REPORT ON:
STAGE 10, LYNDHURST ROAD SUBDIVISION
FRIMLEY, HASTINGS

LOTS 163 TO 178 (EXCLUDING LOT 171)

PROJECT:
GEOTECHNICAL ASSESSMENT

CLIENT: GREENSTONE LAND DEVELOPMENTS LTD.

GREENSTONE LAND DEVELOPMENTS LTD.
P O BOX 1200
HASTINGS 4122

RDCL

EXECUTIVE SUMMARY

Greenstone Land Developments Ltd. (GLDL) engaged Resource Development Consultants Ltd (RDCL) to undertake a geotechnical assessment for Stages 10 Lyndhurst Road, Frimley in Hastings.

The information contained in this report:

- May be relied on for Building Consent only for lightweight timber-framed, single level, residential buildings and foundations as prescribed.
- Any change to building or foundation type will require re-assessment which may include additional site testing and geotechnical analyses.

Stage 10 of the development covers fifteen (15) residential lots (Lots 163 – 178, excluding Lot 171 which is incorporated in Stage 8.

Investigations comprise both shallow (machine auger and Dynamic Cone Penetrometer) and deep (Cone Penetrometer Testing) in accordance with Hastings District Council (HDC) guidelines for the assessment of liquefaction prone land.

Based on the liquefaction assessment, the site is considered susceptible to:

- High to very high risk of liquefaction during a ULS event; with
  - Minor to moderate surface expression; and
  - 15mm to 125mm vertical (free field) settlement indicated.
- Low risk of liquefaction during an SLS earthquake event; with
  - Little to no surface expression; and
  - Up to 2mm to 15mm vertical (free field) settlement

In accordance with MBIE (2015) Technical Guidance, Part C, V3a guidelines for lightweight timber-framed buildings:

- The site is classified Technical Category TC2/TC3 Hybrid; where
- Vertical settlement due to liquefaction governs design.

For TC2/TC3 hybrid foundation recommendations are, indicative foundation recommendations are for:

- A 0.6m deep gravel raft foundation; with
  - Geofabric placed in the base; and
  - Two (2) layers of geogrid reinforcement; with
- MBIE Part A, (December 2012) option 2 enhanced raft; or option 4 waffle slab foundation.

CONTENTS

FIGURES

TABLES

APPENDICES

1 OVERVIEW

Greenstone Land Developments Ltd. (GLDL) engaged Resource Development Consultants Ltd (RDCL) to undertake a geotechnical investigation and assessment report for Stage 10 Lyndhurst Subdivision in Hastings.

1.1 PURPOSE OF THIS REPORT

The purpose of this report is to provide geotechnical information to support subdivision and building consent at the individual Lot level for Stage 10, Lyndhurst Subdivision.

The information contained in this report may be relied on for Building Consent for the foundations recommended in this document. Any change to foundation type may require re-assessment of the geotechnical design and may involve additional site testing and geotechnical analyses.

1.2 UNDERSTANDING THE PROJECT

- This report is based on the following stages as indicated on the Zorn Surveying Proposed Subdivision Plan (Job No: 16-EQH; Plan No: V22a, dated 10 August 2018);
  - Stage 10 comprising fifteen (15) residential lots incorporating Lots 163 – 178, excluding Lot 171.

1.2.1 EXISTING REPORTS

RDCL has previously completed a geotechnical investigation and reporting including:

- Lyndhurst Subdivision Development Reports:
  - Stages 2-6 comprising 67 residential lots between Arbuckle & Lyndhurst Road (RDCL reports R170602050_02, R170602050_03, R181090602_01, and R183970602_01); and
  - Stage 9 Lyndhurst Subdivision (183970602A- 02), dated 30 July 2019.
  - Stages 7 & 8 Lyndhurst Subdivision (183970602B- 01), dated 2 September 2019.

1.3 SCOPE OF WORK

Work was undertaken in general accordance with RDCL proposal 183970602, dated 4 October 2018.

2 SITE DESCRIPTION

Stage 10 is part of the 12 Stage Lyndhurst Road Residential Subdivision located in Frimley Hastings, bordered by Lyndhurst Road, Arbuckle Road and the Napier Expressway.

The subdivision comprises generally flat land with original levels altered by minor cut and fill.

The western side is bordered by a 4m high landscape acoustic bund with State Highway 50 (SH50) on the other side.

The subdivision includes new road access and service installation which is outside of this scope of work.

2.1 REGIONAL GEOLOGY

Regional geology maps indicate the site is underlain by Holocene river deposits; comprising poorly consolidated alluvial gravel, sand, and mud (GNS Science, 2011).

These materials are further described in the Hawkes Bay Emergency Management Group Portal (HBEMGP) as being fine to moderately interlayered silt and fine sand; derived as a complex system of aggrading alluvial river and delta plain deposits (overbank flood deposits).

The depositional environment results in variable ground conditions where silt, sand, and gravel deposits overly each to form non-continuous layers and lenses. This variation can be seen in the modern, braided river systems where coarse cobbles may be found in the river bed, with fine silt in the river margins.

2.1.1 LIQUEFACTION VULNERABILITY

The site is located in a zone of “high liquefaction vulnerability”, as mapped by Hawke’s Bay Emergency Management Group (HBEMGP); requiring an assessment of liquefaction potential and likely ground settlements under seismic conditions.

2.1.2 ACTIVE FAULTS

The site is located approximately 2.5 km southeast of the active trace of the Awanui Fault, as identified in the GNS Science Active Faults Database (2016).

3 RELEVANT GUIDELINES

Geotechnical investigations and assessment have been undertaken in accordance with relevant guidelines:

- Hastings District Council (June 2019). Geotechnical Site Investigations Guidelines. Residential Building Consents.
- MBIE Guidance Version 3 (Dec 2012) Revised issue of Repairing and Rebuilding Houses Affected by the Canterbury Earthquakes. Part A: Technical Guidance (TC1 and TC2).
- MBIE Guidance Version 3a (April 2015) Part C: Assessing, Repairing and Rebuilding foundations in TC3.

4 SUBDIVISION EARTHWORKS

Minor earthworks for subdivision development comprised earthworks filling across three areas (Figure 3).

- Lot 167 and partial Lots 165, 166, 168, 169 and 170 removed existing weak subsoils and replaced with engineered fill;
  - 0.3m to ~1m depth.
- Partial of 172 & 173 filling at the location of a rubbish stockpile area;
  - Up to 0.9m depth.
- Strip portion along the western boundary of Lots 175 – 176 for tree stump removal;
  - Up to 1m depth.

5 SUBSOIL INVESTIGATION

5.1.1 GENERAL

Geotechnical testing comprised site-specific testing at each Lot comprising:

- Shallow testing for bearing capacity checks:
  - One (1) Machine auger investigation (15 MA tests);
  - Four (4) dynamic cone penetrometer (DCP) tests (60 DCP tests).
- Deep Testing at Subdivision Level for liquefaction assessment:
  - Twenty-one (21) Cone Penetration Tests (CPT101 to 113 & CPT 201 to 208) tested to between 2.5m (refusal) and 20 m bgl.

Machine Auger, DCP testing and CPT locations are located on the Site Investigation Layout plan as Figure 1.

Subdivision-wide CPT testing is attached as Figure 2.

Machine Auger and DCP logs are presented in Appendix A.. CPT Logs for the Subdivision are presented in Appendix B.

Soil samples recovered in machine augers were recorded by an engineering geologist in accordance with NZGS (2005) guidelines for field description of soil and rock.

5.1.2 SHALLOW REFUSAL

Shallow CPT refusal (~2.5m to ~5m) occurred at some locations within the development due to natural, coarse materials which in the geological context of the site (Section 2.1) may be expected and is considered normal.

5.2 SUBSOIL CONDITIONS

5.2.1 STAGE 10 RESULTS

The results of shallow subsoil conditions at the locations tested suggest:

- Imported TOPSOIL (Fill); comprising silt with some gravel, dark brown between 0.2 and 0.5 m thick;
- Engineered FILL comprising sandy SILT, with some gravel (Section 4) and indicated in Figure 3;
  - Lot 167 and partial Lots 165, 166, 168, 169 and 170 up to 0.7m
  - Partial of 172 & 173 between 0.3m to 0.6m depth;
  - Strip portion along the western boundary of Lots 175 – 176.
- Thin, discontinuous layers of Silty SAND & Sandy SILT, loose to medium dense, with occasional firm clay lenses consistent with anticipated overbank flood deposits in this region.

5.2.2 DEEP TESTING (CPT TESTS)

CPT outputs indicate the subsoil profile comprises:

- Layer 1; Silt and clay dominated mixtures:
  - ~2m to 3.5m thick,
  - soft to firm and loose; overlying
- Layer 2; Sand with gravel dominated mixtures:
  - to ~11m bgl,
  - medium dense to dense; overlying
- Layer 3; Silt and clay dominated mixtures
  - to ~15m bgl,
  - firm to stiff; overlying
- Layer 4; Sand and gravel dominated mixtures:
  - to ~17m depth,
  - medium dense to dense; overlying;
- Layer 5; Silt and clay dominated mixtures to:

- >20m depth,
- firm to stiff.

Dense sandy gravels at shallow depth are indicated due to shallow refusal in CPT tests (CPT 101, 102, 103, 105, 201, & 205) where Cone Resistance (qt) was recorded more than 30MPa.

5.3 GROUNDWATER

Groundwater was not encountered during the site investigations.

6 GEOTECHNICAL ASSESSMENT

6.1 LIQUEFACTION ASSESSMENT

The liquefaction assessment was undertaken at a subdivision-wide level due to the geological variability encountered during deep testing. Further assessment may be undertaken at individual lot level to confirm specific testing results.

The liquefaction assessment utilised 21 CPT tests (CPT 101 to 113 and CPT 201 to 208) and was assessed using CLiq v.2.1.6.7 Liquefaction Assessment Software. The liquefaction output results are presented in Appendix C.

In accordance with the CPT testing across the site, the Lyndhurst Subdivision is assessed to be:

- For SLS earthquake event:
  - Low risk of liquefaction, with
  - Little to no surface expression;
  - Up to 15mm vertical settlement predicted (Free-field).
- For ULS earthquake event:
  - High to very high risk of liquefaction; with
  - Minor to moderate surface expression; and
  - ~15mm to ~125mm of estimated vertical settlement (Free-field).

Liquefaction potential and induced settlement results are summarised in Table 1; lateral displacements are not expected due to the generally flat relief across the site and surrounding area.

The results of the liquefaction assessment are summarised in Table 1 below.

TABLE 1: CPT ASSESSED LPI, LSN AND VERTICAL SETTLEMENT FOR SLS AND ULS

Development Stage	Test ID	Liquefaction Potential Index	Liquefaction Severity Number	Estimated Vertical Settlement (mm)	Termination Depth (m)
7 - 12	CPT101 to 113 & CPT201 to 208	Low Risk	Little to no expression	2 - 15	See below
Development Stage	**Test ID**	**Liquefaction Potential Index**	**Liquefaction Severity Number**	**Estimated Vertical Settlement (mm)**	**Termination Depth (m)**
7	CPT106	Very High	Moderate	125	13.5
7	CPT107	Low Risk	Little to none	11	3.4
7	CPT108	Very High	Moderate	127	16
7	CPT206	Very High	Moderate	119	20
7	CPT208	High Risk	Minor	71	6.9
8	CPT113	Very High	Moderate	121	17
8	CPT203	Very High	Moderate	117	14.2
8	CPT204	Very High	Minor	102	14.4
8	CPT205	Very High	Minor	99	10.6
9	CPT109	Very High	Moderate	120	20
9	CPT110	Very High	Moderate	115	20
9	CPT201	Low	Little to None	7	3.3
9	CPT202	Very High	Minor	103	20.1
10	CPT111	Very High	Minor	96	9
10	CPT112	Very High	Moderate	123	20
11	CPT101	Low	Little to none	15	4.9
12	CPT102	Low	Little to none	3	2.4
12	CPT103	High Risk	Minor	49	4.9
12	CPT104	Very High	Moderate	117	13.8
12	CPT105	High Risk	Minor	86	8.2
12	CPT207	Low	Little to None	5	2.6

6.1.1 SEISMIC SOIL CLASSIFICATION

The site is classified as site subsoil "Class D – Deep or Soft Soil Site" in accordance with NZS1170.5:2004, part 5: Earthquake Actions – New Zealand.

The site subsoil class was determined based on a conservative review of the Hawkes Bay well database.

The Hawkes Bay well database indicates ground conditions are variable in the area, such that the site can be expected to be underlain by deep soils, specifically:

- Well 2008;
- Well 5554;
- Well 671;
- Well 10847; and
- Well 8474.

6.1.2 BASIS OF ASSESSMENT

The liquefaction assessment for the site was assessed using CLiq, accepted industry software package (Geoligismiki, 2014), CPT data of current ground conditions, soil logs from Test Pit investigations and the following input parameters (GNS Consultancy Report (2015/185), October 2015):

- PGA = 0.12g (SLS) & 0.42g (ULS), with:
  - Magnitude (M) = 6.2 (SLS) & 6.5 (ULS)
  - C=1.12 (Class D Soil), and
  - R=0.25 (SLS) & 1.0 (ULS).
- Groundwater table 2.0 m bgl based on our knowledge of the area.

The design earthquake was chosen based on the probability of recurrence. The probability is based on historical earthquakes assuming a 50-year design life and Importance Level 2 (IL2) structure.

A 6.5 magnitude earthquake correlates with a 500 year return period (ULS) and 6.2 magnitude for a 25 year return period (SLS) and was assigned.

6.2 ENGINEERED FILL CERTIFICATION

Weak materials identified by the earthworks contractor was excavated and replaced with engineered fill at the locations referenced in Section 4 and attached in Figure 3.

Excavated material was replaced with an engineered fill of material type referenced in section 5.2.1 was placed in layers and compacted using a pad foot roller and tested by an independent laboratory for:

- Field Testing by Nuclear Desometer Test (NZS 4407: 2015 Test 4.2);
- One Point Dynamic Compaction (NZS4402:1986 – Test 4.1.1);

The results of the tests indicate:

- Compaction achieved a target density of 95% of dry density.
- Compaction results are presented in Appendix D

Fill placement was observed during periodic site construction inspections to be in accordance with NZS4431:1989 Earthworks for Residential Development.

6.3 INFERRED BEARING CAPACITY

DCP test results have been correlated with Ultimate Bearing Capacity (UBC) in accordance with M.J. Stockwell 1977. Inferred UBC for each site is presented in Appendix E.

Inferred Ultimate Bearing Capacity for Stage 10 varied between:

- 300kPa UBC between 0.3m and 1.1m bgl;
- 200kPa UBC between 0.2m and 1.2m bgl;
- Indicating high variability in bearing capacity across the site.

For foundation design, Liquefaction risk governs over bearing capacity and therefore the foundation recommendations are based on the results of the Liquefaction Assessment and recommendations given in Section 7.

7 GEOTECHNICAL RECOMMENDATIONS

7.1 FOUNDATION RECOMMENDATIONS

Based on the results of these investigations, we consider Stage 10 to be suitable for the proposed residential development provided:

- Foundations meet TC2/TC3 Hybrid type foundation requirements in accordance with MBIE (April 2015) TC3 Technical Guidance, V3a; where
- A gravel raft foundation and enhanced slab or waffle slab in general accordance with MBIE Technical Guidance, Part A, December 2012 is used.

7.1.1 GRAVEL RAFT FOUNDATION

The gravel raft foundation is presented as a schematic section in Figure 4. The gravel raft specification requires:

- Undercut to 0.6m bgl and 1m horizontal distance outside the building footprint;
- Placement of geotextile filter cloth (Strength Class C) in the base and wrapped up the sides;
- Placement of two (2) layers of Cirtex geogrid SS30 or equivalent, where the first layer is placed in the base with a second layer separated by ~150mm gravel fill.
- Placement of compacted, well-graded gravels with maximum particle size of 70mm and less than 15% fines, free of topsoil or deleterious materials; and
- Compacted to 95% MDD at optimum water content;
- Tested by NDM testing by an independent laboratory.

7.1.2 FLOOR SLAB

The Floor slab should incorporate from MBIE Part A, December 2012, either:

- Option 2 (300mm – 400mm thick) enhanced raft; or
- Option 4 Waffle Slab

7.2 SUITABILITY FOR USE

7.2.1 FOUNDATION SOLUTIONS; THIS REPORT

Foundation solutions given in this report are considered suitable for use to support a Building Consent provided:

- The proposed structure generally meets the description of Lightweight, single-level timber-framed buildings of "simple shape"; and the
- Proposed foundations meet the requirements of TC2/TC3 hybrid category solutions.

Alternative solutions require specific geotechnical testing and design to confirm.

The depth to suitable bearing capacity is based on-site testing on the day. Experience shows that depth may vary with excavation, particularly in wet conditions.

7.2.2 ALTERNATIVE FOUNDATION SOLUTIONS; SPECIFIC DESIGN

Alternative, acceptable foundation solutions may be possible based on additional geotechnical testing, or structural design.

8 GEOTECHNICAL VERIFICATION

Geotechnical inspections required for building consent include:

- Excavation Inspection (Geotechnical Engineer);
- Inspection of geotextile and geogrid components;
- Granular backfill inspection;
- Independent compaction testing (NDM);
- Verification of Compaction tests (Geotechnical Engineer); and
- Issue of Producer Statement (PS4); Geotechnical Engineer.

9 STATEMENT OF PROFESSIONAL OPINION - FORM 6 (224C)

A statement of professional opinion as to the suitability of land for building development is presented in Appendix F.

10 REFERENCES

GNS Science. (2004). Active Faults Database. *Institute of Geological and Nuclear Sciences*. GNS Science.

GNS Science. (2011). HAWKE'S BAY. *Institute of Geological and Nuclear Sciences, 1:250,000 Geological Map 8*. (J. Lee, K. Bland, D. Townsend, & P. Kamp, Compilers) GNS Science.

Hastings District Council. (2014). Online GIS - IntraMaps.

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Langridge, R.M., Ries, W.F., Litchfield, N.J., Villamor, P., Van Dissen, R.J., Rattenbury, M.S., Barrell, D.J.A., Heron, D.W., Haubrock, S., Townsend, D.B., Lee, J.A., Cox, S., Berryman, K.R., Nicol, A., Stirling, M. (2016). The New Zealand active faults database: NZAFD250. accepted to New Zealand Journal of Geology and Geophysics 59 (1)

MBIE Guidance Version 3 (Dec 2012) Revised issue of Repairing and Rebuilding Houses Affected by the Canterbury Earthquakes. Part A: Technical Guidance (TC1 and TC2).

MBIE Guidance Version 3a (April 2015) Part C: Assessing, Repairing and Rebuilding foundations in TC3

NZS1170.5. (2004, December 22). NZS1170.5:2004 - Structural Design Actions; Part 5: Earthquake actions - New Zealand. Standards New Zealand.

NZS3604. (2011). *NZS3604:2011 - Timber-framed buildings*. Standards New Zealand.

M.J. Stockwell, Determination of allowable bearing pressure under small structures, 15 June 1977, New Zealand Engineering, 32,6 p 132-135

11 LIMITATIONS

- This report has been prepared for the particular purpose outlined in the project scope and no responsibility is accepted for the use of any part in other contexts or any other purpose.
- Ground conditions assessed in this report are inferred from published sources, site inspection and the investigation described. Variations from the interpreted conditions may occur, and special conditions relating to the site may not have been revealed by this investigation, and which are therefore not taken into account. No warranty is included either expressed or implied that the actual conditions will conform to the interpretation contained in this report.
- No responsibility is accepted by Resource Development Consultants Ltd for inaccuracies in data supplied by others. Where data has been supplied by others, it has been assumed that this information is correct.
- Groundwater conditions can vary with season or due to other events. Any comments on groundwater conditions are based on observation at the time.
- This report is provided for use by the client, section owners, and Hastings District Council and is confidential to the client and their professional advisors. No responsibility whatsoever for the contents of this report shall be accepted for any person other than the client.

12 CLOSURE

We trust this meets your current needs. Should you wish to discuss any aspect of the contents of this document please contact the undersigned on 06 877-1652.

Prepared by:

T Bunny
BSc, PG Dip EngGeol
Senior Engineering Geologist

Reviewed by:

CA Wylie
MSc; MIPENZ, CPEng
Principal

FIGURES

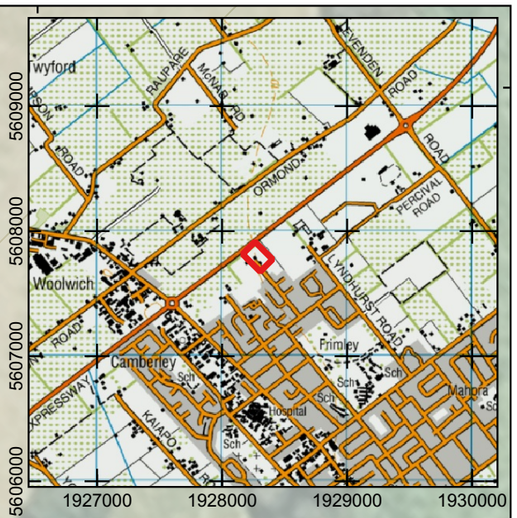
FIGURE 1 – STAGE 10 SITE INVESTIGATION LAYOUT

5607900 5607850 5607800

1928250 1928200 1928400 1928350

DCP28 DCP27 DCP30 DCP31 DCP37 DCP38 DCP45 DCP46
MA10.07 MA10.11 MA10.12
DCP25 DCP40 DCP39
DCP26 MA10.08 DCP48 DCP47
DCP29 DCP34 DCP35 DCP42 DCP43
DCP24 DCP23 DCP32 MA10.09 DCP49 DCP50
MA10.06
DCP21 MA10.10
DCP22 DCP33 DCP41 MA10.13
DCP44
DCP36 DCP52 DCP51
CPT112 CPT111
DCP20 DCP19 DCP53 DCP54
MA10.05
DCP17 DCP18 DCP11 MA10.14
DCP10 DCP07 DCP06 DCP56 DCP55
DCP16 DCP15 DCP03 DCP02
MA10.03 MA10.02 DCP57
MA10.04 MA10.01 DCP58
DCP13 DCP14 DCP12 DCP09 DCP08 DCP05 MA10.15
DCP04 DCP01 DCP60 DCP59

Lot 172 Lot 170 Lot 167 Lot 166
Lot 173 Lot 169 Lot 168 Lot 165
Lot 174 Lot 164
Lot 176 Lot 177 Lot 178
Lot 175 Lot 163



20 0 20 40 60 m

Notes:
New Zealand Topo50 Map and Hawke's Bay 0.3 m Rural Aerial Imagery (2014-2015) obtained from https://data.linz.govt.nz

Legend
- Dynamic Cone Penetrometer (DCP)
- Machine Auger (MA)
- Cone Penetrometer Test (CPT)
- Proposed lot boundaries

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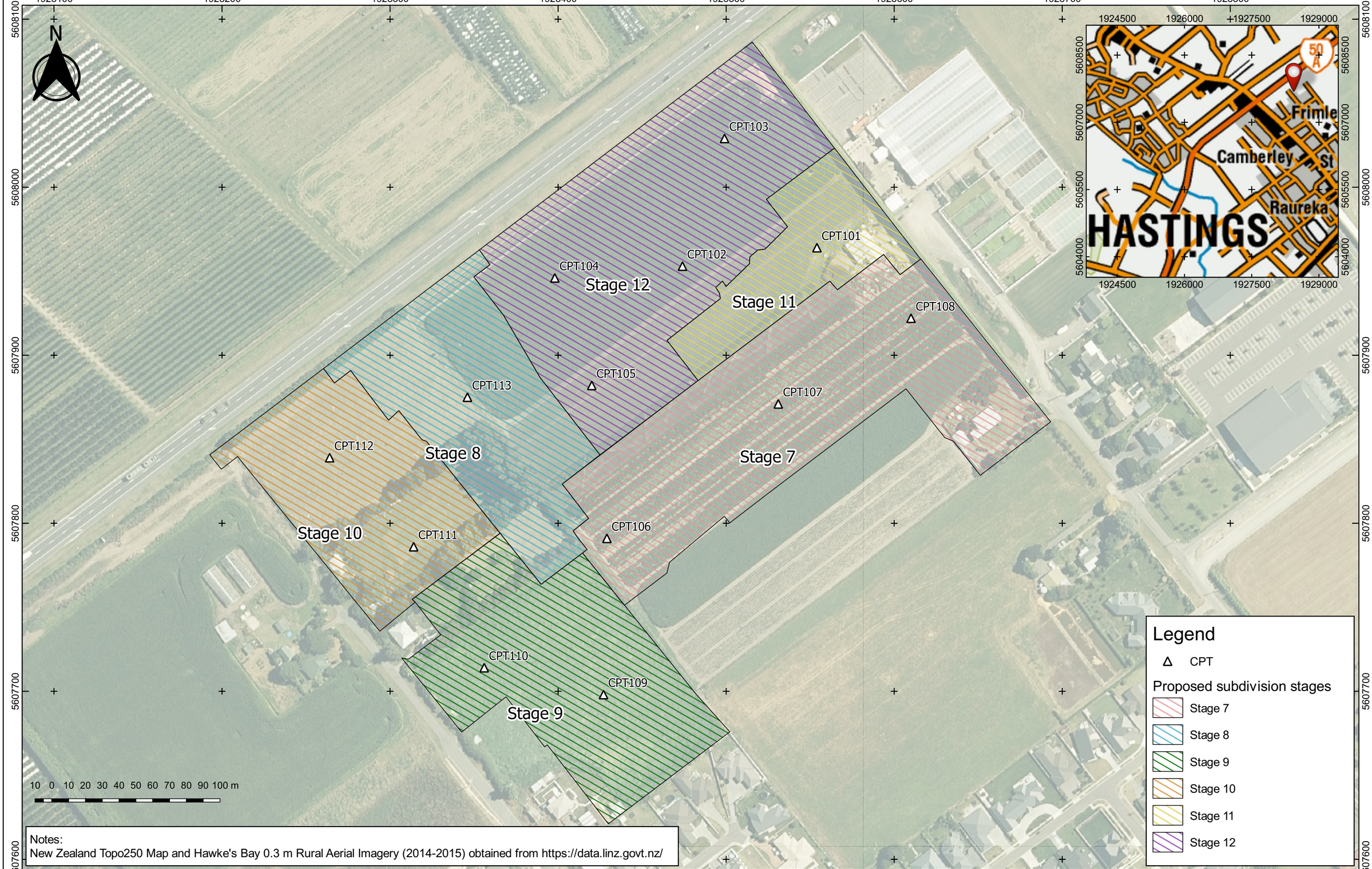
Title	Site Investigation Layout	Drawn By SD	Date 11/12/19	Drawing Size- A3	
Project	Stage 10 - Lyndhurst Rd Subivision	Checked By TB	Date 11/12/19	Project No.: 183970602	
Client	Greenstone Land Development Ltd	Approved By CW	Date 11/12/19	Figure Number: 01	

5607800 5607750 5607700

FIGURE 2 - STAGES 7 TO 12 CPT INVESTIGATION LAYOUT



Notes:
New Zealand Topo250 Map and Hawke's Bay 0.3 m Rural Aerial Imagery (2014-2015) obtained from https://data.linz.govt.nz/

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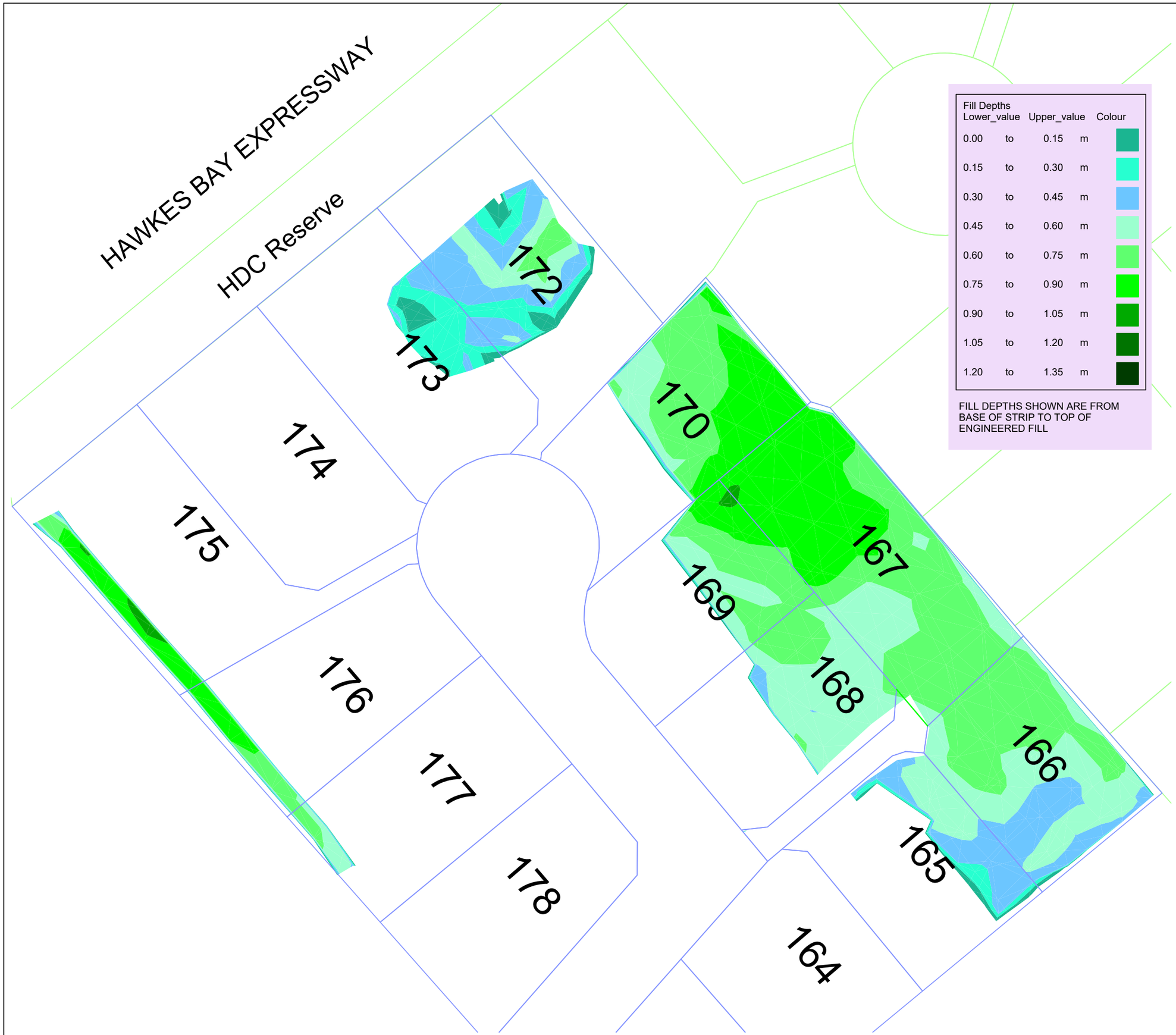
Email: info@rdcl.co.nz www.rdcl.co.nz

Title	CPT Test Locations	Drawn By SD	Date 28/05/19	Drawing Size- A3	
Project	Stage 9 - Lyndhurst Rd Subdivision	Checked By BB	Date 28/05/19	Project No.: 183970602	
Client	Greenstone Land Development Ltd	Approved By TB	Date 28/05/19	Figure Number: 2	

FIGURE 3 – EARTHWORKS PLAN



Fill Depths Lower_value		Upper_value		Colour
0.00	to	0.15	m	
0.15	to	0.30	m	
0.30	to	0.45	m	
0.45	to	0.60	m	
0.60	to	0.75	m	
0.75	to	0.90	m	
0.90	to	1.05	m	
1.05	to	1.20	m	
1.20	to	1.35	m	

FILL DEPTHS SHOWN ARE FROM BASE OF STRIP TO TOP OF ENGINEERED FILL

SANTO STAGE 10 EARTHWORKS ENGINEERED FILL DEPTHS C/O GLDL

DATE : 18 Nov 19
SCALE : 1:500 @ A3
DRAWN BY : R.M
JOB NO. : J001156
PLAN NO. : FillDepth

ZORN SURVEYING Ltd
9 Severn Street, Pandora, Napier
PO Box 1006 Napier
Phone 06 835 2360
Web www.zornsurveying.co.nz
Email info@zornsurveying.co.nz

FIGURE 4 - SCHEMATIC FOUNDATION RECOMMENDATIONS

NOTES:

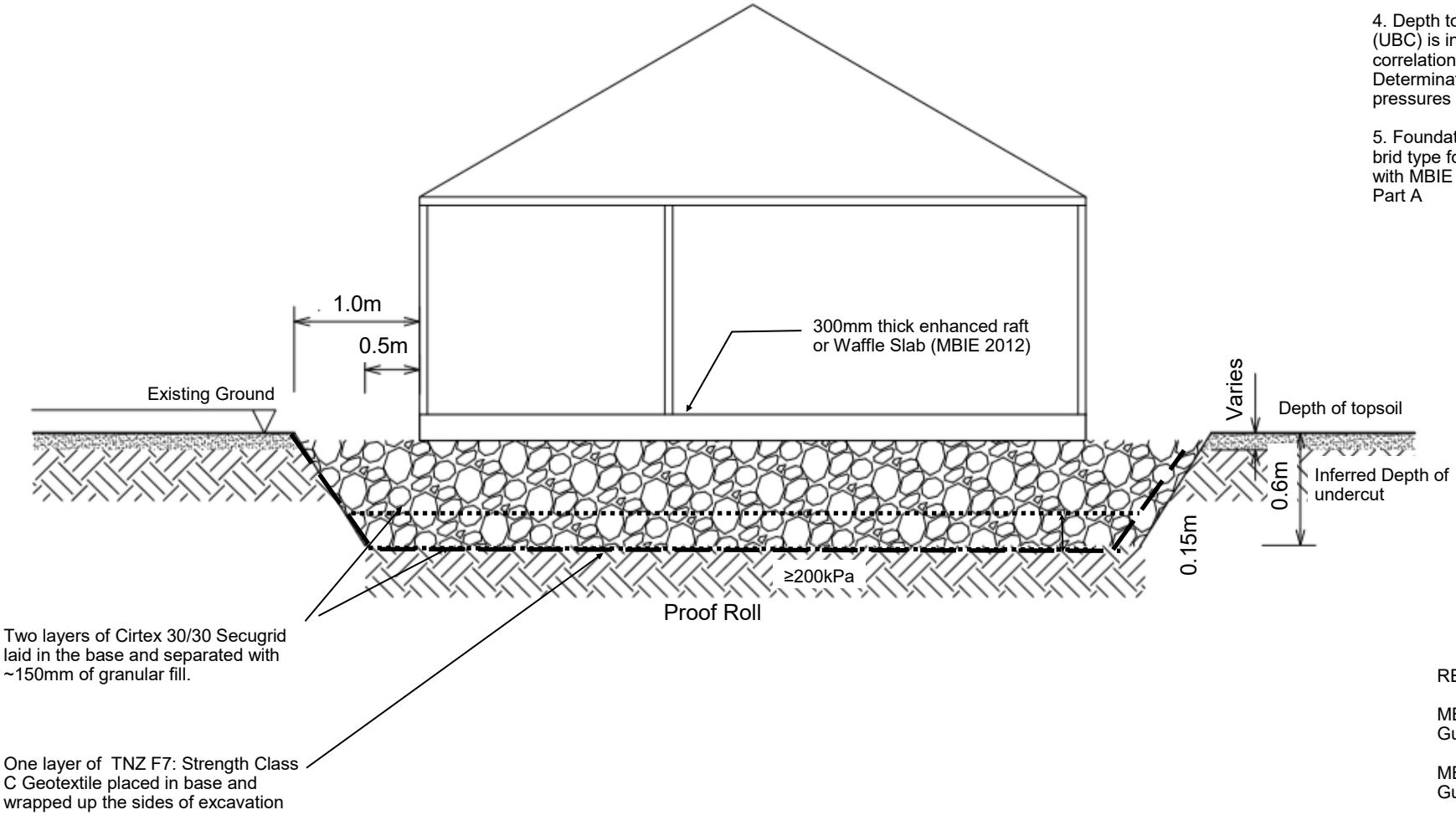
1. For recommended foundation type, refer to RDCL geotechnical report.

2. Depth of undercut is referenced from existing ground level

3. Depth of topsoil is based on depth recorded at the locations tested.

4. Depth to Ultimate Bearing Capacity (UBC) is inferred from DCP tests in correlation with M.J.Stockwell (1977); Determination of allowable bearing pressures under small structures.

5. Foundations to meet TC2/TC3 Hybrid type foundations in accordance with MBIE (2012) Technical Guidance, Part A



REFERENCE:

MBIE (2012) Part A Technical Guidance Version 3

MBIE (2012) Part C Technical Guidance Version 3a

TITLE	Schematic Foundation Recommendation	PROJECT	183970602C				
PROJECT	Lyndhurst Subdivision Stage 10	DRAWN BY	TB	DATE	12/12/19	FIG	
CLIENT	Greenstone Land Development Ltd	CHECKED BY	CAW	DATE	12/12/19	4	

APPENDIX A – STAGE 10 MACHINE AUGER & DCP LOGS

MACHINE AUGER LOG

MA10.01

SHEET 1 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928277.56	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607782.66		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0	0.0	Groundwater Not Encountered		Sandy gravelly SILT; brown. Stiff; dry; sand, fine to medium, gravel, fine to medium, subround; [FILL].	D	SF				
0.5	-0.5			Sandy SILT; brown with grey and orange mottling. Firm; low plasticity; moist; sand, fine.	M	FM				
1.0	-1.0			SAND, with trace silt; brown with orange mottling. Medium dense; non-plastic; moist.		MD				
1.5	-1.5			SILT, with some sand; greyish brown with dark orange mottling. Firm; moist; sand, fine.		FM				
2.0	-2.0			Sandy CLAY; greyish brown with orange mottling. Firm; high plasticity; wet; sand, fine.	W					
2.5	-2.5			EOH: 2.00m Termination: Target depth						
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL
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MACHINE AUGER LOG

MA10.02

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928265.62	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607799.19		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		Sandy gravelly SILT, with some topsoil; dark brown. Stiff; non-plastic; moist; gravel, fine to medium, subround; [FILL] distinctive odour.	M	SF				
				SILT, with some sand; greyish brown. Firm; low plasticity; moist; sand, fine to coarse.		FM				
1.0	-1.0			SAND; brown with dark orange mottling. Medium dense; sand, fine to medium.						
1.5	-1.5			SAND, with some silt; greyish brown with orange mottling. Medium dense; moist.	M	MD				
				CLAY, with some sand; grey with orange mottling. Firm; high plasticity; wet; sand, fine.	W	FM				
2.0	-2.0			EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MACHINE AUGER LOG

MA10.03

SHEET 3 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928252.67	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607812.71		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0				Sandy gravelly SILT, with some topsoil; dark brown. Stiff; non-plastic; moist; sand, fine to coarse, gravel, fine to medium, subround; [FILL].		SF				
0.5	-0.5	Groundwater Not Encountered		SILT, with some sand; greyish brown with orange mottling. Stiff; low plasticity; moist; sand, fine.						
				SAND; brown with orange mottling. Moist; Moderate plasticity.	M					
1.0	-1.0									
				SAND, with some silt; grey with dark orange mottling. Medium dense; low plasticity; moist; Silt lensoidal.		MD				
1.5	-1.5									
				CLAY, with some sand; grey with dark orange mottling. Firm; high plasticity; sand, fine.		FM				
2.0	-2.0			EOH: 2.10m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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MACHINE AUGER LOG

MA10.04

SHEET 4 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928228.31	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607833.78		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		Sandy gravelly SILT, with some topsoil; dark brown. Stiff; non-plastic; moist; sand, fine to coarse, gravel, fine to medium, subangular to subround; [FILL].	M	SF				
1.0	-1.0			Sandy SILT; grey with dark orange mottling. Stiff; moderate plasticity; moist; sand, fine, lensoidal.						
1.5	-1.5			SAND, with some silt; grey with orange mottling. Medium dense; low plasticity; sand, fine to medium; silt, lensoidal.		MD				
2.0	-2.0			EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MA10.05

SHEET 5 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928247.06	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607846.43		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		Sandy SILT, with some topsoil and gravel; dark brown. Stiff; non-plastic; moist; gravel, fine to medium, subround; [FILL].	M	SF				
1.0	-1.0			SILT, with some sand; greyish brown. Stiff; low plasticity; moist.						
1.5	-1.5			Silty SAND; greyish brown with orange mottling. Medium dense; low plasticity; sand, fine, grey, lensoidal.		MD				
2.0	-2.0			CLAY, with some sand; greyish brown with orange mottling. Firm; high plasticity; wet; sand, fine.	W	FM				
				EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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SHEET 6 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928264.39	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607859.80		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		Sandy SILT, with some gravel; dark brown. Stiff; non-plastic; moist; sand, fine to coarse; gravel, fine to medium, subround; [FILL].		SF				
1.0	-1.0			Sandy SILT; greyish brown with orange mottling. Stiff; moderate plasticity; moist; some sand, lensoidal, fine to medium, brown.	M					
1.5	-1.5			Silty SAND; greyish brown with dark orange mottling. Medium dense; low plasticity; moist; some sand, lensoidal, fine to medium.		MD				
2.0	-2.0			SAND; dark grey with fark orange mottling. Medium dense; wet; sand, fine to medium. EOH: 2.00m Termination: Target depth	W					
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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SHEET 7 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928278.09	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607871.44		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0	0.0	Groundwater Not Encountered		TOPSOIL; dark brown. Soft; moist; [FILL].		S				
0.5	-0.5			Silty SAND; brown with orange mottling. Medium dense; low plasticity; moist.		MD				
1.0	-1.0			SAND; greyish brown with orange mottling. Moist; Non-Plastic; some silt, lensoidal, brown.	M					
1.5	-1.5									
2.0	-2.0			Sandy CLAY; greyish brown with orange mottling. High plasticity; wet; sand, fine.	W					
				EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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MA10.08

SHEET 8 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928300.72	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607844.76		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0	0.0	Groundwater Not Encountered		SAND, with some topsoil; grey with dark brown mottling. Dense; moist; sand, fine to medium; [FILL].	M	D				
0.5	-0.5			Sandy SILT; brown with orange mottling. Very stiff; low plasticity; moist; [FILL].		VSF				
				Silty gravellyTOPSOIL; dark grey with grey and black mottling. Firm; non-plastic; moist; gravel, fine to medium, subround to round; [FILL].		FM				
1.0	-1.0			SAND, with trace silt; brown with grey and orange mottling. Medium dense; non-plastic; moist; some silt, lensoidal.		MD				
1.5	-1.5			Silty SAND; grey with orange mottling. Moderate plasticity; wet; sand, fine to medium; some silt, lensoidal.	W					
2.0	-2.0			EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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MA10.09

SHEET 9 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928305.16	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607822.51		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0	-0.5	Groundwater Not Encountered		TOPSOIL, with some gravel; dark brown. Stiff; moist; gravel, fine to medium, round; some wood [FILL].	M	SF				
0.5				Sandy SILT; greyish brown with orange mottling. Firm; low plasticity; moist.		FM				
1.0	-1.0			SAND, with minor silt; brown with orange mottling. Medium dense; non-plastic; some silt, lensoidal.		MD				
1.5	-1.5									
2.0	-2.0			Sandy CLAY; grey with orange mottling. Firm; moderate plasticity; wet; sand, fine; clay, lensoidal, brown, @2.0m; seepage @2.0m.	W	FM				
				EOH: 2.10m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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MA10.10

SHEET 10 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928312.10	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607806.89		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		SiltyTOPSOIL, with some gravel; dark brown. Firm; non-plastic; moist; gravel, fine, subround;]FILL].	M	FM				
1.0	-1.0			Silty SAND; greyish brown. Dense; low plasticity; moist; sand, fine to medium.		D				
1.5	-1.5			SAND, with trace silt; grey with orange mottling. Dense; non-plastic; moist; sand, fine to medium.						
2.0	-2.0			Silty SAND; greyish brown with orange mottling. Medium dense; moderate plasticity; wet.	W	MD				
				Silty sandy CLAY; greyish brown with grey and orange mottling. Soft; moderate plasticity; wet; Seepage @2.0m.		S				
				EOH: 2.20m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MA10.11

SHEET 11 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928328.74	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607826.56		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		Silty sandyTOPSOIL; dark brown with grey mottling. Stiff; non-plastic; moist; [FILL].	M	SF				
1.0	-1.0			Silty SAND; brown with orange mottling. Dense; low plasticity; moist; sand, fine to medium.		D				
1.5	-1.5			SAND, with trace silt; brown with orange mottling. Medium dense; non-plastic; moist; sand, fine to medium.		MD				
2.0	-2.0			Sandy, with some silt; brown with orange mottling. Medium dense; non-plastic; wet.	W					
				Silty sandy CLAY; brown with orange mottling. Firm; high plasticity; wet; sand, fine.		FM				
2.5	-2.5			EOH: 2.20m Termination: Target depth						
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MA10.12

SHEET 12 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928348.90	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607797.77		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0		Groundwater Not Encountered		SAND, with trace topsoil; greyish brown with grey and dark brown mottling. Medium dense; moist; [FILL].	M	MD				
0.5	-0.5			Silty SAND; brown with grey and orange mottling. Dense; low plasticity; moist; sand, fine to medium.		D				
1.0	-1.0			Sandy SILT; brown with orange mottling. Firm; moderate plasticity; moist; sand, fine to medium.		FM				
1.5	-1.5			SAND, with some silt; brown with orange mottling. Medium dense; low plasticity; moist; sand, fine to medium; silt, lensoidal.		MD				
2.0	-2.0			Silty sandy CLAY; brown with orange mottling. Moderate plasticity; wet; sand, fine.	W					
2.5	-2.5			EOH: 2.00m Termination: Target depth						
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MA10.13

SHEET 13 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928331.20	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607783.11		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.5	-0.5	Groundwater Not Encountered		SiltyTOPSOIL, with trace gravel. Firm; low plasticity; moist; gravel, fine, subround; [FILL].		FM				
1.0	-1.0			Sandy SILT; brown with orange mottling. Low plasticity; moist; sand, fine to medium.	M					
1.5	-1.5			SAND; brown with orange mottling. Medium dense; moist; sand, fine to coarse.		MD				
2.0	-2.0			Silty SAND; brown with orange mottling. Medium dense; low plasticity; moist.						
				Clayey silty SAND; brown with orange mottling. Medium dense; moderate plasticity; wet; sand, fine to medium.	W					
2.5	-2.5			EOH: 2.00m Termination: Target depth						
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MA10.14

SHEET 14 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928314.32	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607768.26		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0	0.0	Groundwater Not Encountered		TOPSOIL; dark brown. Firm; moist; [FILL].	M	FM				
0.5	-0.5			Silty SAND; brown with orange mottling. Medium dense; low plasticity; moist.		MD				
				Sandy SILT; grey with orange mottling. Stiff; moderate plasticity; moist.		SF				
1.0	-1.0			SAND, with some silt; grey with orange mottling. Low plasticity; moist; silt, lensoidal.						
1.5	-1.5									
2.0	-2.0			Clayey silty SAND, with trace gravel; grey with dark orange mottling. Medium dense; high plasticity; wet; gravel, fine, angular.	W	MD				
				EOH: 2.00m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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MACHINE AUGER LOG

MA10.15

SHEET 15 OF 15

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	STARTED:	05-11-2019
PROJECT:	183970602	EASTING:	1928297.34	FINISHED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607754.54		
	Lot145	DATUM:	-	LOGGED BY:	SD DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 12-12-2019
ENGINEER:	TB	DIMENSIONS:	m x m	STATUS:	Final data
CONTRACTOR:	RDCL	MACHINE TYPE & MODEL:			

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	ROCK / SOIL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / DENSITY	CLASSIFICATION	DCP BLOWS	SAMPLES & TESTS	ADDITIONAL REMARKS
0.0				TOPSOIL; dark brown. Stiff; moist; with some rootlets [FILL].		SF				
0.5	-0.5	Groundwater Not Encountered		Silty SAND; greyish brown with orange mottling. Medium dense; low plasticity; moist; sand, fine to medium.	M	MD				
1.0	-1.0			SAND, with trace silt; brown with orange mottling. Medium dense; sand, fine to medium.						
1.5	-1.5			Clayey silty SAND; grey with dark orange mottling. Medium dense; moderate plasticity; wet; sand, fine to medium.	W					
2.0	-2.0			SAND, with some clay and silt; greyish brown with grey and orange mottling. Medium dense; low plasticity; wet.						
2.2	-2.2			EOH: 2.20m Termination: Target depth						
2.5	-2.5									
3.0	-3.0									
3.5	-3.5									
4.0	-4.0									
4.5	-4.5									

