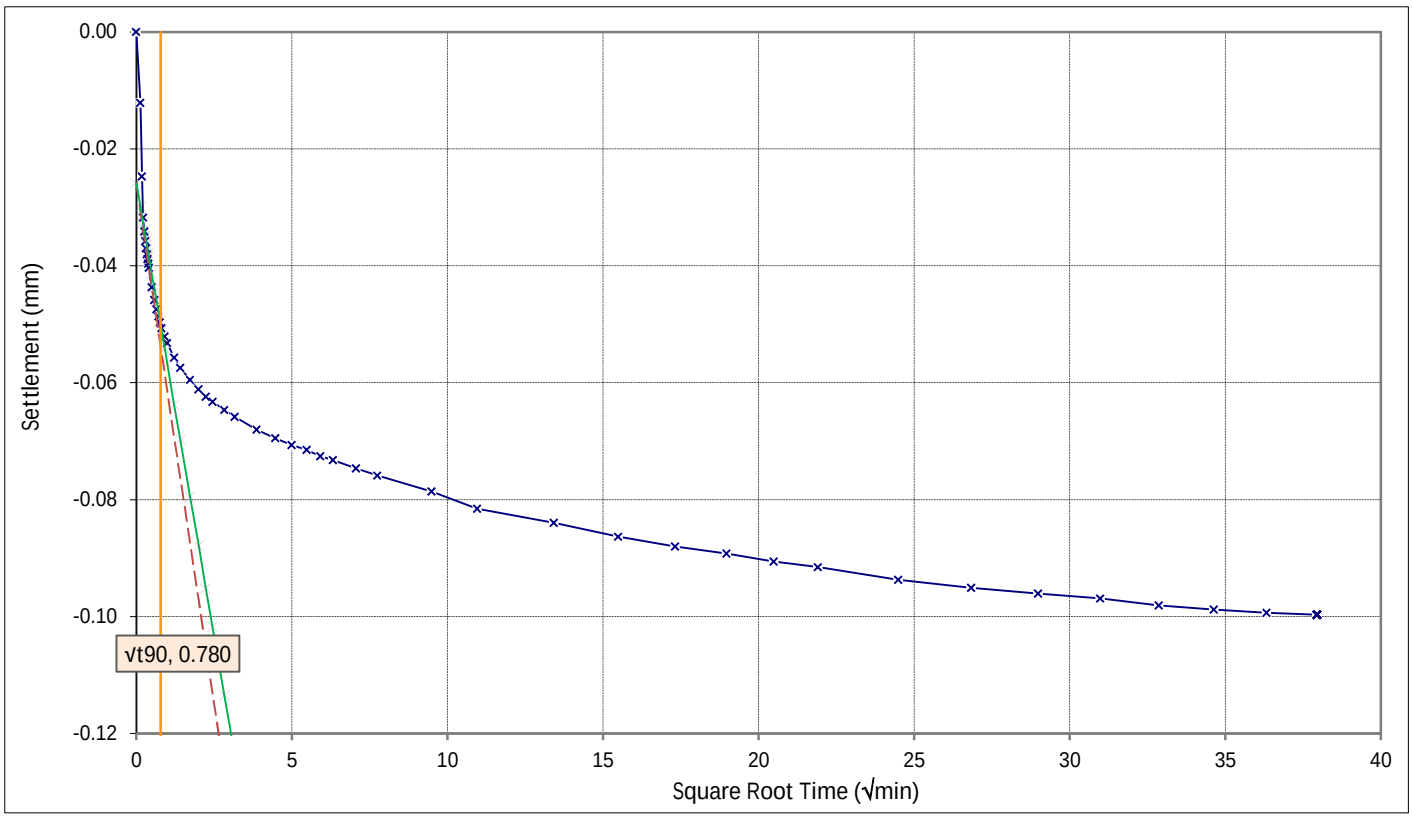
Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 12.5 (kPa)





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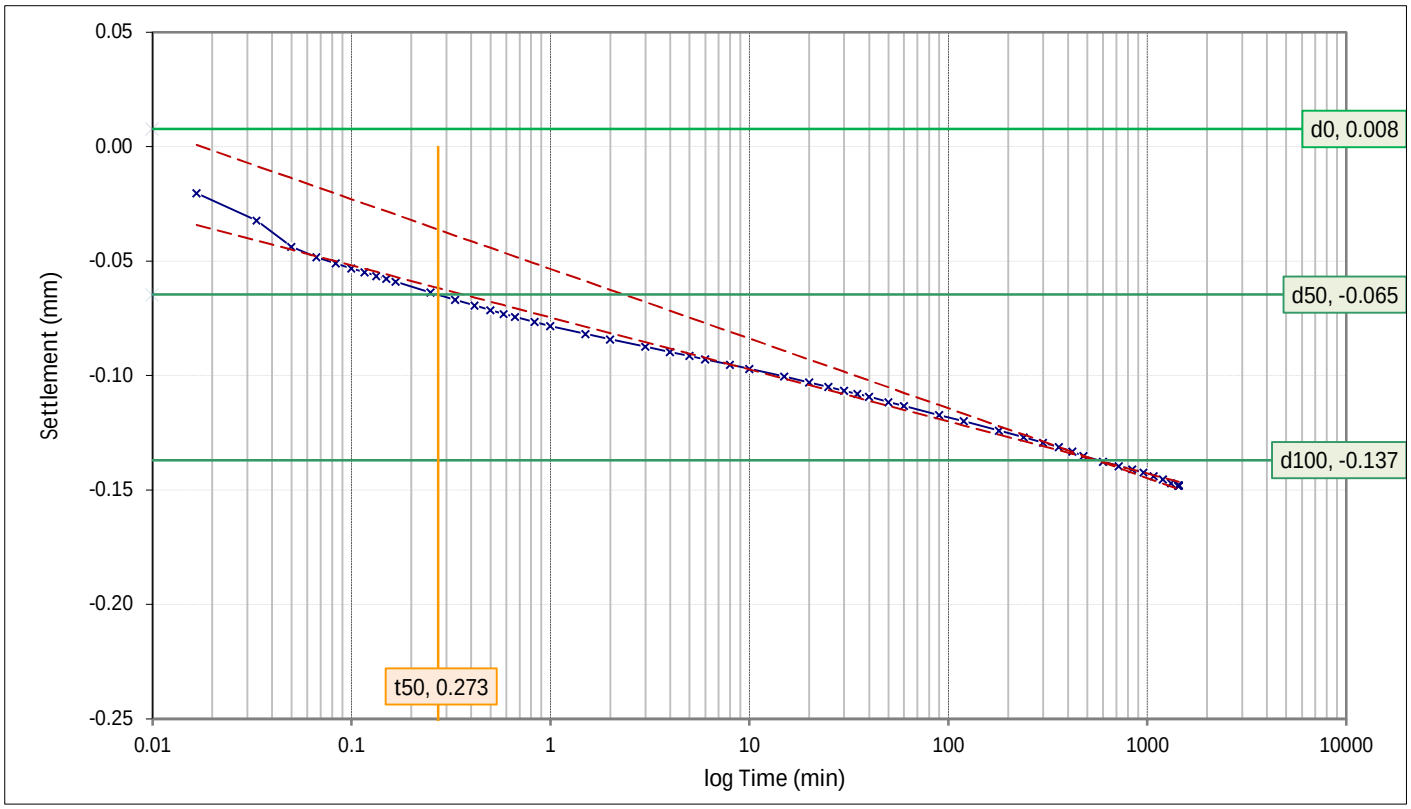