REMARKS

Ground water not encountered

SYMBOLS

▼ Standing Water Level

◁ Out flow

▷ In flow

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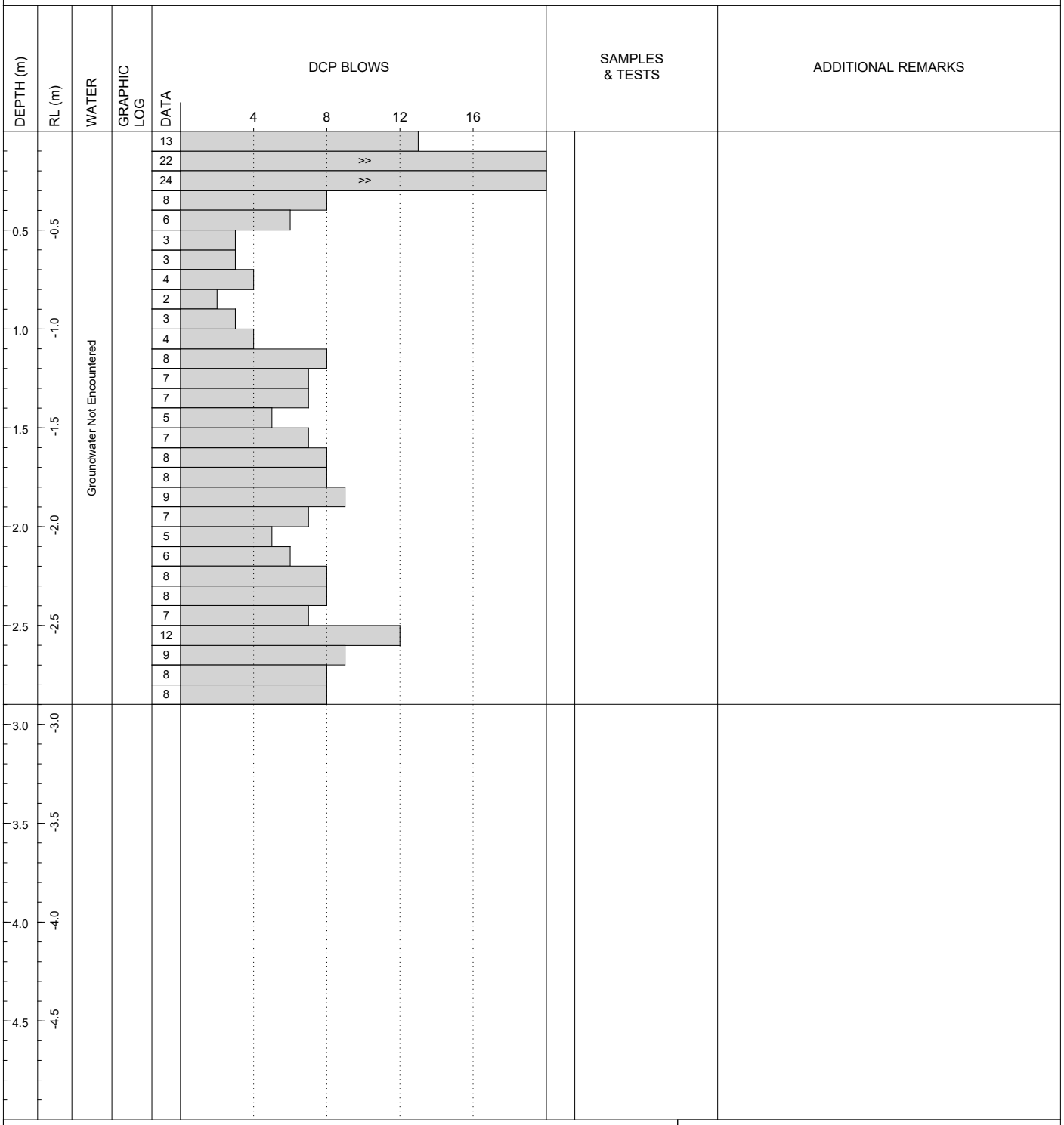
DCP LOG

DCP10.01

SHEET 1 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 178
PROJECT:	183970602	EASTING:	1928273.10	STARTED:	04-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607773.46	FINISHED:	04-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 04-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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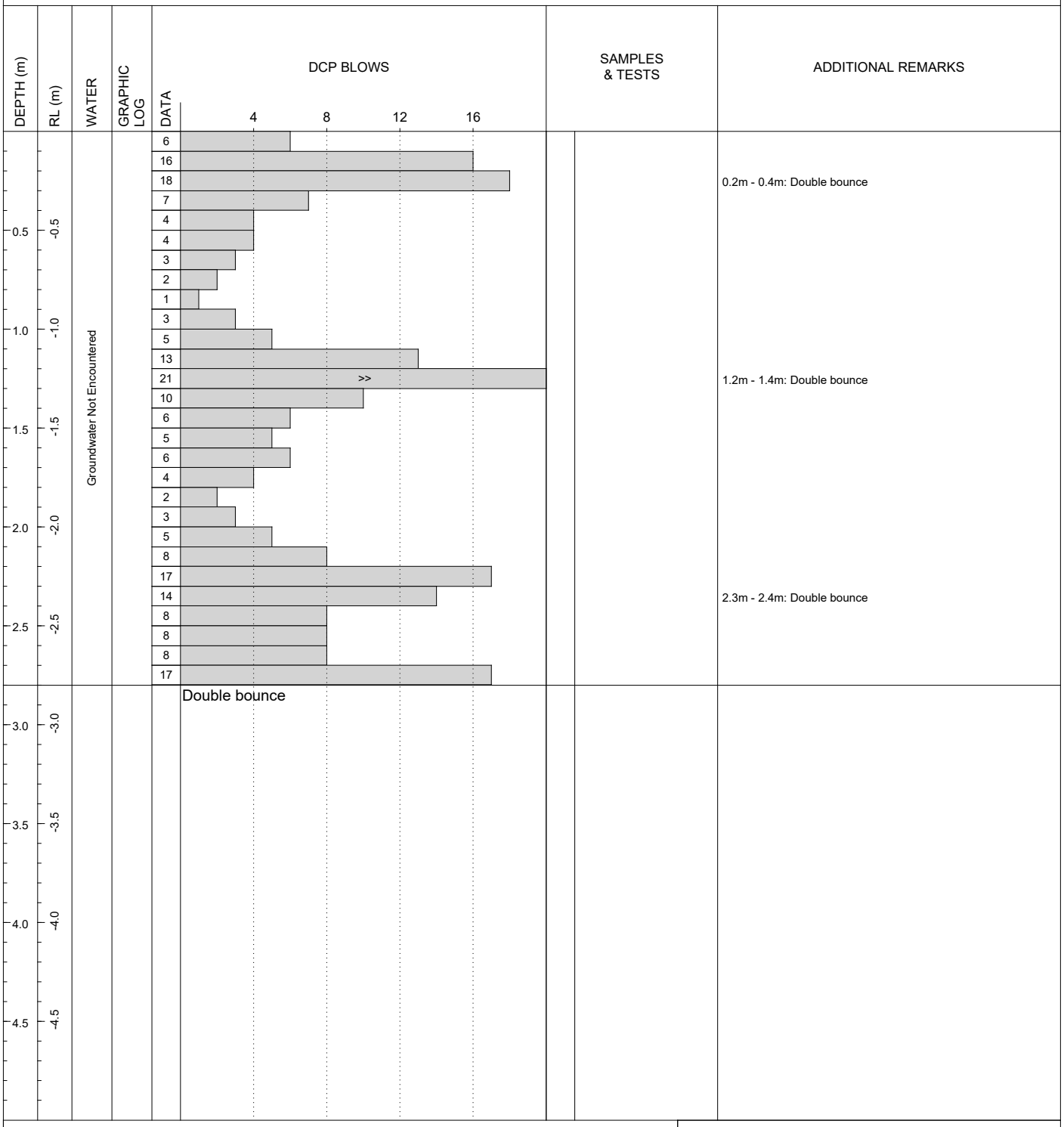
DCP LOG

DCP10.02

SHEET 2 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 178
PROJECT: 183970602	EASTING: 1928285.40	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607785.24	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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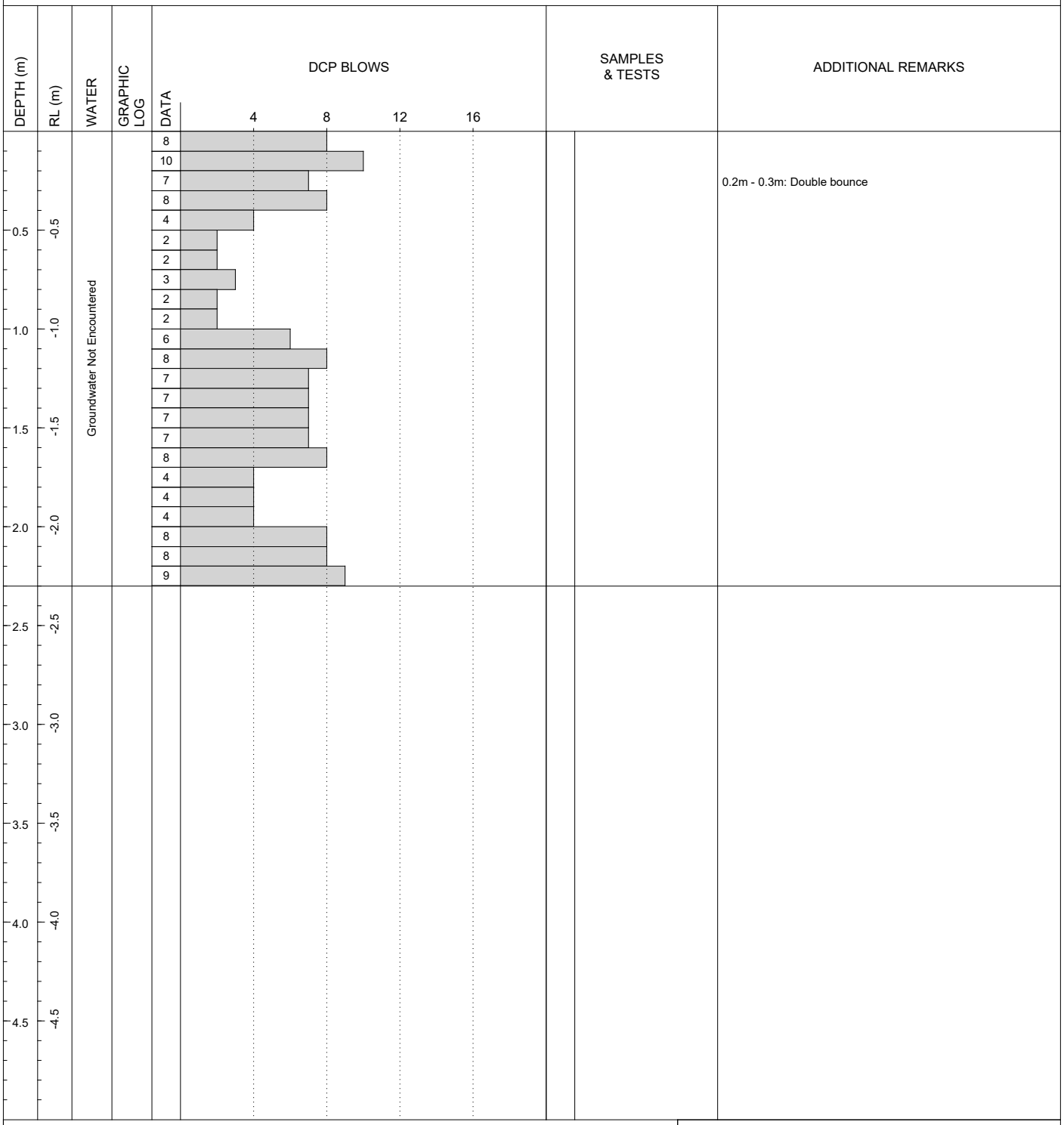
DCP LOG

DCP10.03

SHEET 3 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 178
PROJECT: 183970602	EASTING: 1928280.38	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607789.69	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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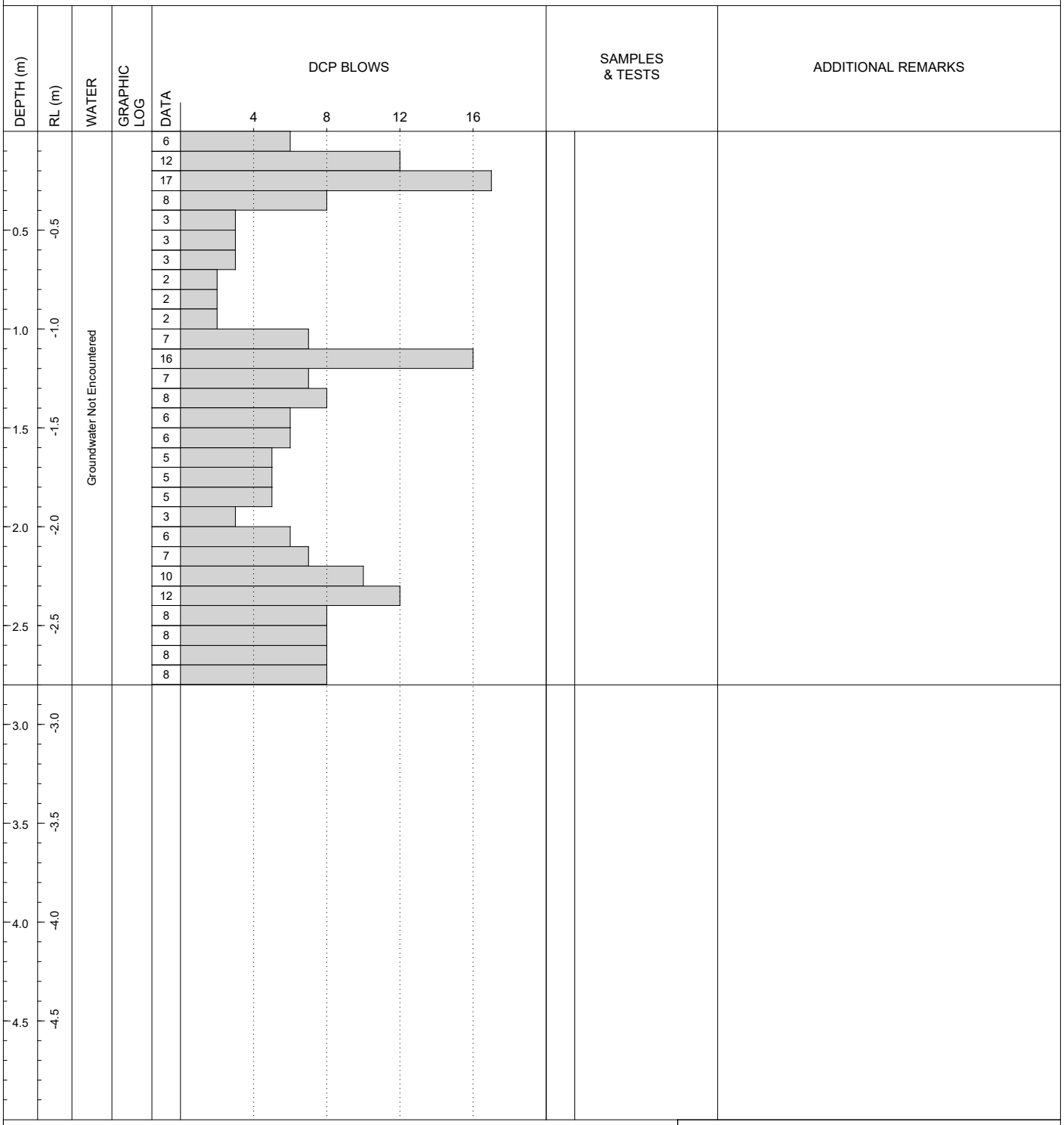
DCP LOG

DCP10.04

SHEET 4 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 178
PROJECT: 183970602	EASTING: 1928263.67	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607782.41	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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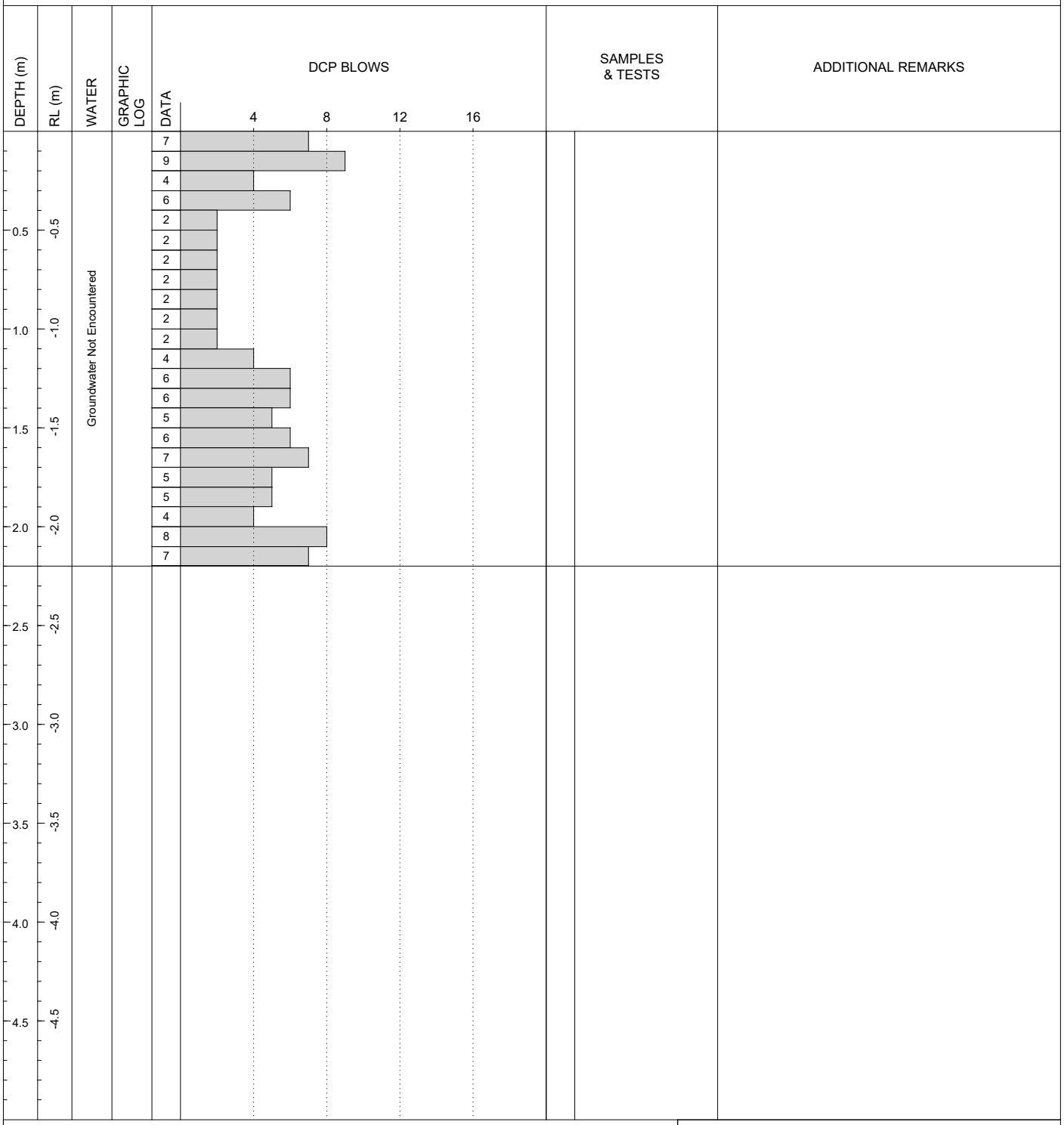
DCP10.05

SHEET 5 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 177
PROJECT: 183970602	EASTING: 1928260.01	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607790.70	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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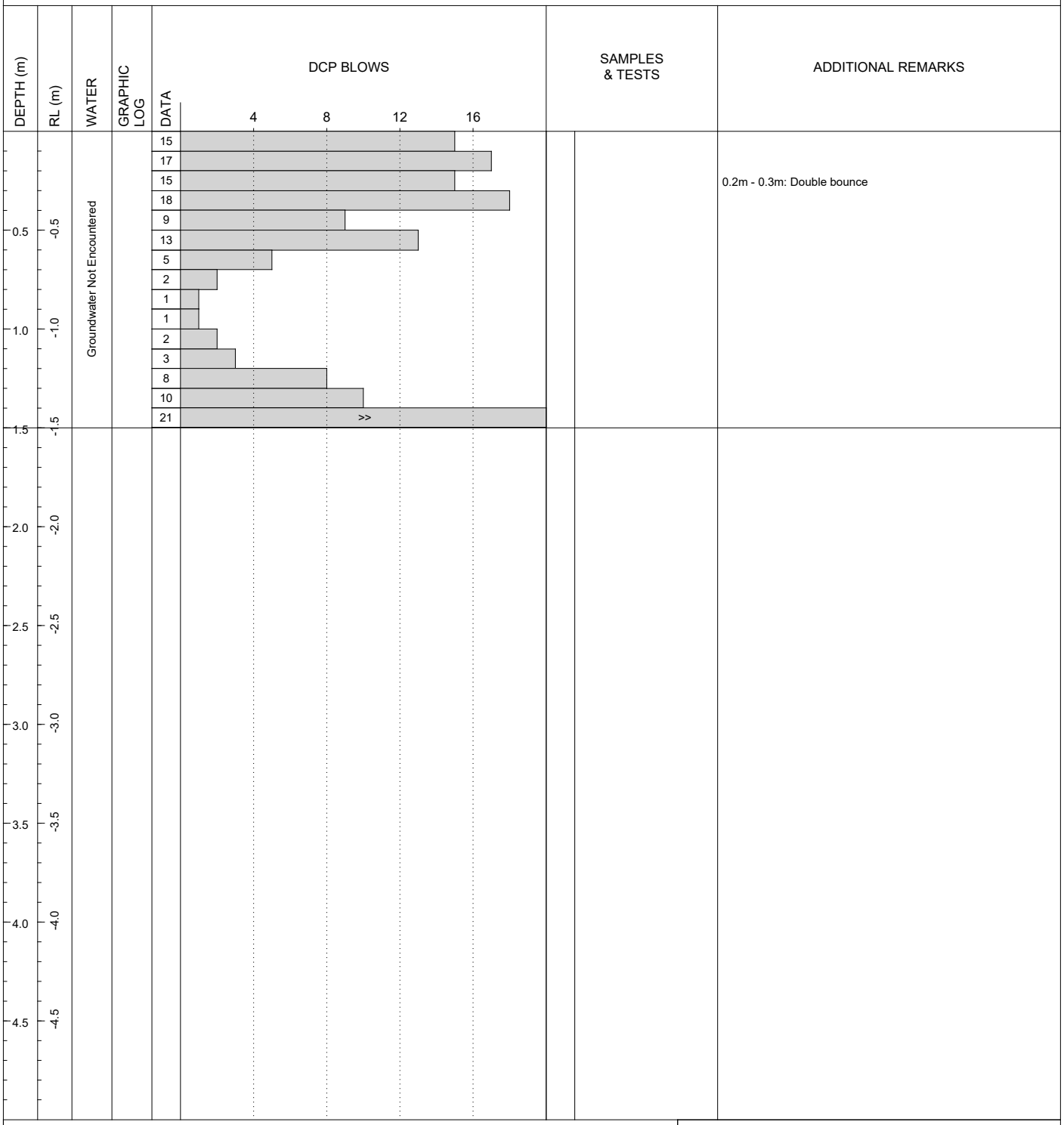
DCP10.06

SHEET 6 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 177
PROJECT: 183970602	EASTING: 1928275.36	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607800.11	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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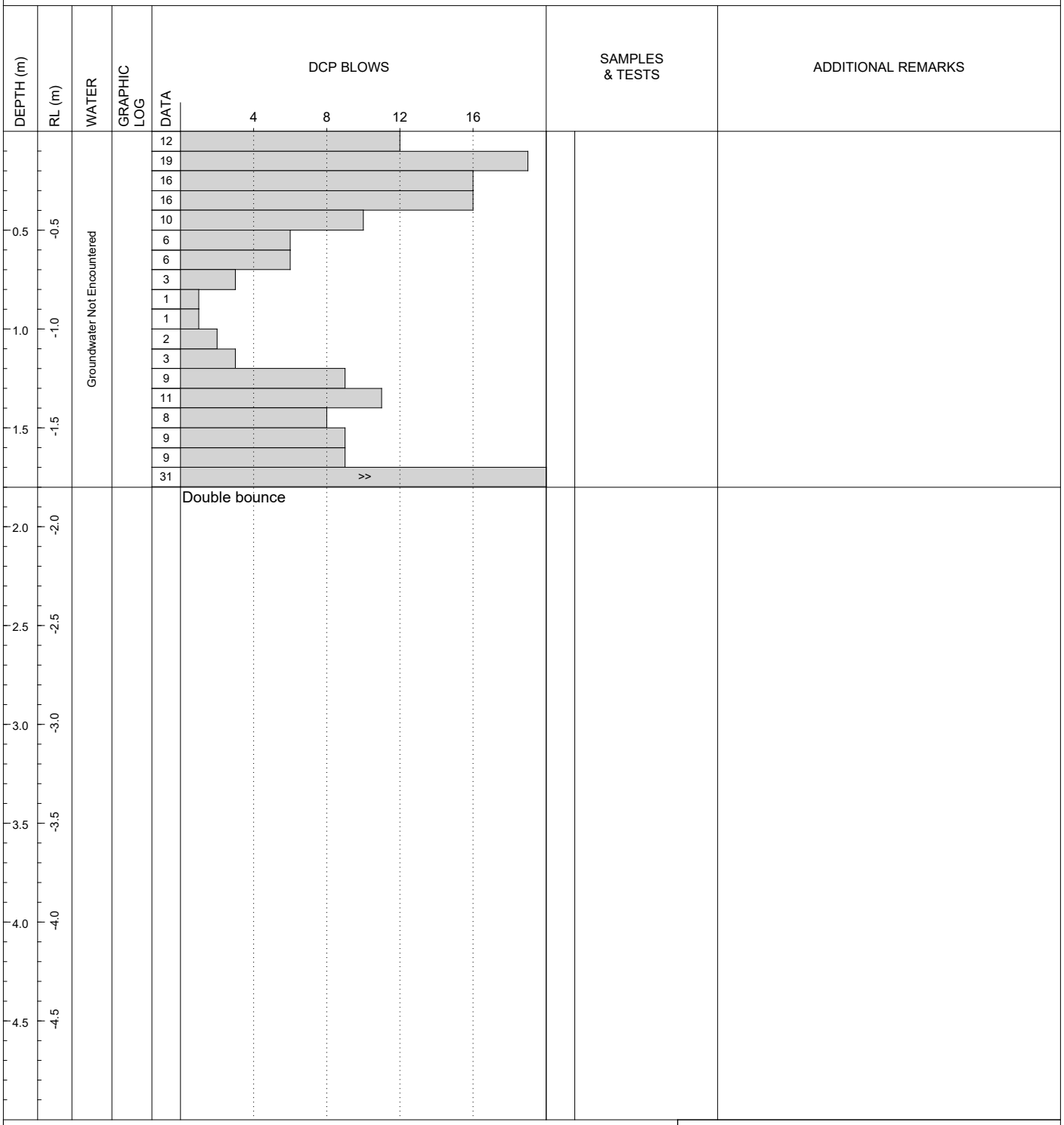
DCP LOG

DCP10.07

SHEET 7 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 177
PROJECT: 183970602	EASTING: 1928269.20	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607800.37	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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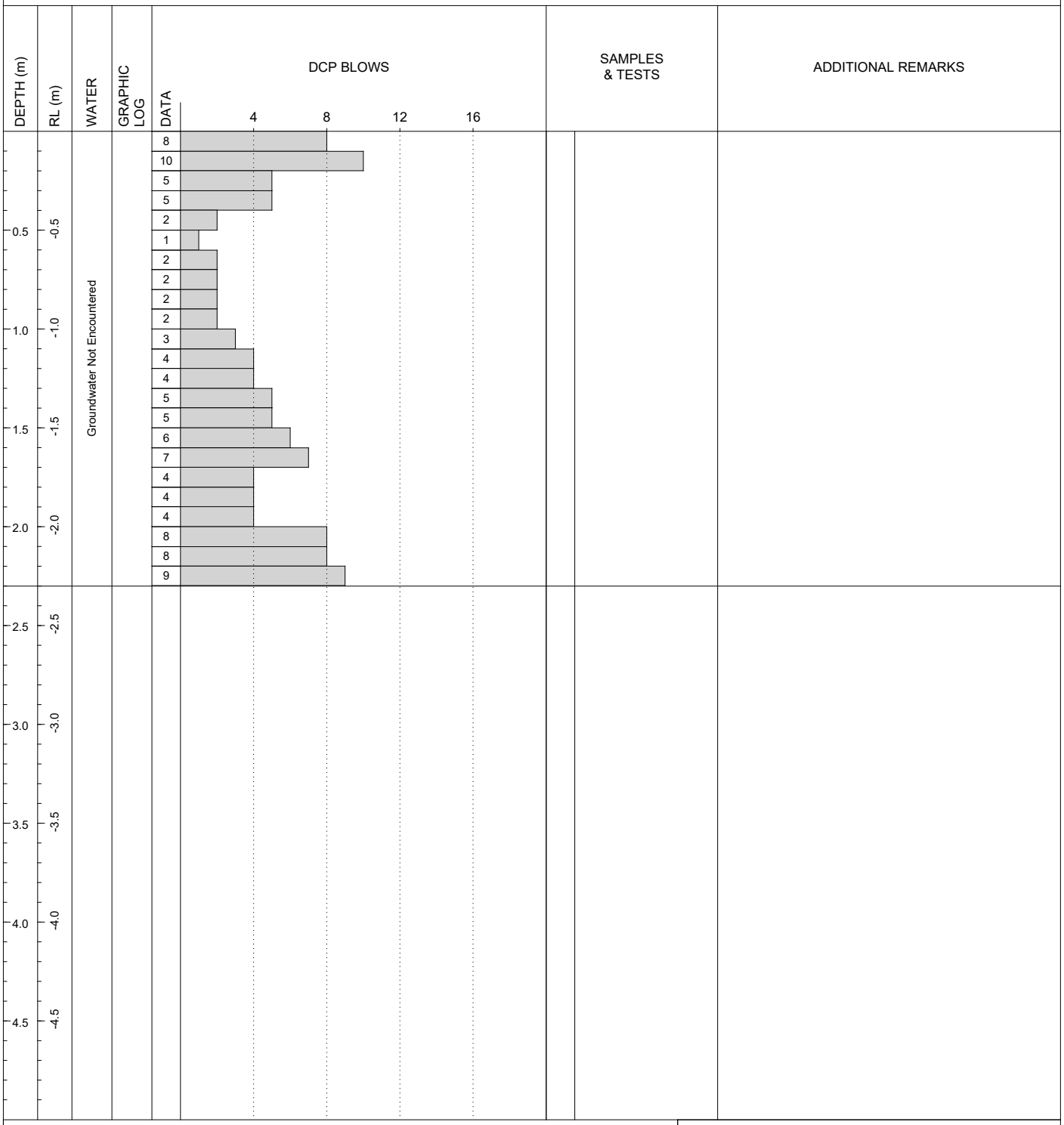
DCP LOG

DCP10.08

SHEET 8 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 177
PROJECT: 183970602	EASTING: 1928255.35	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607800.97	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS
Soils tested in accordance with NZGS

SYMBOLS
- Standing Water Level
- Out flow
- In flow

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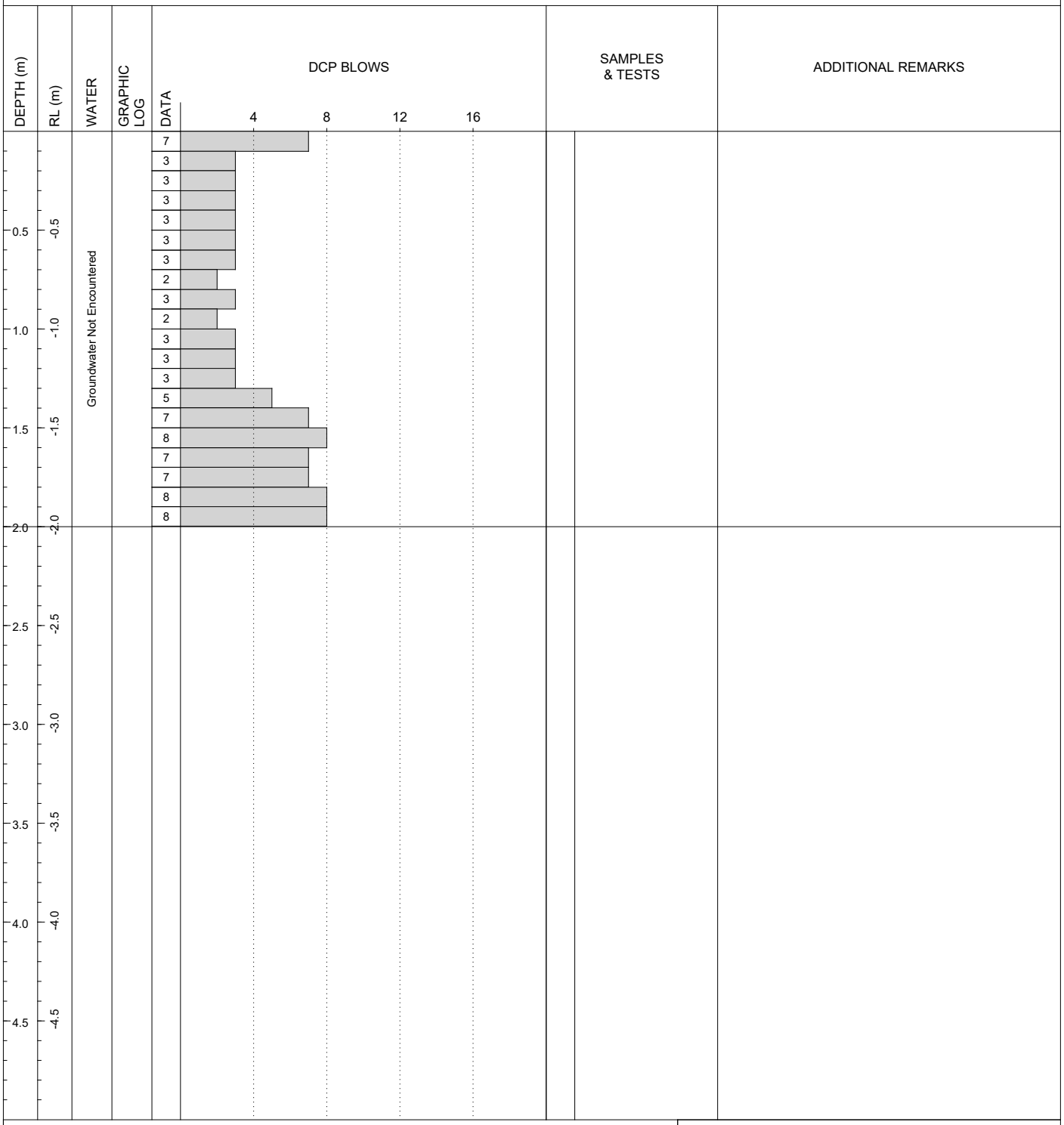
DCP LOG

DCP10.09

SHEET 9 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 176
PROJECT: 183970602	EASTING: 1928247.07	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607805.38	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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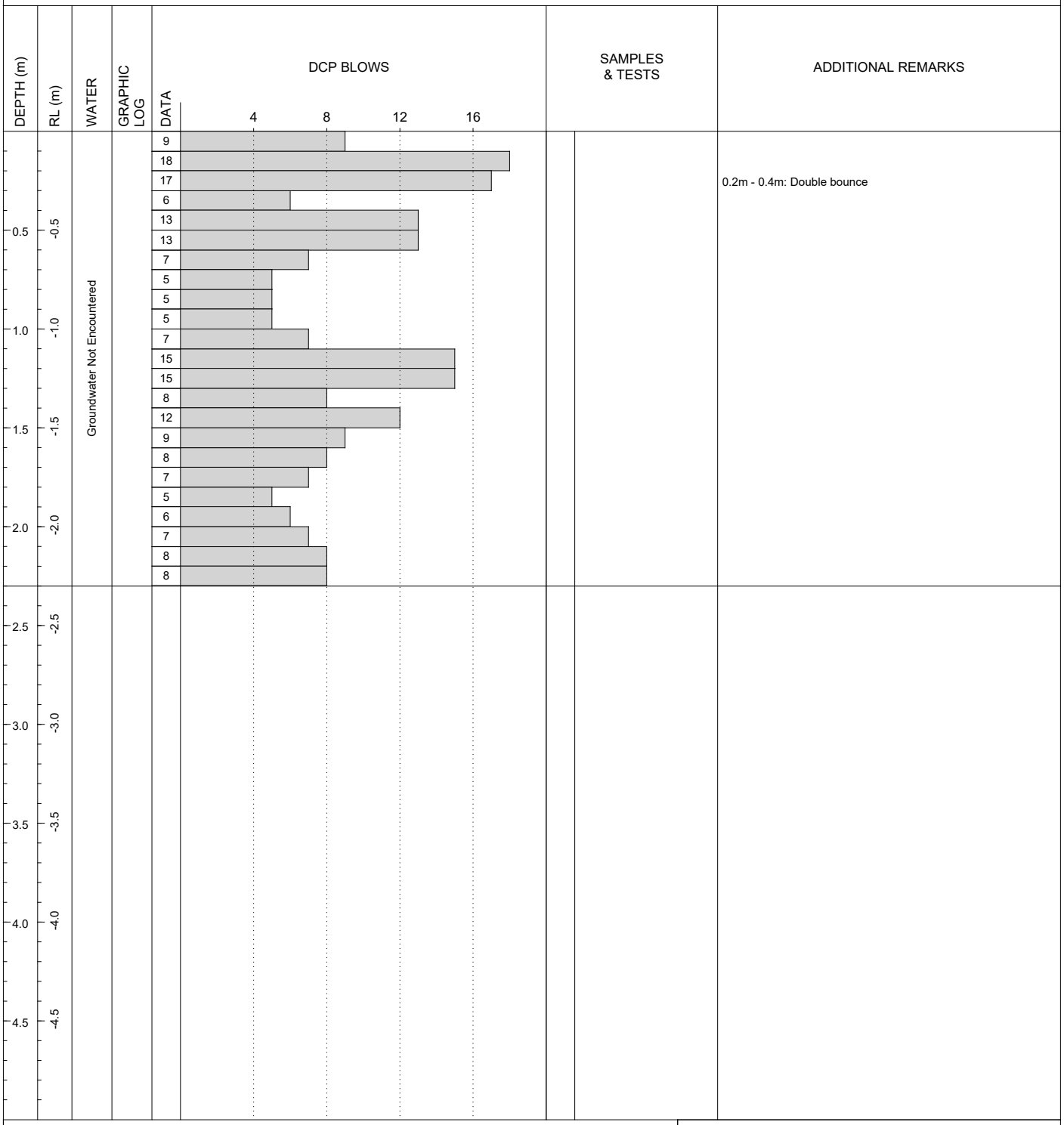
DCP LOG

DCP10.10

SHEET 10 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 176
PROJECT: 183970602	EASTING: 1928262.98	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607815.55	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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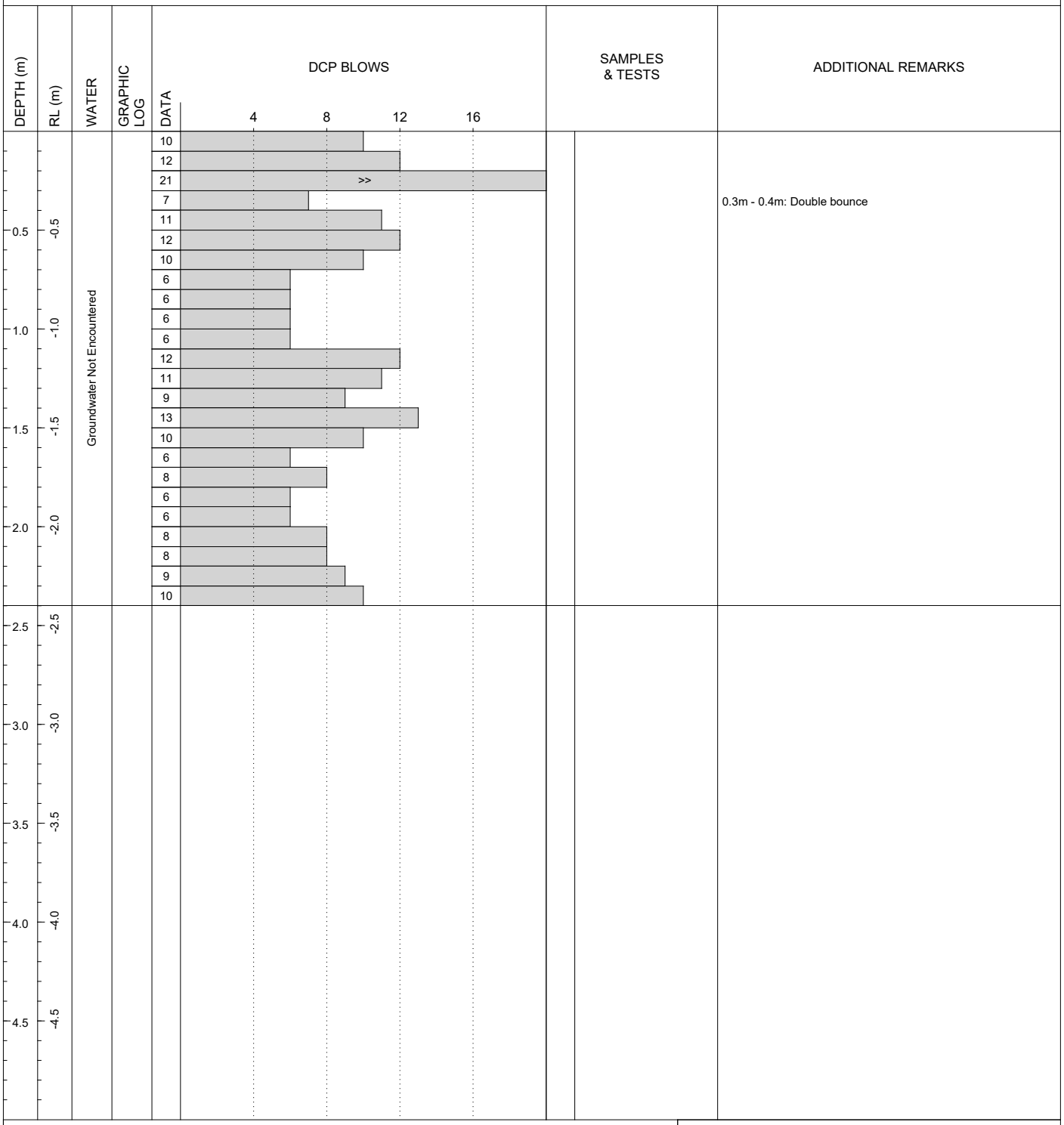
DCP LOG

DCP10.11

SHEET 11 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 176
PROJECT: 183970602	EASTING: 1928259.76	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607821.52	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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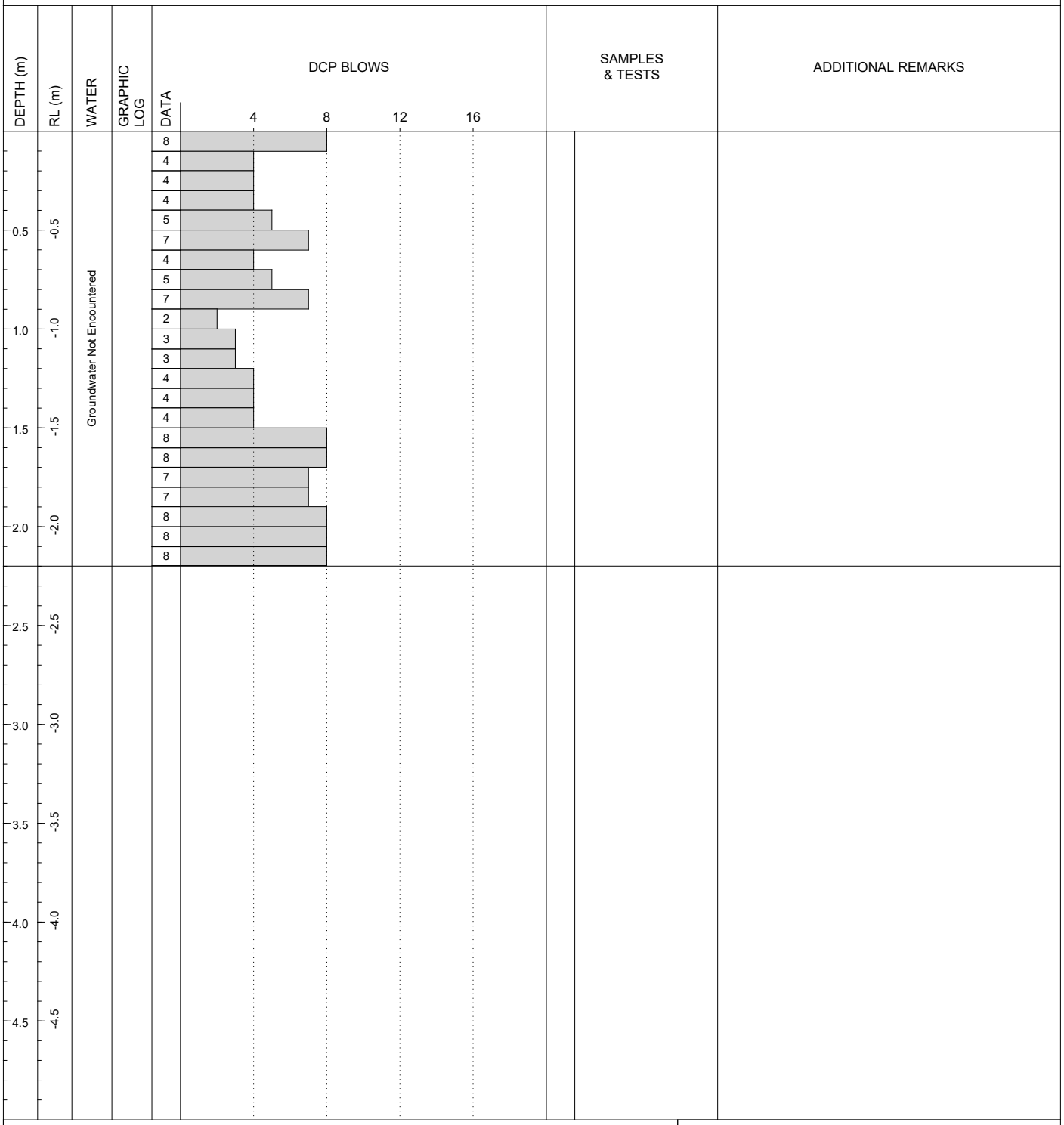
DCP LOG

DCP10.12

SHEET 12 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 176
PROJECT: 183970602	EASTING: 1928241.61	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607813.02	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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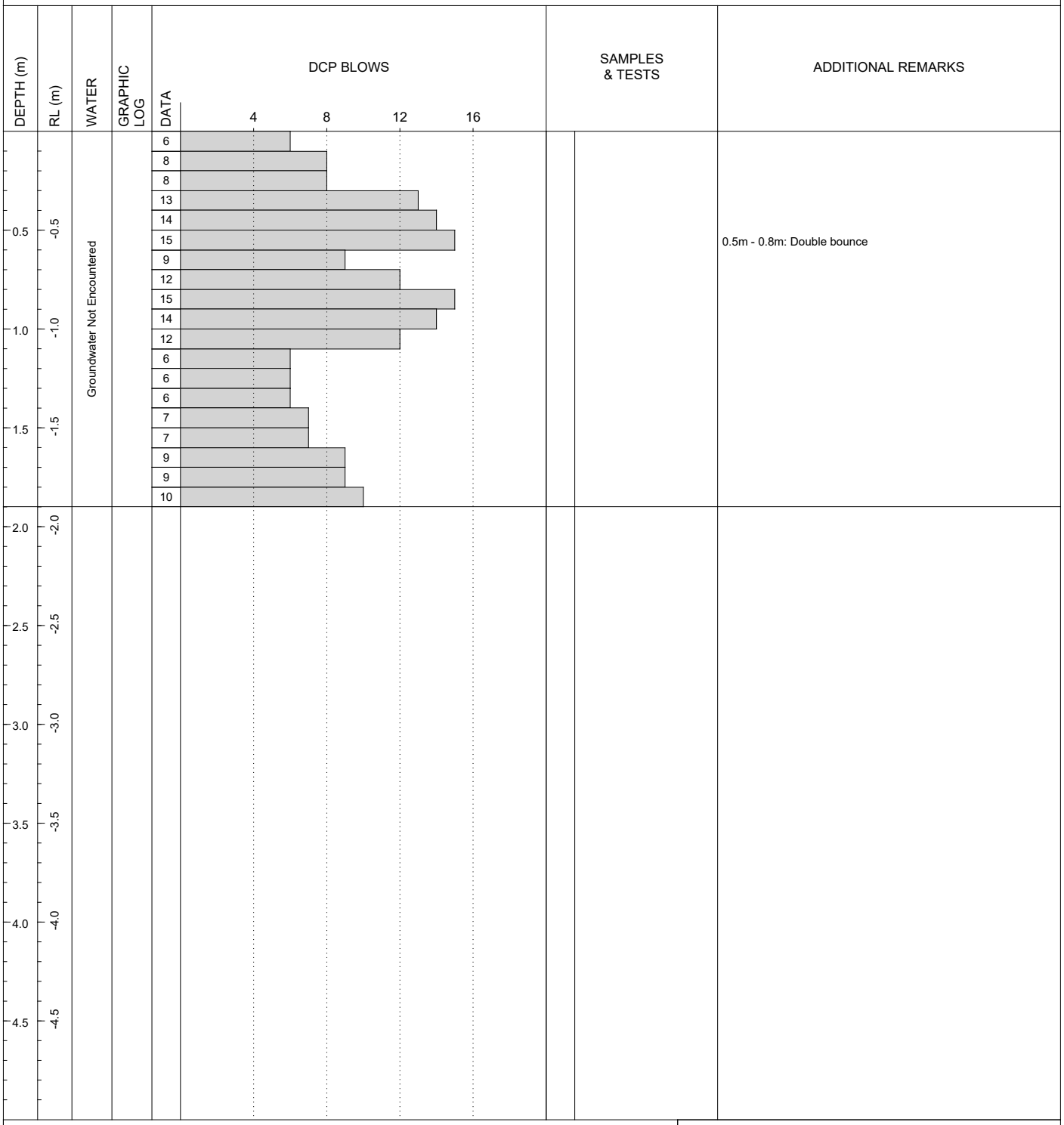
DCP LOG

DCP10.13

SHEET 13 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 175
PROJECT:	183970602	EASTING:	1928221.79	STARTED:	04-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607834.68	FINISHED:	04-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 04-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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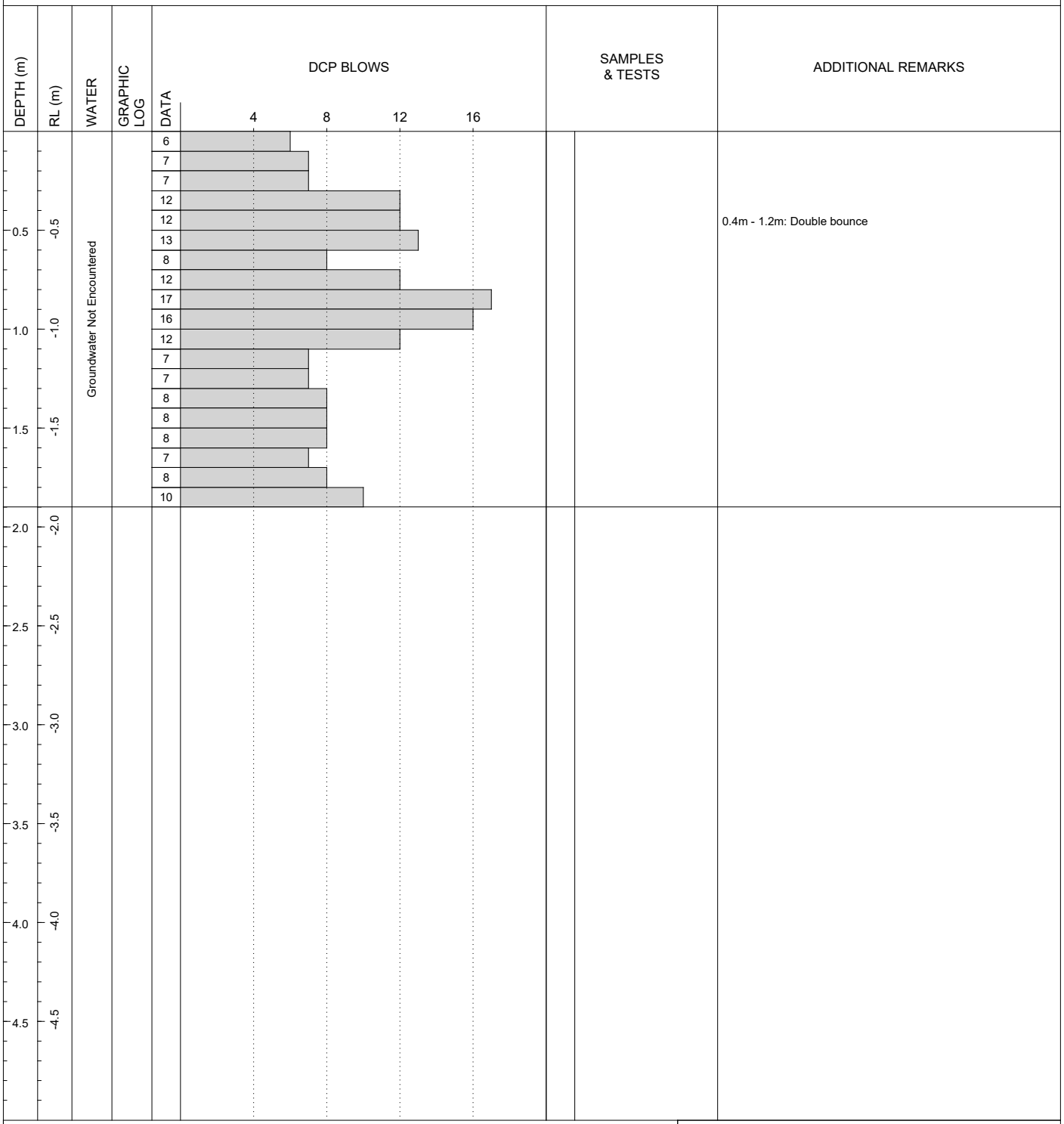
DCP LOG

DCP10.14

SHEET 14 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 175
PROJECT: 183970602	EASTING: 1928230.93	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607823.71	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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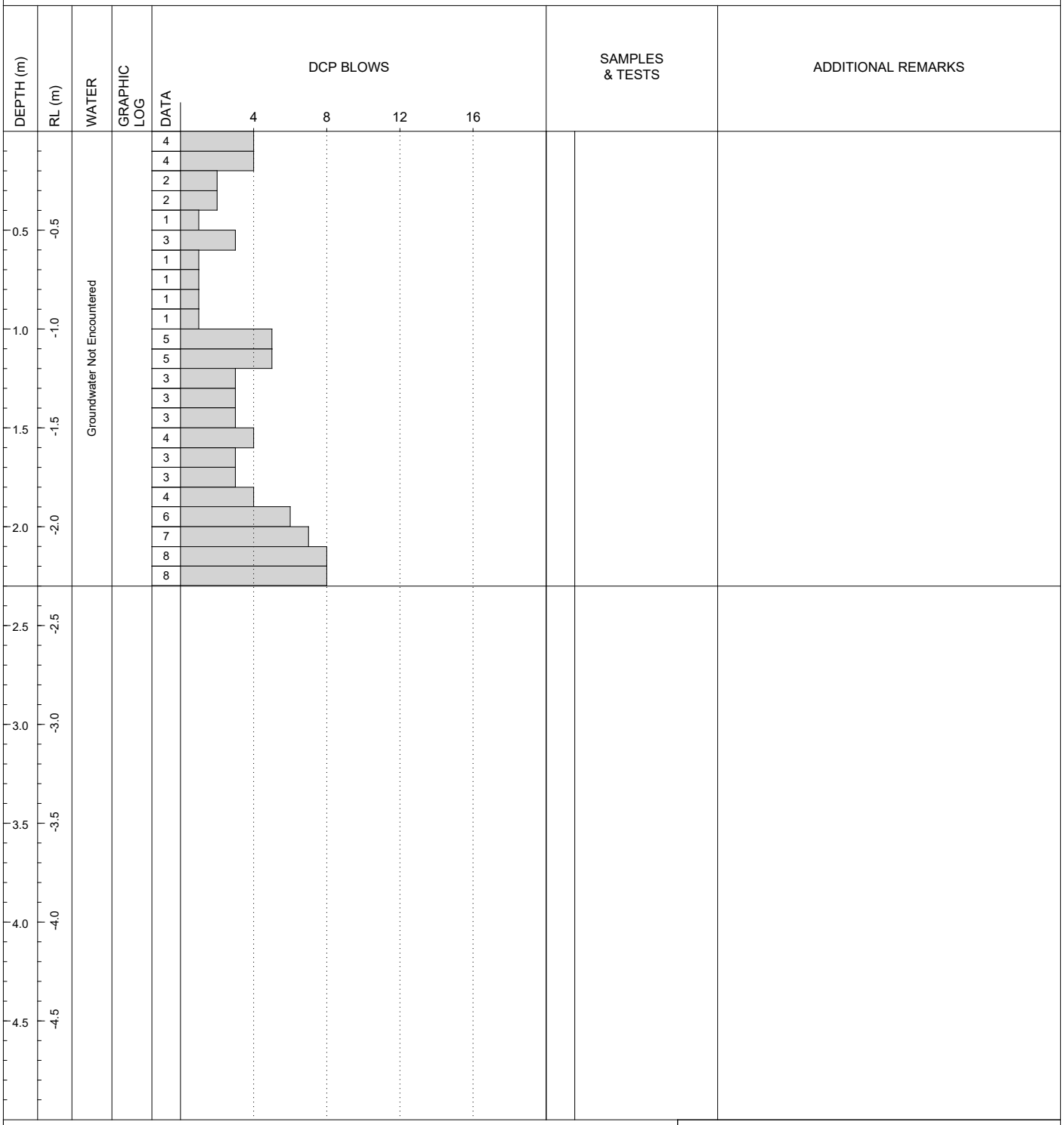
DCP LOG

DCP10.15

SHEET 15 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 175
PROJECT: 183970602	EASTING: 1928241.96	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607827.15	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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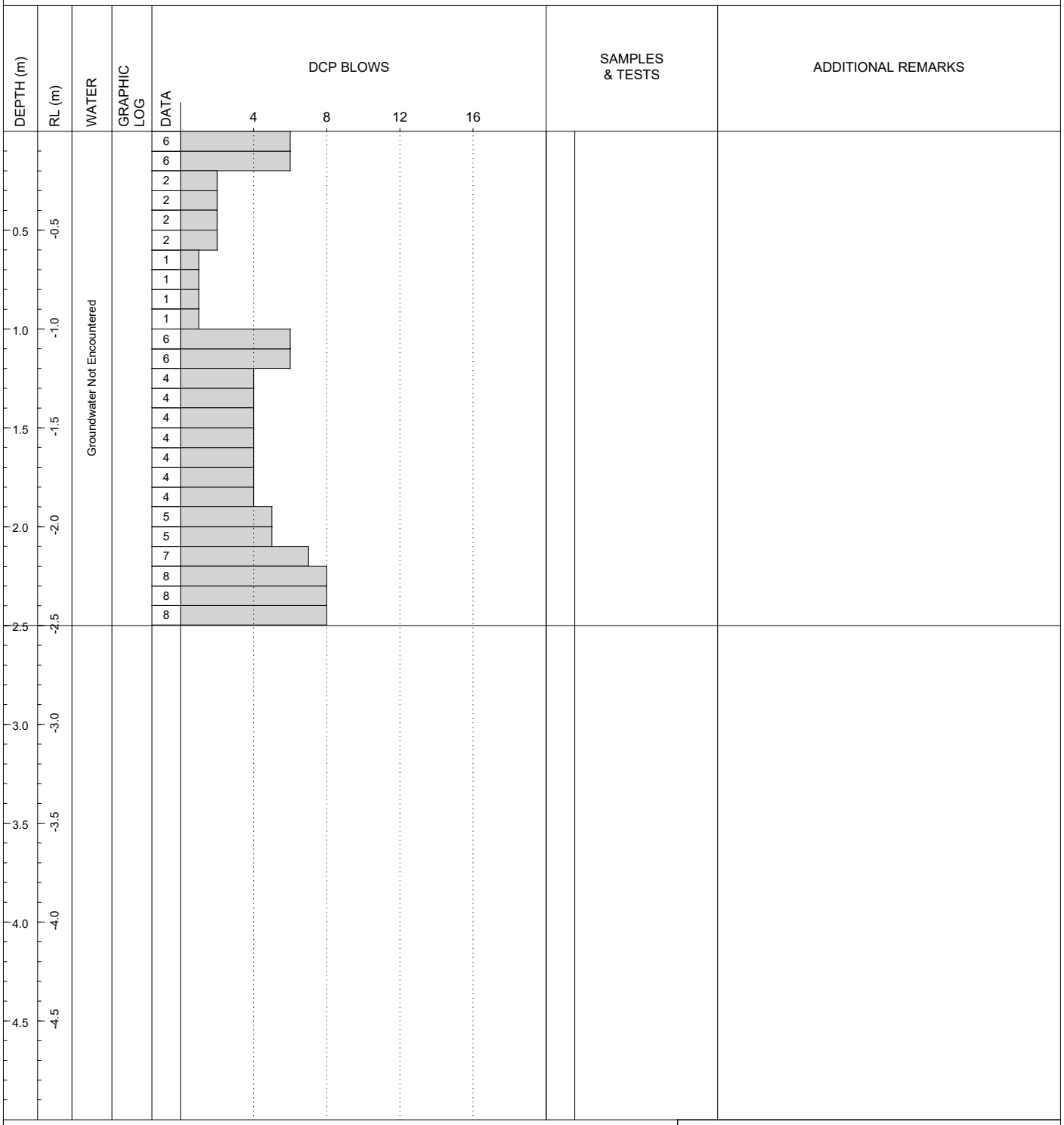
DCP LOG

DCP10.16

SHEET 16 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 175
PROJECT: 183970602	EASTING: 1928229.02	STARTED: 04-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607842.03	FINISHED: 04-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 04-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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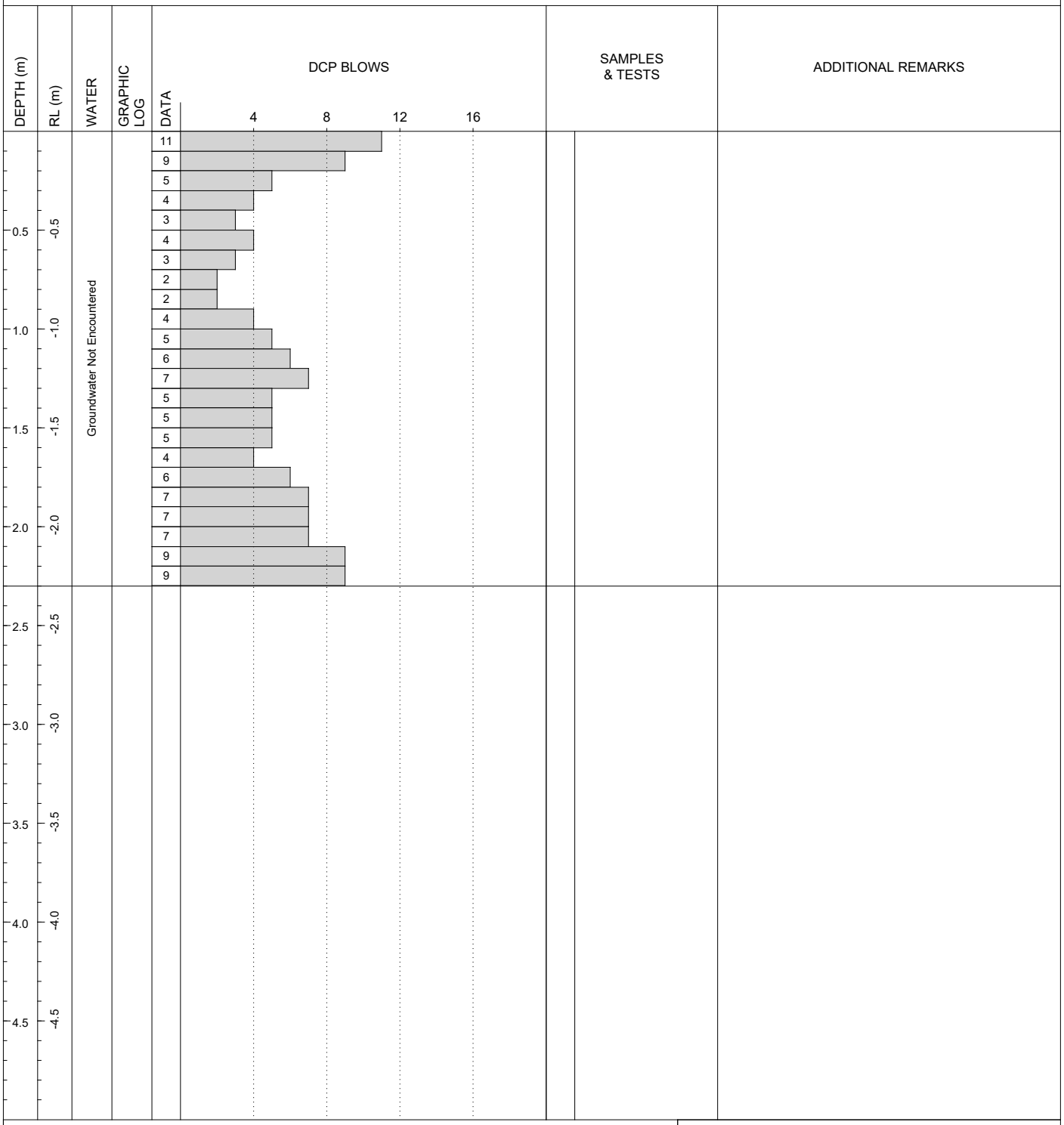
DCP LOG

DCP10.17

SHEET 17 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 174
PROJECT: 183970602	EASTING: 1928236.60	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607847.97	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS
Soils tested in accordance with NZGS

SYMBOLS
- Standing Water Level
- Out flow
- In flow

RDCL
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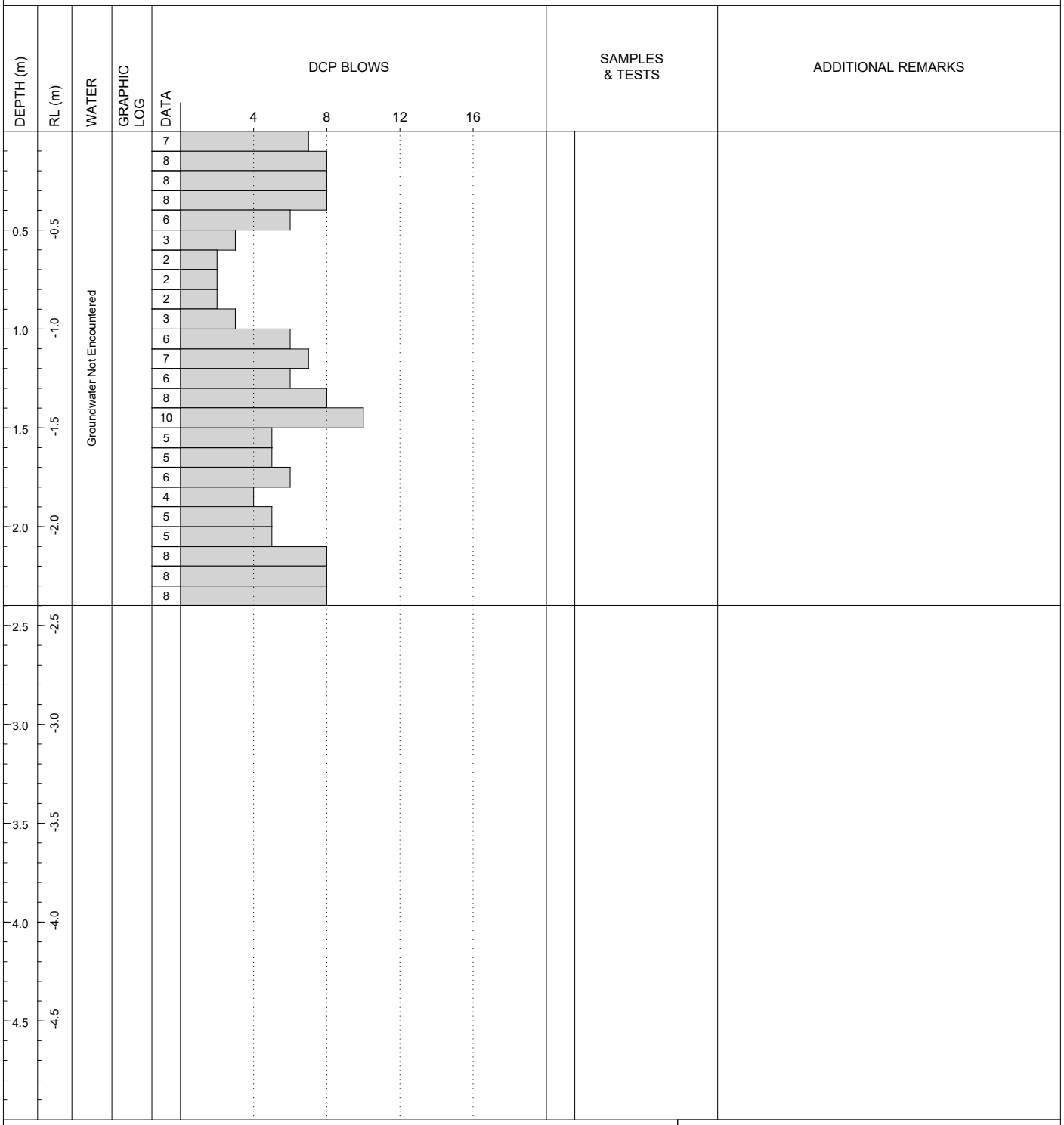
Produced with Core-GS by Geroc

DCP LOG

DCP10.18

SHEET 18 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 174
PROJECT: 183970602	EASTING: 1928249.81	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607834.89	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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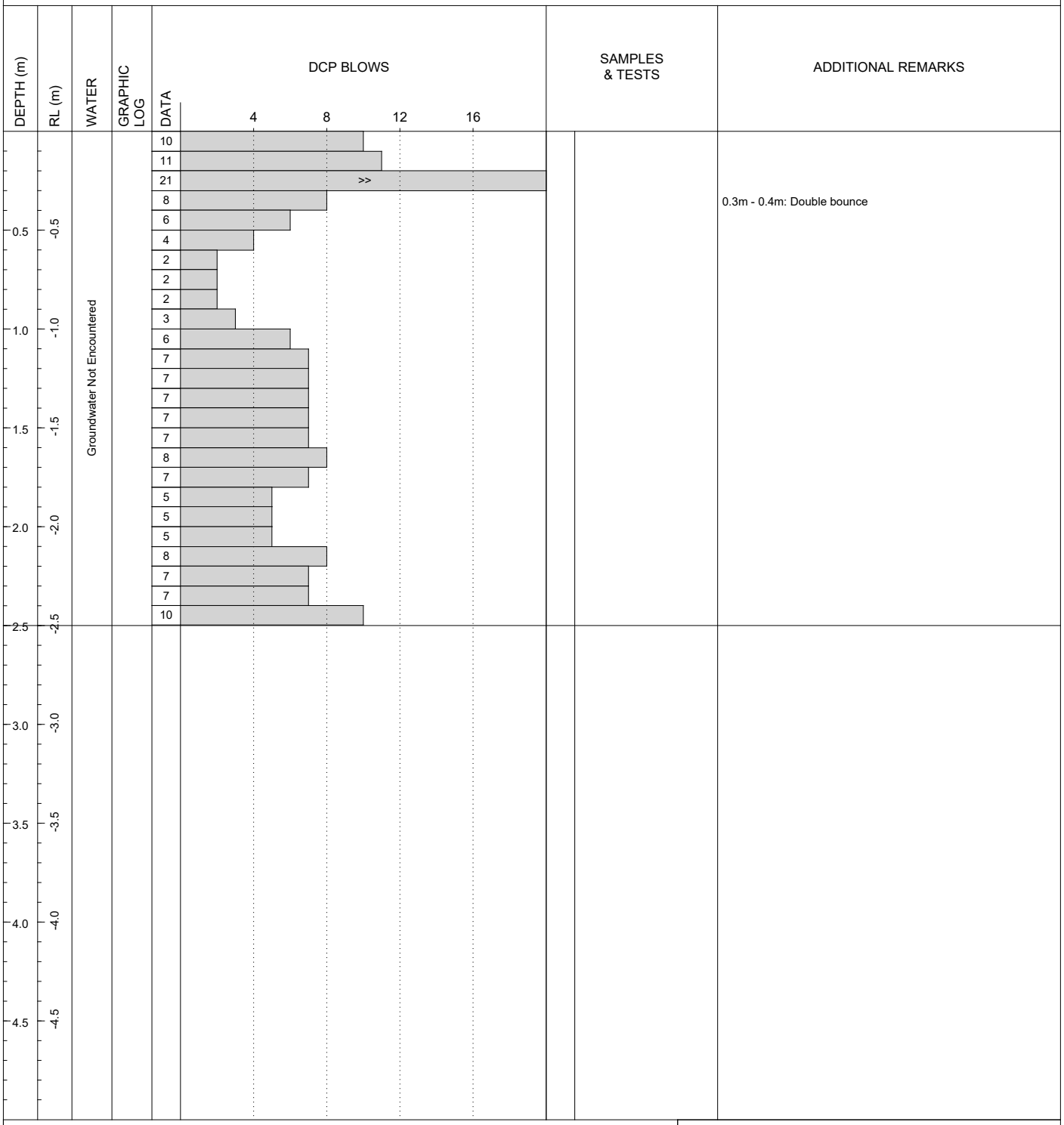
DCP LOG

DCP10.19

SHEET 19 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 174
PROJECT:	183970602	EASTING:		STARTED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:		FINISHED:	05-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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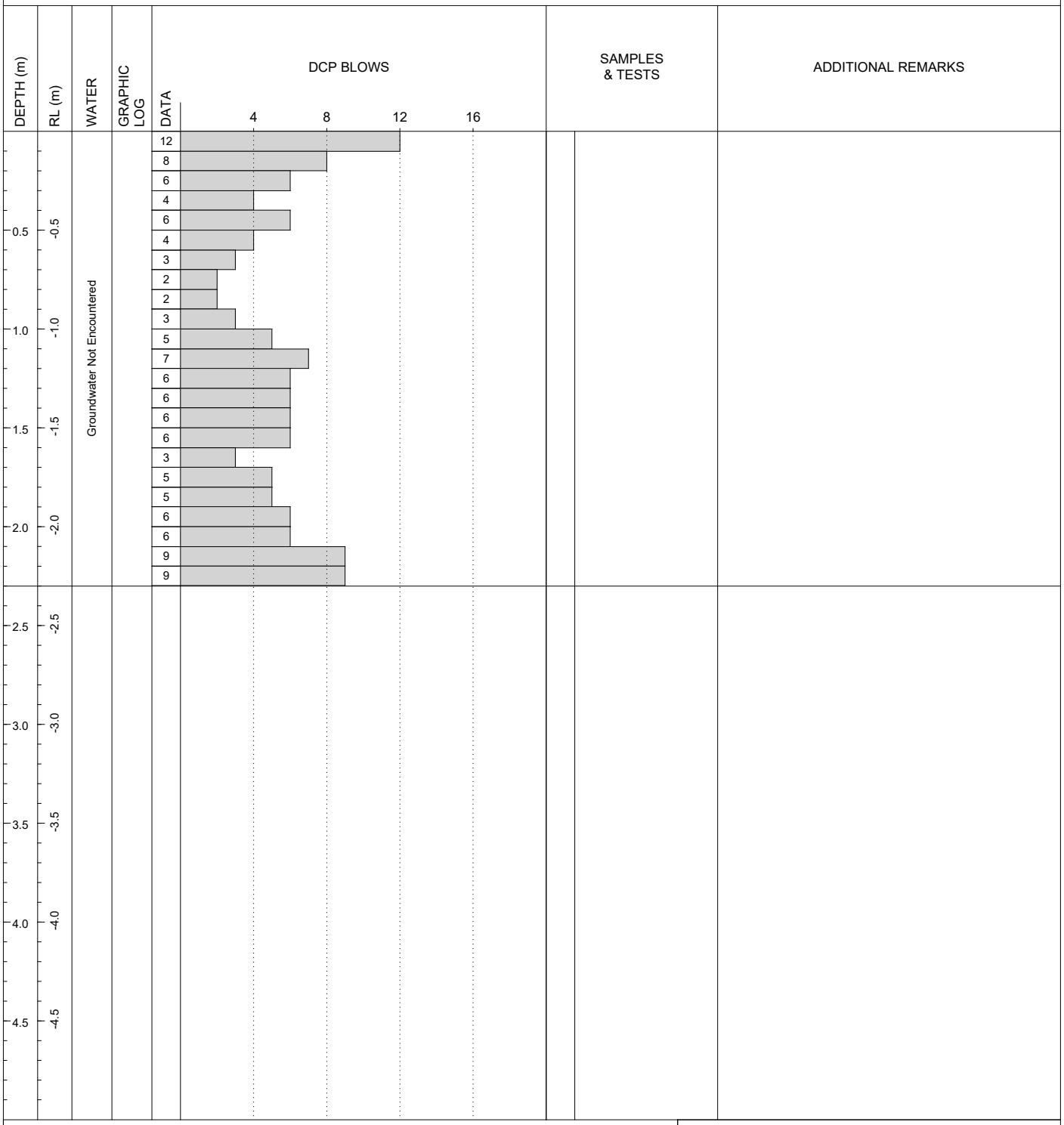
DCP LOG

DCP10.20

SHEET 20 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 174
PROJECT: 183970602	EASTING: 1928245.29	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607854.80	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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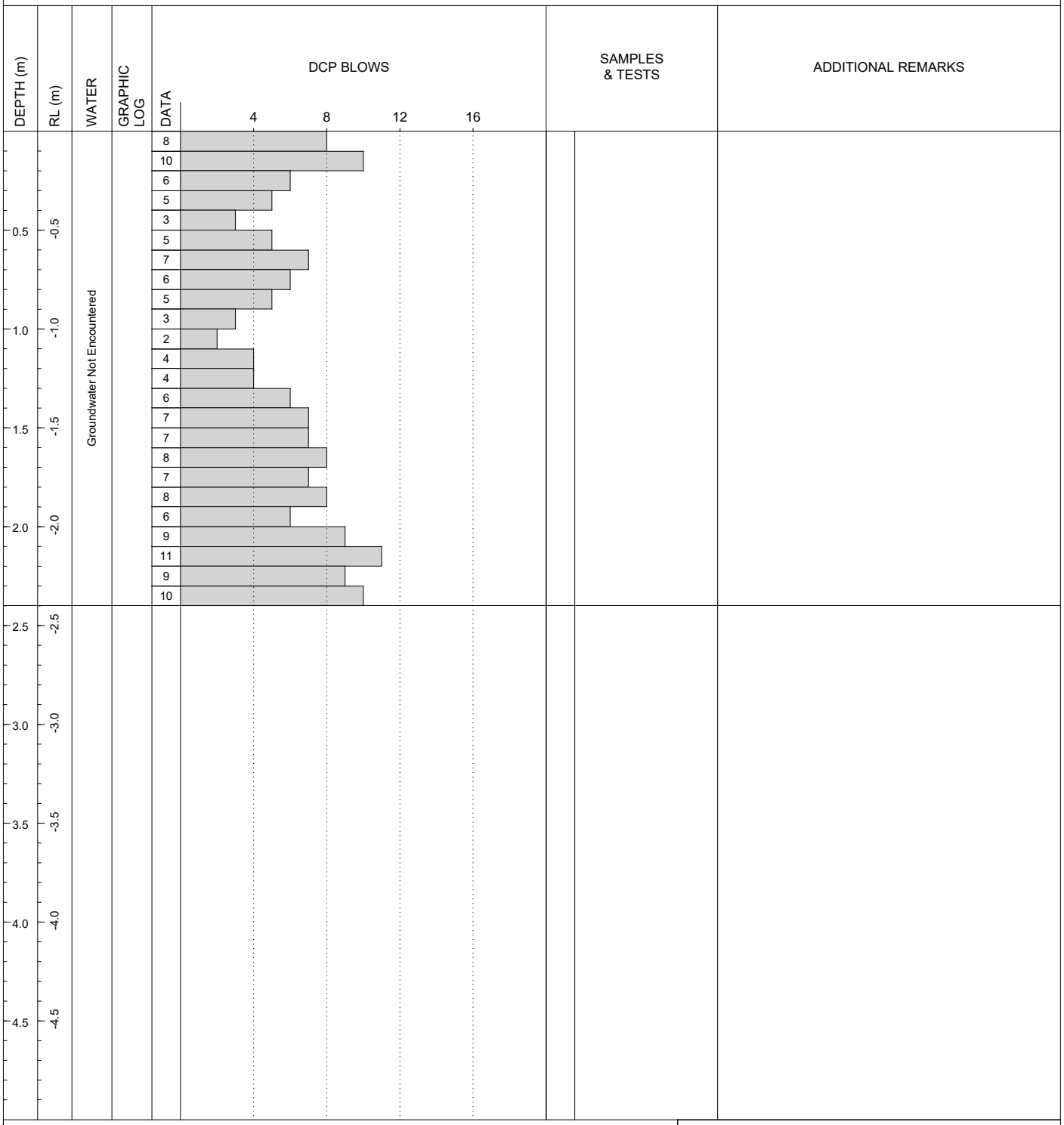
DCP LOG

DCP10.21

SHEET 21 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 173
PROJECT: 183970602	EASTING: 1928254.95	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607863.93	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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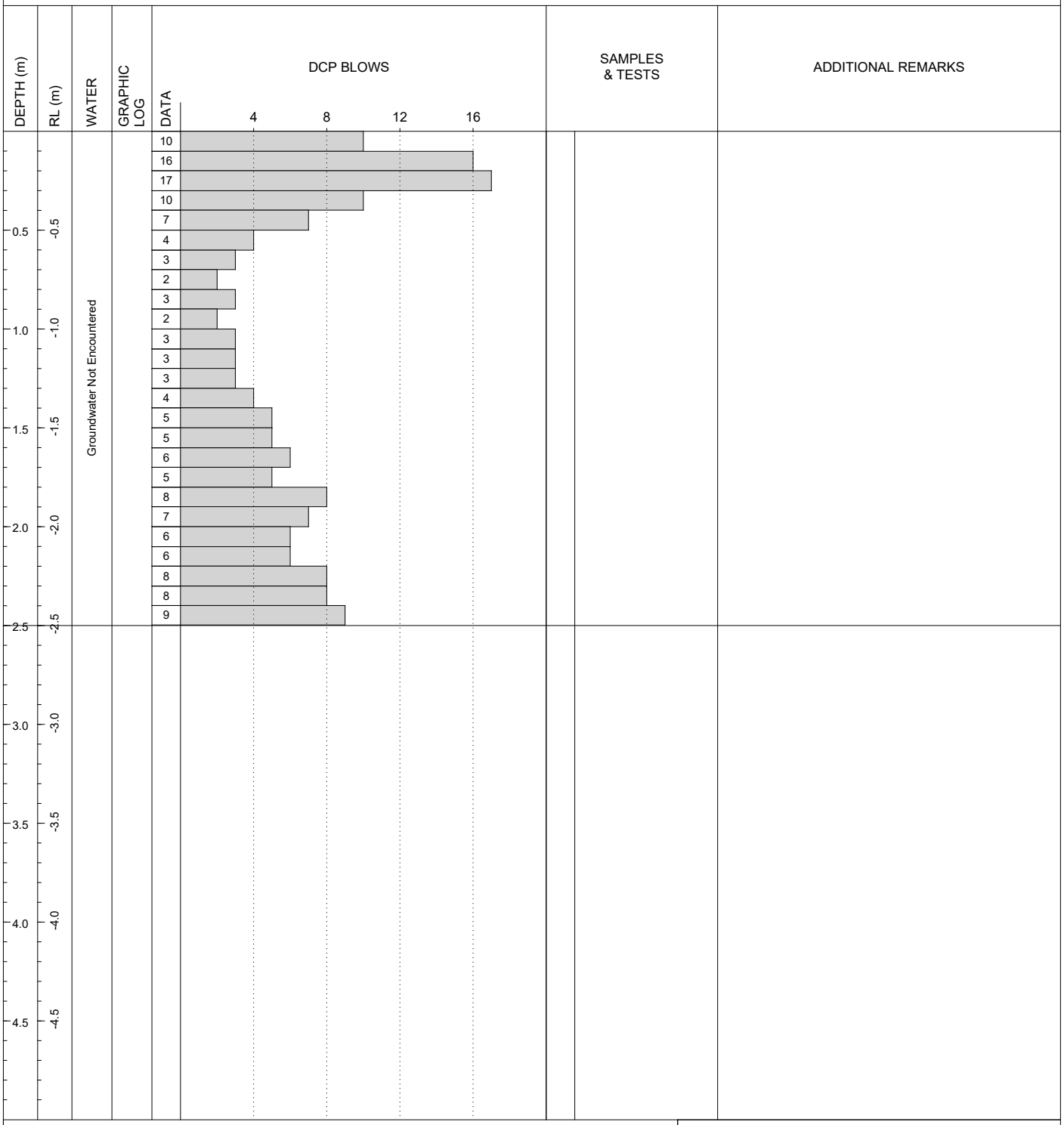
DCP LOG

DCP10.22

SHEET 22 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 173
PROJECT: 183970602	EASTING: 1928268.21	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607847.78	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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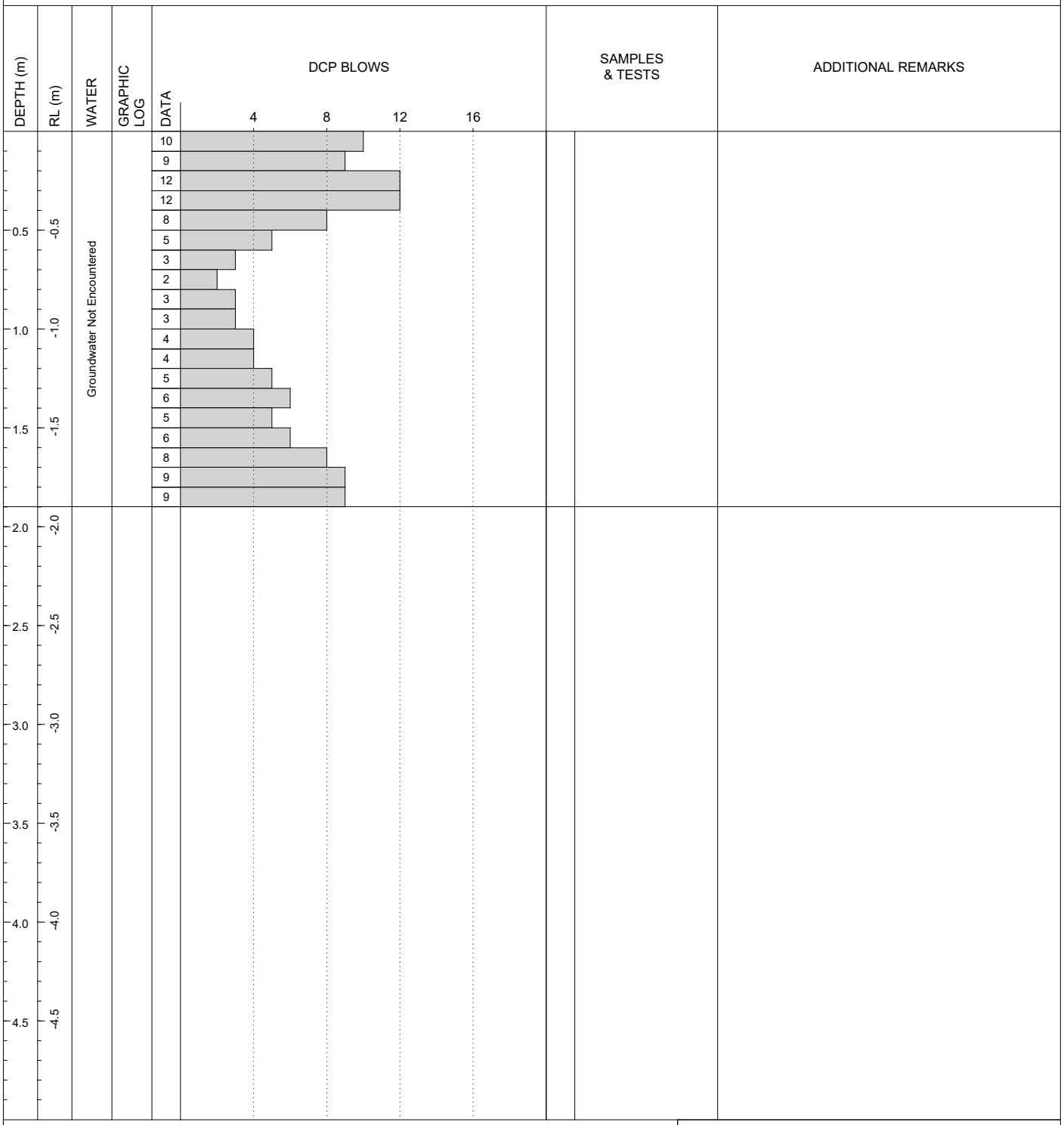
DCP LOG

DCP10.23

SHEET 23 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 173
PROJECT:	183970602	EASTING:		STARTED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:		FINISHED:	05-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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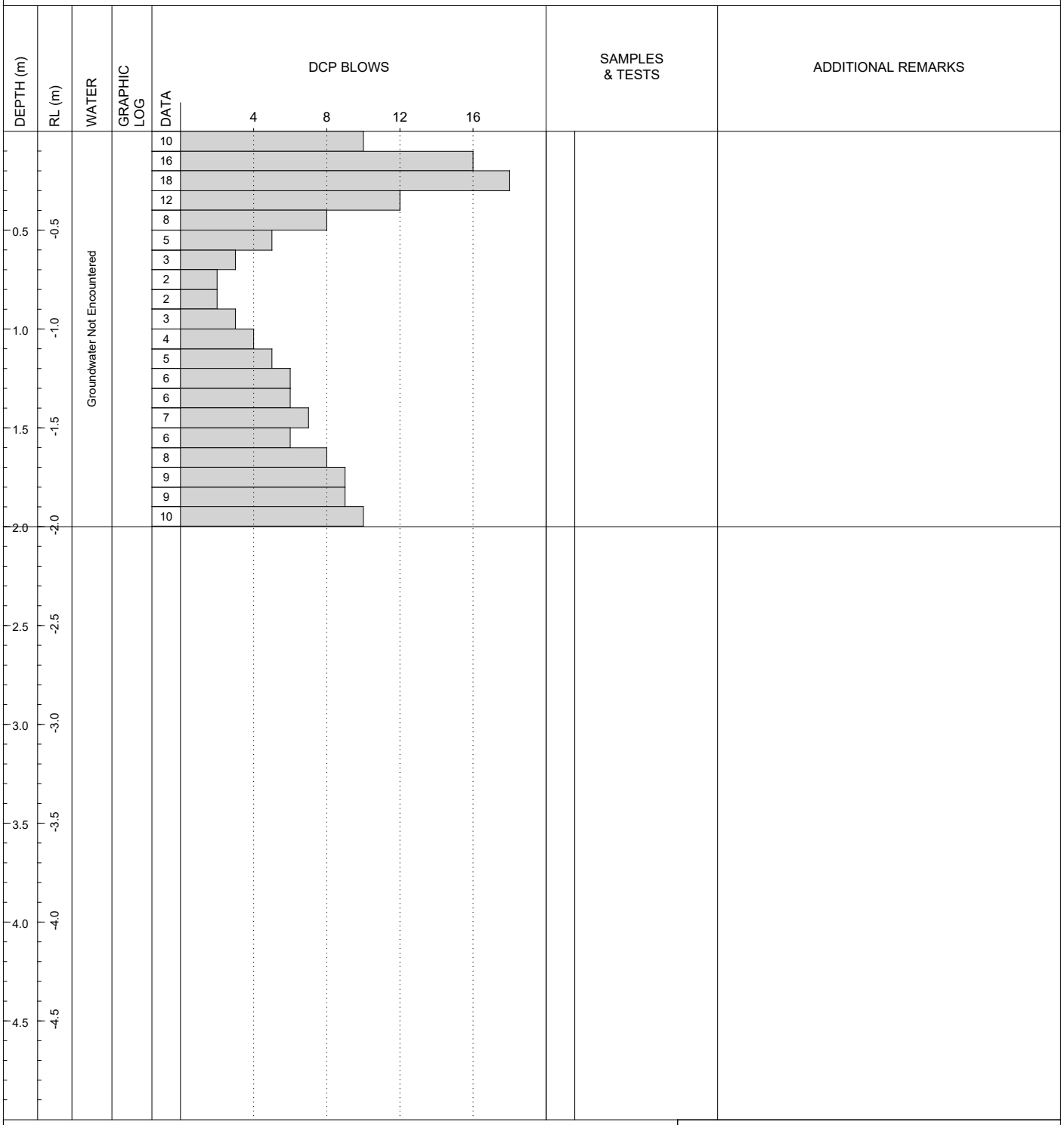
DCP LOG

DCP10.24

SHEET 24 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 173
PROJECT: 183970602	EASTING: 1928263.74	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607866.54	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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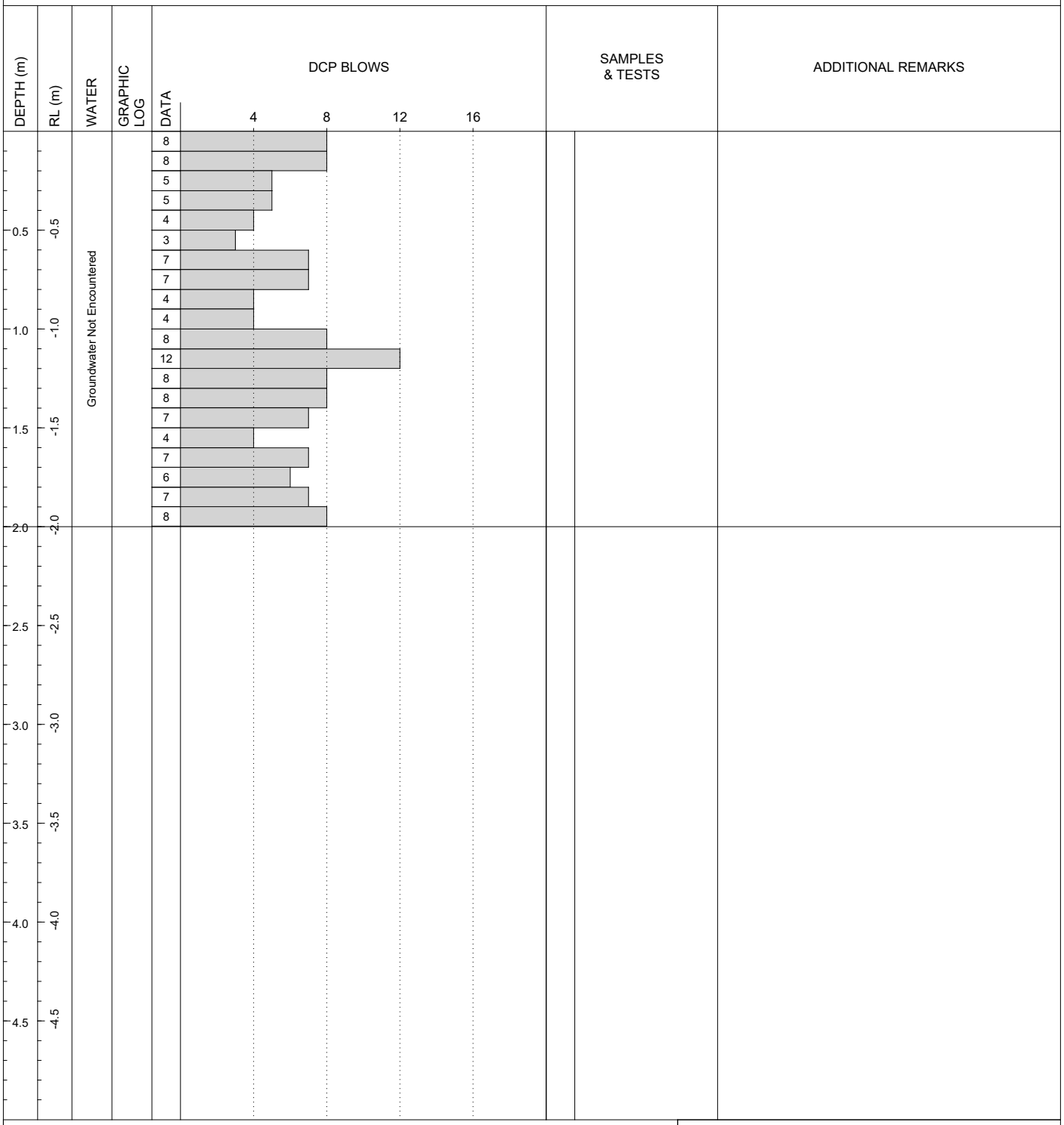
DCP LOG

DCP10.25

SHEET 25 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 172
PROJECT: 183970602	EASTING: 1928271.78	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607873.75	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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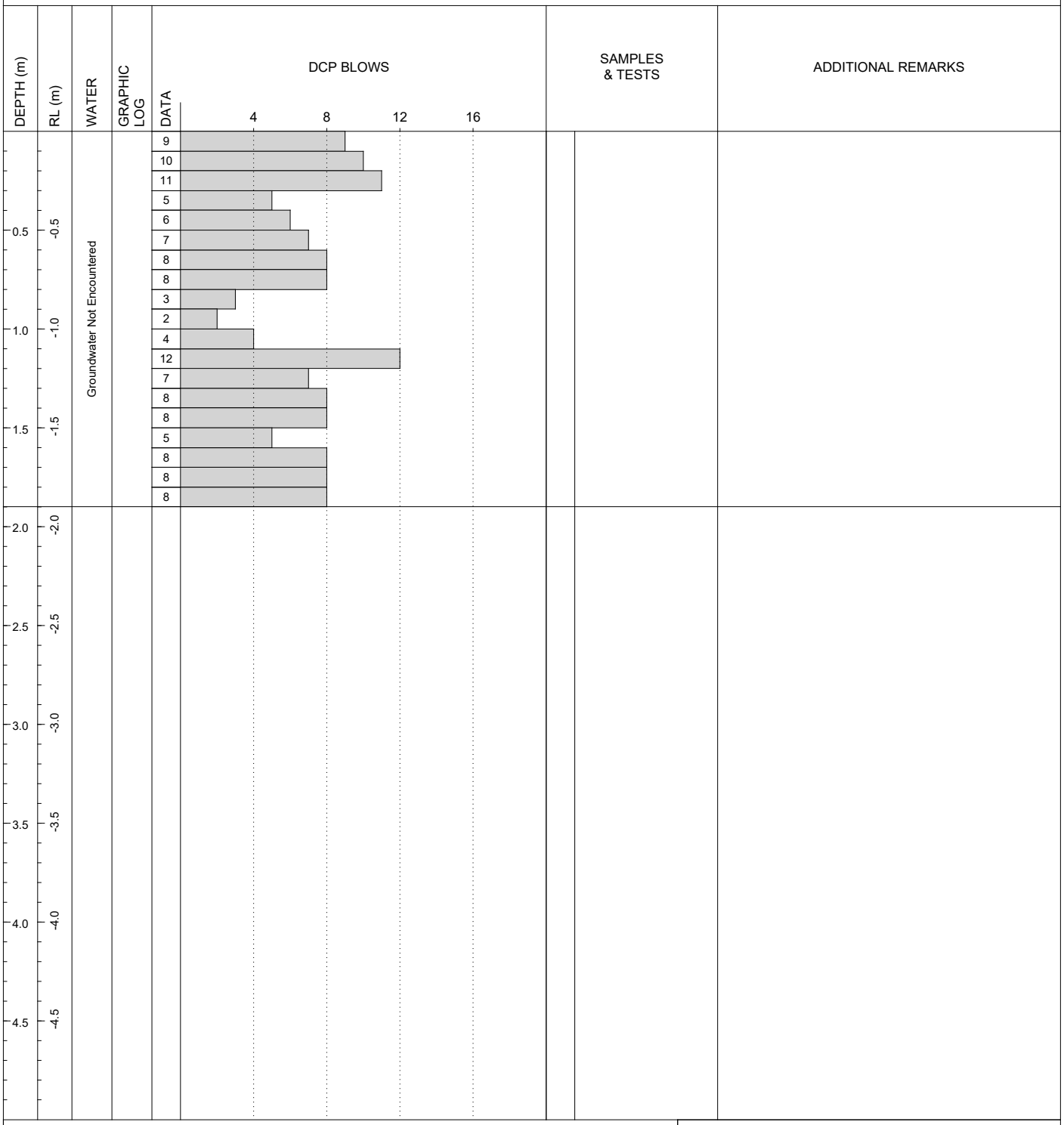
DCP LOG