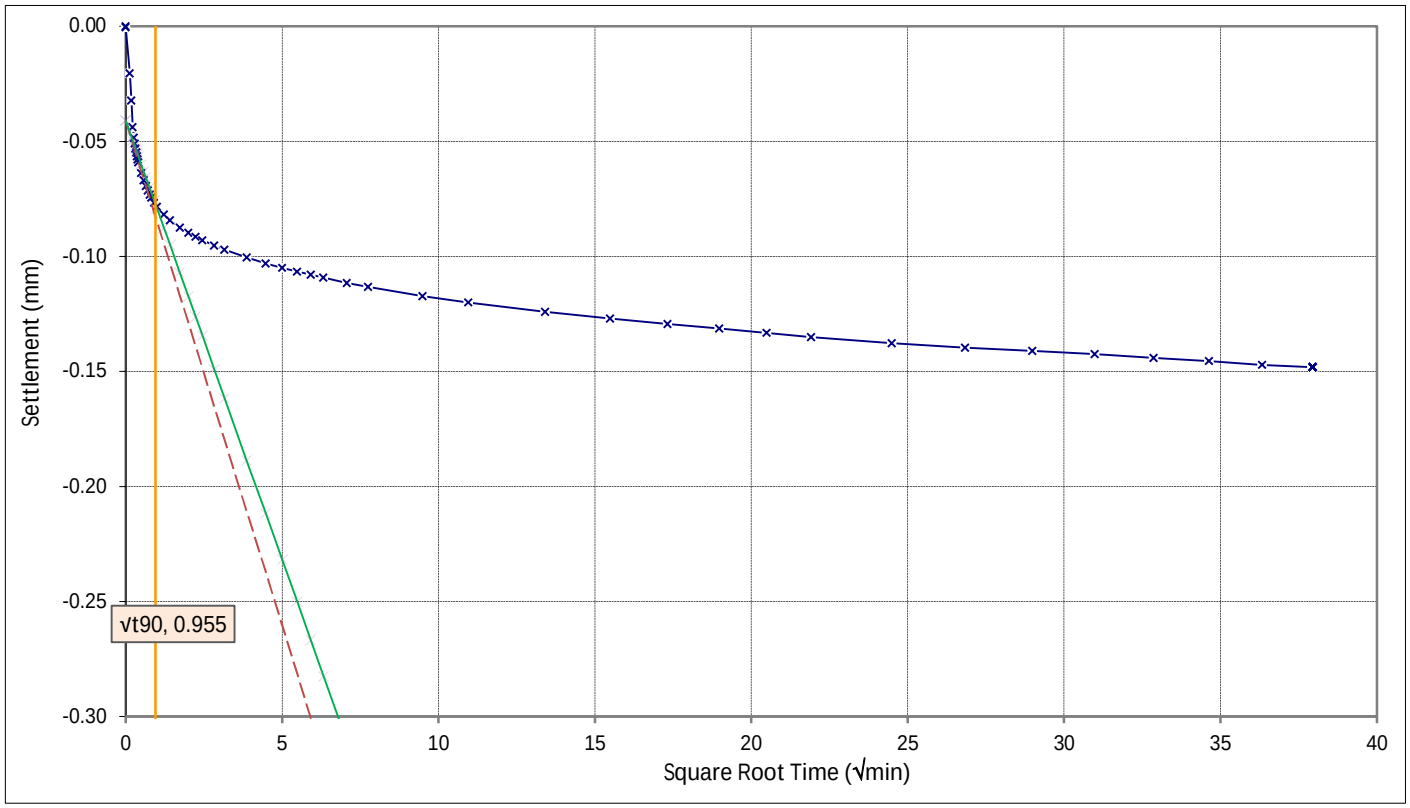
Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 25 (kPa)





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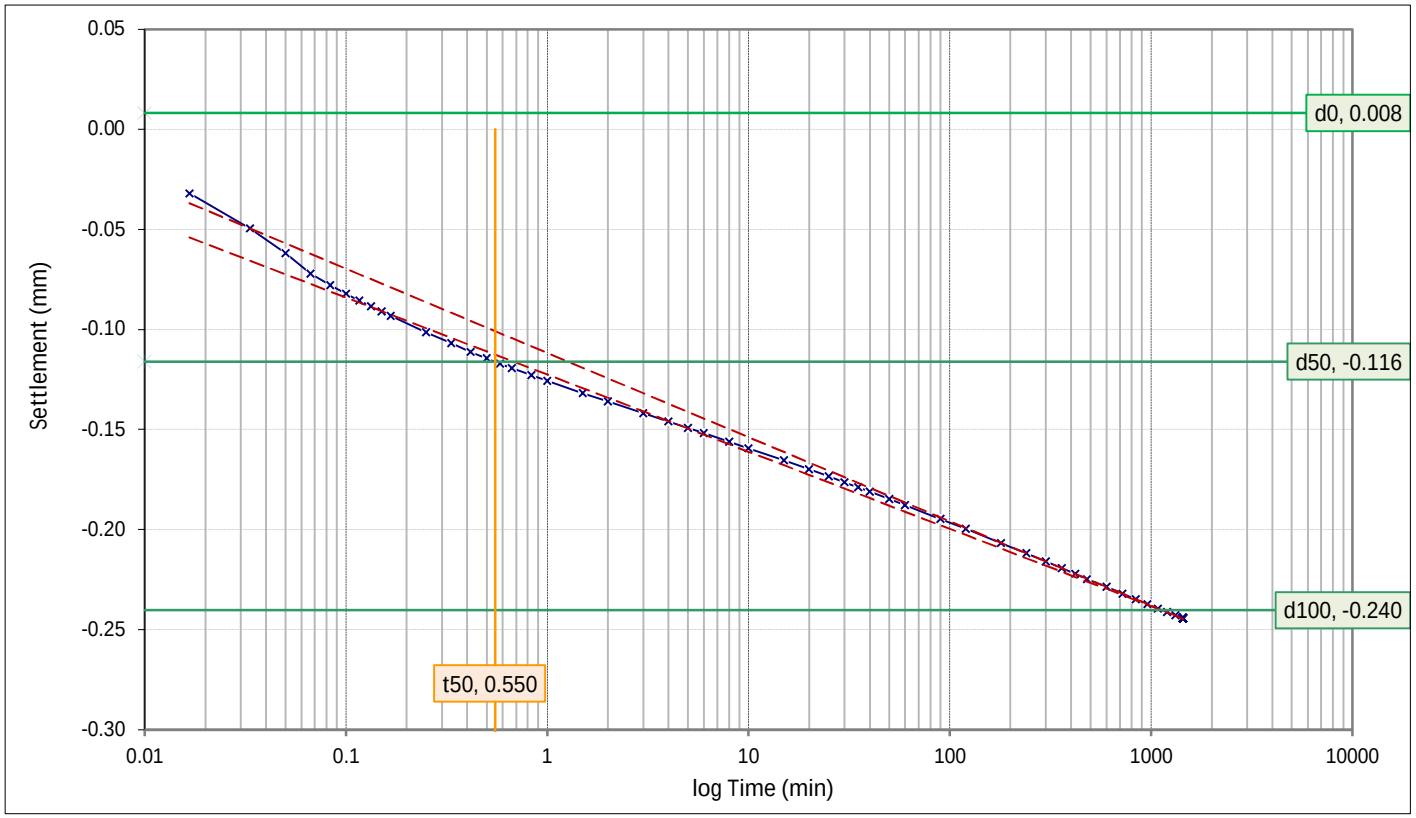
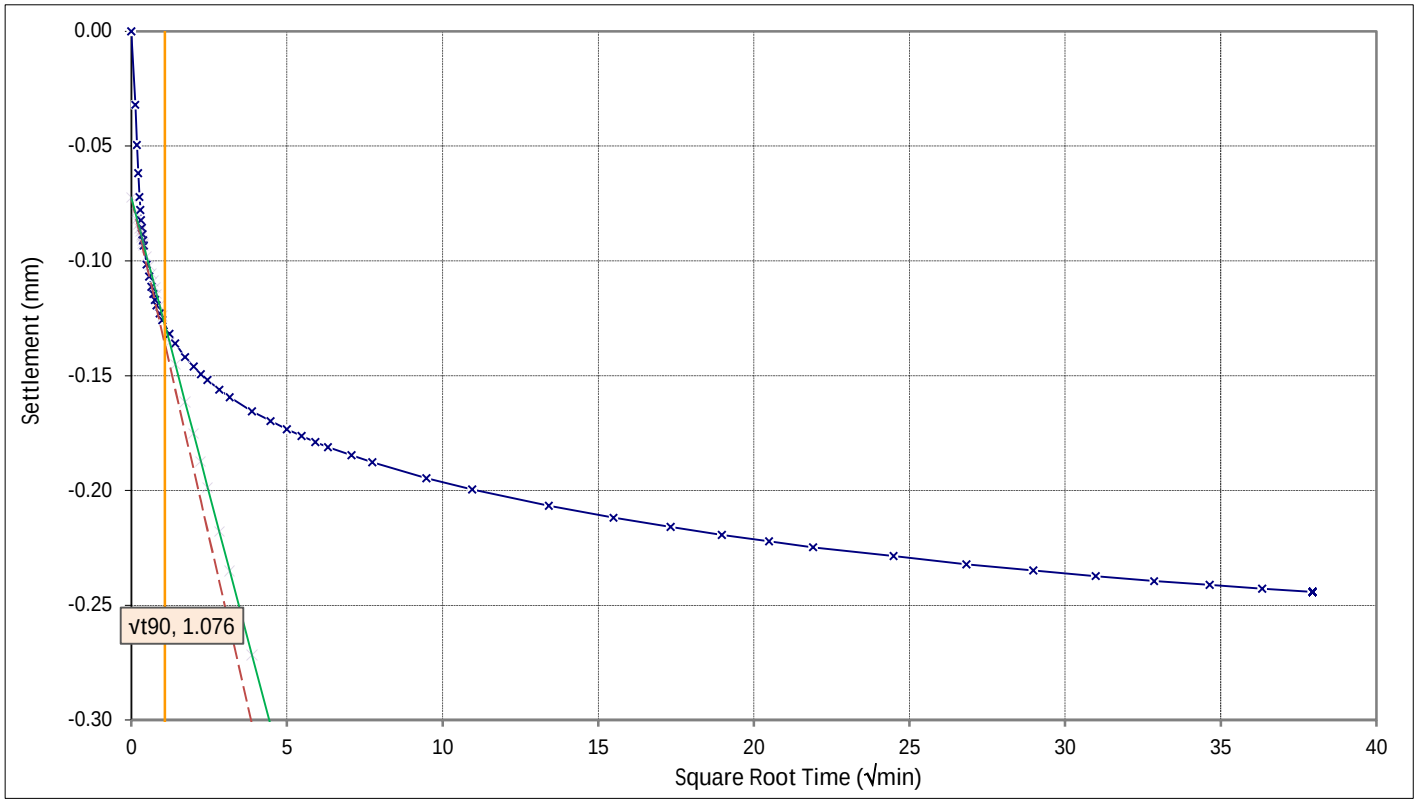