DCP10.26

SHEET 26 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 172
PROJECT: 183970602	EASTING: 1928283.41	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607858.46	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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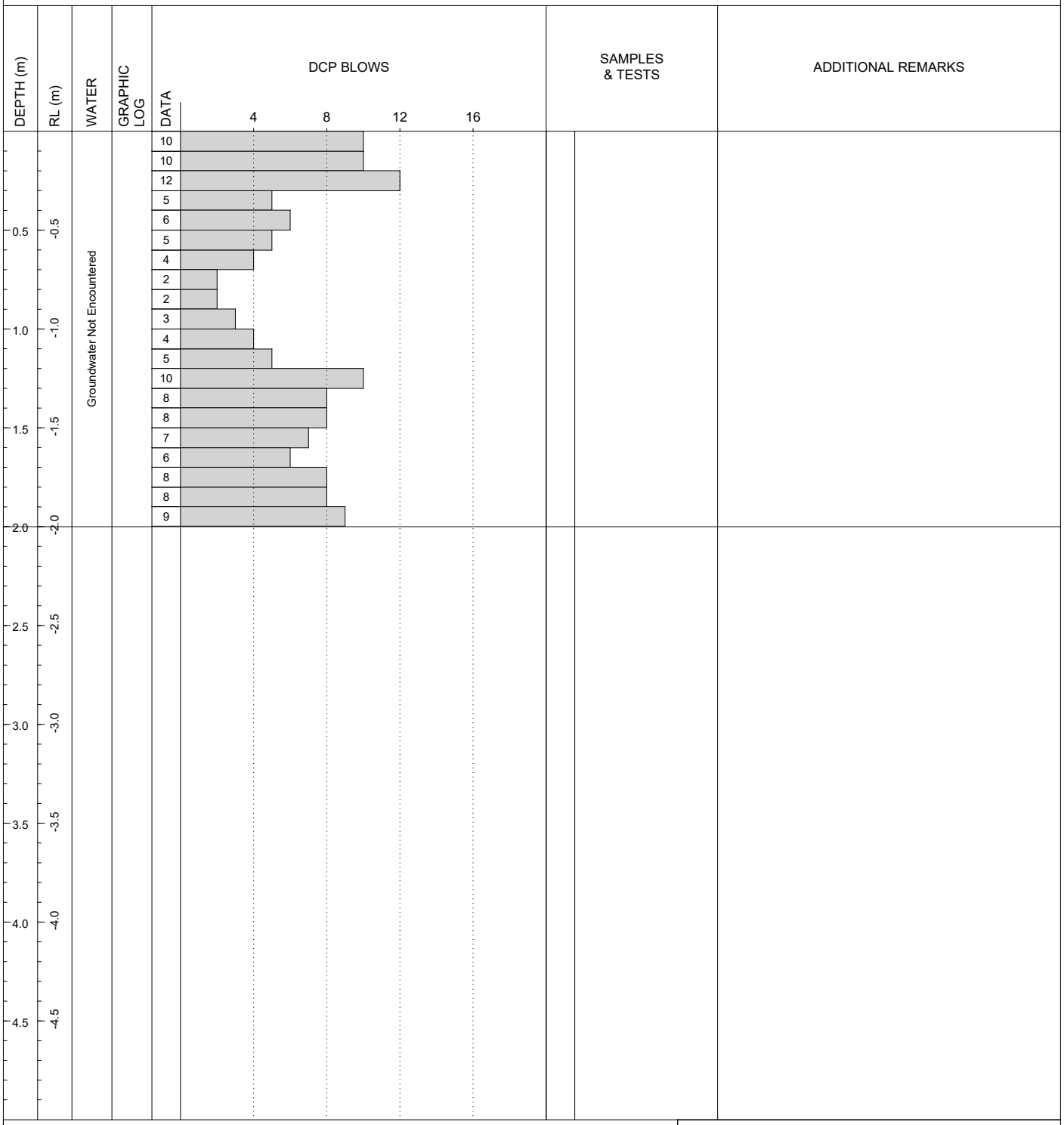
DCP LOG

DCP10.27

SHEET 27 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 172
PROJECT: 183970602	EASTING: 1928290.54	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607863.46	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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DCP LOG

DCP10.28

SHEET 28 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 172
PROJECT: 183970602	EASTING:	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING:	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data

DEPTH (m)	RL (m)	WATER	GRAPHIC LOG	DATA	DCP BLOWS (4, 8, 12, 16)	SAMPLES & TESTS	ADDITIONAL REMARKS
				12			
				11			
				5			
				6			
				4			
				4			
				3			
				2			
				3			
				3			
				6			
				6			
				8			
				9			
				10			
				6			
				5			
				6			
				12			

REMARKS
Soils tested in accordance with NZGS

SYMBOLS
- Standing Water Level
- Out flow
- In flow

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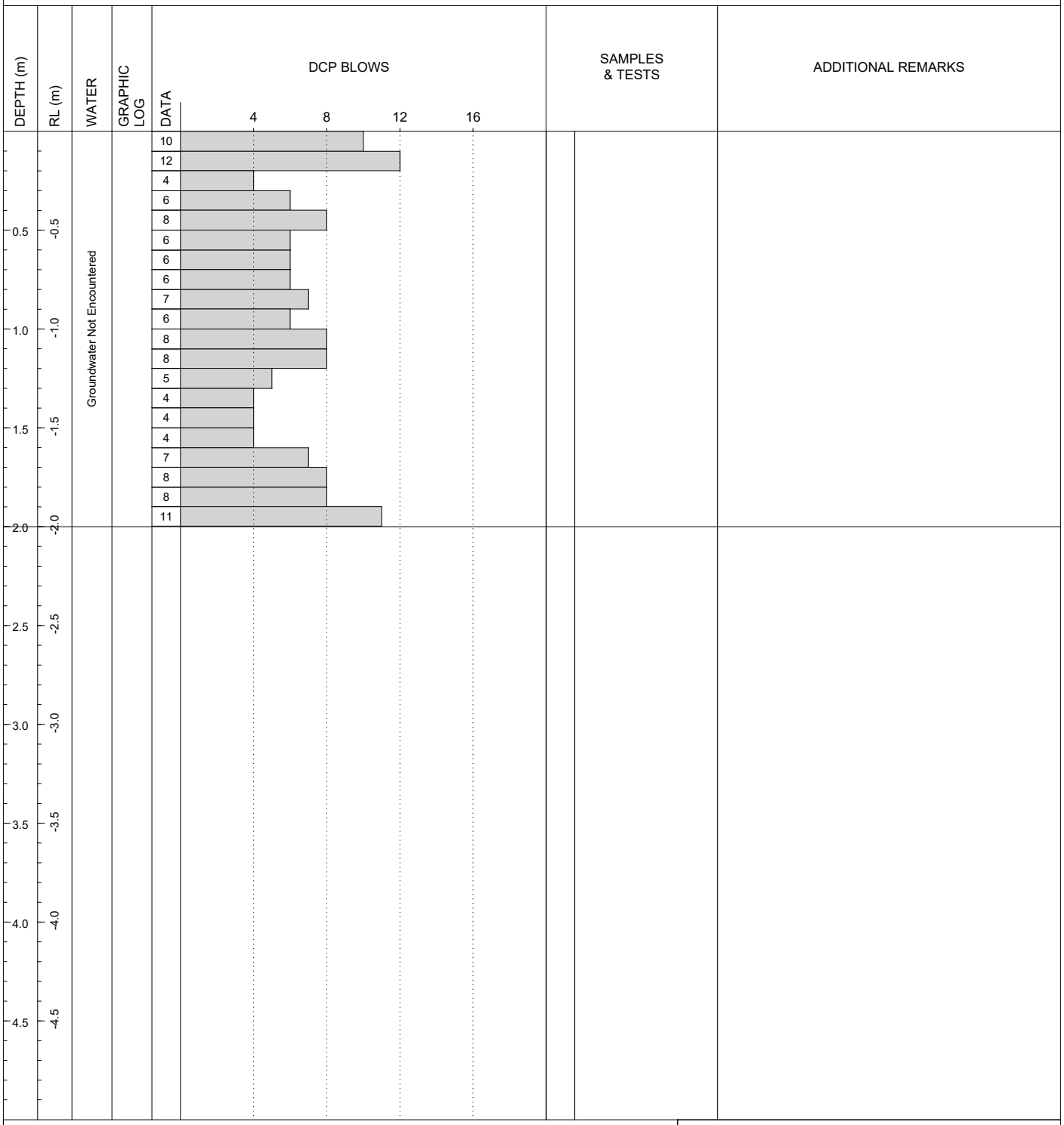
DCP LOG

DCP10.29

SHEET 29 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 170
PROJECT: 183970602	EASTING: 1928290.44	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607845.78	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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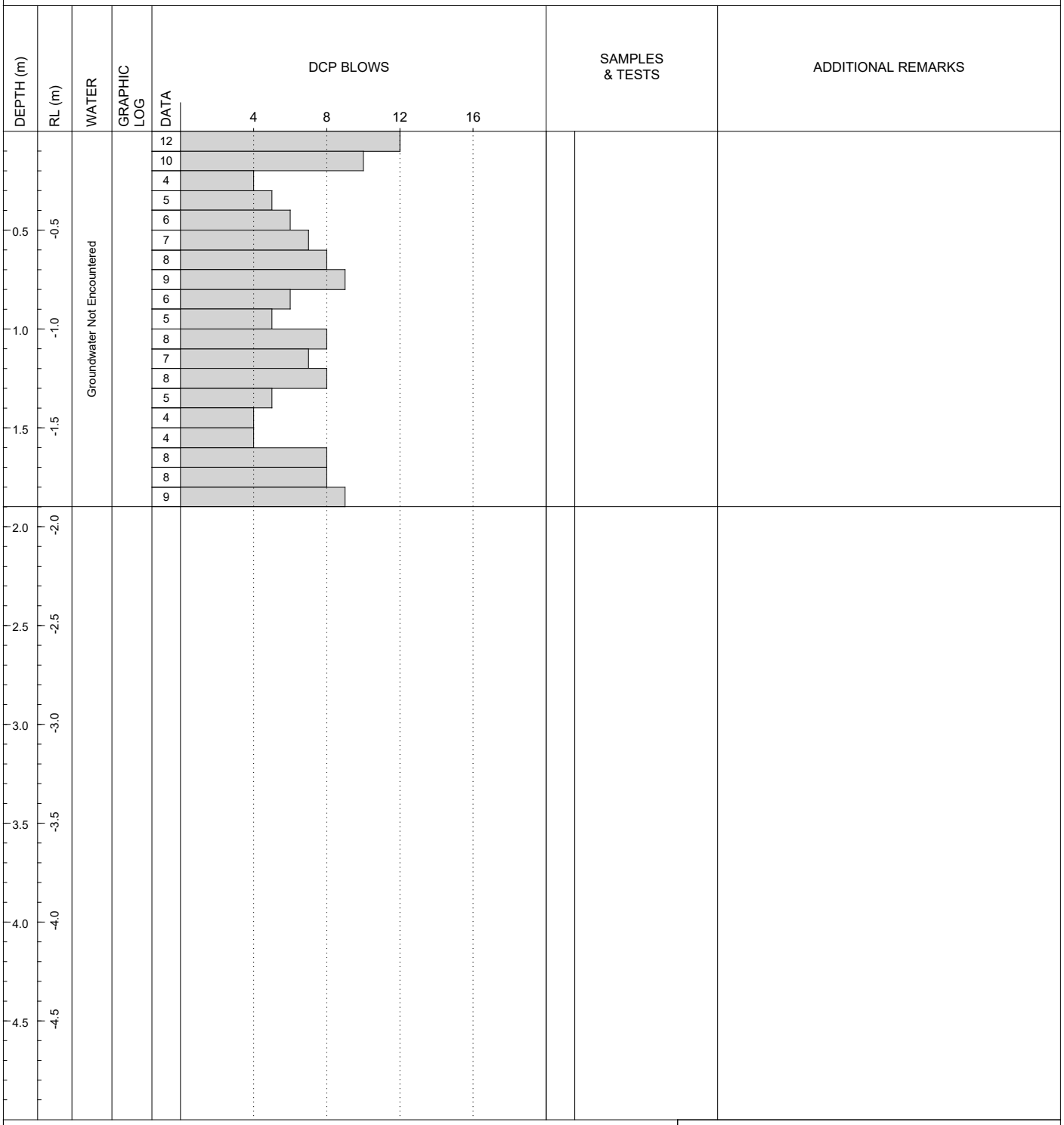
DCP LOG

DCP10.30

SHEET 30 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 170
PROJECT: 183970602	EASTING: 1928304.36	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607856.05	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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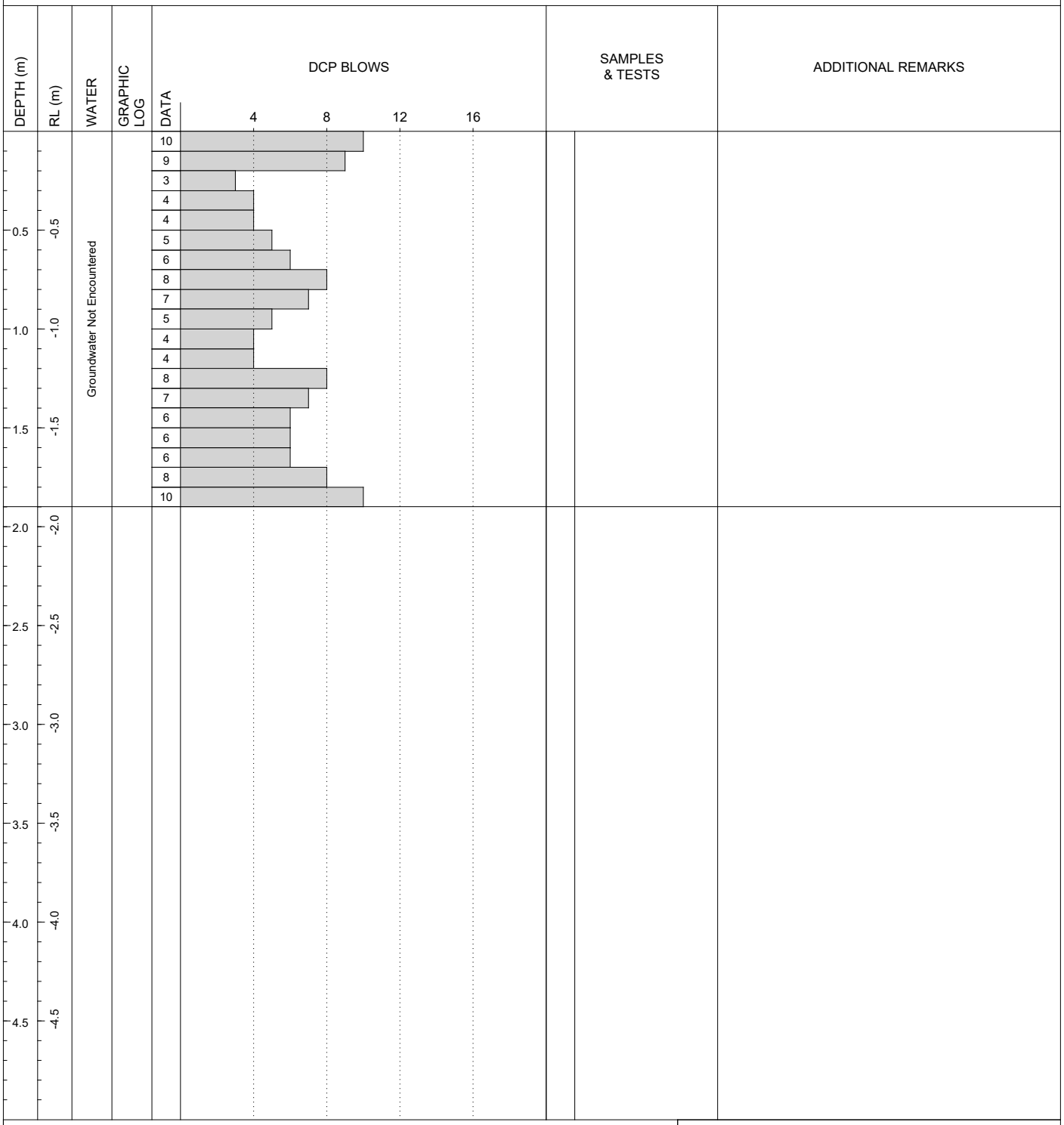
DCP LOG

DCP10.31

SHEET 31 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 170
PROJECT:	183970602	EASTING:	1928307.51	STARTED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607846.60	FINISHED:	05-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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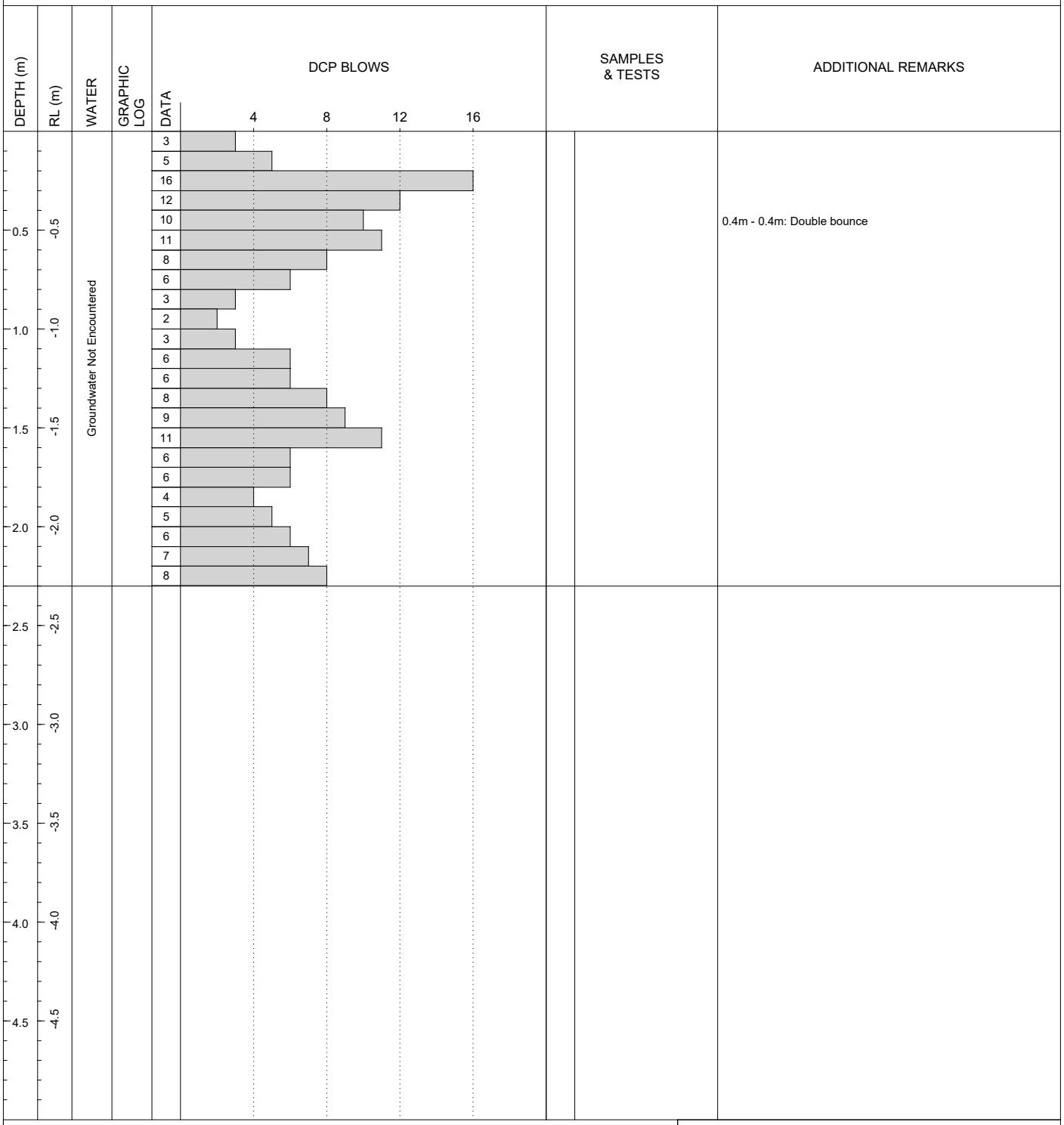
DCP LOG

DCP10.32

SHEET 32 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 170
PROJECT: 183970602	EASTING: 1928295.80	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607838.48	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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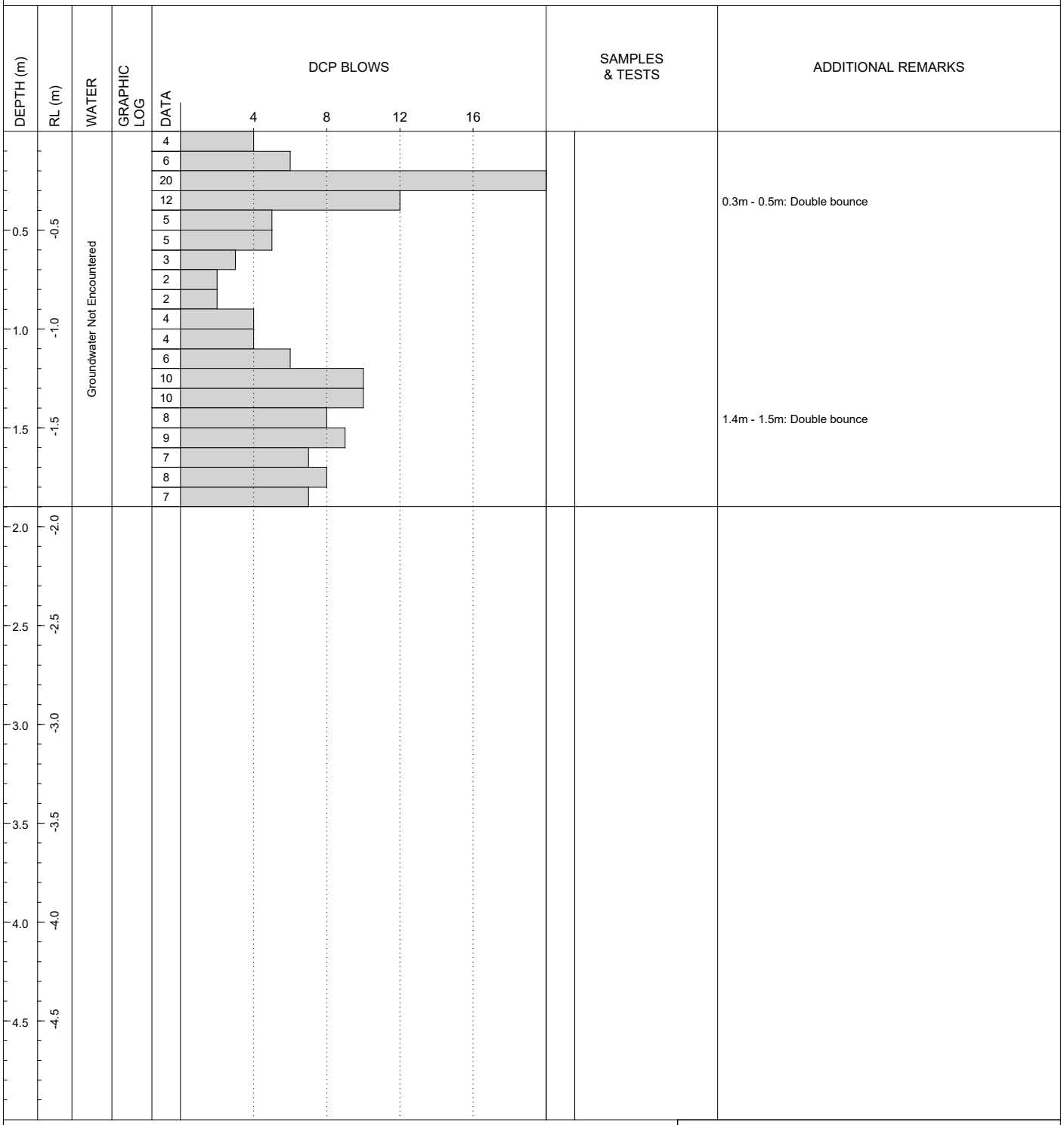
DCP LOG

DCP10.33

SHEET 33 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 169
PROJECT:	183970602	EASTING:	1928294.91	STARTED:	05-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607821.77	FINISHED:	05-11-2019
		DATUM:	-	LOGGED BY:	JM/AR DATE: 05-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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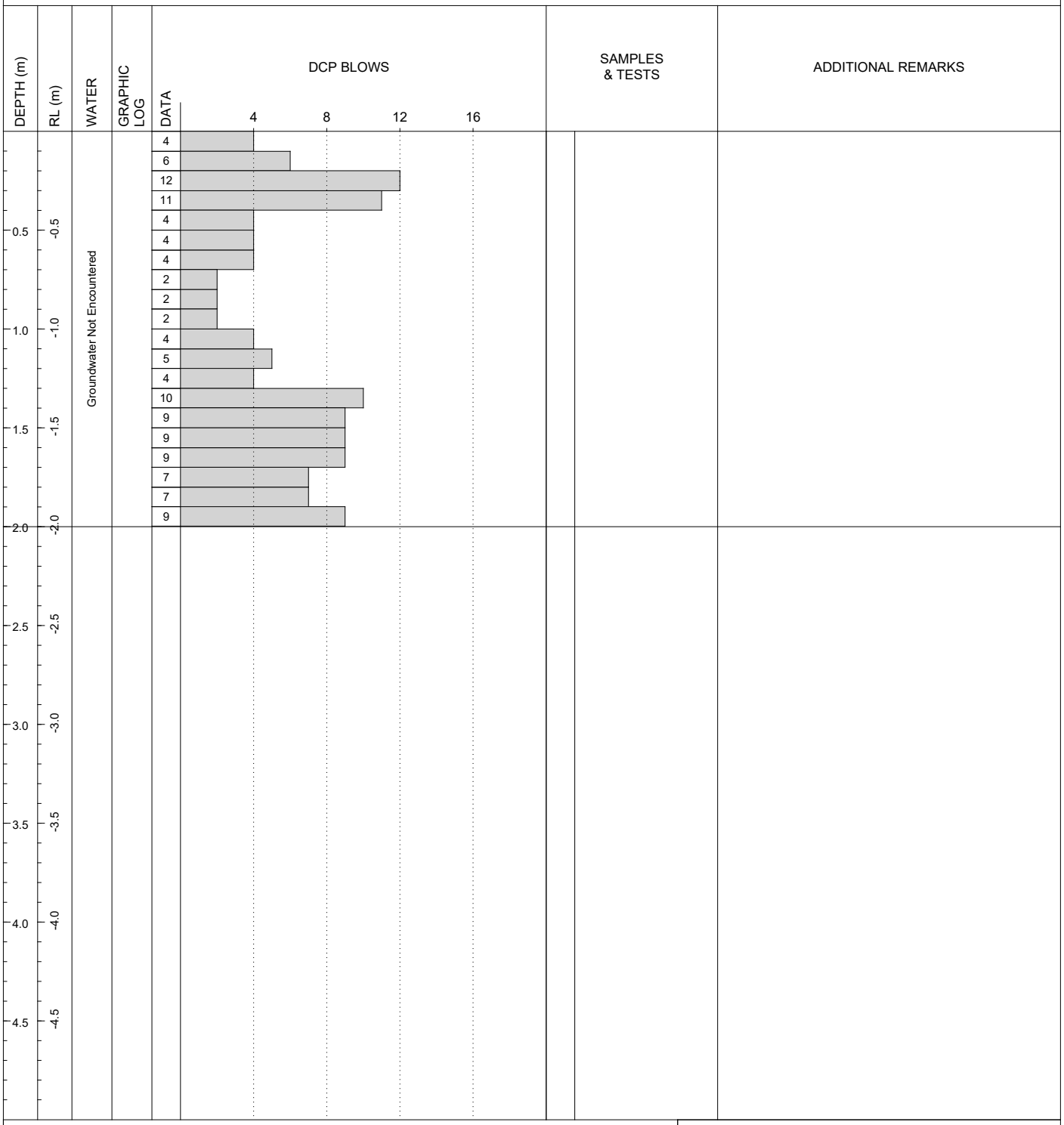
DCP LOG

DCP10.34

SHEET 34 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 169
PROJECT: 183970602	EASTING: 1928305.09	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607831.78	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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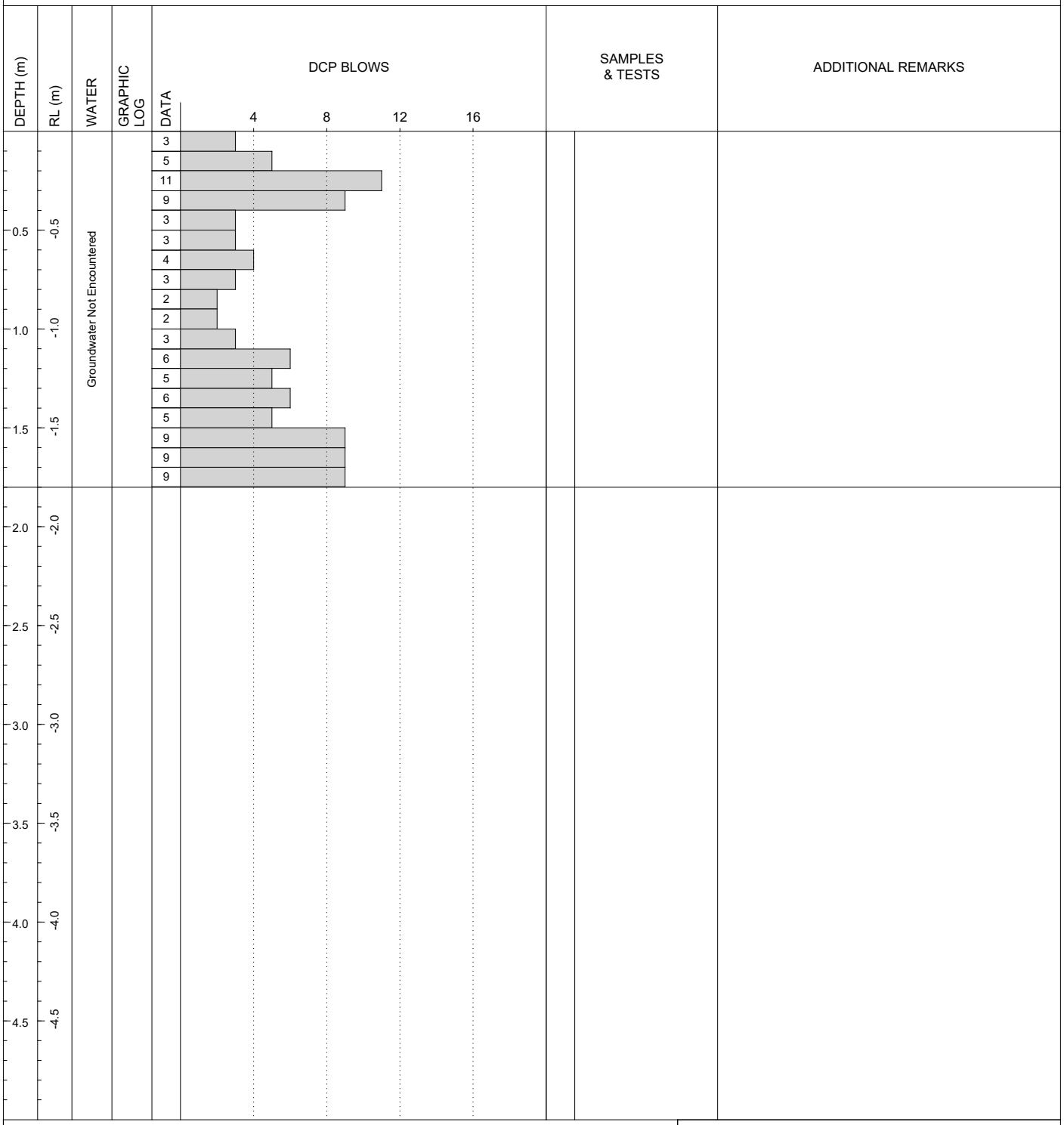
DCP LOG

DCP10.35

SHEET 35 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 169
PROJECT: 183970602	EASTING: 1928311.09	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607825.43	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

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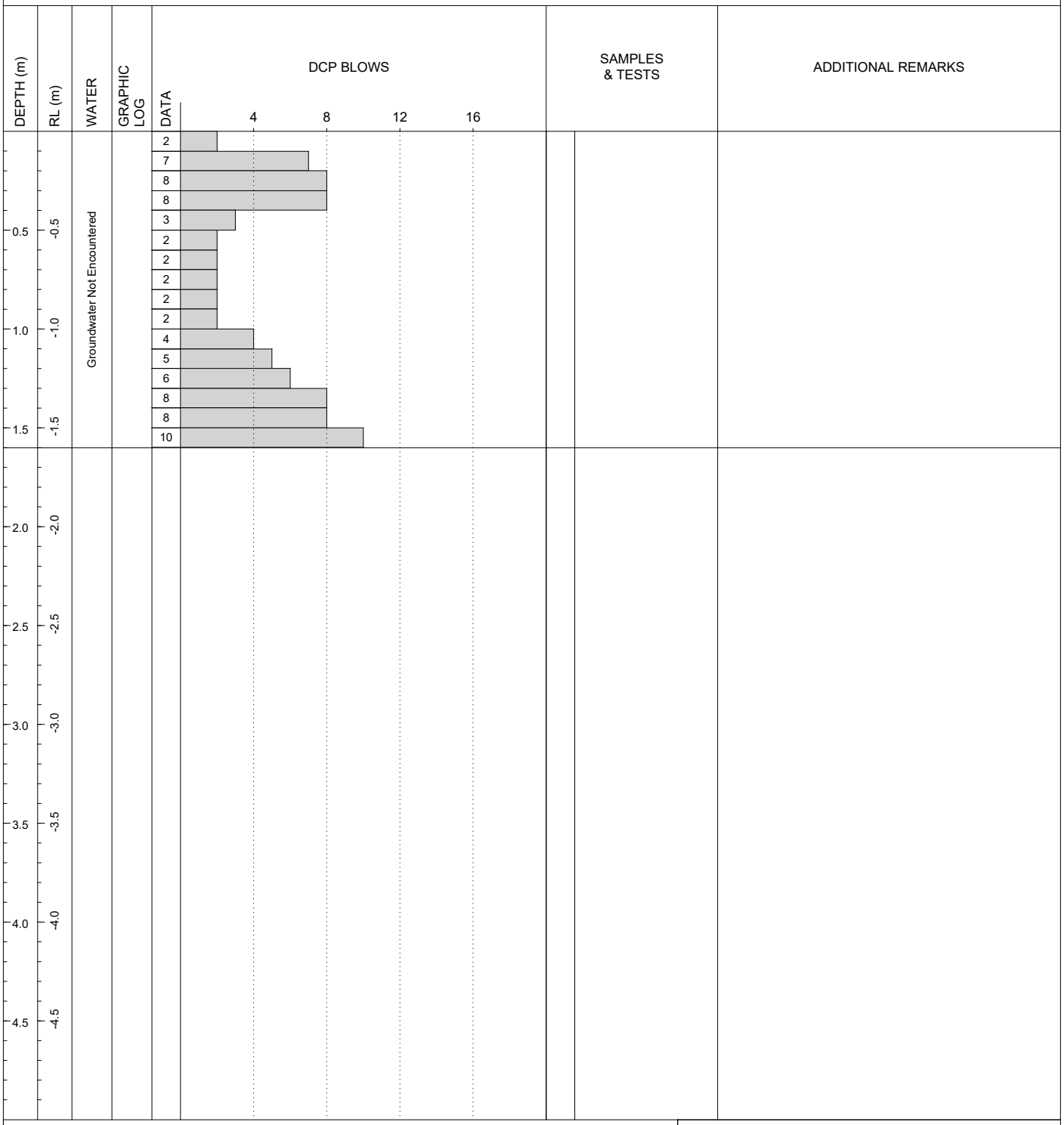
DCP LOG

DCP10.36

SHEET 36 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 169
PROJECT: 183970602	EASTING: 1928297.96	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607811.25	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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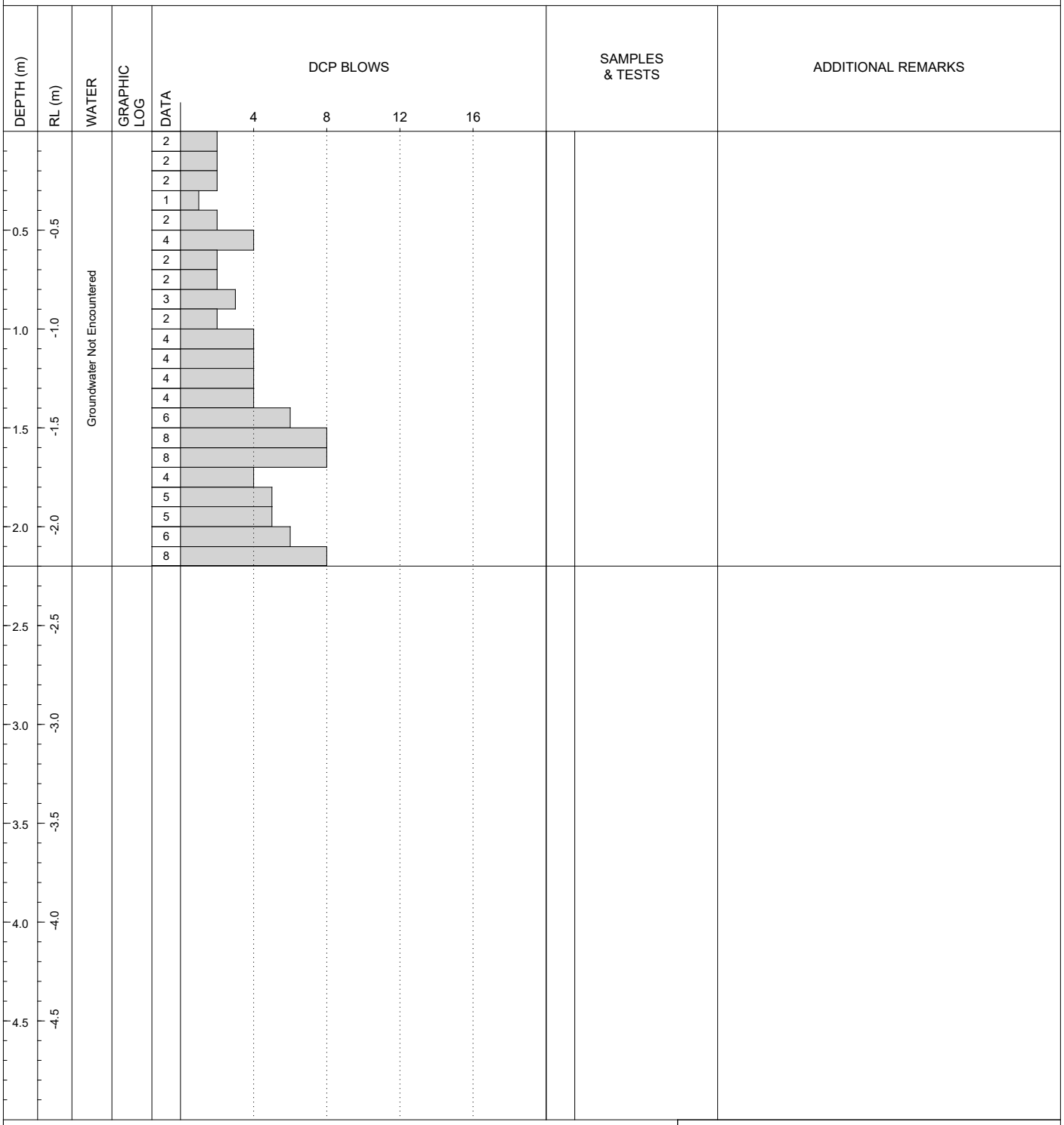
Produced with Core-GS by Geroc

DCP LOG

DCP10.37

SHEET 37 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 167
PROJECT: 183970602	EASTING: 1928322.89	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607838.78	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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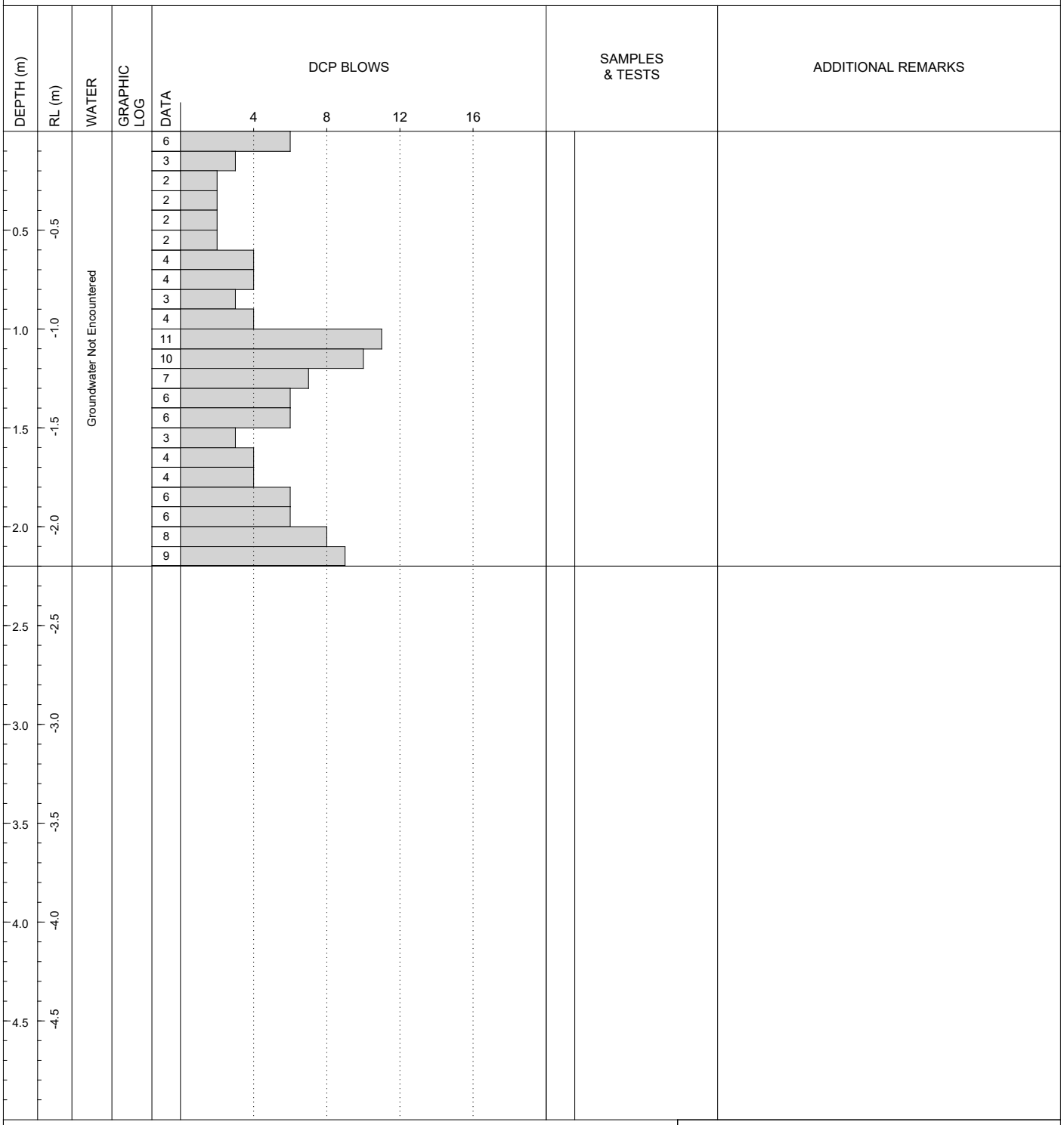
DCP LOG

DCP10.38

SHEET 38 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 167
PROJECT: 183970602	EASTING: 1928334.72	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607823.38	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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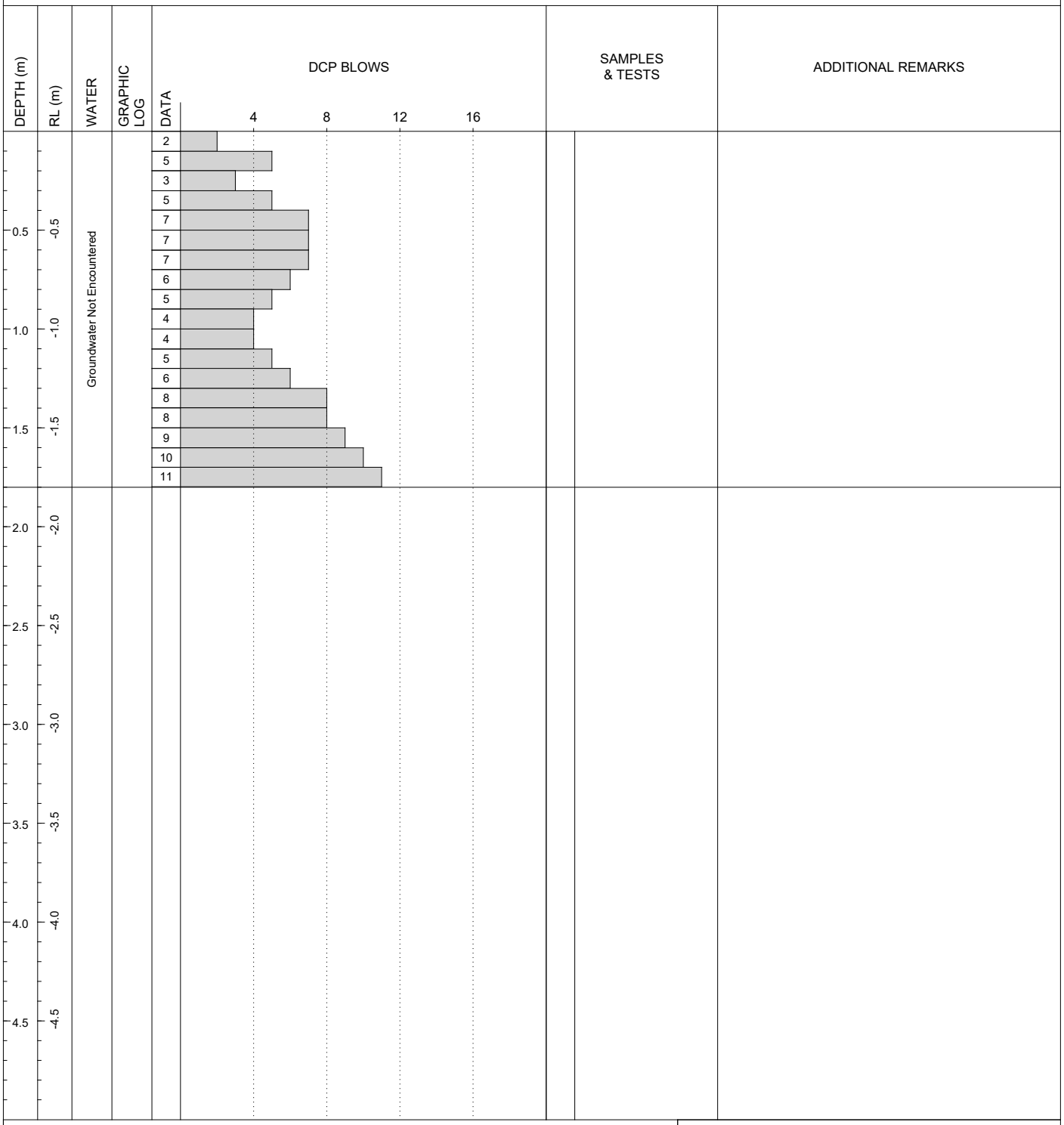
DCP LOG

DCP10.39

SHEET 39 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 167
PROJECT: 183970602	EASTING: 1928330.42	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607816.98	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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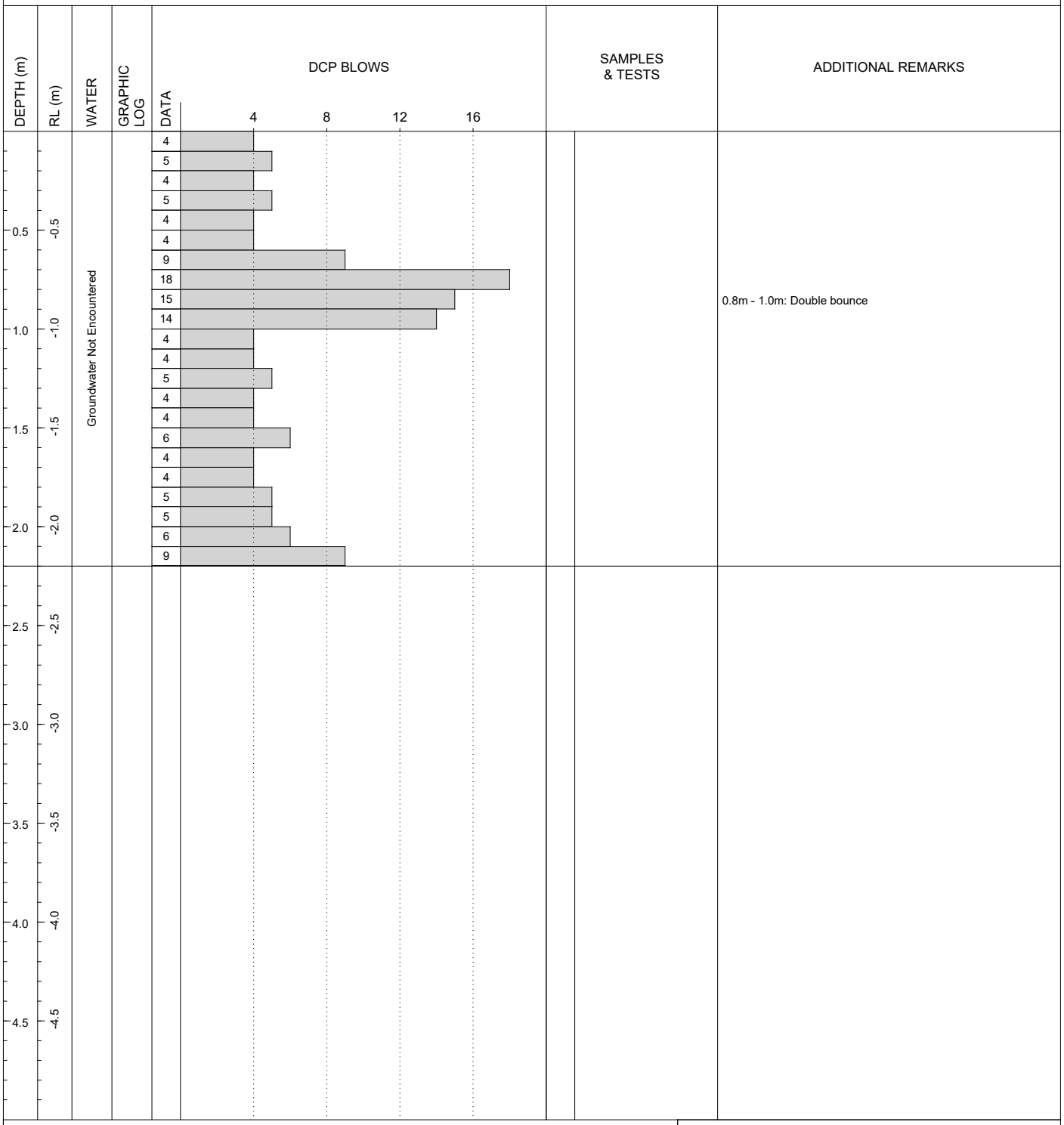
DCP LOG

DCP10.40

SHEET 40 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 167
PROJECT: 183970602	EASTING: 1928318.71	STARTED: 05-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607831.30	FINISHED: 05-11-2019
	DATUM: -	LOGGED BY: JM/AR DATE: 05-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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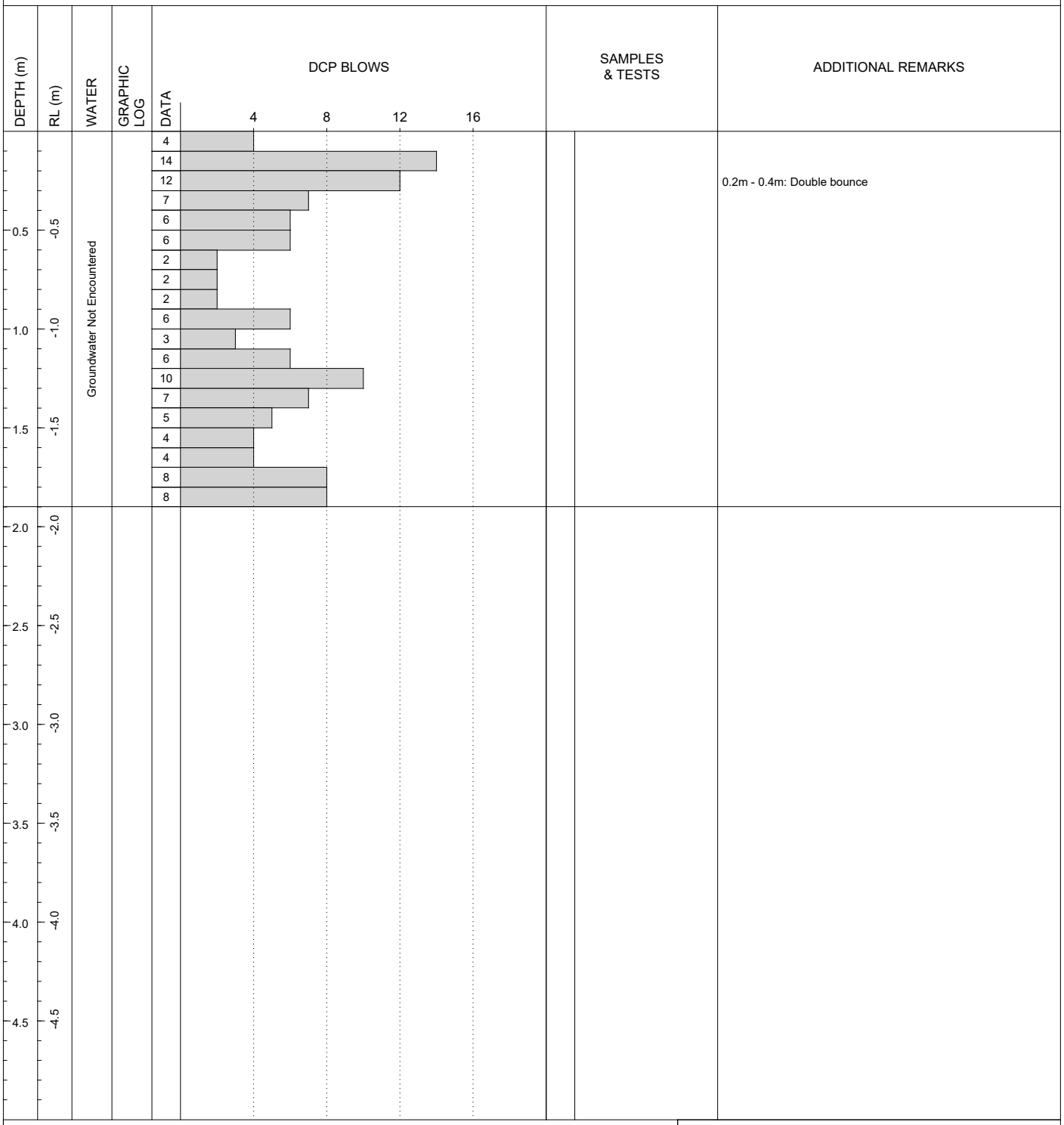
DCP LOG

DCP10.41

SHEET 41 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 168
PROJECT:	183970602	EASTING:	1928306.00	STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607808.97	FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	JM/SD DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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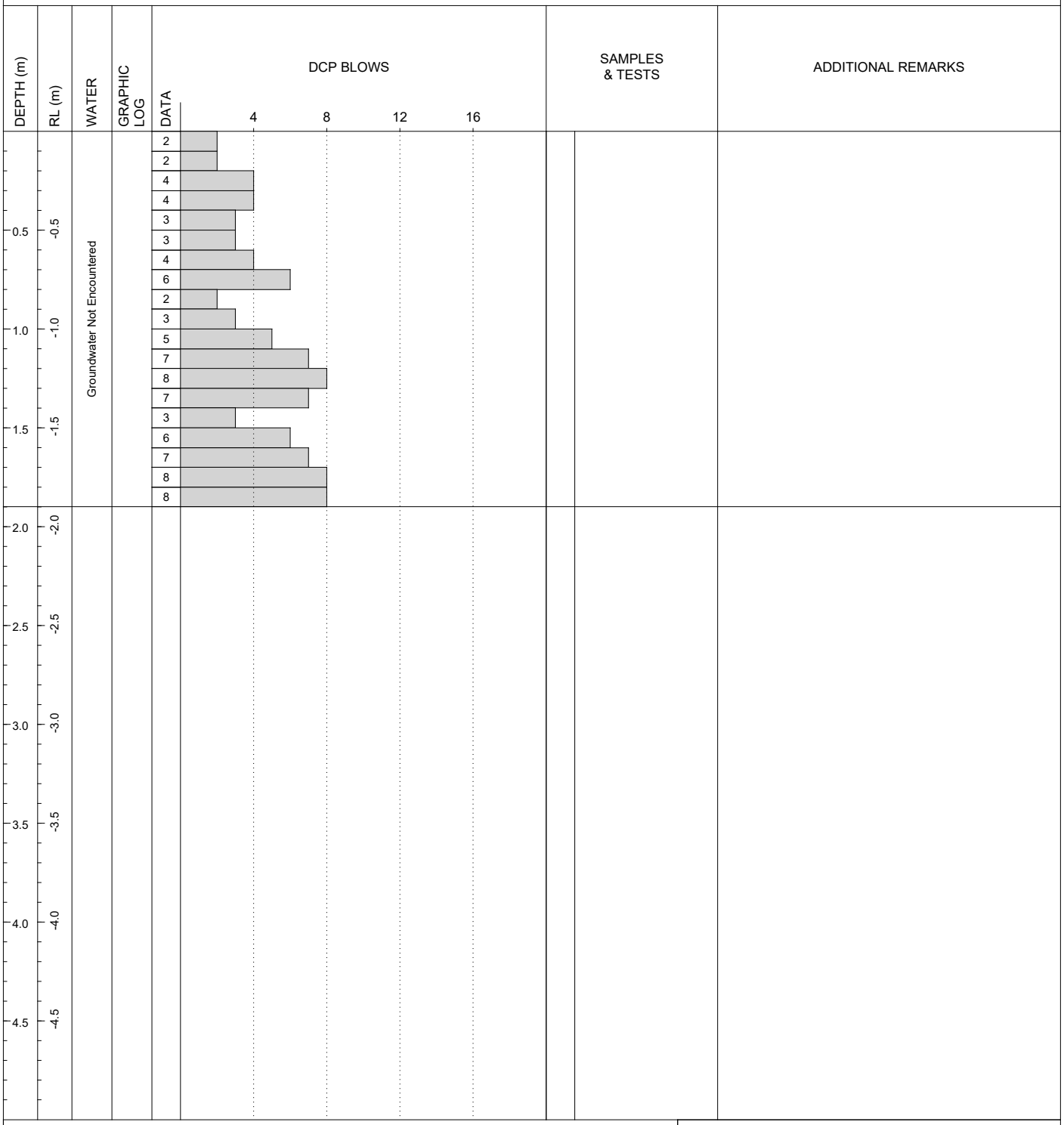
DCP LOG

DCP10.42

SHEET 42 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 168
PROJECT: 183970602	EASTING: 1928316.05	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607816.65	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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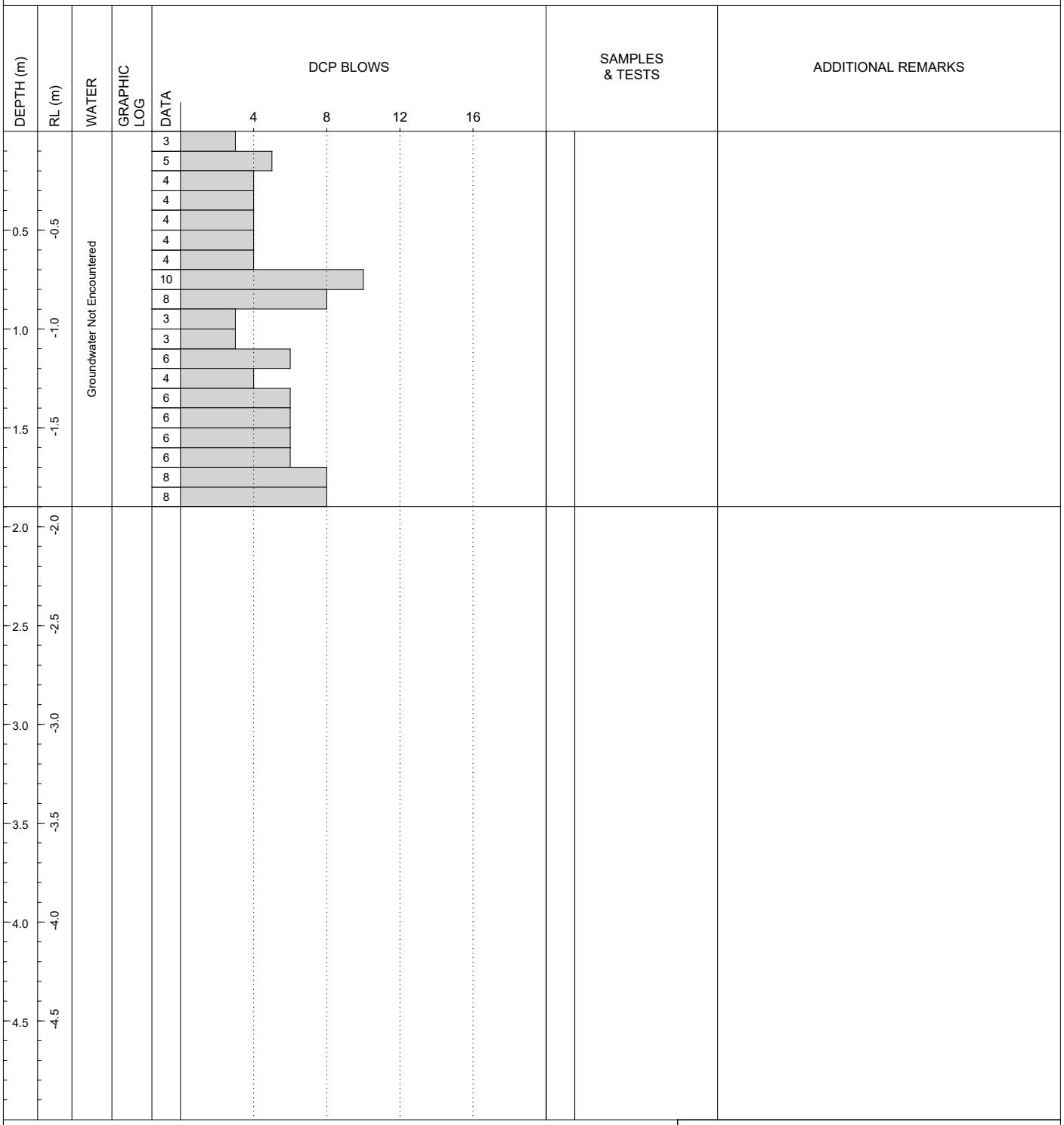
DCP LOG

DCP10.43

SHEET 43 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 168
PROJECT:	183970602	EASTING:	1928322.18	STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607808.08	FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	JM/SD DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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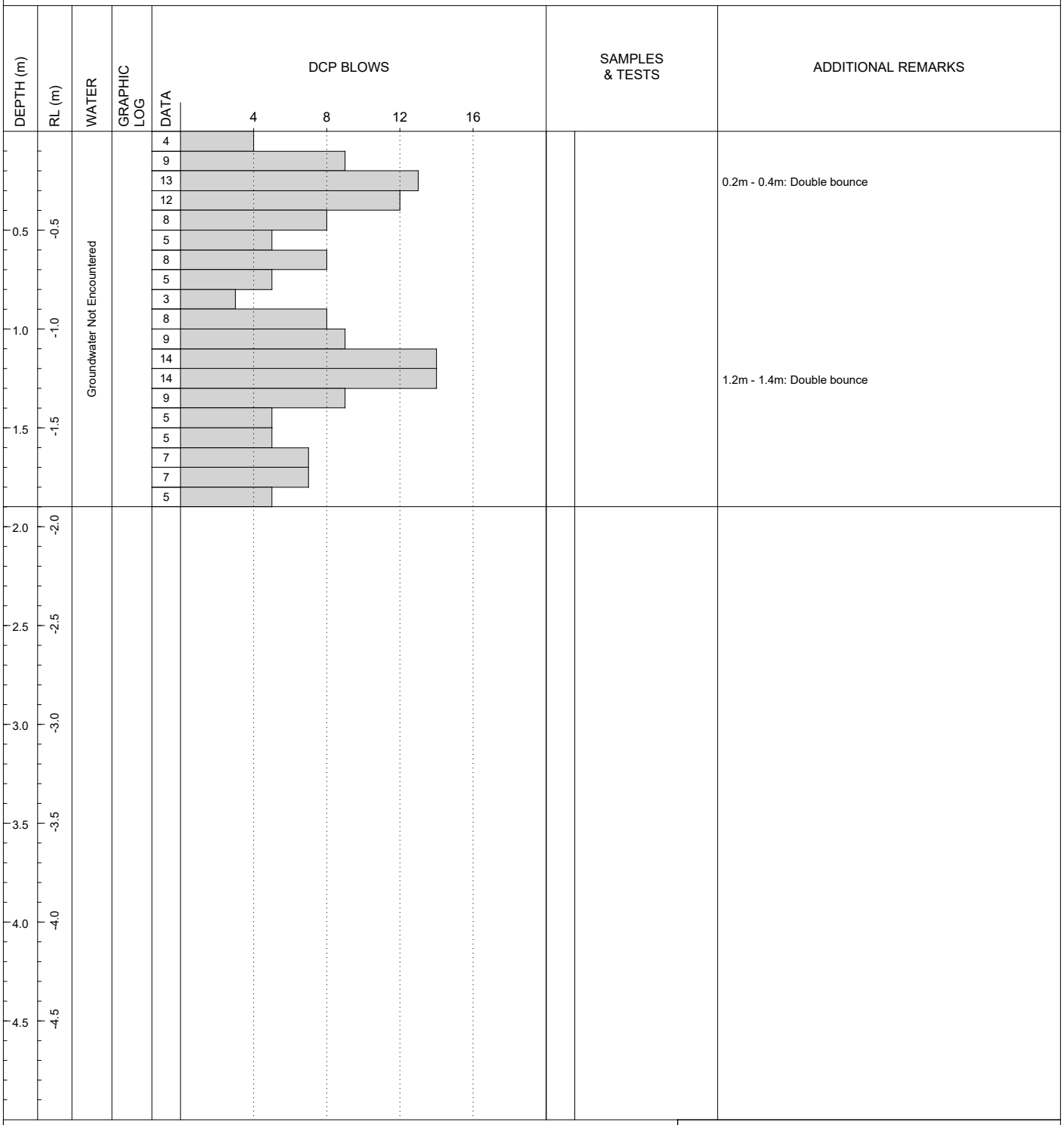
DCP LOG

DCP10.44

SHEET 44 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 168
PROJECT:	183970602	EASTING:	1928312.56	STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607798.78	FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	JM/SD DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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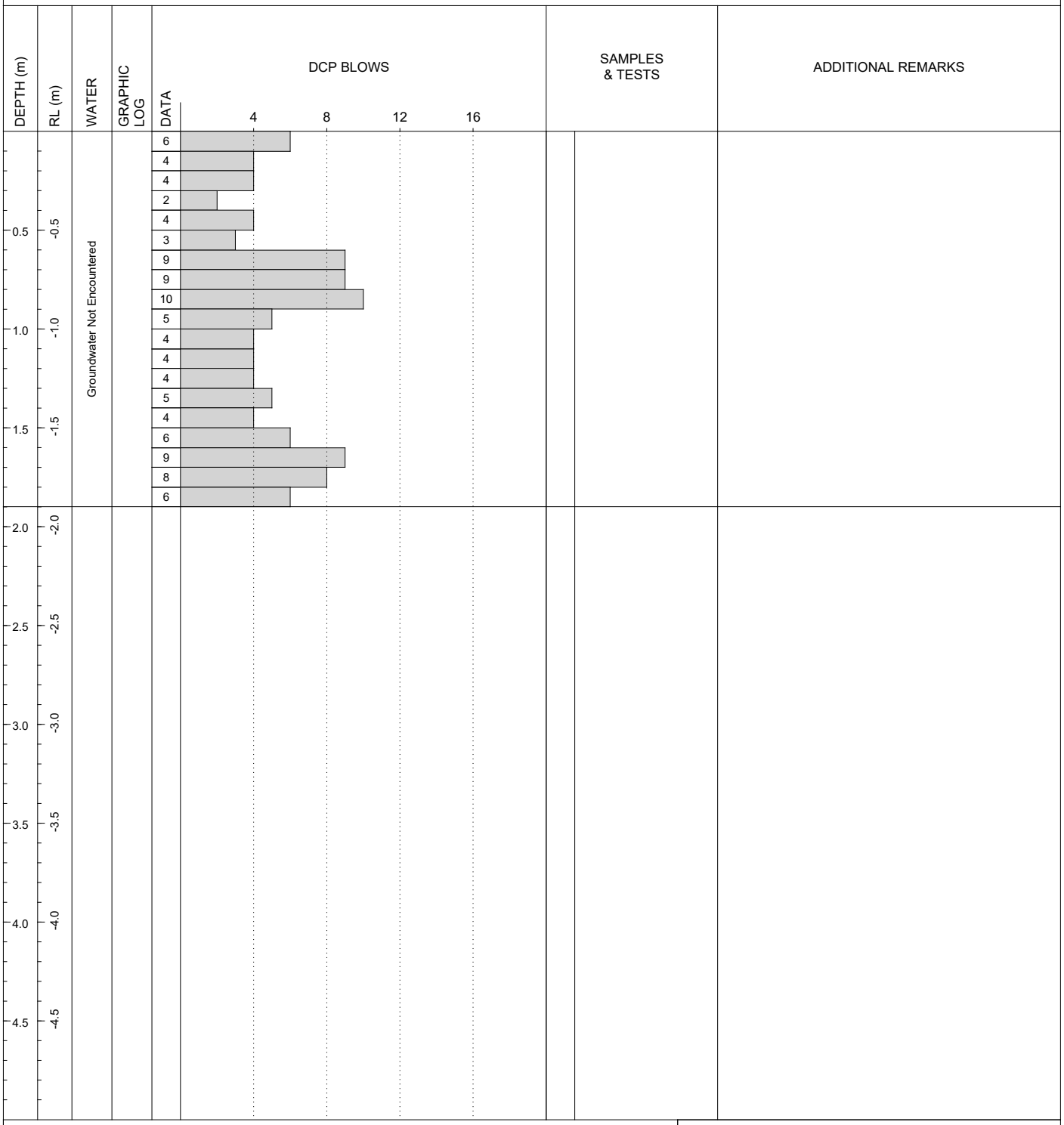
DCP LOG

DCP10.45

SHEET 45 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 166
PROJECT: 183970602	EASTING: 1928347.79	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607804.69	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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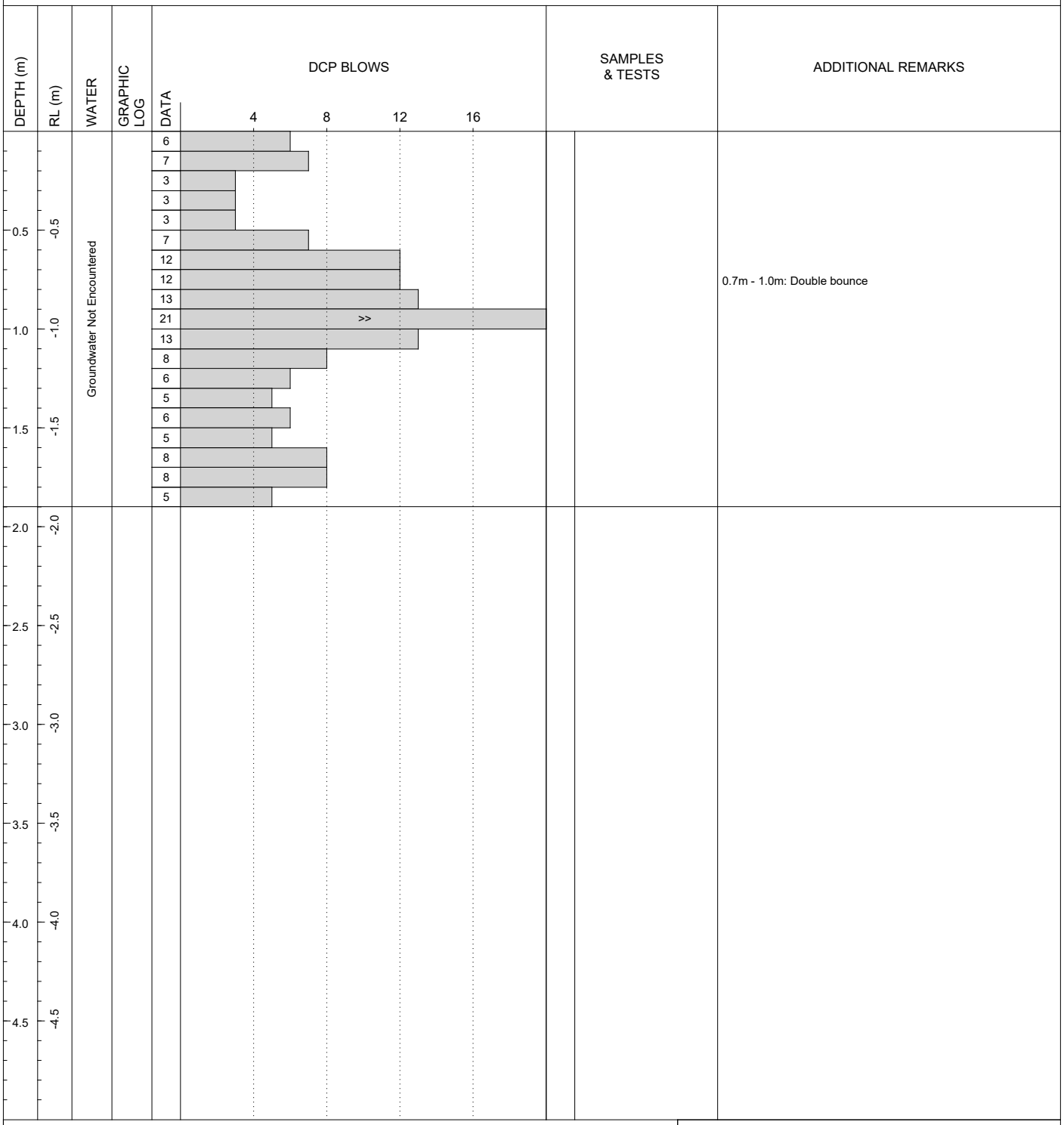
DCP LOG

DCP10.46

SHEET 46 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 166
PROJECT: 183970602	EASTING: 1928356.24	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607796.58	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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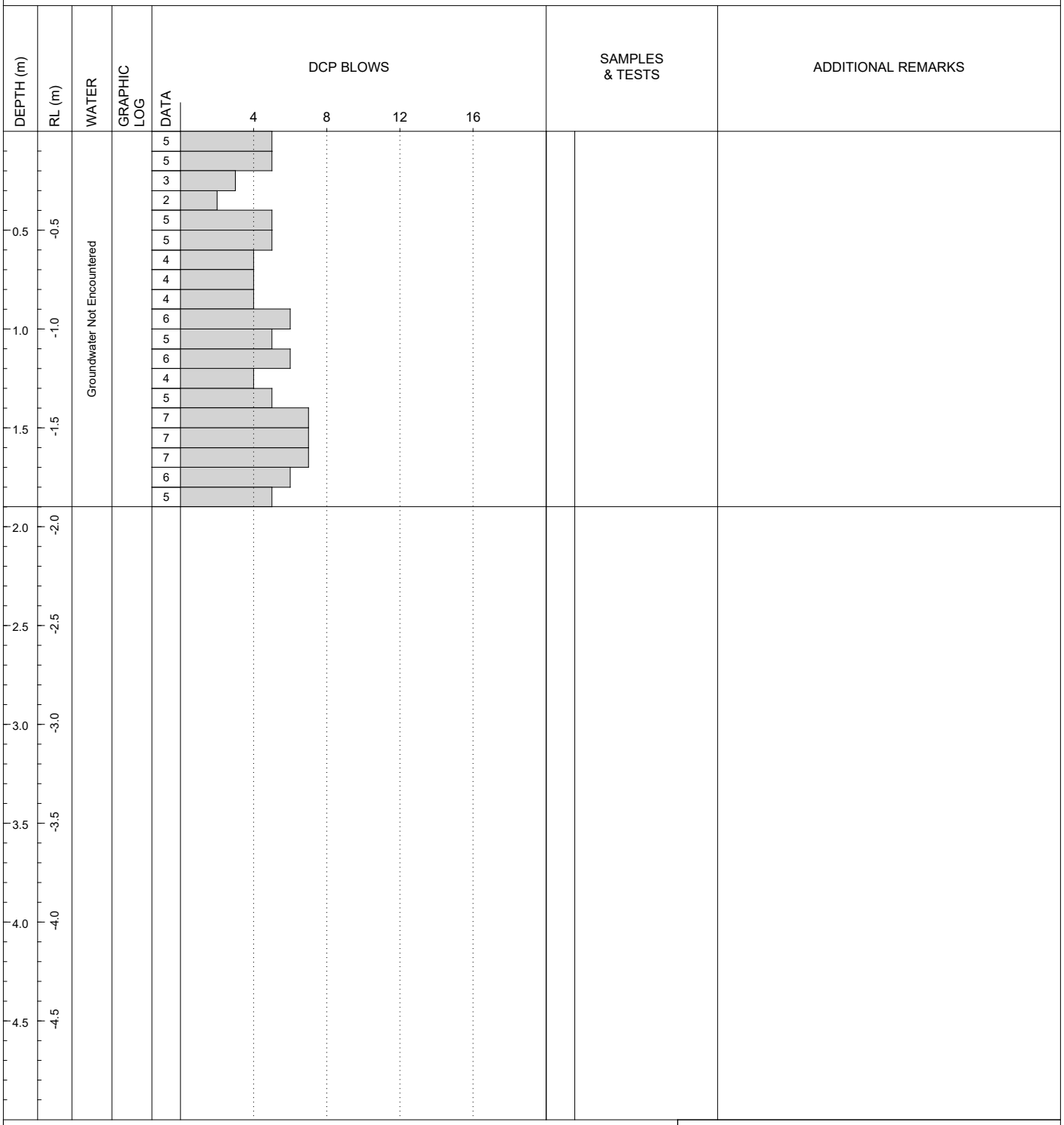
DCP LOG

DCP10.47

SHEET 47 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 166
PROJECT: 183970602	EASTING: 1928347.92	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607790.14	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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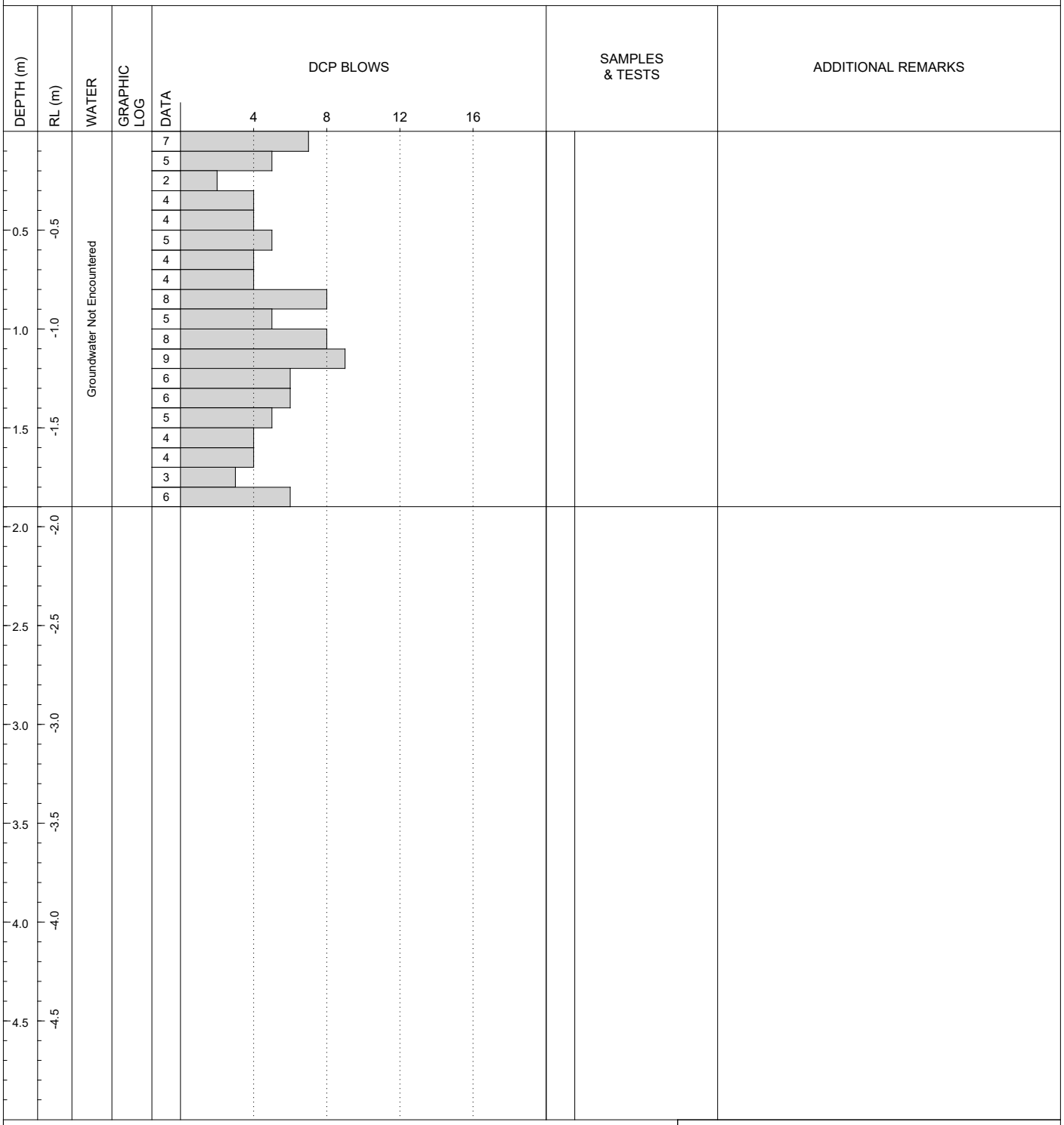
DCP LOG

DCP10.48

SHEET 48 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 166
PROJECT: 183970602	EASTING: 1928340.35	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607800.17	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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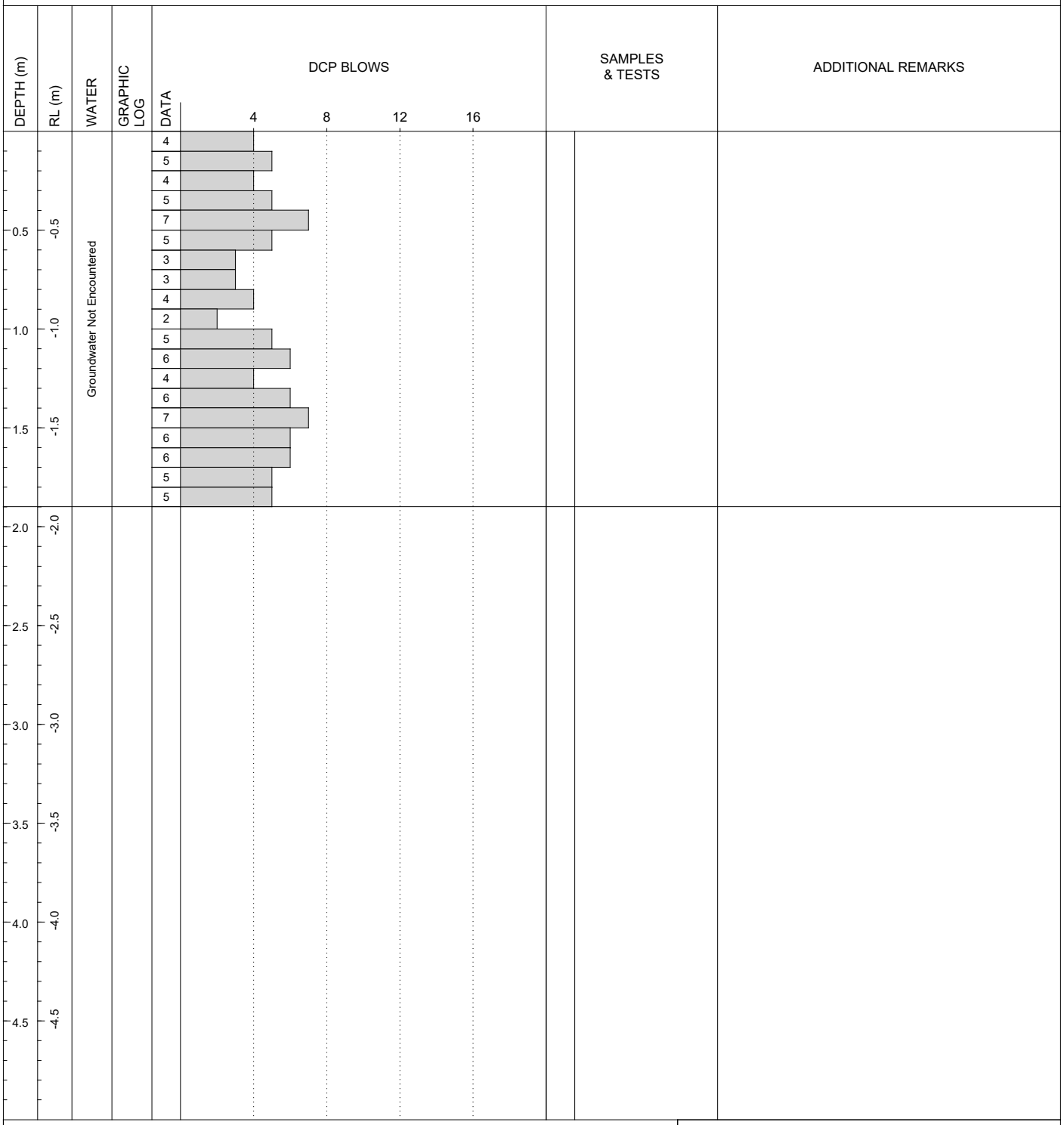
DCP LOG

DCP10.49

SHEET 49 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 165
PROJECT: 183970602	EASTING: 1928331.68	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607794.61	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND

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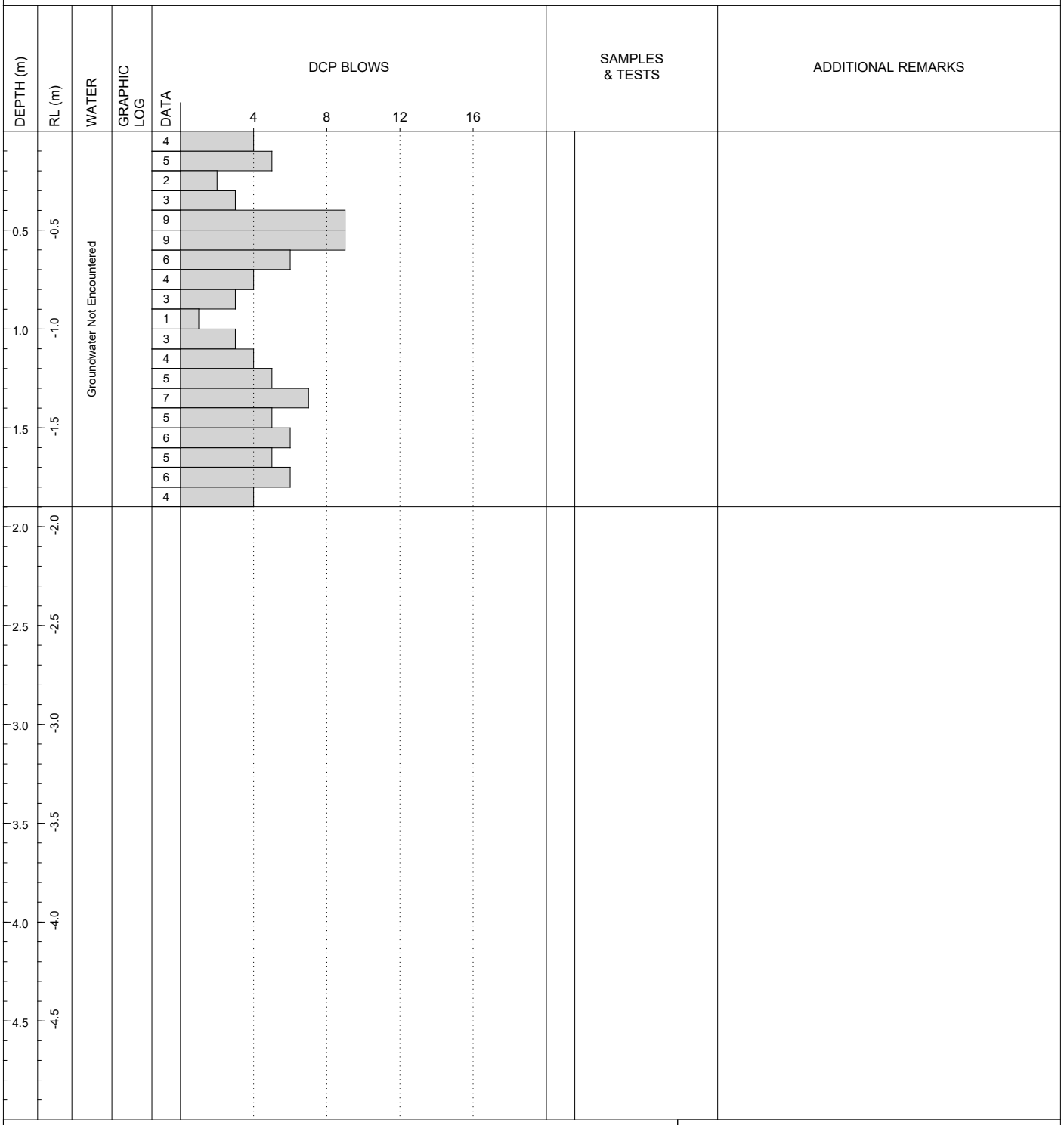
DCP LOG

DCP10.50

SHEET 50 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 165
PROJECT: 183970602	EASTING: 1928340.49	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607782.98	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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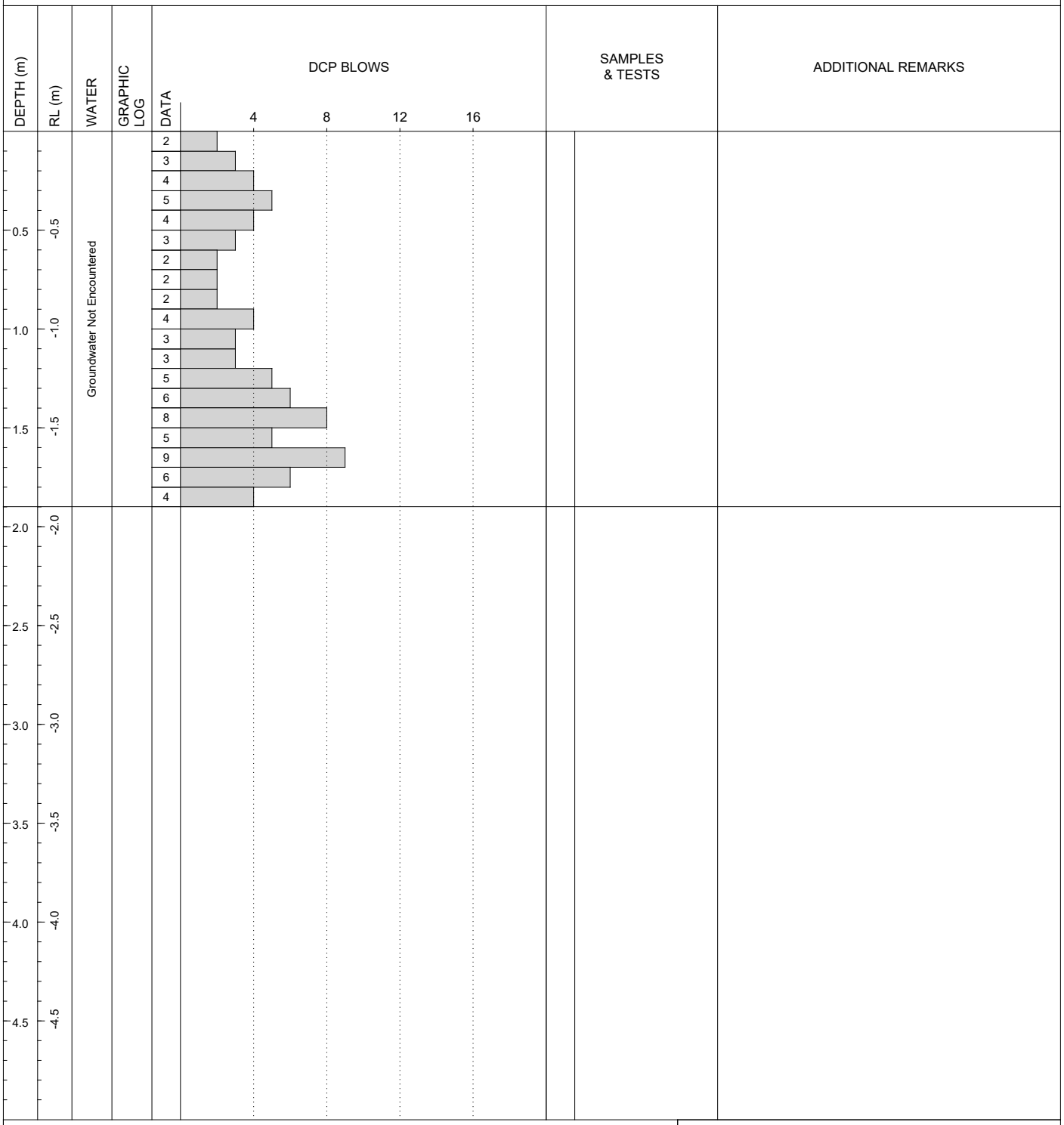
DCP LOG

DCP10.51

SHEET 51 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 165
PROJECT: 183970602	EASTING: 1928330.66	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607776.34	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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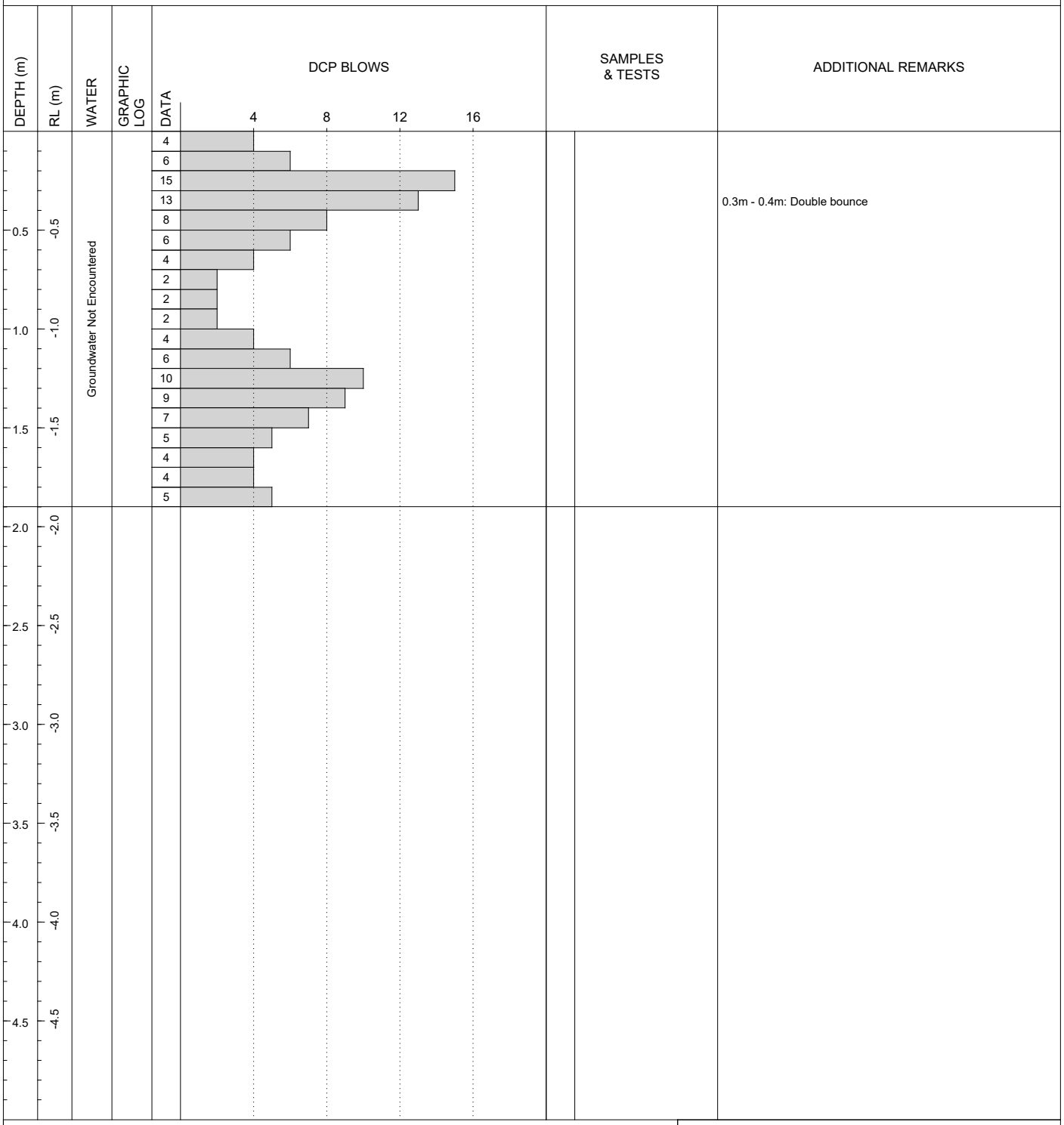
DCP LOG