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 50 (kPa)





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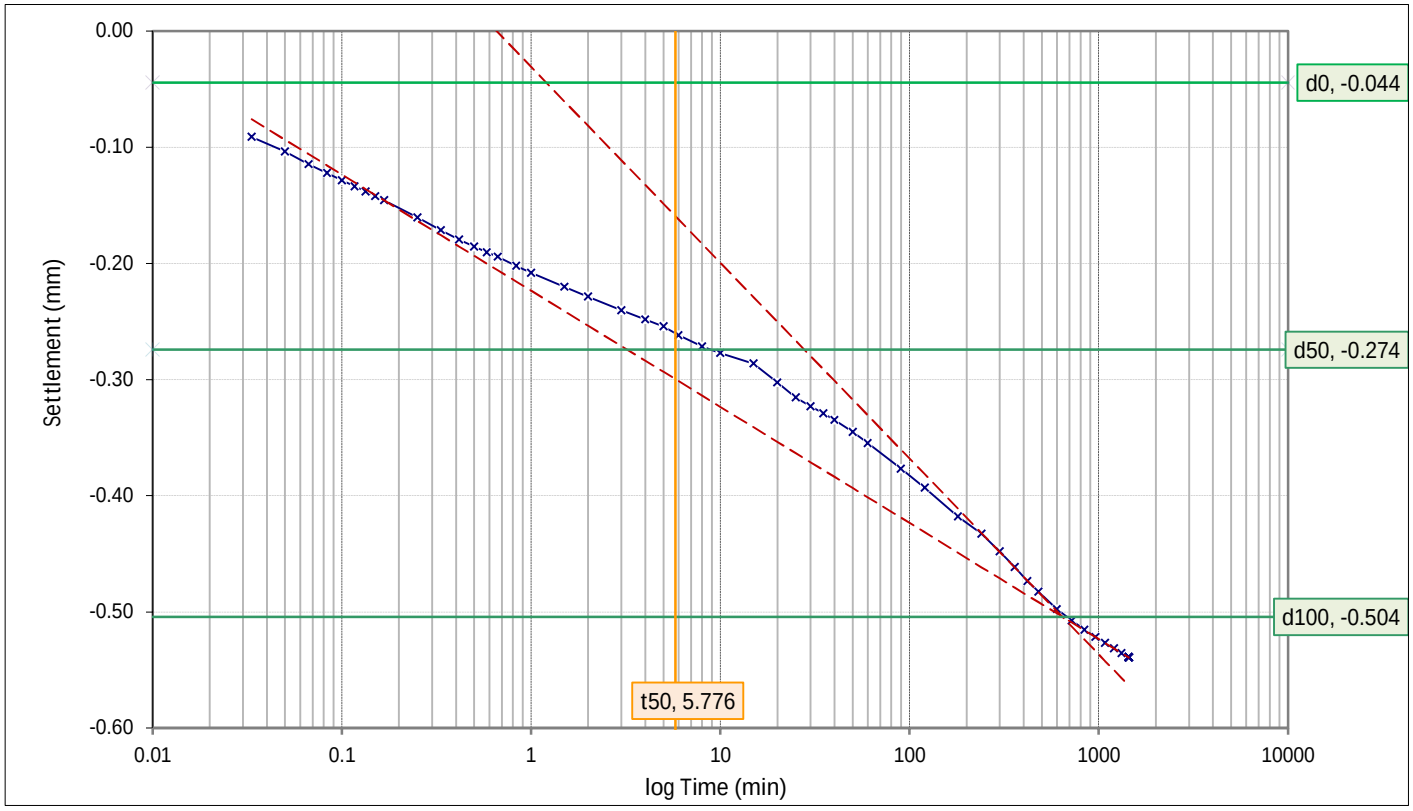
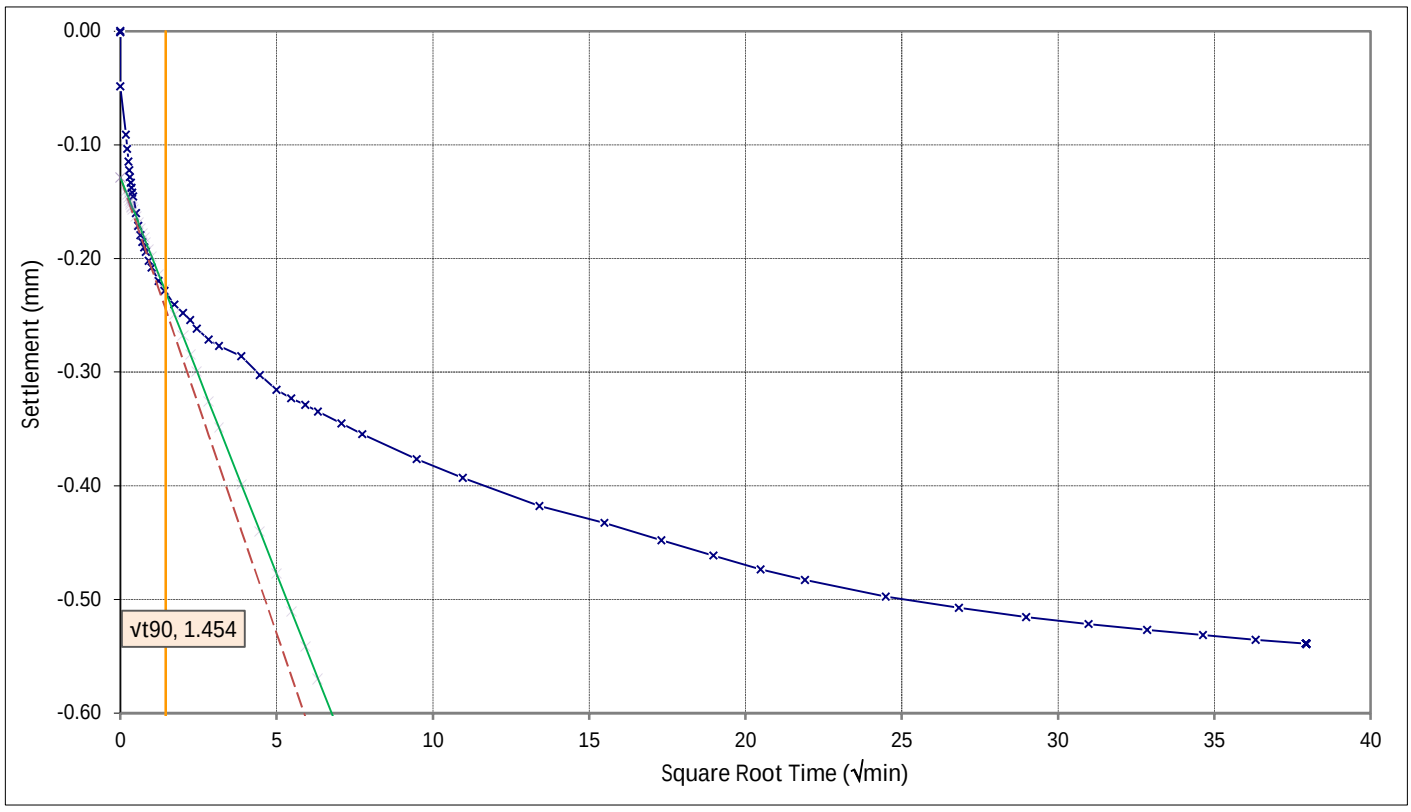