DCP10.52

SHEET 52 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 165
PROJECT: 183970602	EASTING: 1928321.72	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607787.25	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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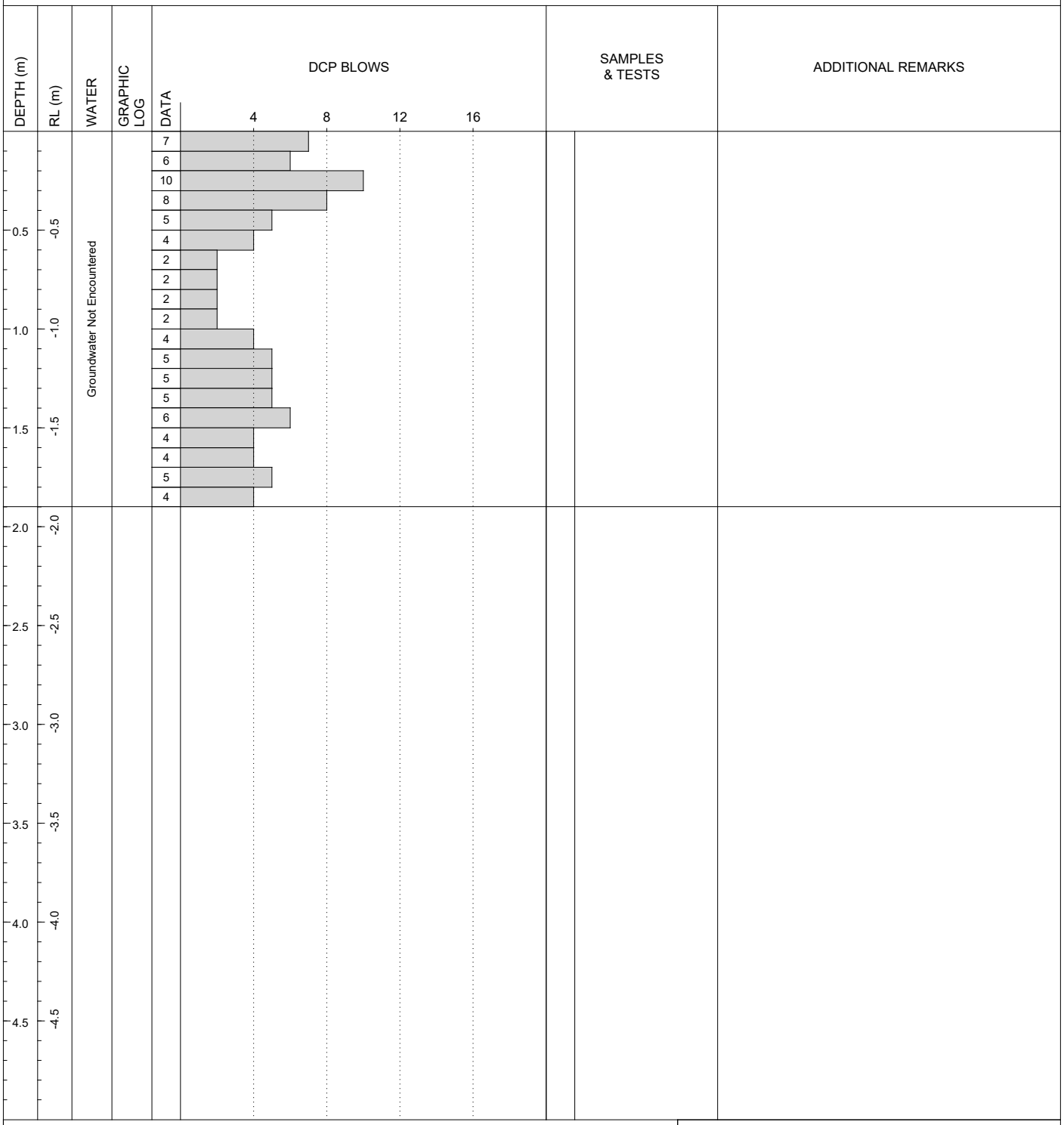
DCP LOG

DCP10.53

SHEET 53 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 164
PROJECT: 183970602	EASTING: 1928315.77	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607778.73	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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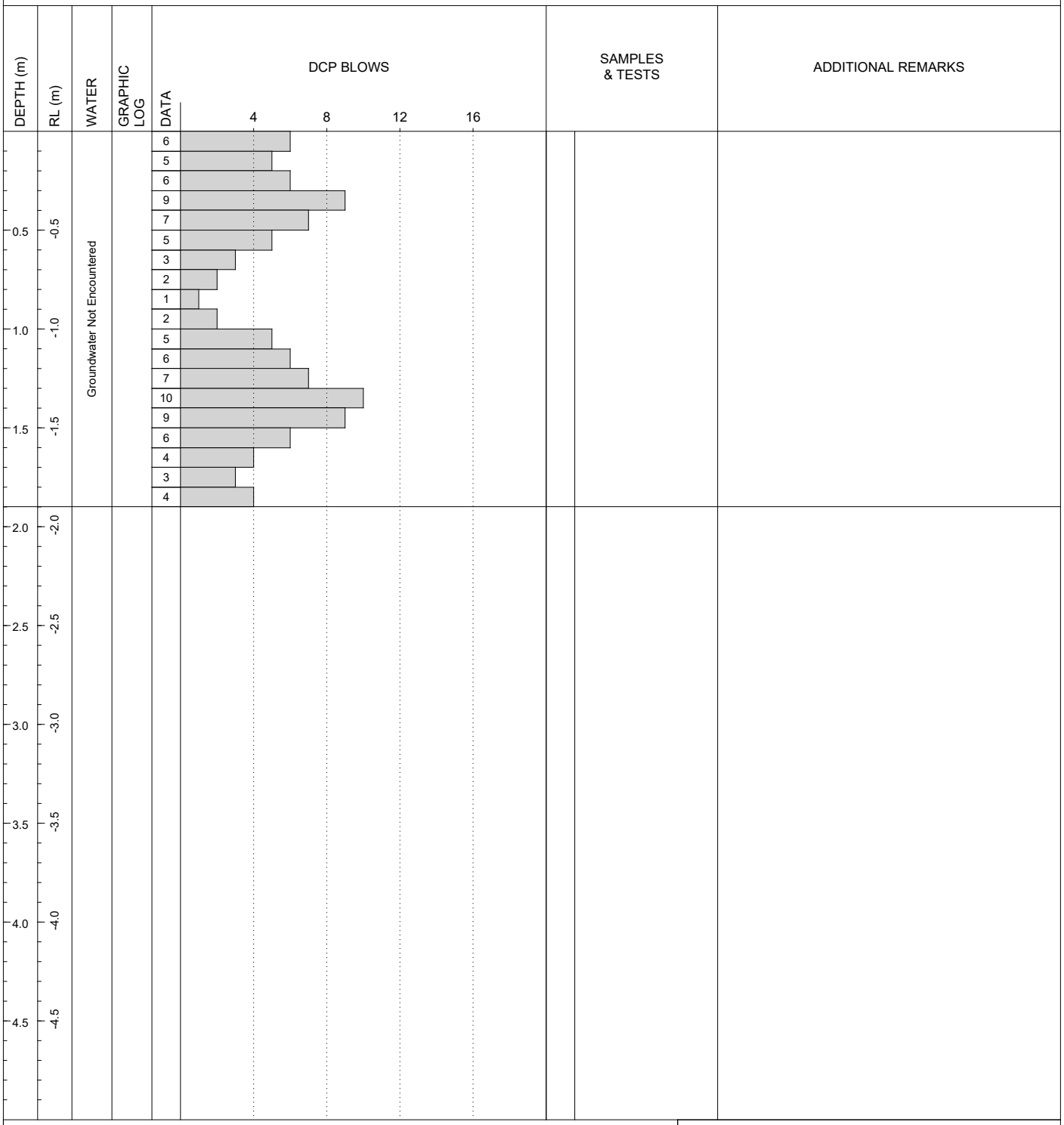
DCP LOG

DCP10.54

SHEET 54 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 164
PROJECT:	183970602	EASTING:		STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:		FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	JM/SD DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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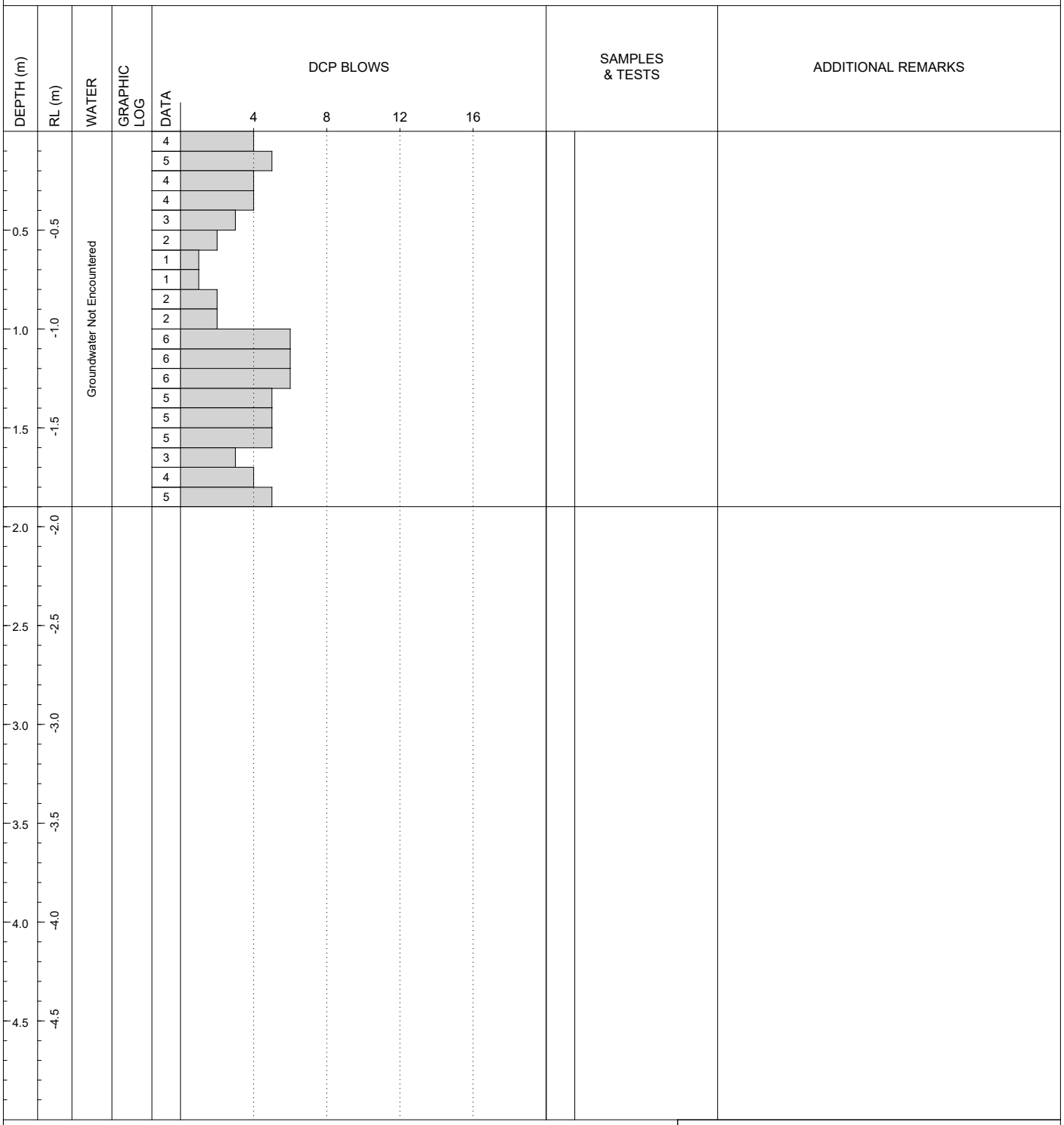
DCP LOG

DCP10.55

SHEET 55 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 164
PROJECT: 183970602	EASTING: 1928313.42	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607762.68	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: JM/SD DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND

Ph: +64 6 8771652 | Email: info@rdcl.co.nz

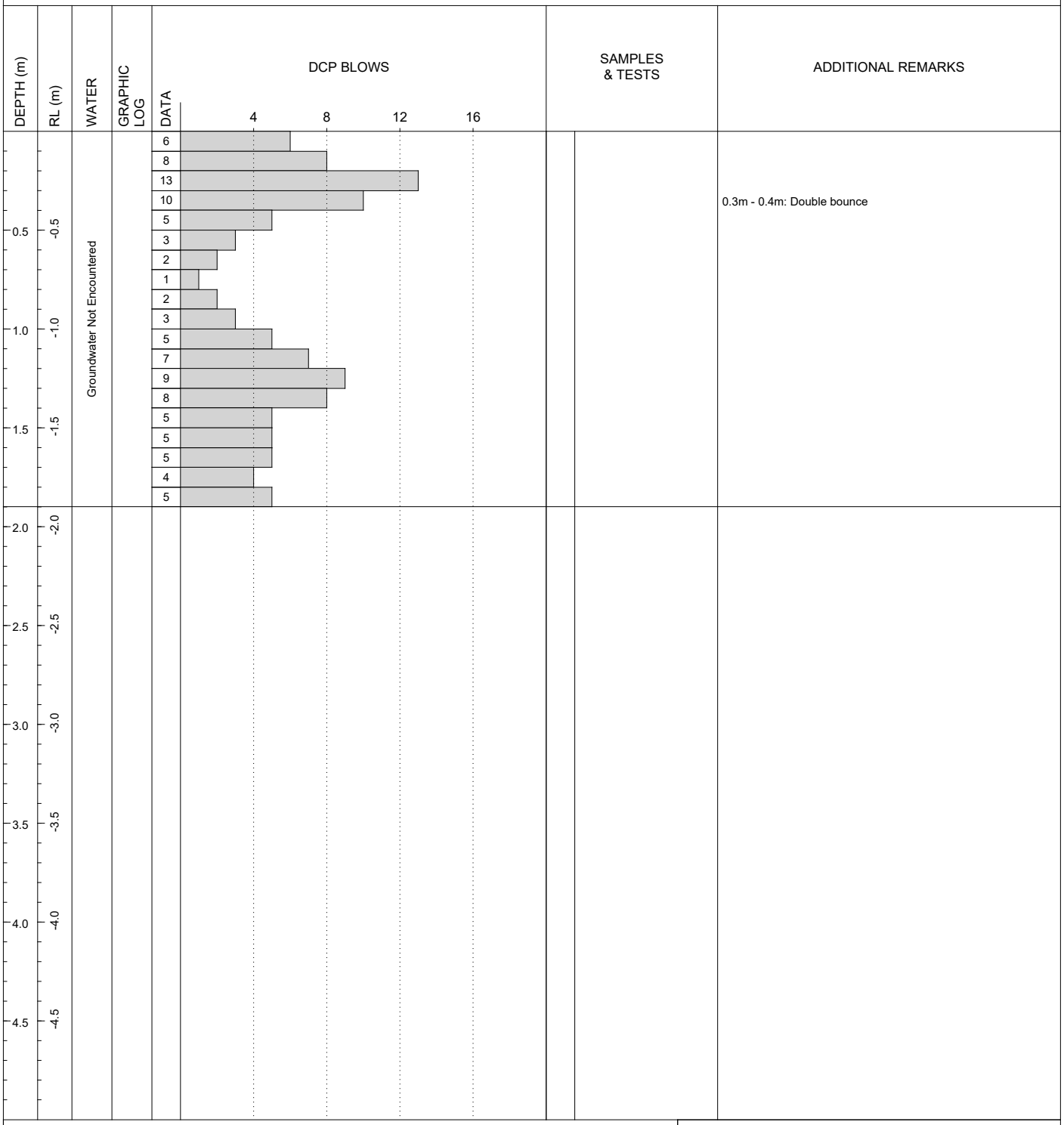
Produced with Core-GS by Geroc

DCP LOG

DCP10.56

SHEET 56 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 164
PROJECT:	183970602	EASTING:		STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:		FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	JM/SD DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND

Ph: +64 6 8771652 | Email: info@rdcl.co.nz

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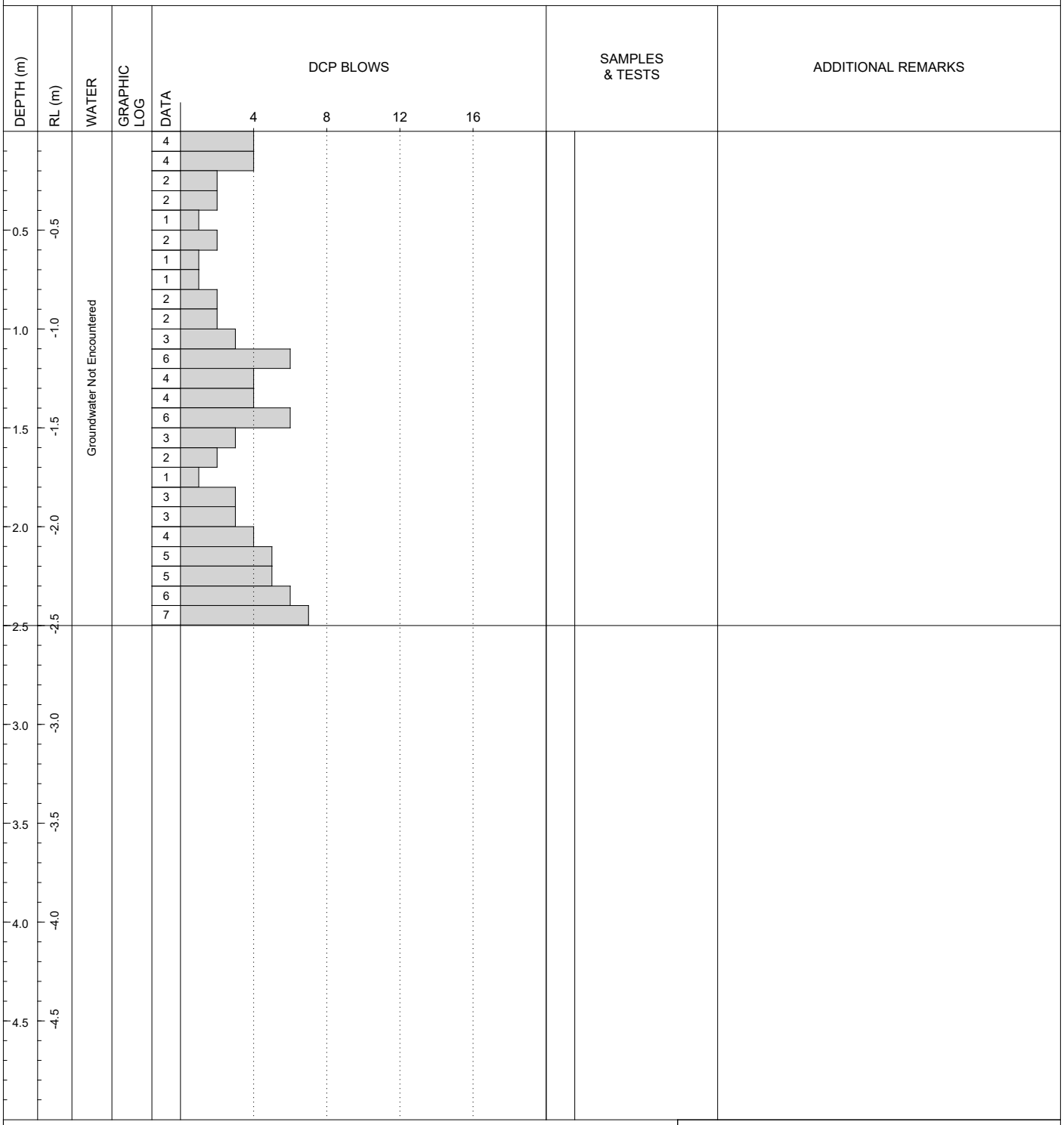
DCP LOG

DCP10.57

SHEET 57 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 163
PROJECT: 183970602	EASTING: 1928298.41	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607763.50	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: SD/BR DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS
Soils tested in accordance with NZGS

SYMBOLS
- Standing Water Level
- Out flow
- In flow

RDCL
8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND
Ph: +64 6 8771652 | Email: info@rdcl.co.nz

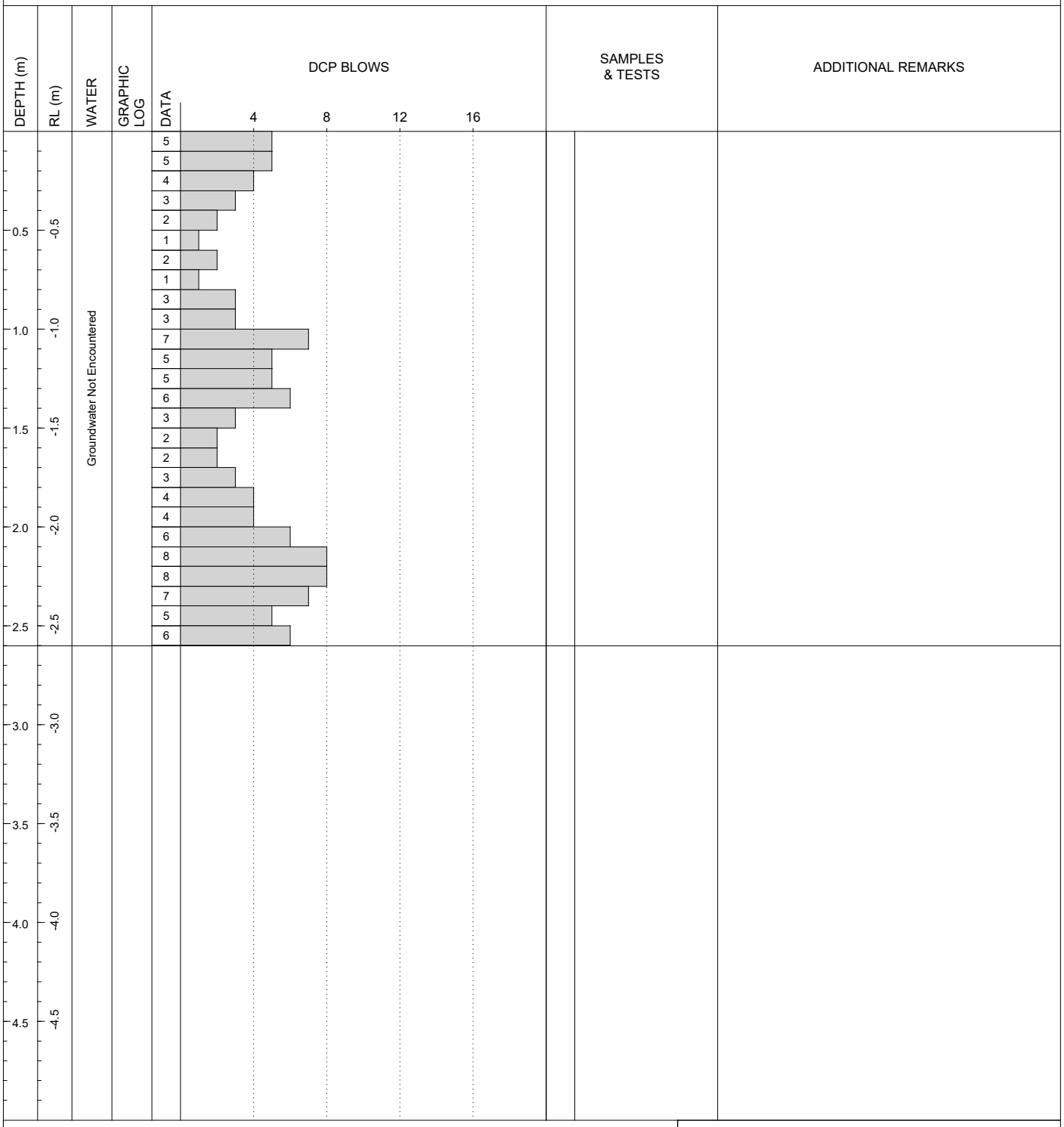
Produced with Core-GS by Geroc

DCP LOG

DCP10.58

SHEET 58 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 163
PROJECT: 183970602	EASTING: 1928305.64	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607752.71	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: SD/BR DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND

Ph: +64 6 8771652 | Email: info@rdcl.co.nz

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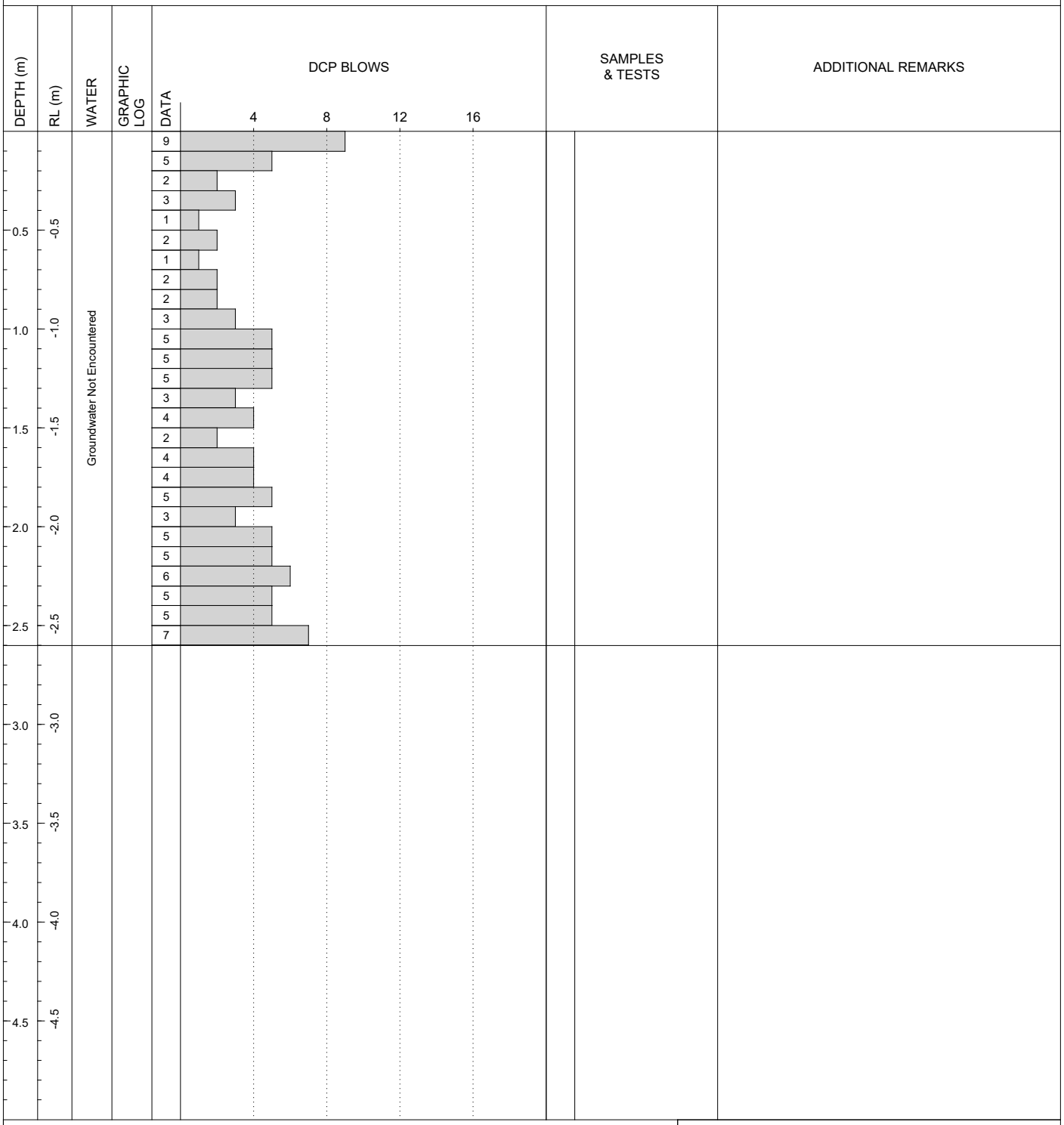
DCP LOG

DCP10.59

SHEET 59 OF 60

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	Stage 10, Lot 163
PROJECT:	183970602	EASTING:	1928295.85	STARTED:	06-11-2019
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607745.45	FINISHED:	06-11-2019
		DATUM:	-	LOGGED BY:	SD/BR DATE: 06-11-2019
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TB DATE: 14-08-2019
ENGINEER:	TB	AZUMITH:	PLUNGE: 90°	STATUS:	Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

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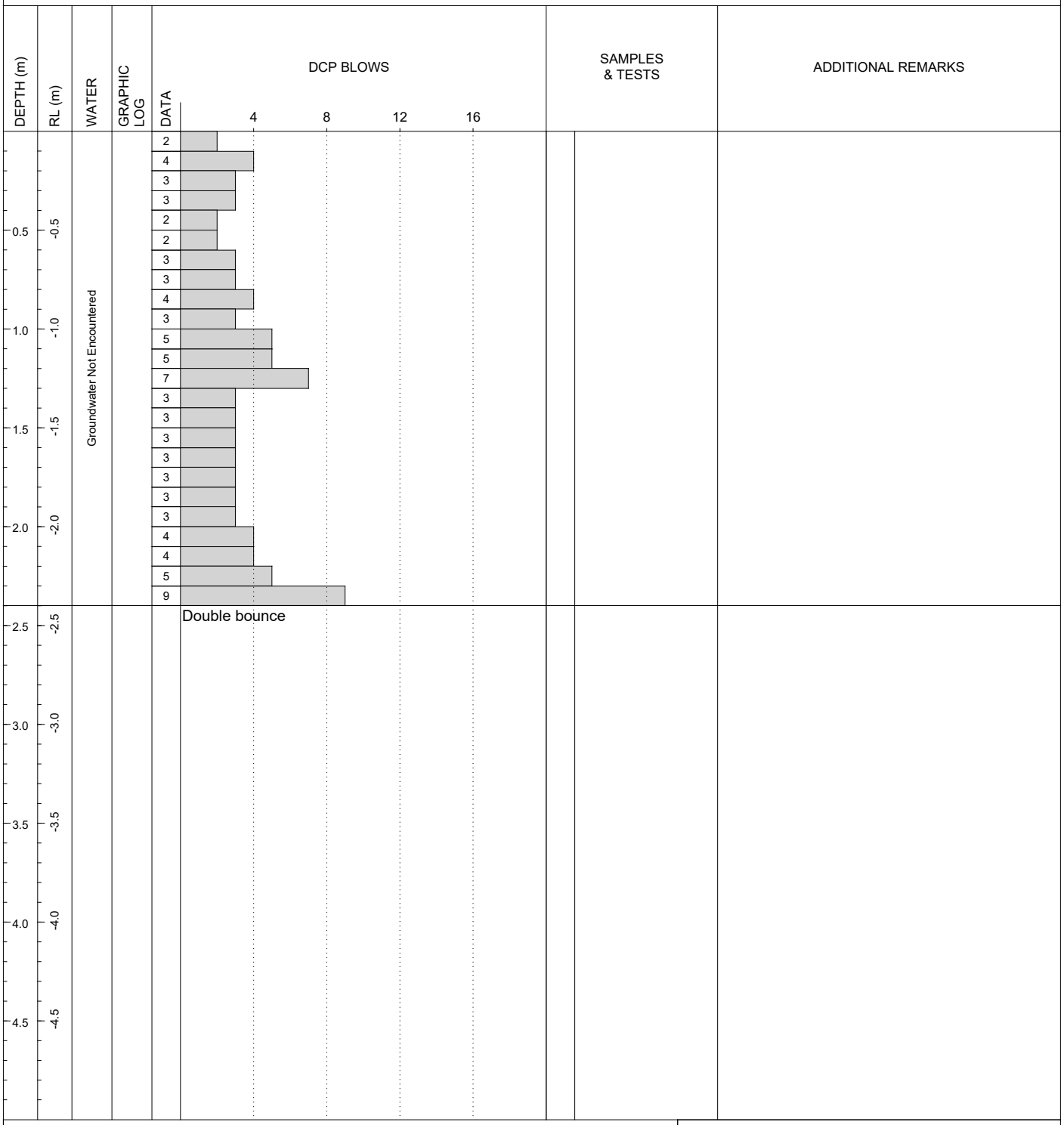
DCP LOG

DCP10.60

SHEET 60 OF 60

CLIENT: Greenstone Land Developments Ltd	PROJECTION: NZTM2000	SUB-LOCATION: Stage 10, Lot 163
PROJECT: 183970602	EASTING: 1928289.00	STARTED: 06-11-2019
LOCATION: Lyndhurst Road, Frimley, Hastings	NORTHING: 5607754.64	FINISHED: 06-11-2019
	DATUM: -	LOGGED BY: SD/BR DATE: 06-11-2019
OFFICE: RDCL - Hastings	ELEVATION: -	CHECKED BY: TB DATE: 14-08-2019
ENGINEER: TB	AZUMITH: PLUNGE: 90°	STATUS: Final data



REMARKS

Soils tested in accordance with NZGS

SYMBOLS

- Standing Water Level
- Out flow
- In flow

RDCL

8/308 QUEEN ST EAST, HASTINGS | PO BOX 28057, HAVELOCK NORTH 4130 | NEW ZEALAND

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APPENDIX B – CONE PENETROMETER (CPT) OUTPUTS

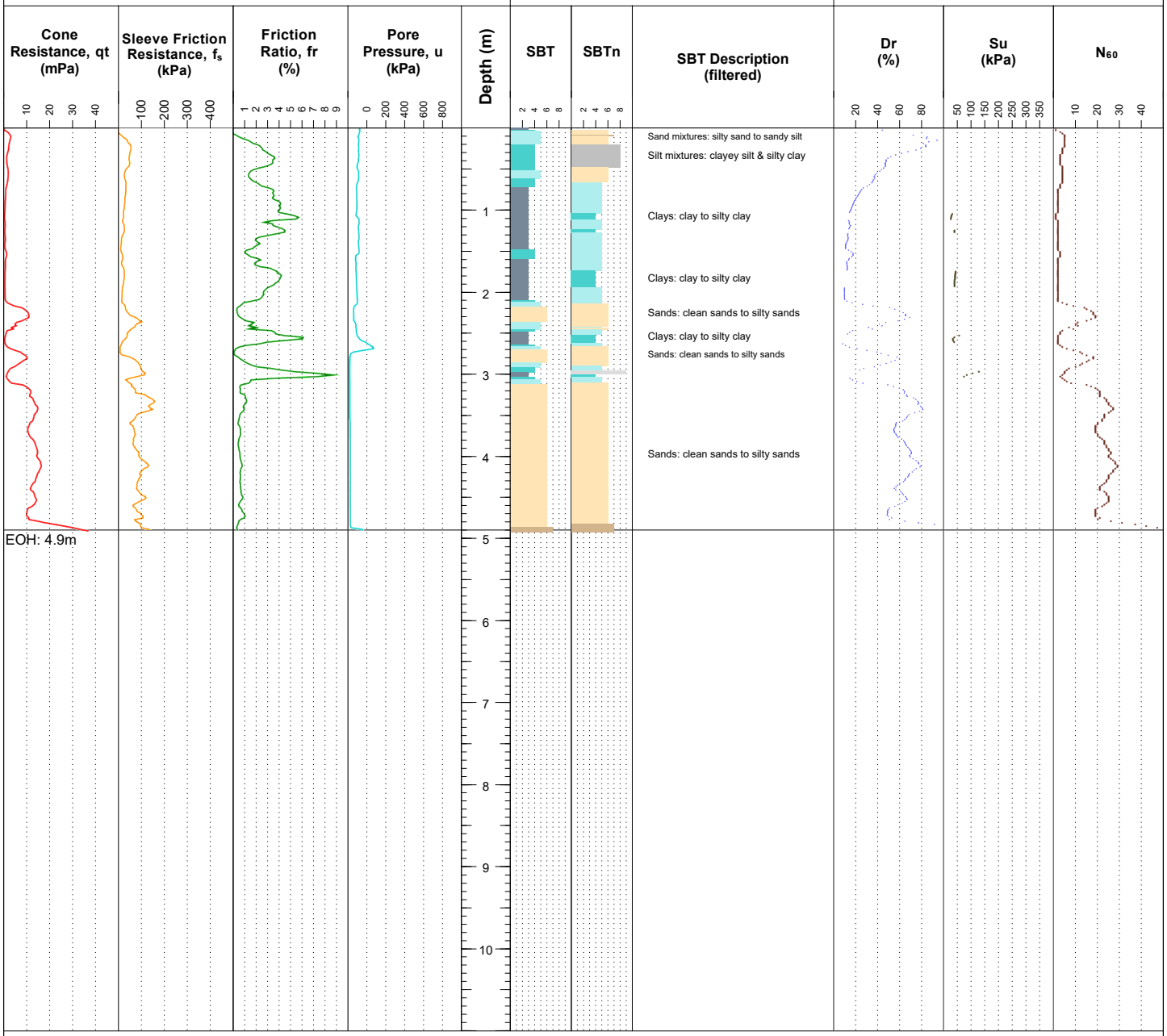
CONE PENETRATION TEST LOG

CPT101

SHEET 1 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928554.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607964.00	PREPARED BY:	TS DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TS DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: 35MPA Tip Resistance Exceeded

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 4.90

Sheet 1 of 20

Printed: 12-12-2019

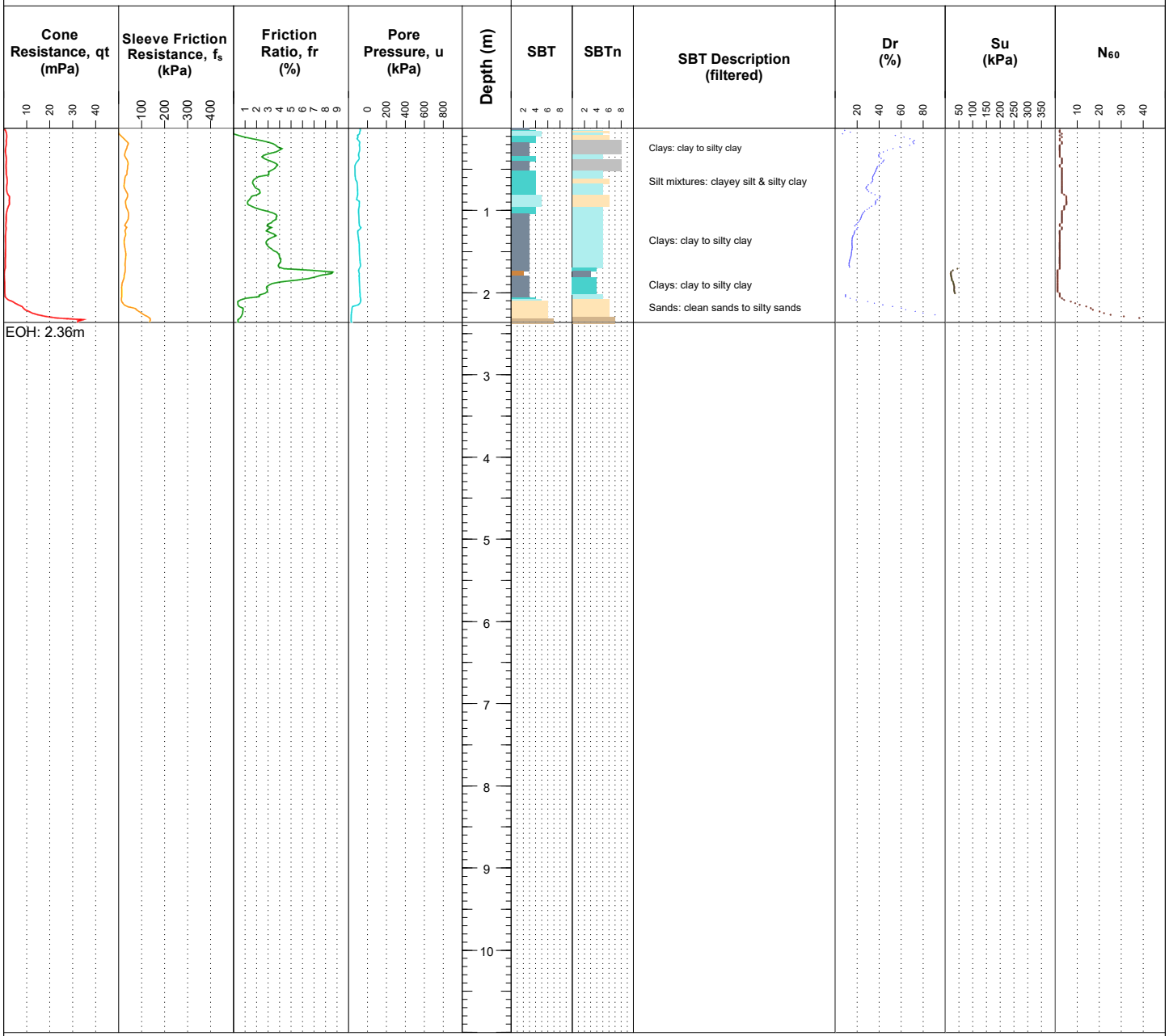
CONE PENETRATION TEST LOG

CPT102

SHEET 2 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928474.00	LOGGED ON:	21-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607953.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: 35MPA Tip Resistance Exceeded

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 2.36

Sheet 2 of 20

Printed: 12-12-2019

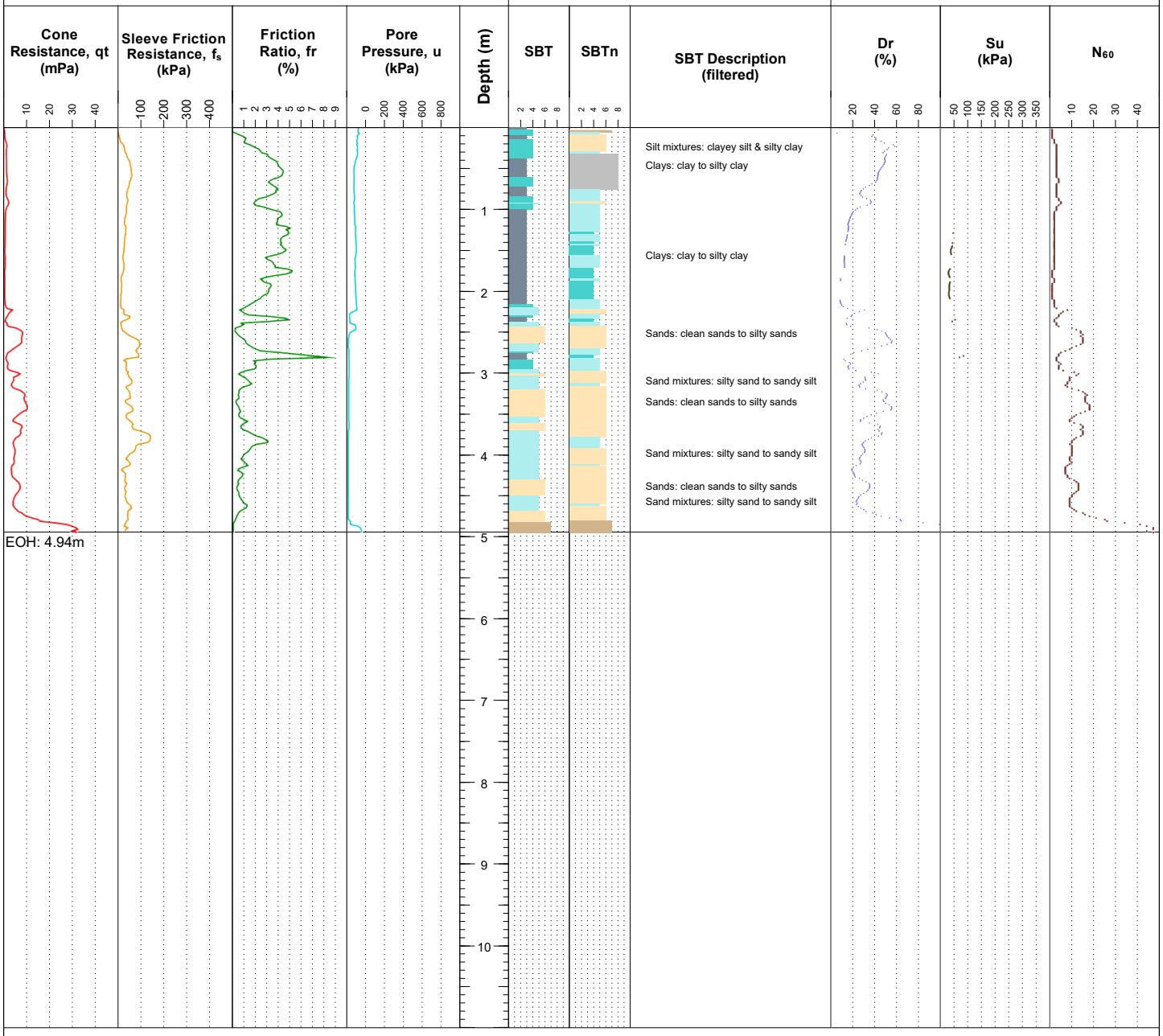
CONE PENETRATION TEST LOG

CPT103

SHEET 3 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928499.00	LOGGED ON:	21-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5608029.00	PREPARED BY:	TS DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY:	TS DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: 35MPA Tip Resistance Exceeded

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 4.94

Sheet 3 of 20

Printed: 12-12-2019

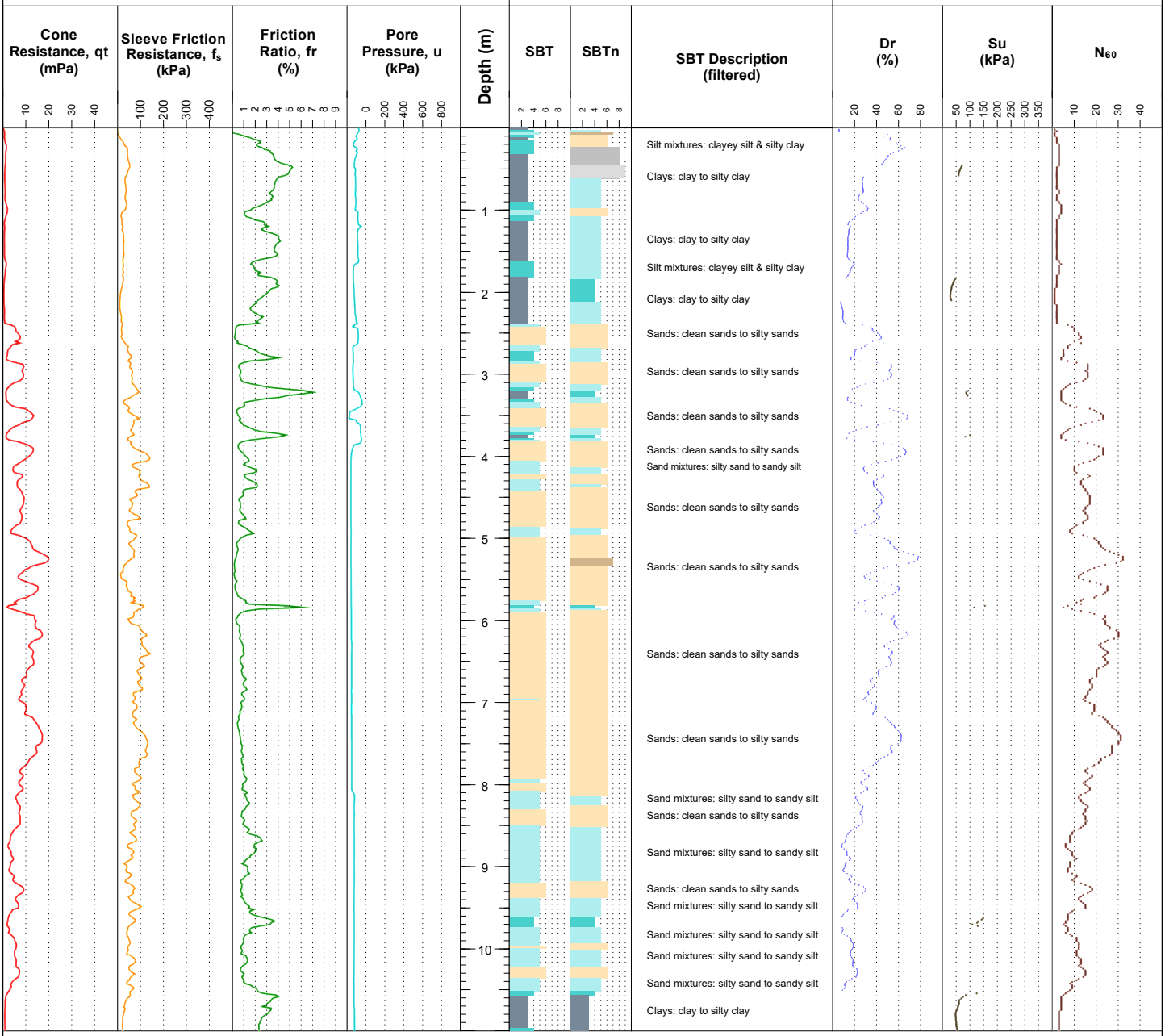
CONE PENETRATION TEST LOG

CPT104

SHEET 4 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928398.00	LOGGED ON:	21-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607946.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Anchor Failure

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 13.78

Sheet 4 of 20

Printed: 12-12-2019

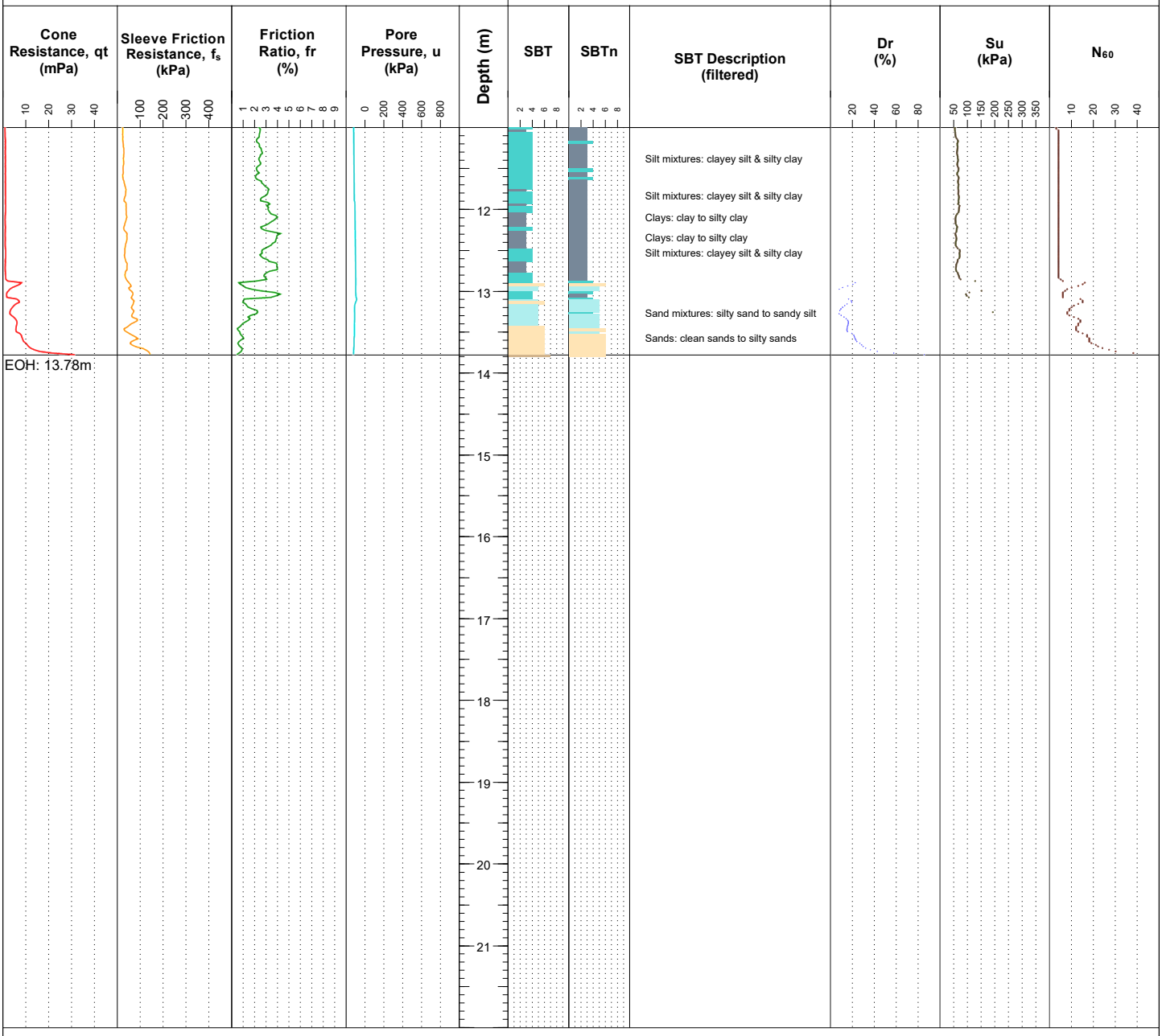
CONE PENETRATION TEST LOG

CPT104

SHEET 5 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928398.00	LOGGED ON:	22-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607946.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 13.78

Sheet 5 of 20

Printed: 12-12-2019

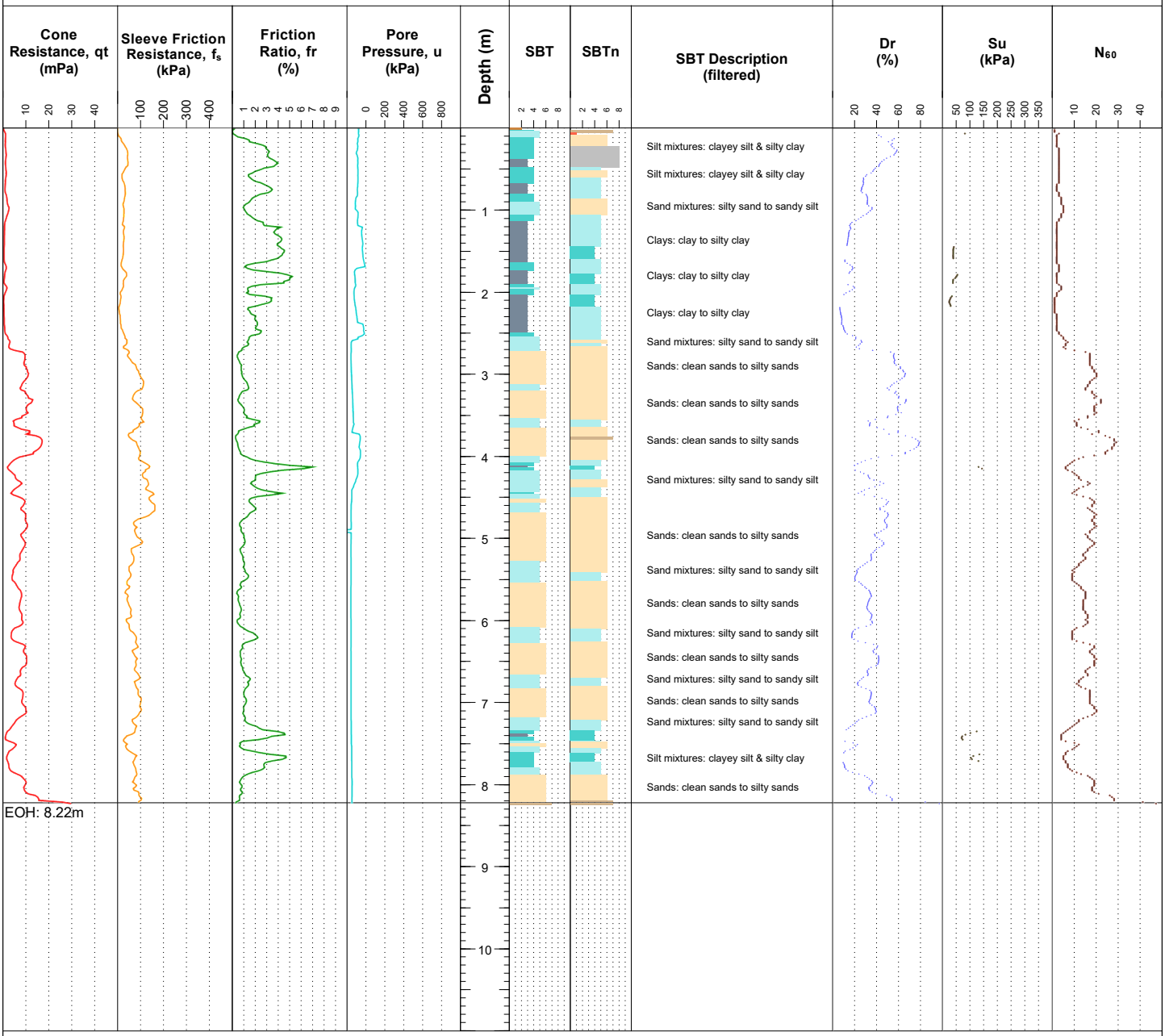
CONE PENETRATION TEST LOG

CPT105

SHEET 6 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928420.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607882.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: 35MPA Tip Resistance Exceeded

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 8.22

Sheet 6 of 20

Printed: 12-12-2019

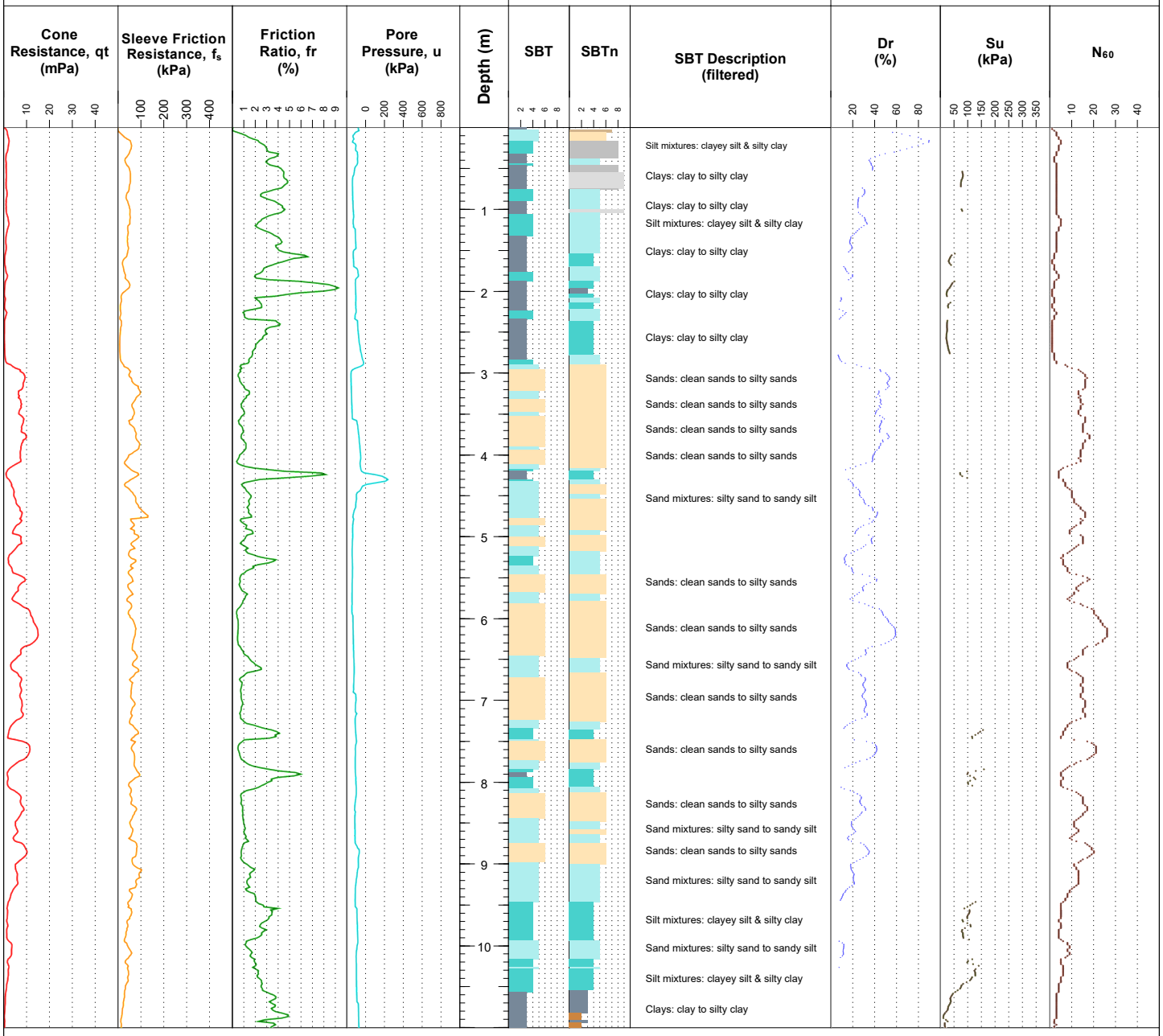
CONE PENETRATION TEST LOG

CPT106

SHEET 7 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928429.00	LOGGED ON:	22-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607791.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447 CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Anchor Failure

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 13.50

Sheet 7 of 20

Printed: 12-12-2019

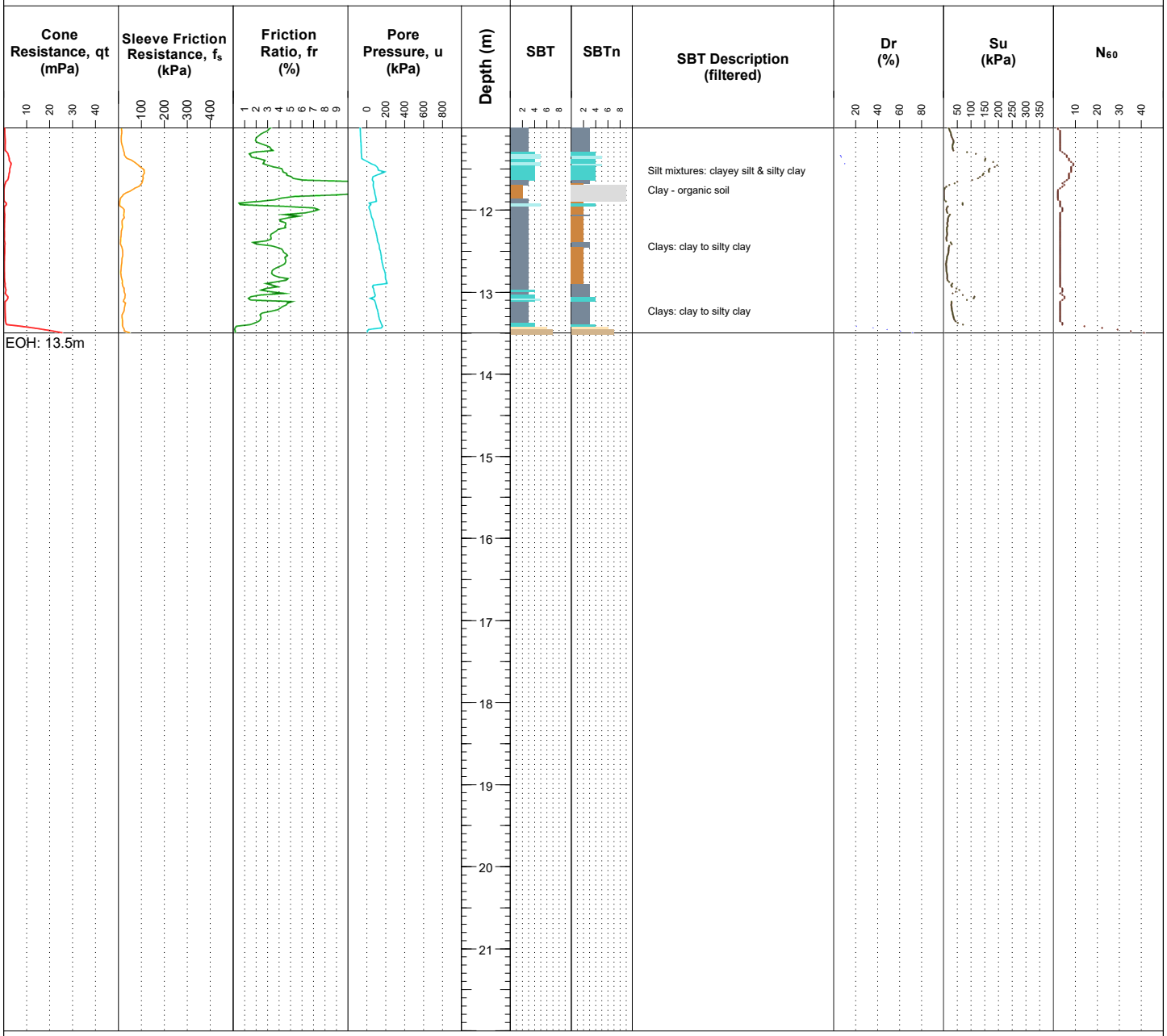
CONE PENETRATION TEST LOG

CPT106

SHEET 8 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928429.00	LOGGED ON:	22-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607791.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 13.50

Sheet 8 of 20

Printed: 12-12-2019

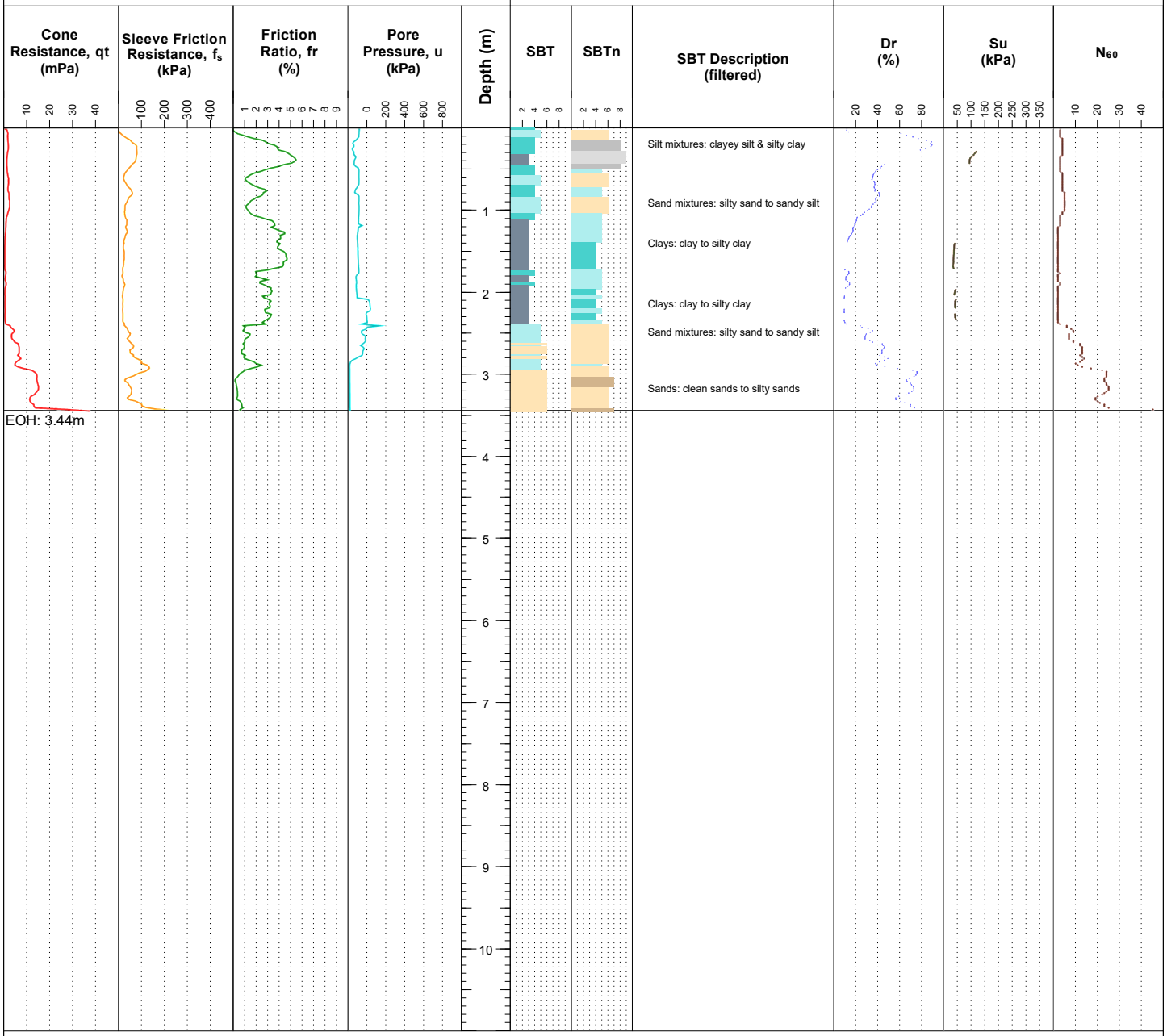
CONE PENETRATION TEST LOG

CPT107

SHEET 9 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928531.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607871.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 3.44

Sheet 9 of 20

Printed: 12-12-2019

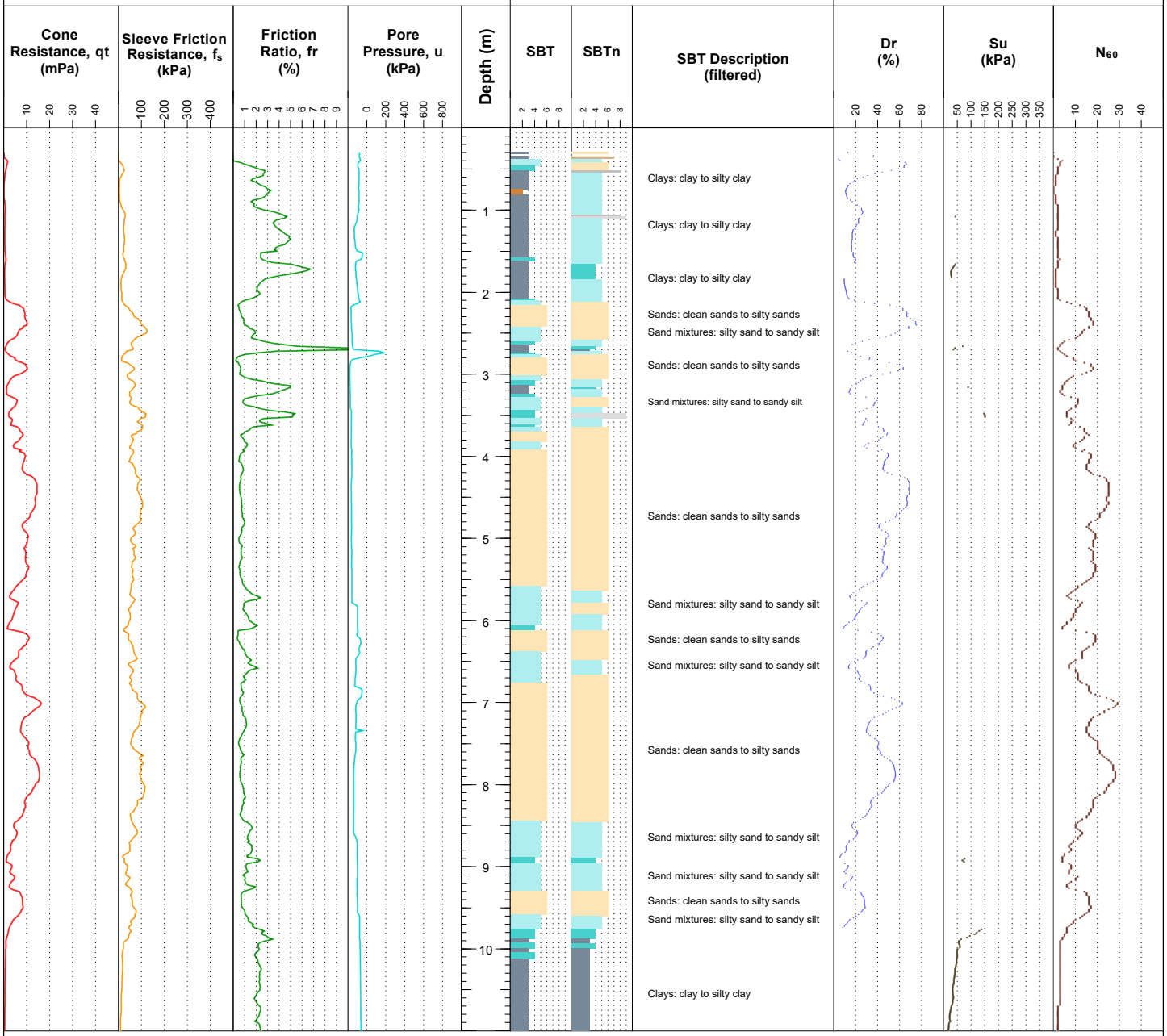
CONE PENETRATION TEST LOG

CPT108

SHEET 10 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928610.00	LOGGED ON:	22-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607922.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 16.02

Sheet 10 of 20

Printed: 12-12-2019

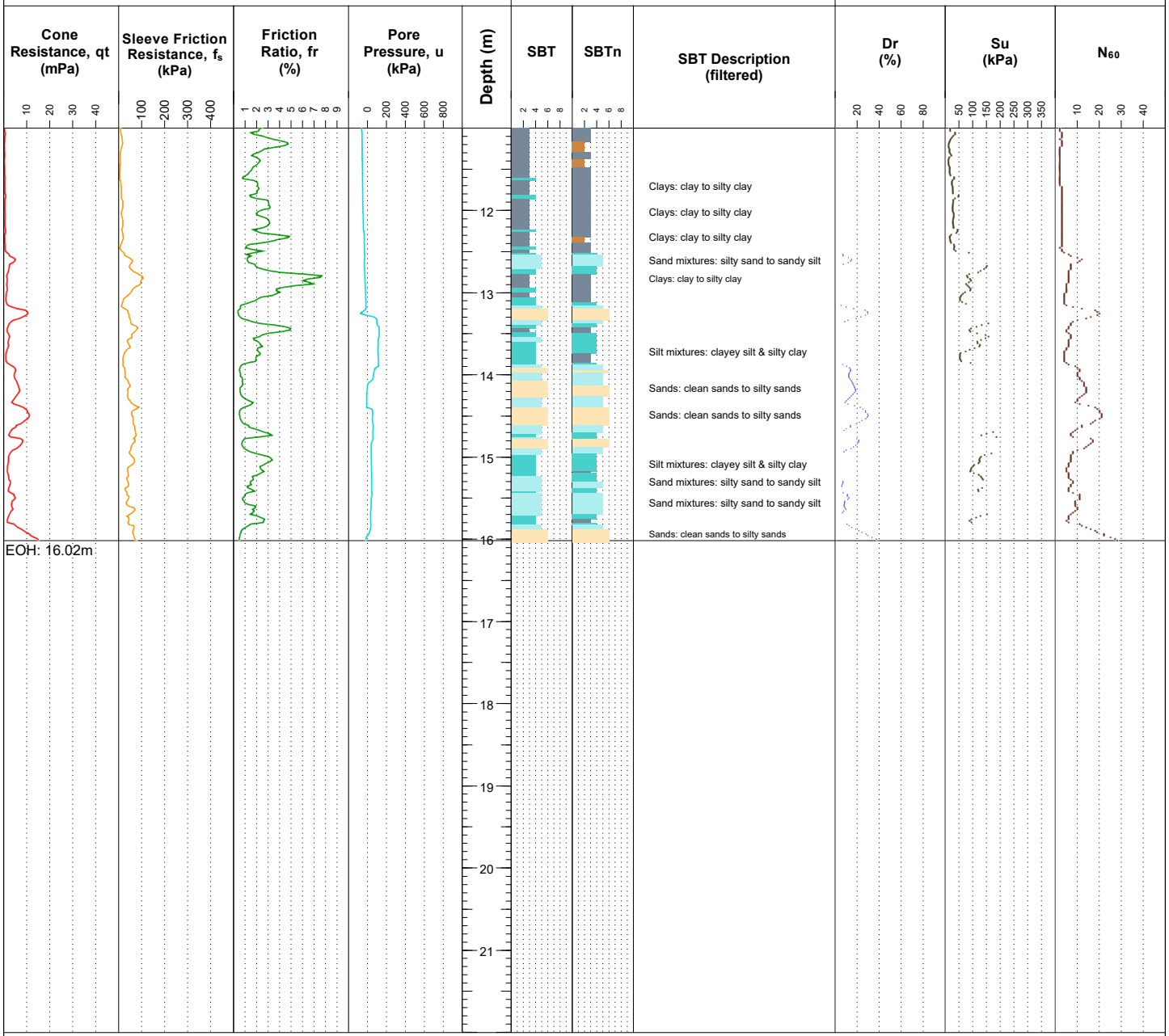
CONE PENETRATION TEST LOG

CPT108

SHEET 11 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928610.00	LOGGED ON:	22-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607922.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 16.02

Sheet 11 of 20

Printed: 12-12-2019

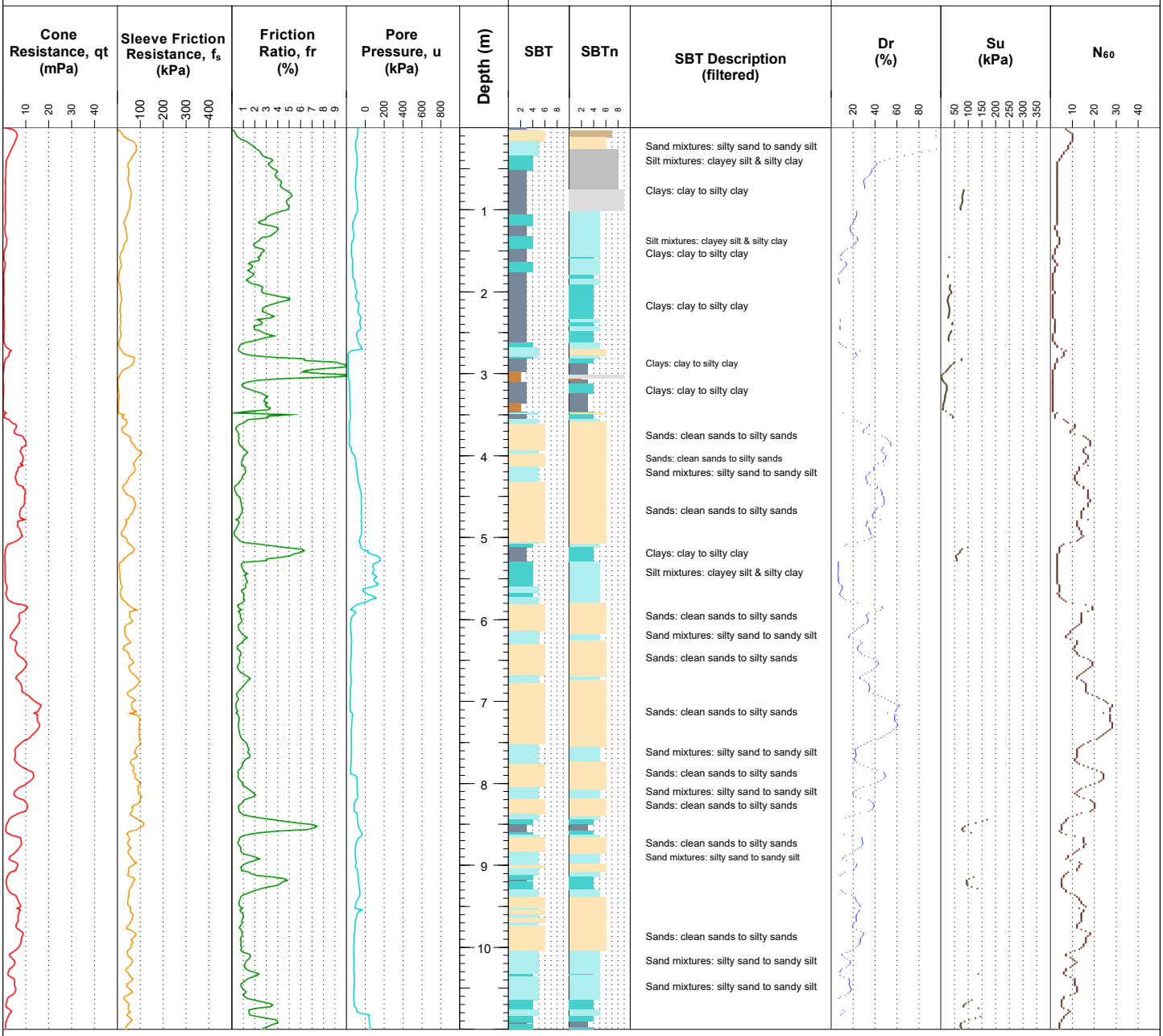
CONE PENETRATION TEST LOG

CPT109

SHEET 12 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928427.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607698.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447 CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Target Depth Reached

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.04

Printed: 12-12-2019

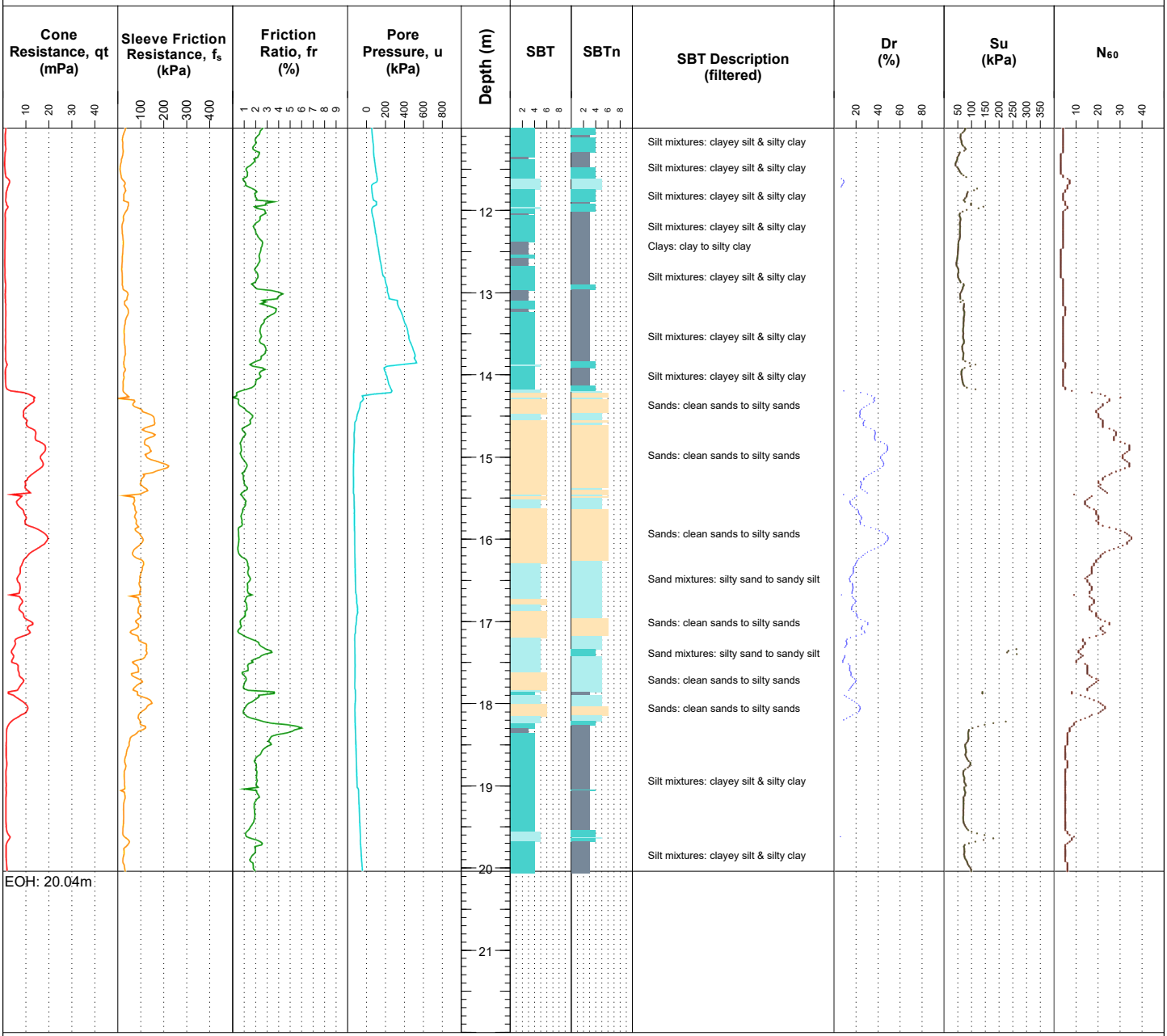
CONE PENETRATION TEST LOG

CPT109

SHEET 13 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928427.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607698.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Target Depth Reached

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.04

Sheet 13 of 20

Printed: 12-12-2019

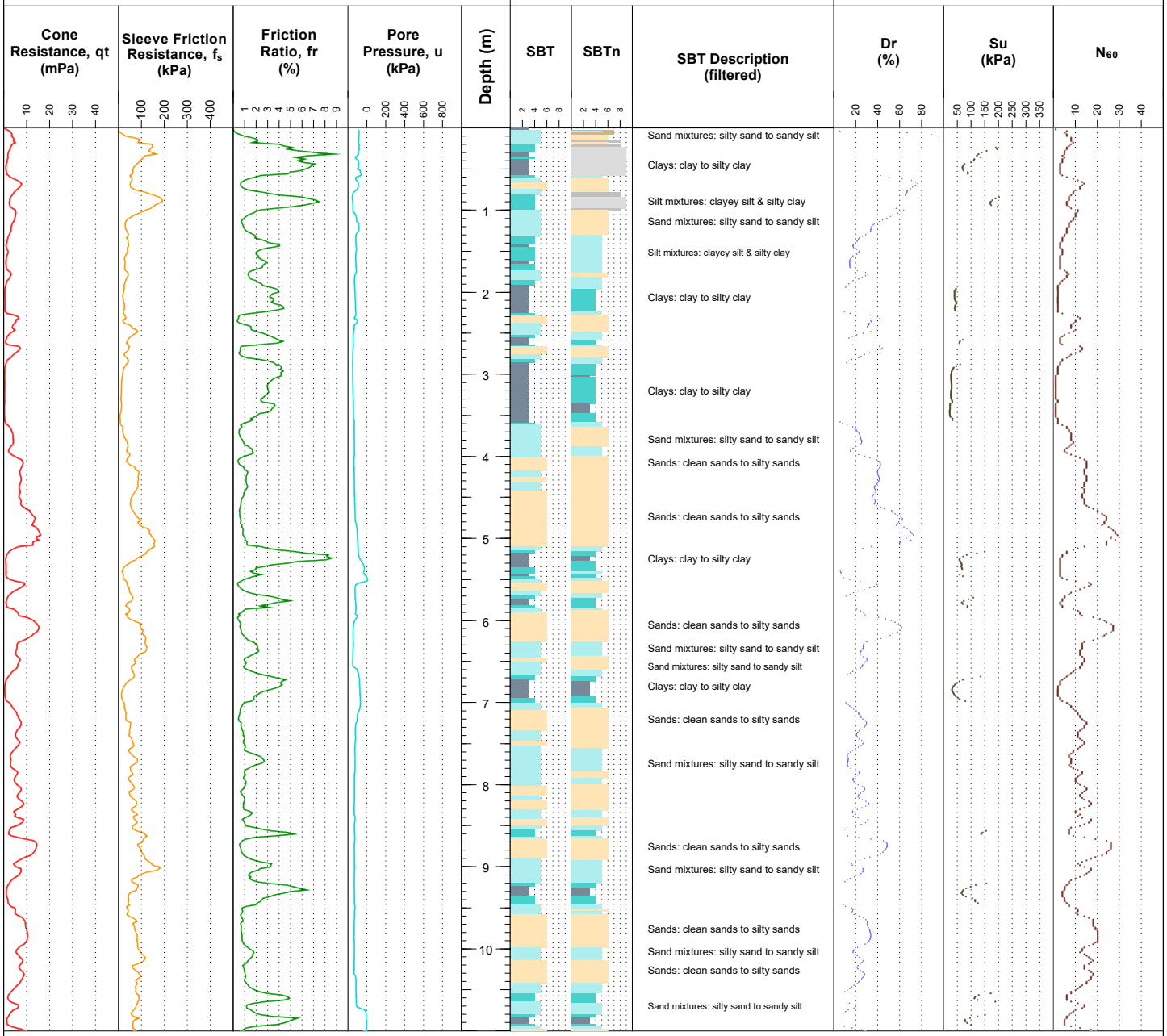
CONE PENETRATION TEST LOG

CPT110

SHEET 14 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928356.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607714.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Target Depth Reached

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.06

Sheet 14 of 20

Printed: 12-12-2019

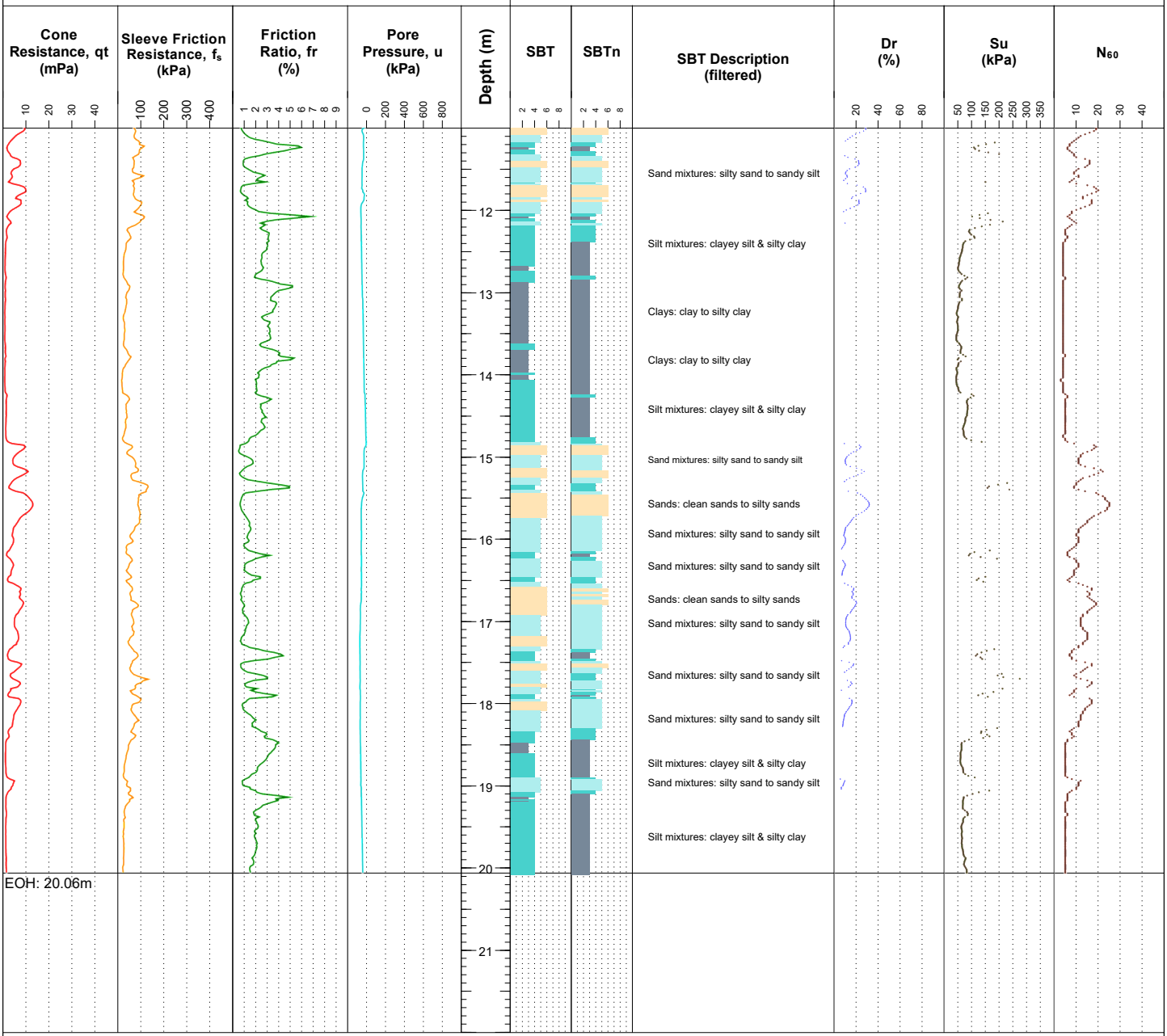
CONE PENETRATION TEST LOG

CPT110

SHEET 15 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928356.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607714.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Target Depth Reached

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.06

Sheet 15 of 20

Printed: 12-12-2019

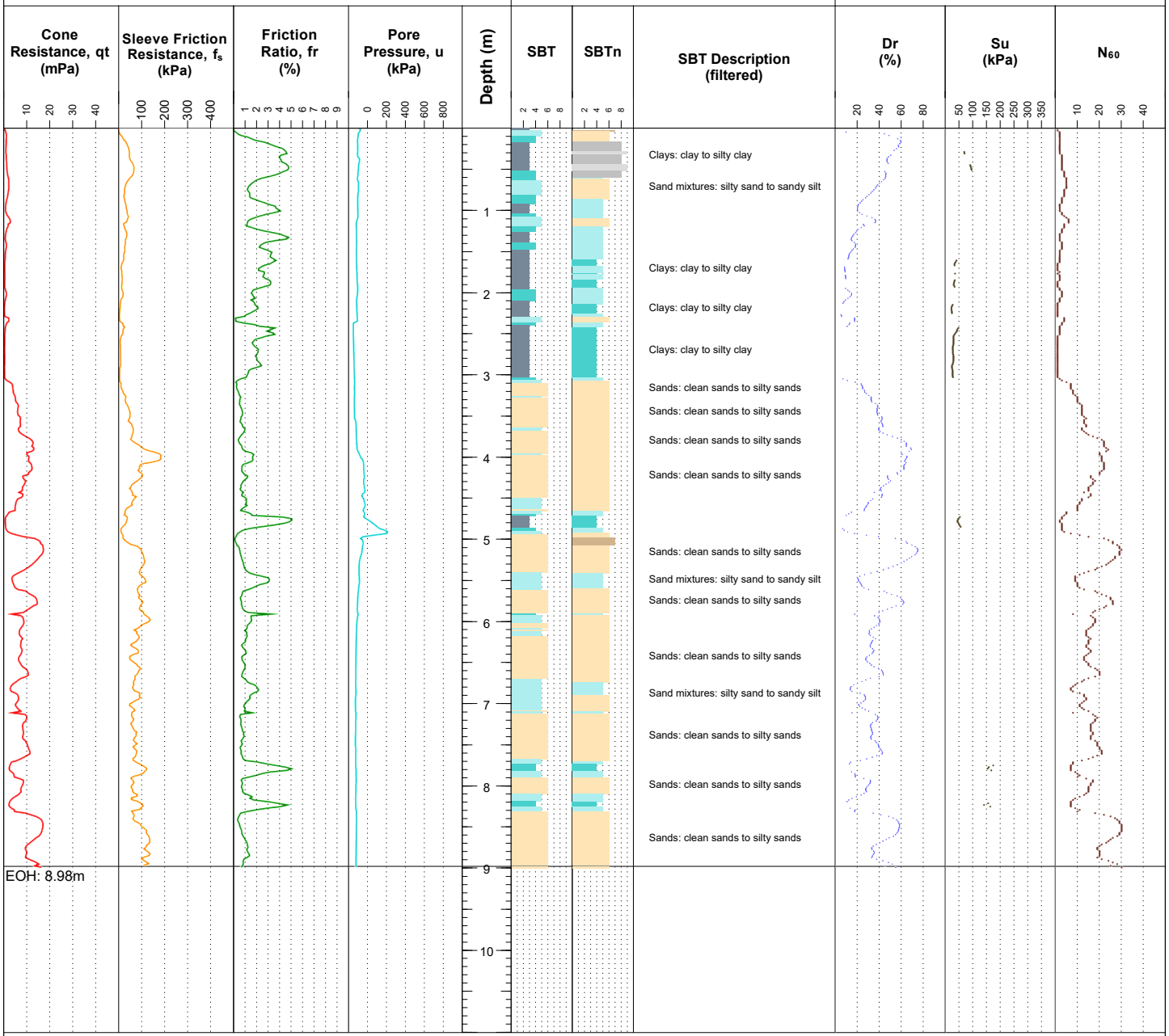
CONE PENETRATION TEST LOG

CPT111

SHEET 16 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928314.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607786.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-02-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 8.98

Sheet 16 of 20

Printed: 12-12-2019

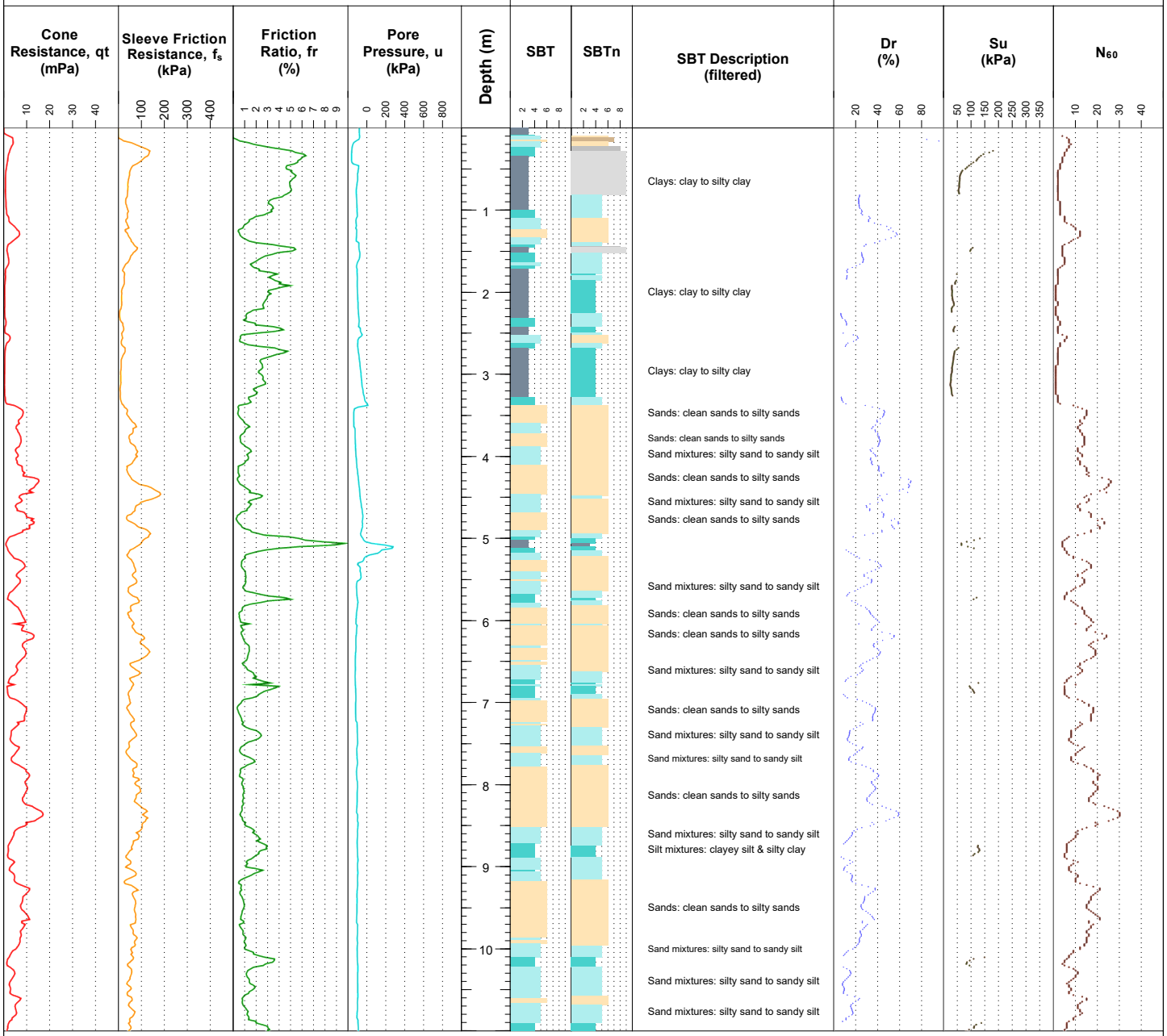
CONE PENETRATION TEST LOG

CPT112

SHEET 17 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928264.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607839.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Target Depth Reached