Test Schedule Reference: --

Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: -- Geotechnics ID: -- Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 100 (kPa)





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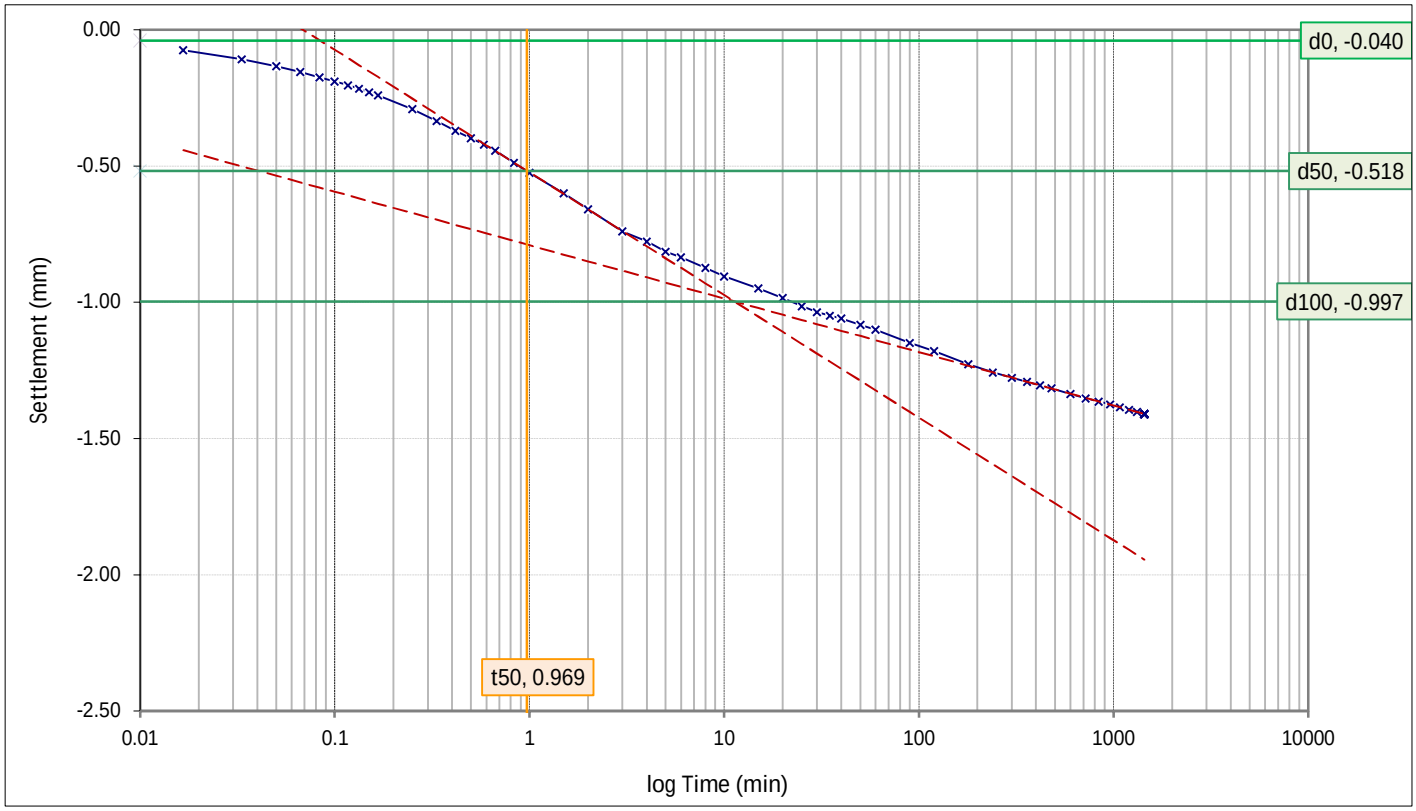
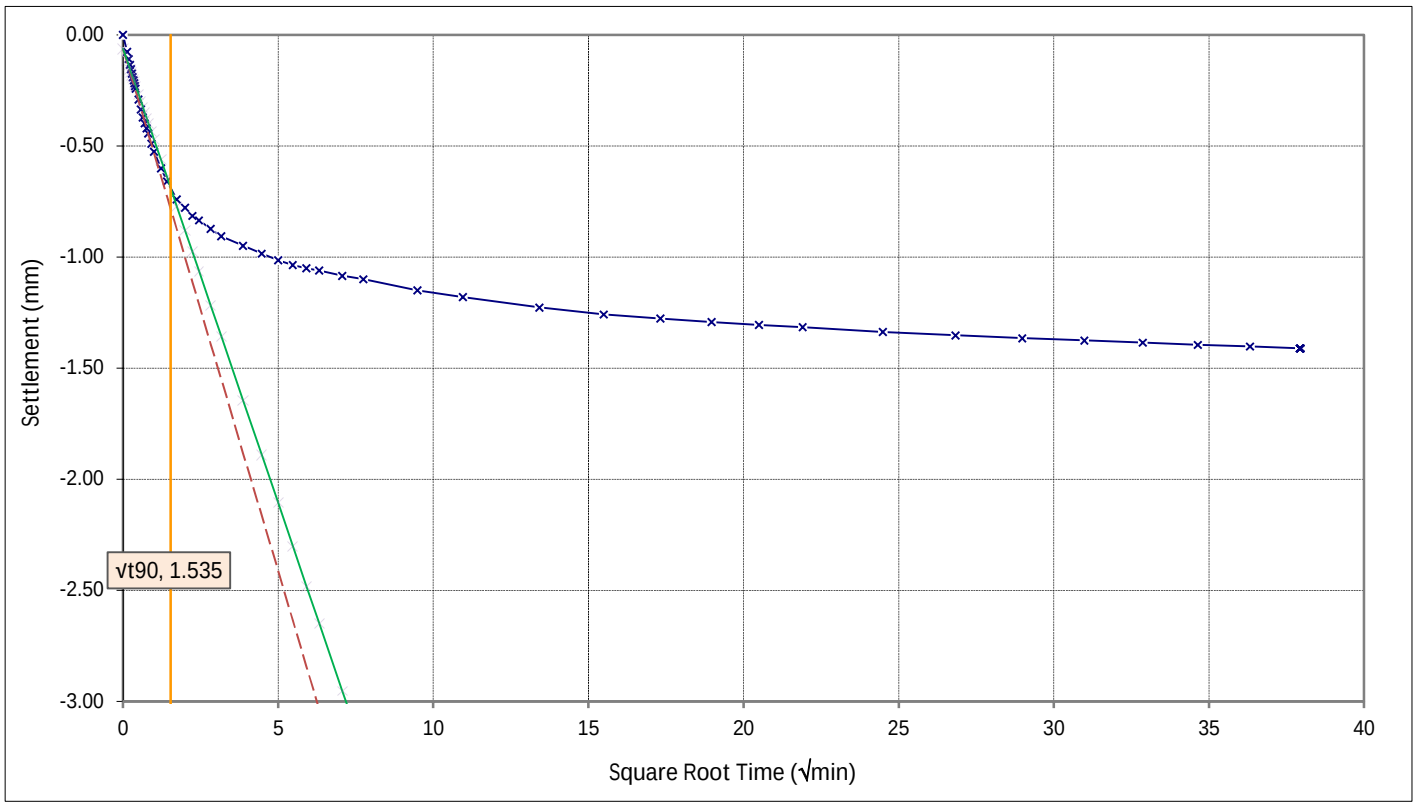
Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 200 (kPa)





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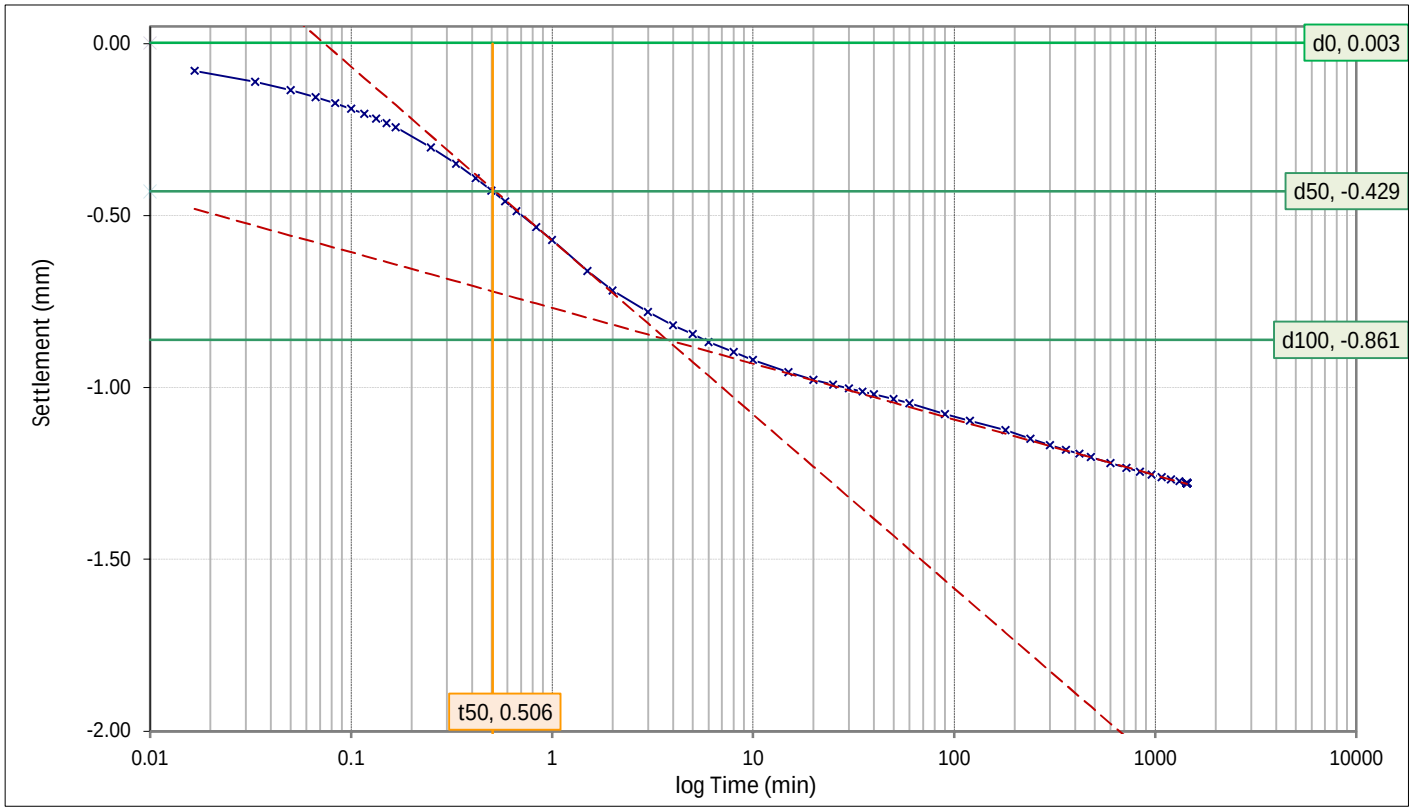
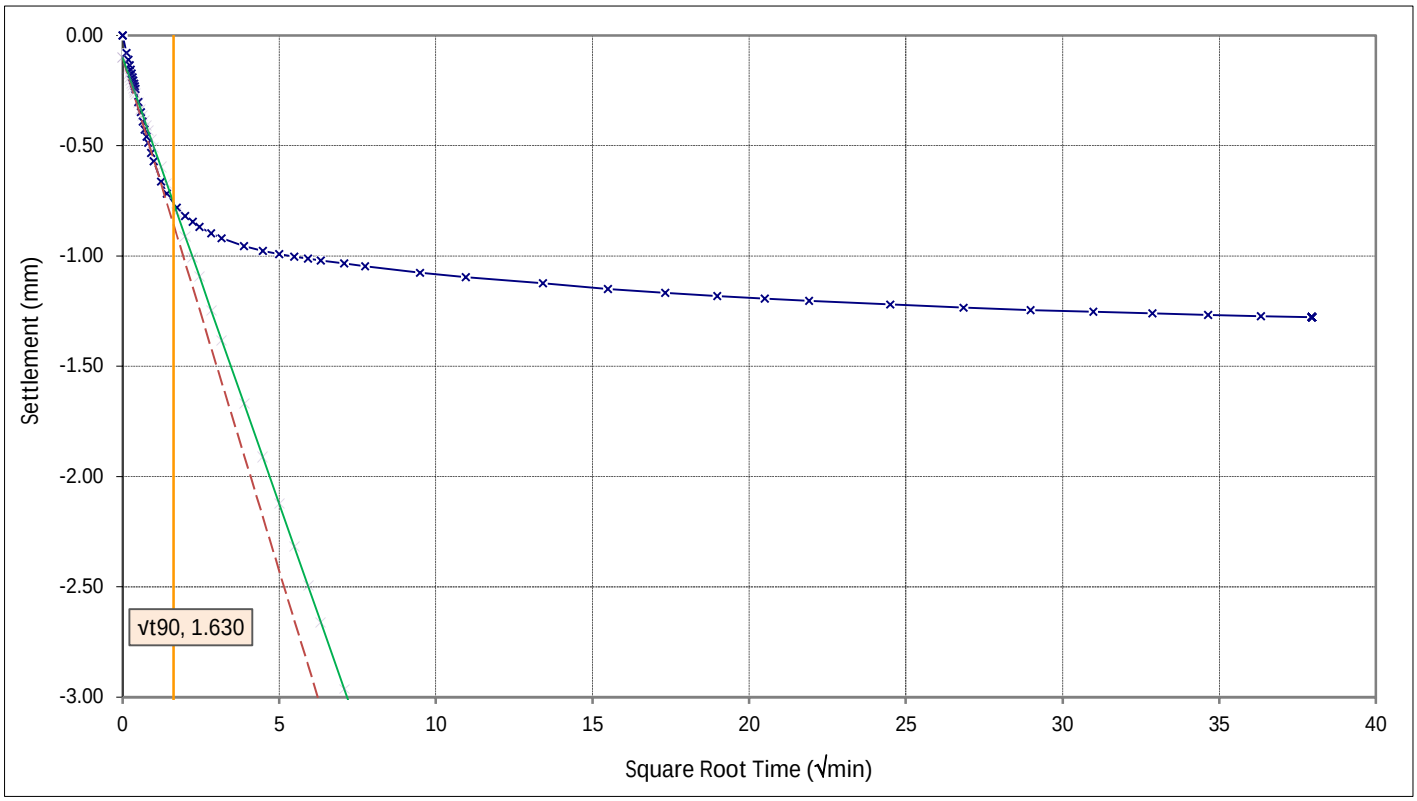
Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 400 (kPa)





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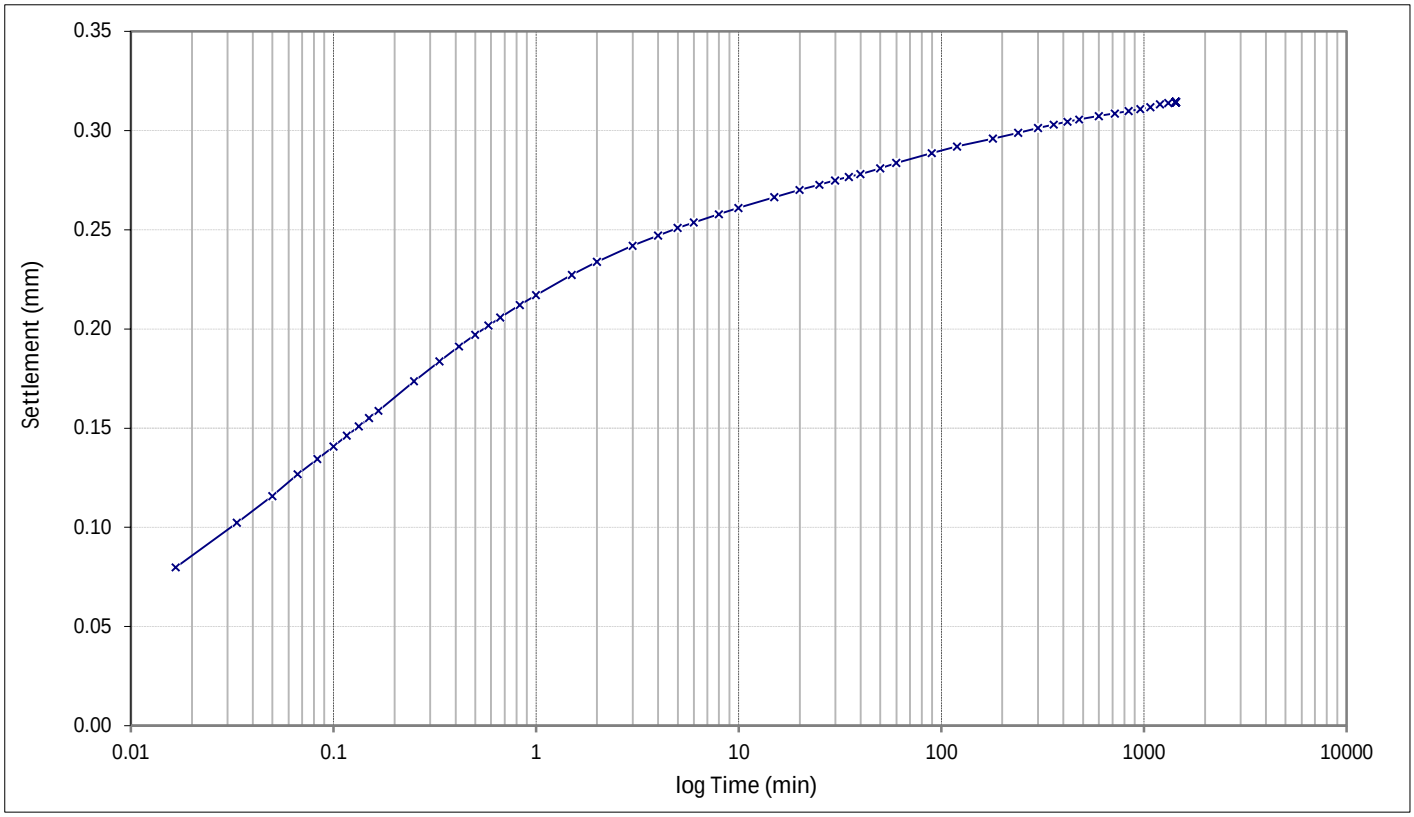