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.00

Sheet 17 of 20

Printed: 12-12-2019

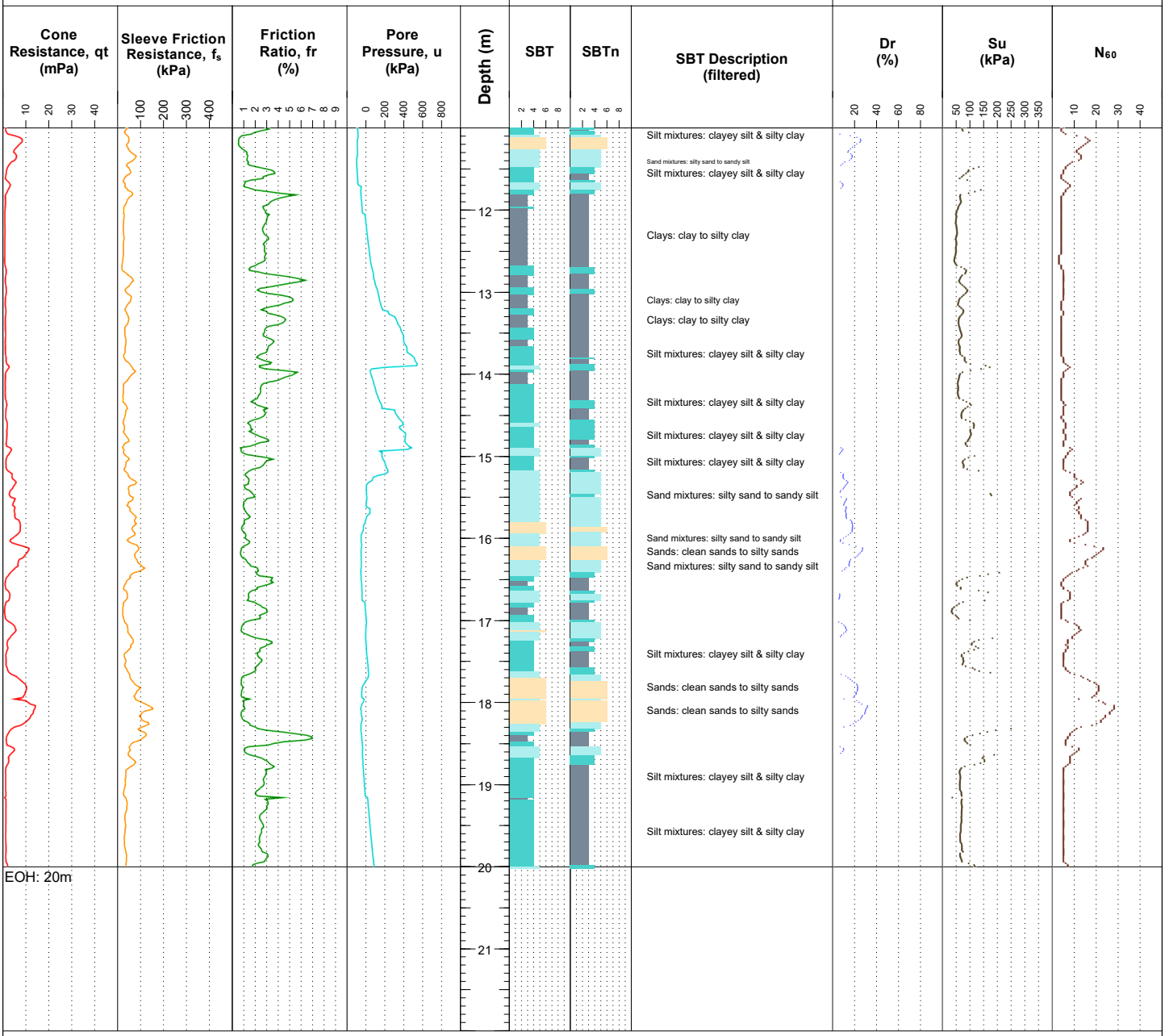
CONE PENETRATION TEST LOG

CPT112

SHEET 18 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928264.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607839.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 23-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Soil Behaviour Type (SBT) - Robertson et al. 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

Termination: Target Depth Reached

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 20.00

Sheet 18 of 20

Printed: 12-12-2019

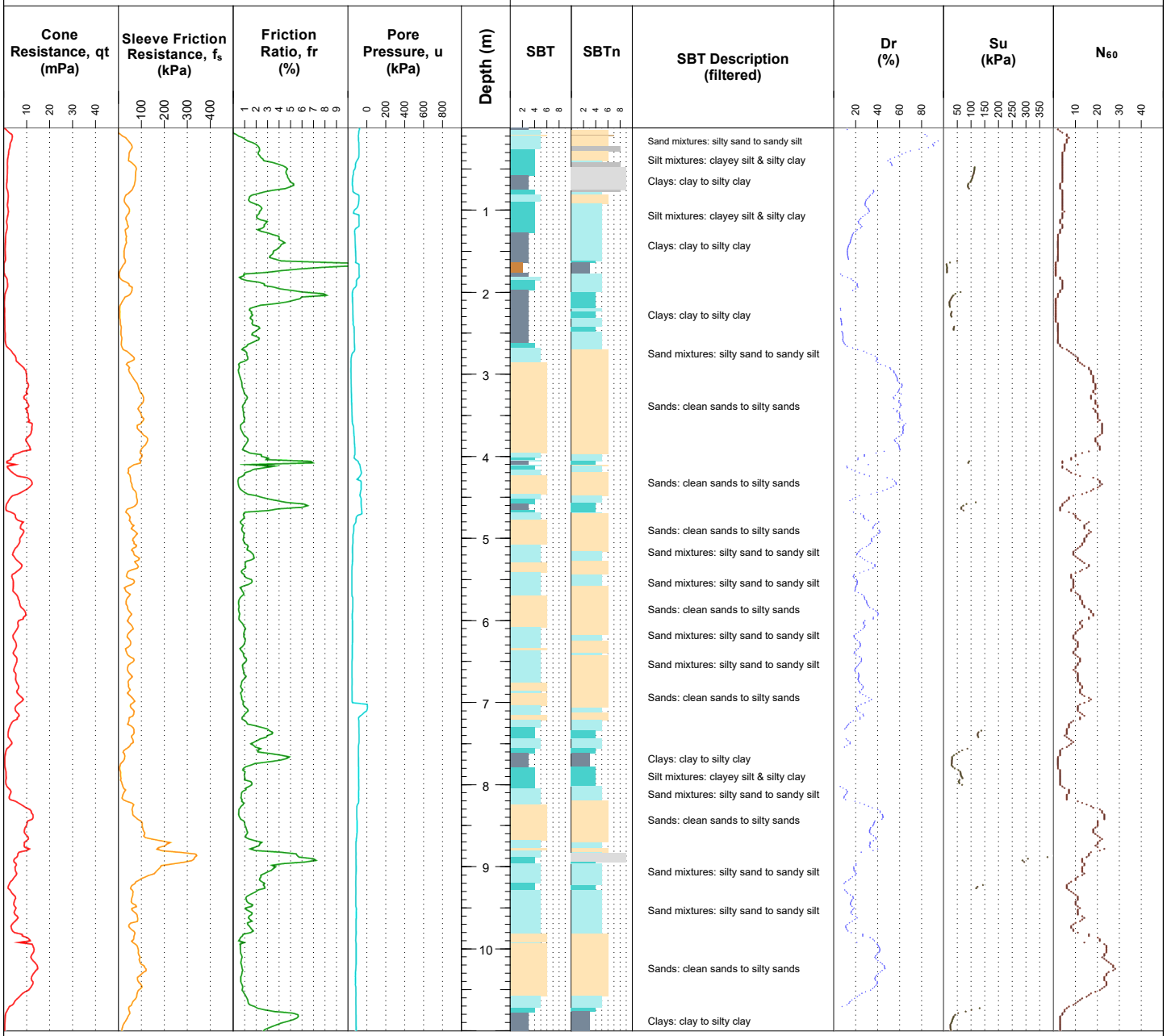
CONE PENETRATION TEST LOG

CPT113

SHEET 19 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928346.00	LOGGED ON:	23-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607875.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 24-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 17.04

Sheet 19 of 20

Printed: 12-12-2019

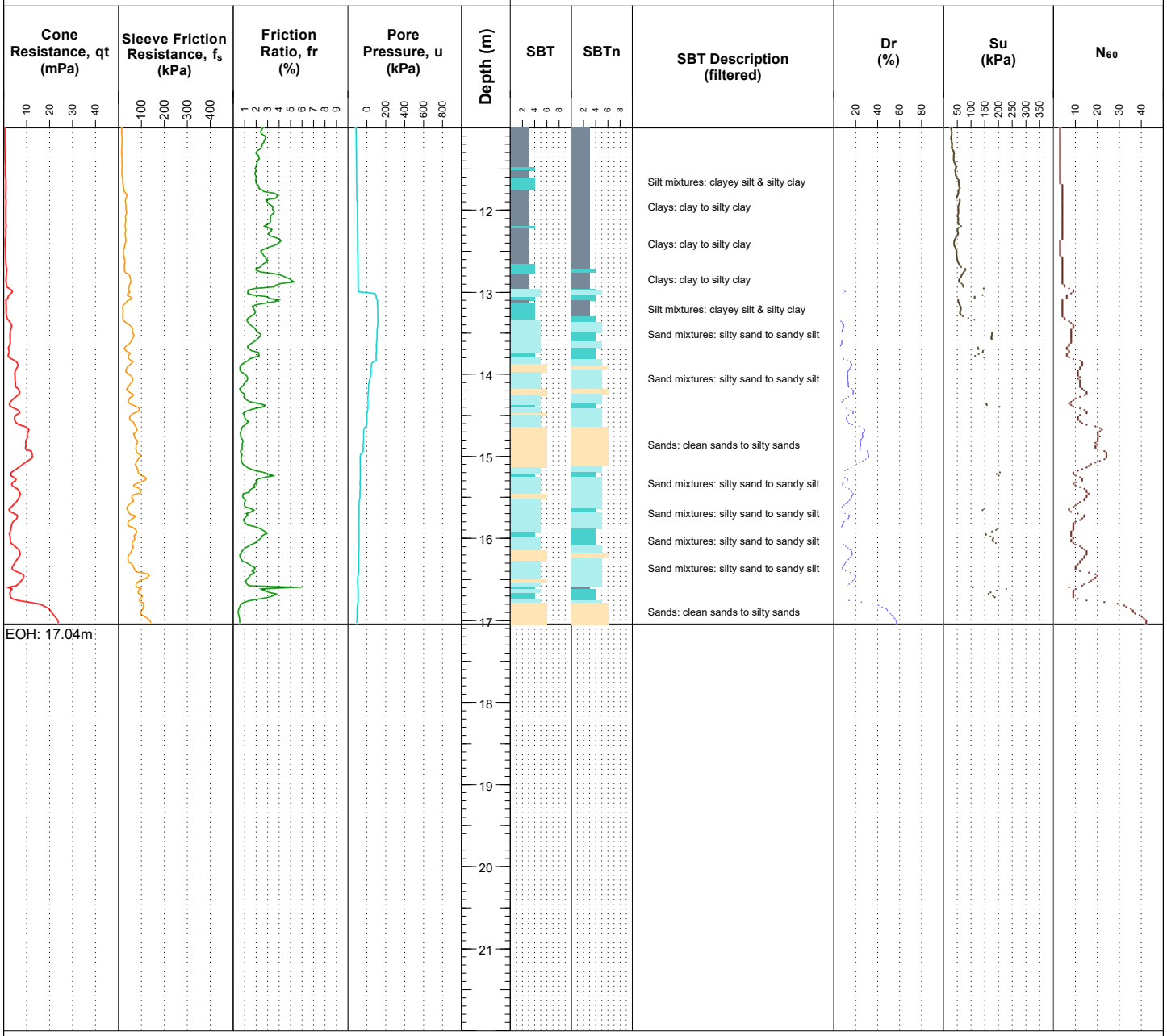
CONE PENETRATION TEST LOG

CPT113

SHEET 20 OF 20

CLIENT:	Greenstone Land Developments Ltd	PROJECTION:	NZTM2000	SUB-LOCATION:	
PROJECT:	183970602	EASTING:	1928346.00	LOGGED ON:	24-Aug-18 12:00:00 AM
LOCATION:	Lyndhurst Road, Frimley, Hastings	NORTHING:	5607875.00	PREPARED BY: TS	DATE: 23-08-2018
OFFICE:	RDCL - Hastings	ELEVATION:	-	CHECKED BY: TS	DATE: 24-08-2018
		DATUM:	-	STATUS:	Final data

RAW DATA | **SOIL BEHAVIOUR TYPE** | **ESTIMATED PARAMETERS**



CONE ID: 4447

CONE TYPE: -

	INITIAL	FINAL
CONE RESISTANCE:	7.6812	-0.0296
SLEEVE FRICTION RESISTANCE:	123.2	0.2
POREWATER PRESSURE:	237.9	-0.3

Termination: Anchor Failure

Soil Behaviour Type (SBT) - Robertson et al. 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

Notes & Limitations

Data shown on this report has been assessed to provide a basic interpretation in terms of Soil Behaviour Type (SBT) and various geotechnical soil and design parameters using methods published in P. K. Robertson and K.L. Cabal (2010), Guide to Cone Penetration Testing for Geotechnical Engineering, 4th Edition. The interpretations are presented only as a guide for geotechnical use, and should be carefully reviewed by the user. Geroc Solutions Ltd do not warranty the correctness or the applicability of any of the geotechnical soil and design parameters shown and does not assume any liability for any use of the results in any design or review. The user should be fully aware of the techniques and limitations of any method used to derive data shown in this report.

Remarks

Hole Depth (m): 17.04

Sheet 20 of 20

Printed: 12-12-2019

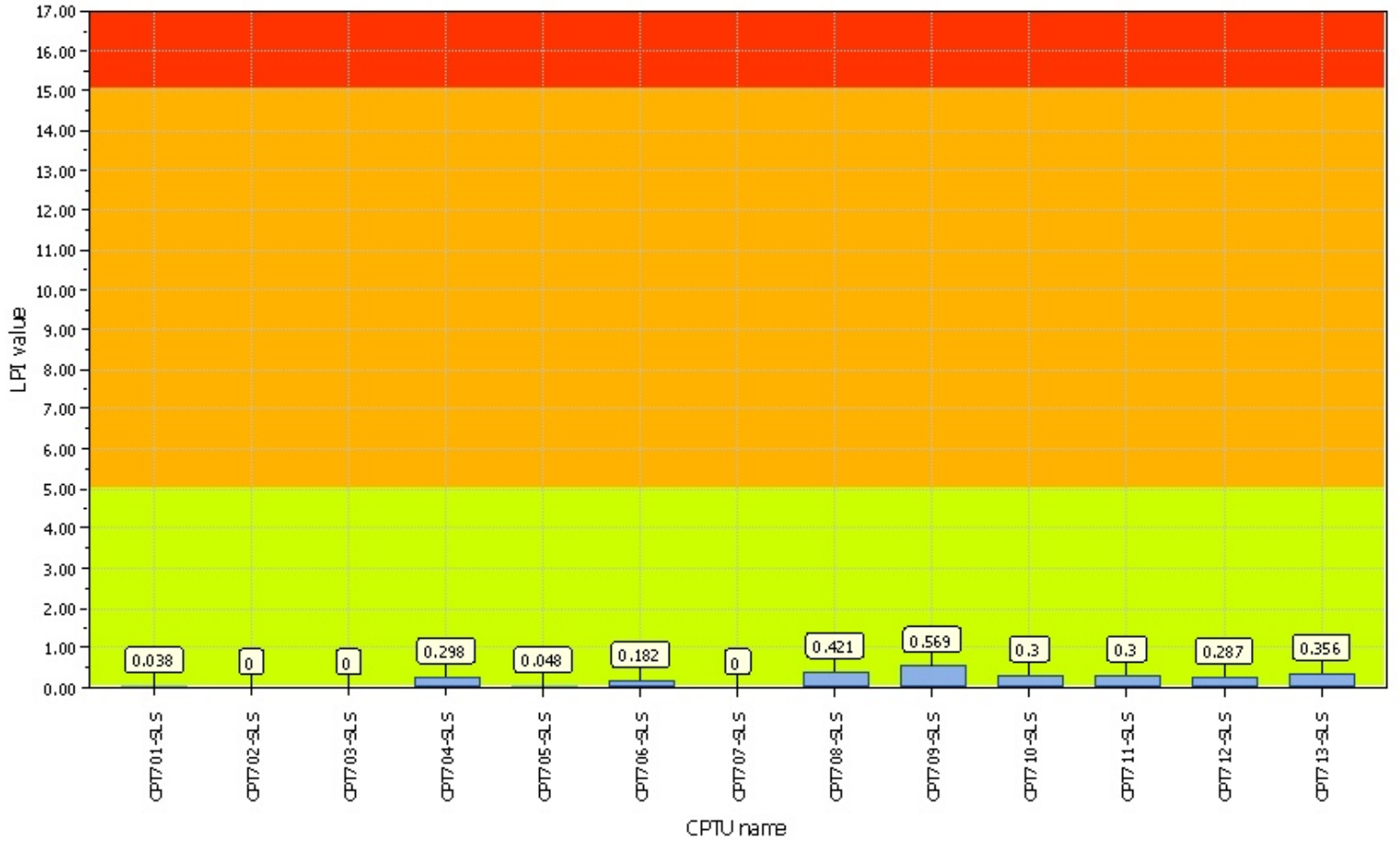
APPENDIX C - LIQUEFACTION ASSESSMENT OUTPUTS

RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

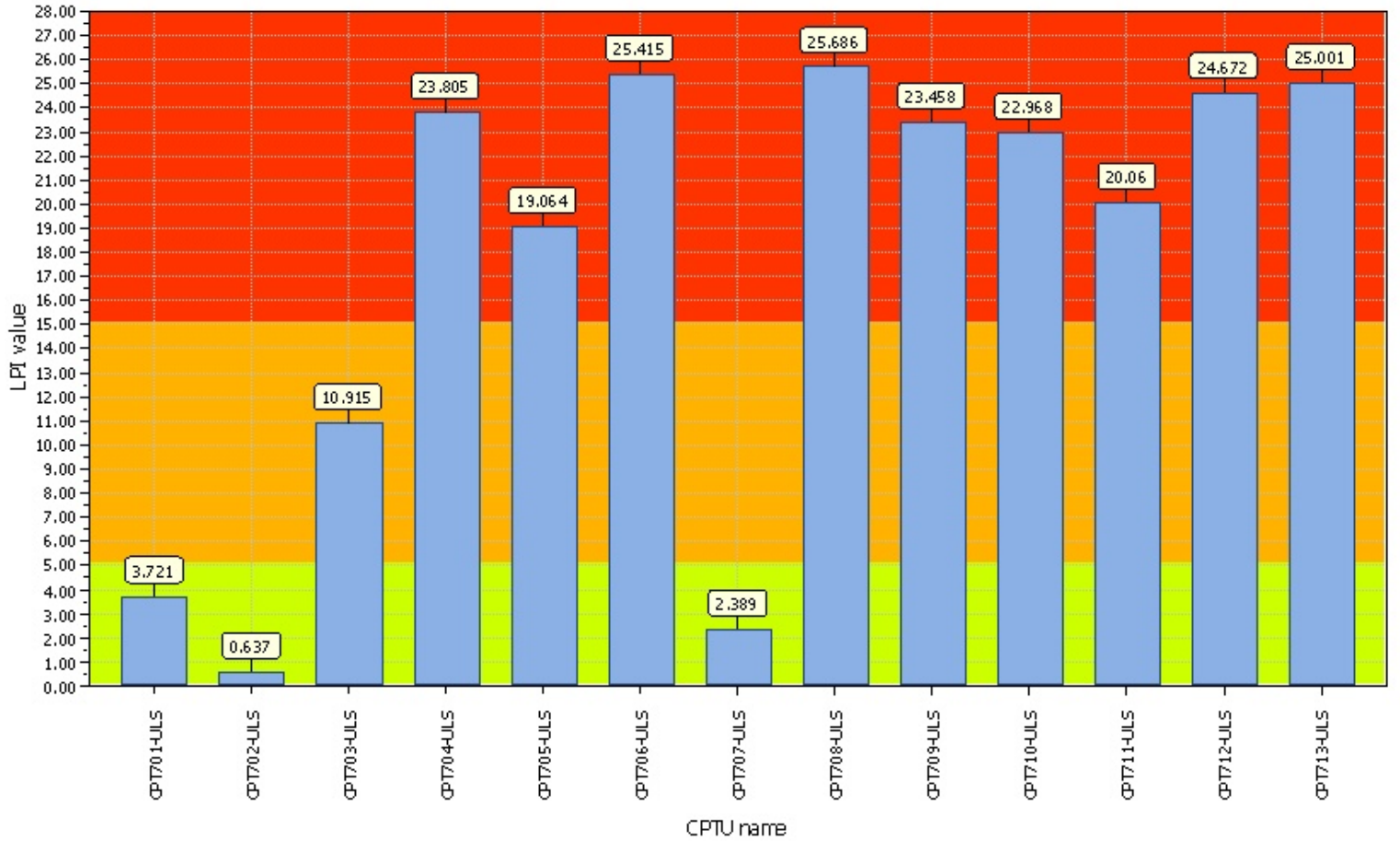
Total CPT number: 13
100.00% low risk
0.00% high risk
0.00% very high risk

RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall Liquefaction Potential Index report



LPI color scheme

- Very high risk
- High risk
- Low risk

Basic statistics

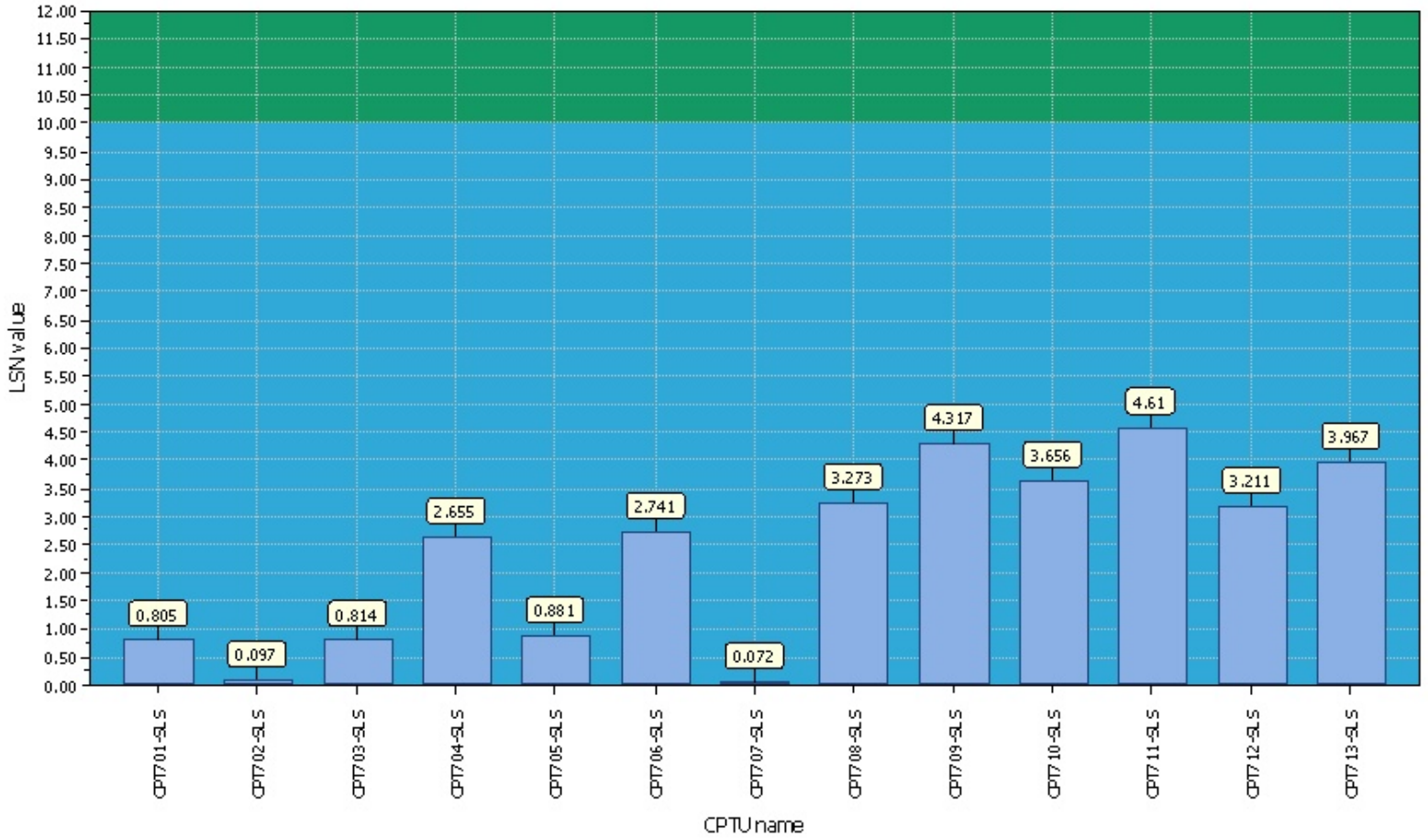
Total CPT number: 13
23.08% low risk
7.69% high risk
69.23% very high risk

RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

Total CPT number: 13

100.00% little liquefaction

0.00% minnor liquefaction

0.00% moderate liquefaction

0.00% moderate to major liquefaction

0.00% major liquefaction

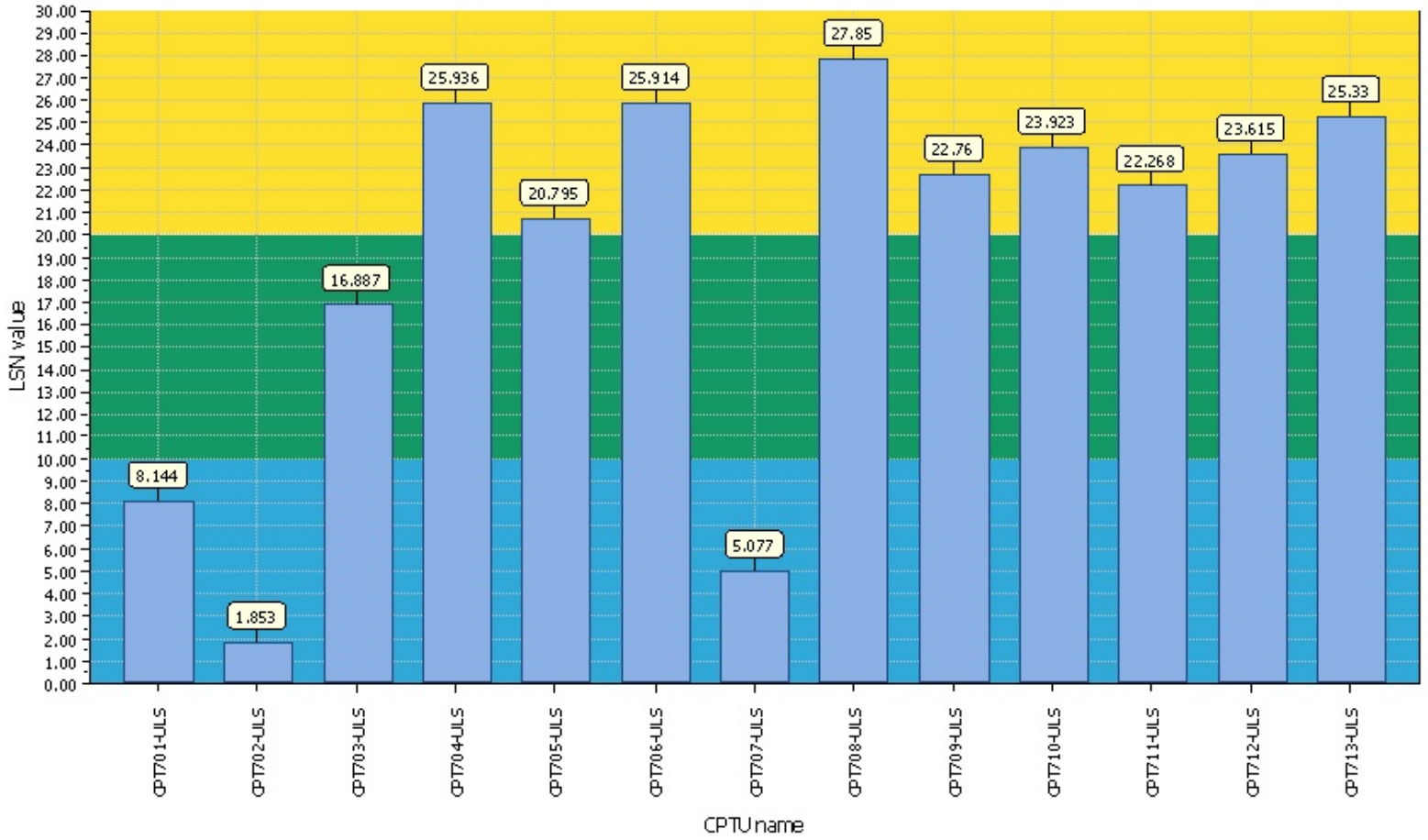
0.00% severe liquefaction

RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall Liquefaction Severity Number report



LSN color scheme

- Severe damage
- Major expression of liquefaction
- Moderate to severe exp. of liquefaction
- Moderate expression of liquefaction
- Minor expression of liquefaction
- Little to no expression of liquefaction

Basic statistics

Total CPT number: 13

23.08% little liquefaction

7.69% minnor liquefaction

69.23% moderate liquefaction

0.00% moderate to major liquefaction

0.00% major liquefaction

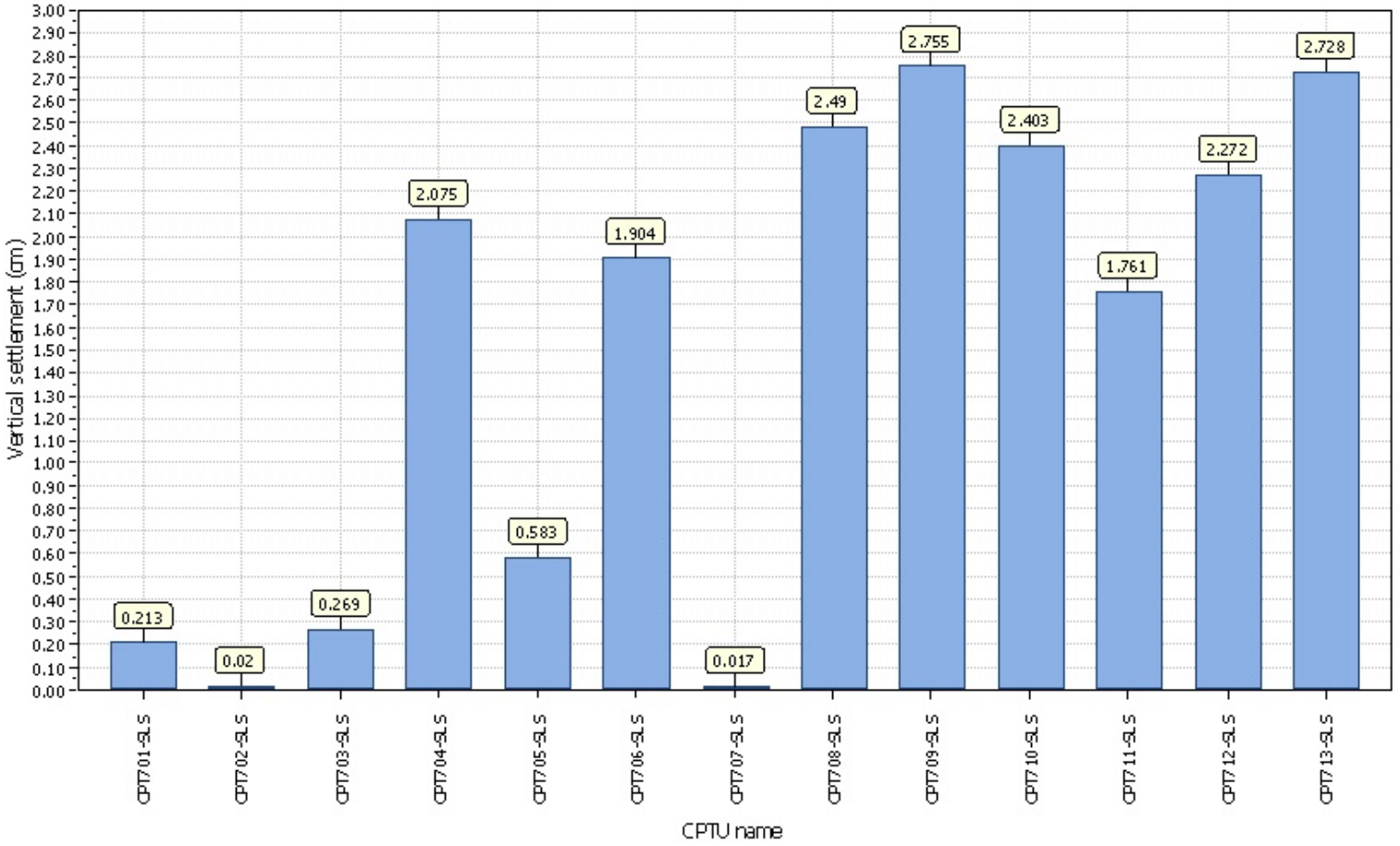
0.00% severe liquefaction

RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall vertical settlements report

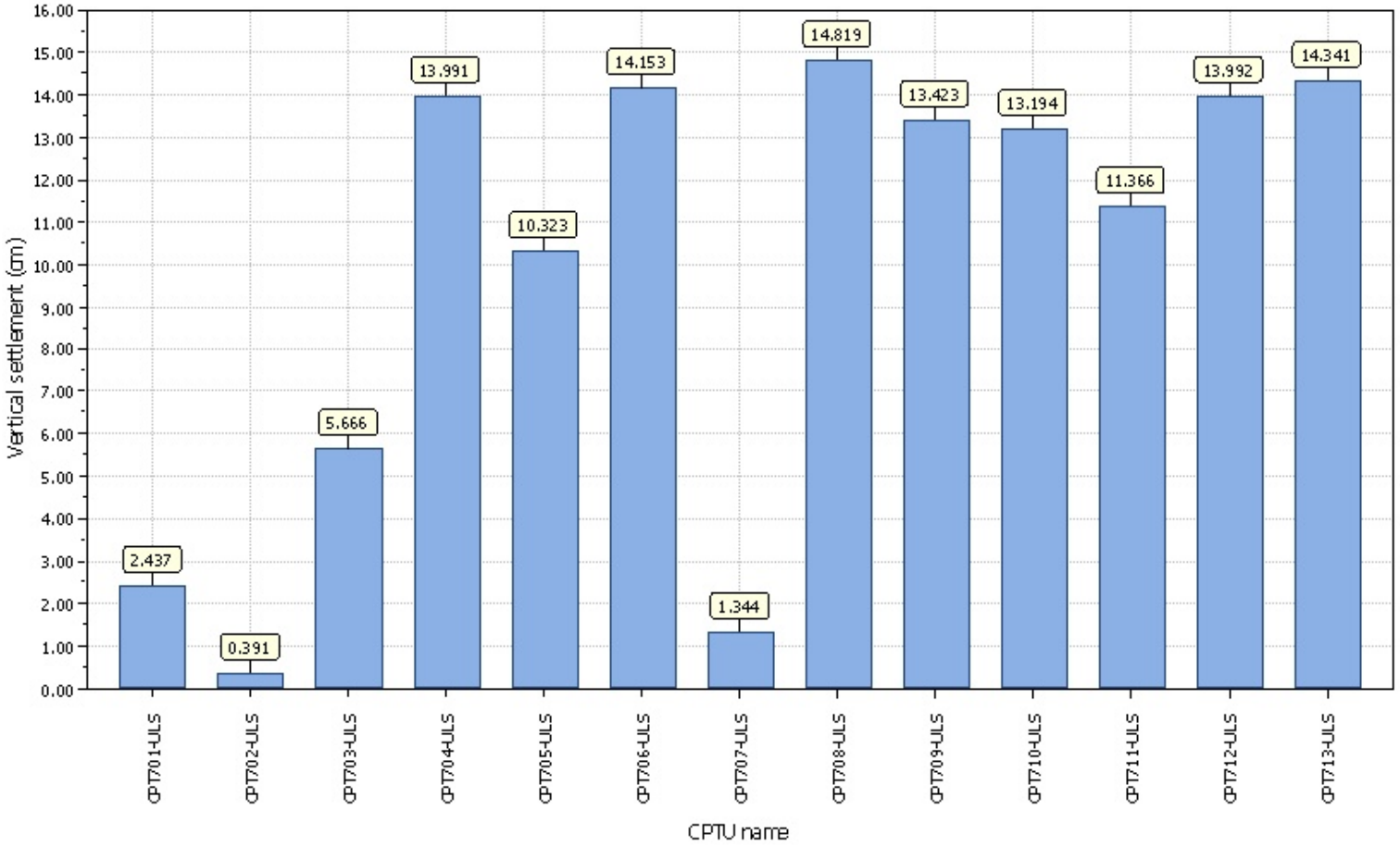


RDCL
Geotechnical Specialists
8/308 Queen St, Hastings
http://www.rdcl.co.nz

Project title : Lyndhurst Subdivision Stage 7-12

Location :

Overall vertical settlements report



APPENDIX D – EARTHWORKS TESTING RESULTS

ONE POINT - DYNAMIC COMPACTION TEST REPORT

Project :	**Greenstone Land Development**
Location :	**Lyndhurst Road**
Client :	**A & V. Partnership**
Contractor :	**Santo Drainage & Contracting Ltd**
Sampled by :	**J Crichton**
Date sampled :	**11/11/2019**

Project No :	**2-L0494.18**
Lab Ref No :	**NA 2854C**
Client Ref No :	

Test Results

Sample location:	NDM Test point
Material Type:	Silt
Sample condition:	Tested as received
Fraction tested:	Whole Sample
Water Content:	**13.7%**
Compacted Dry Density:	**1.75 t/m^3**

Test Method:	Dry Density/Water Content	NZS4402:1986 - Test 4.1.1
	Water content	NZS4402:1986 - Test 2.1

Date tested : 13/11/19
Date reported : 13/11/19

This report may only be reproduced in full

Approved

J Crichton
Designation : *Assistant Laboratory Manager*
Date : 13/11/19

WSP Opus
Napier Laboratory
Quality Management Systems Certified to ISO 9001

90 Prebensen Drive
Private Bag 6019, Hawkes Bay Mail Centre,
Napier 4142, New Zealand

Telephone +64 6 833 5590
Website www.wsp-opus.co.nz

EARTHWORKS COMPACTION CONTROL TEST RESULTS

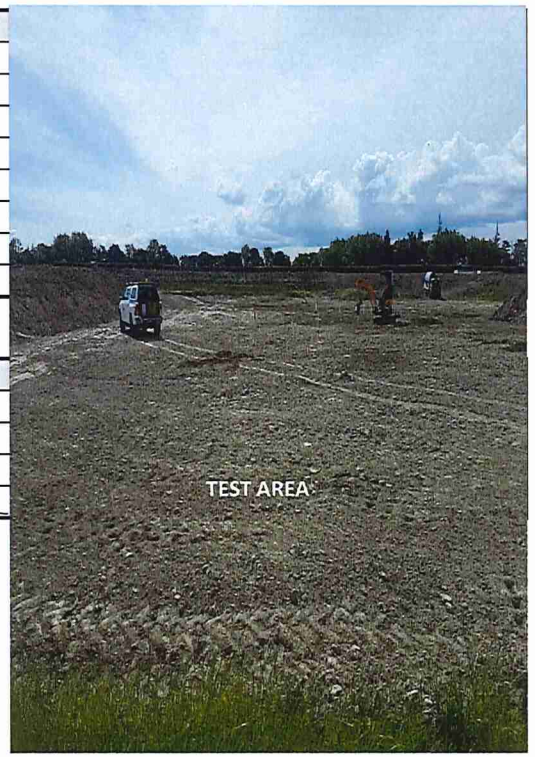
wsp | OPUS

Project :	**Greenstone Developments**	Sample description :	**Sandy Silt ("Pumiceous")**		
Location :	**Lyndhurst Road**				
Client :	**A & V. Partnership**	Nuclear densometer no :	**27668**		
Contractor :	**Santo Drainage & Contracting**	Solid Density (assumed) :	**2.6**	**t/m³**	
Tested by :	**J Crichton**	Dry density (tested) :	**1.34**	**t/m³**	
Date tested :	**11/11/19**	Water content (tested) :	**33.1**	**%**	
			(NA 2854B)		

Project No :	**2-L0494.18**
Lab Ref No :	**NA2854C**
Client Ref No :	**Stage 10**

Nuclear Densometer Test Results										
Test Number	1	2	3	4	5	6	7	8	9	10
lots 160,166, 167, 170										
Probe Depth (mm)	300	300	300	300	300	300	300	300	300	300
Wet Density (t/m³)	1.66	1.69	1.69	1.66	1.73	1.64	1.63	1.66	1.69	1.68
Dry Density (t/m³)	1.33	1.38	1.32	1.29	1.32	1.30	1.30	1.34	1.39	1.29
Water Content (%)	25.0	22.3	28.2	28.5	31.1	26.4	25.5	23.9	22.0	29.8
Air Voids (%)	15.7	16.0	12.1	13.5	8.2	15.8	16.9	16.4	16.2	11.6
% of DD	99	103	98	96	98	97	97	100	103	97

Oven Corrected Test Results										
Dry Density (t/m³)										
Water Content (%)										
Air Voids (%)										
% of DD										



Test Methods	**Notes**
Insitu Density : NZS 4407 : 2015, Test 4.2 for Direct Transmission Mode	Tests at approximately 20m centres

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Approved

J Crichton J.C

Designation : *Assistant Laboratory Manager*

Date reported : 13/11/19 Date : 13/11/19

WSP Opus
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Private Bag 6019, Hawkes Bay Mail Centre,
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Website www.wsp-opus.co.nz

EARTHWORKS COMPACTION CONTROL TEST RESULTS

Project :	**Greenstone Developments**	Sample description :	**Silt**		
Location :	**Lyndhurst Road**				
Client :	**A & V. Partnership**	Nuclear densometer no :	**27668**		
Contractor :	**Santo Drainage & Contracting**	Solid Density (assumed) :	**2.6**	t/m³	
Tested by :	**J Crichton**	Dry density (tested) :	**1.75**	t/m³	
Date tested :	**11/11/19**	Water content (tested) :	**13.7**	%	
			(NA 2854C)		

Project No :	**2-L0494.18**
Lab Ref No :	**NA2854C**
Client Ref No :	**Stage 10**

Nuclear Densometer Test Results							
Test Number	1	2	3				
Back of 175, 176, 177, 178	Refer to image						
Probe Depth (mm)	300	300	300				
Wet Density (t/m³)	1.89	1.88	1.88				
Dry Density (t/m³)	1.68	1.66	1.66				
Water Content (%)	12.6	13.1	13.5				
Air Voids (%)	14.3	14.3	13.9				
% of DD	96	95	95				

Oven Corrected Test Results							
Dry Density (t/m³)							
Water Content (%)							
Air Voids (%)							
% of DD							

Test Methods	**Notes**
Insitu Density : NZS 4407 : 2015, Test 4.2 for Direct Transmission Mode	Tests at approximately 500mm below existing ground level .

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Approved

J Crichton

Designation : *Assistant Laboratory Manager*

Date reported : 13/11/19

Date : 13/11/19

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Website www.wsp-opus.co.nz

EARTHWORKS COMPACTION CONTROL TEST RESULTS

WSP | OPUS

Project :	**Greenstone Developments**	Sample description :	**Sandy Silt ("Pumiceous")**		
Location :	**Lyndhurst Road**				
Client :	**A & V. Partnership**	Nuclear densometer no :	**27668**		
Contractor :	**Santo Drainage & Contracting**	Solid Density (assumed) :	**2.6**	**t/m³**	
Tested by :	**J Crichton**	Dry density (tested) :	**1.34**	**t/m³**	
Date tested :	**14/11/19**	Water content (tested) :	**33.1**	**%**	
			(NA 2854B)		

Project No :	**2-L0494.18**
Lab Ref No :	**NA2854D**
Client Ref No :	**Stage 10**

Nuclear Densometer Test Results					
Test Number	1	2	3		
	lot 172	***lot 172***	***lot 172***		
Probe Depth (mm)	300	300	300		
Wet Density (t/m³)	1.69	1.71	1.78		
Dry Density (t/m³)	1.28	1.37	1.36		
Water Content (%)	32.0	25.1	31.0		
Air Voids (%)	9.8	13.1	5.6		
% of DD	96	102	101		

Oven Corrected Test Results					
Dry Density (t/m³)					
Water Content (%)					
Air Voids (%)					
% of DD					

Test Methods	**Notes**
Insitu Density : NZS 4407 : 2015, Test 4.2 for Direct Transmission Mode	

This report may only be reproduced in full

Approved

J Crichton

Designation : *Assistant Laboratory Manager*

Date reported : 14/11/19 Date : 14/11/19

J. C.

WSP Opus
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APPENDIX E - STAGE 10 BEARING CAPACITY

STAGE 10 INFERRED ULTIMATE BEARING CAPACITY (UBC) AND ACHIEVED DEPTH

Lot Number	300 kPa UBC Depth Achieved (m)	200 kPa UBC Depth achieved (m)
163	1.1	0.7
164	1.1	1.0
165	0.3	0.3
166	0.3	0.3
167	0.7	0.7
168	0.3	0.3
169	1.1	0.3
170	0.3	0.3
172	1.0	0.3
173	1.1	0.6
174	1.0	0.6
175	1.0	1.0
176	0.3	0.3
177	1.2	1.2
178	1.1	0.2

APPENDIX F- FORM 6 (224C)

APPENDIX 62
FORM 6

To: Hastings District Council
Private Bag 9002
HASTINGS 4156

STATEMENT OF PROFESSIONAL OPINION AS TO SUITABILITY OF LAND FOR BUILDING DEVELOPMENT

Subdivision: .**Stage 10, Lyndhurst Subdivision**.....

Owner/Developer: **Greenstone Land Development Ltd**.....

Location: **Lyndhurst Road, Frimley, Hastings**.....

I Cameron Andrew Wylie.....
(full name)

of Resource **Development Consultants Ltd**.....
(address)

hereby confirm that:

1. I am a suitably qualified professional experienced in the field of Geotechnical Engineering and was retained by the owner/developer in this regard on the above subdivision. My qualifications are **BSc, MSc, CPEng, CMEng, NZ.**

2. The extent of my inspections during construction, and the results of all tests carried out are described in my report dated **183970602C-01**.

3. In my professional opinion, not to be construed as a guarantee, I consider that:

   * a. The earth fills shown on the attached Plan **Figure 3 have been placed in compliance with HDC Code of Practice.**

   b. The completed works give due regard to the land slope and foundation stability considerations.

   c. The filled ground is suitable for the erection thereon of residential buildings not requiring

   * specific design in terms of **MBIE (2012) Technical Guidance, Part A and C** and related documents providing that:

      i. **The recommendations made in the RDCL geotechnical report, Ref 183970602C-01, dated 12 December 2019 are adhered to.**

   * d. The original ground not affected by filling is suitable for the erection thereon of residential buildings not requiring specific design in terms of **MBIE (2015) Technical Guidance, Part A and C and related documents providing that:**

      i. **The recommendations made in the RDCL geotechnical report, Ref 183970602C-01, dated 12 December 2019 are adhered to.**

4. This professional opinion is furnished to the Council and the owner/developer for their purposes alone, on the express conditions that it will not be relied upon by any other person and does not remove the necessity for the normal inspection of foundation conditions at the time of erection of any dwelling.

Signed .....Date 13/12/2019

* Delete items not applicable
A similar form for those giving their professional opinion relating to the new NES on contaminated soils

Important Information about This

Geotechnical-Engineering Report

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

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

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, clients can benefit from a lowered exposure to the subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

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

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled*. No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be*, and, in general, *if you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying it. A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed*. The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old.*

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration.*** Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

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