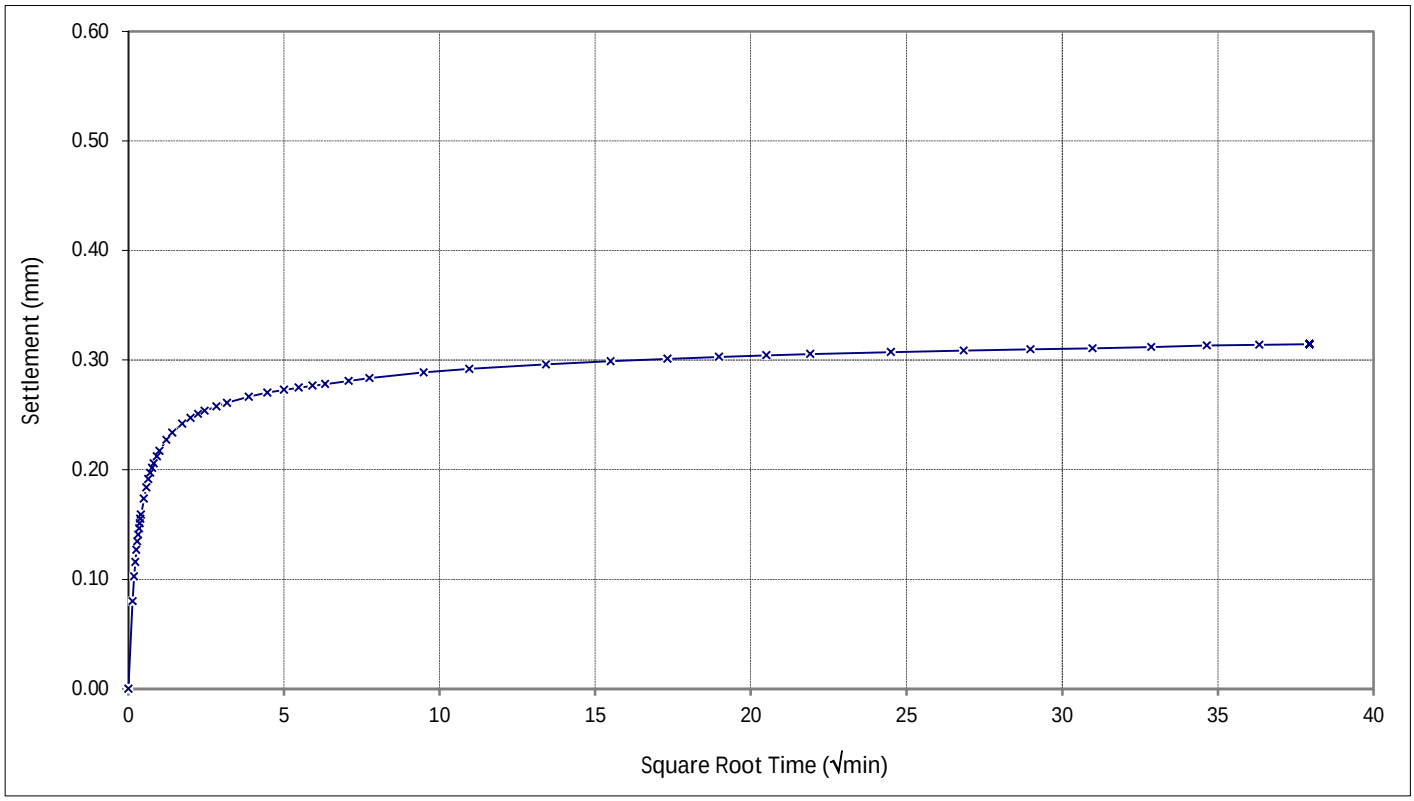
Site/Location: Wairakei South Development
Location ID: MBH05
Sample Ref.: --
Geotechnics ID: --
Depth: 8.68 - 8.70 (m)
Test method used: NZS 4402:1986 Test 7.1 Determination of the One-dimensional Consolidation Properties
NZS 4402:1986 Test 2.1 Determination of Water Content

ONE-DIMENSIONAL CONSOLIDATION TEST

Applied Pressure = 25 (kPa)





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