

BC150243

Well 10545

Riverlands Aquifer, confined structure

APPROVED DOCUMENTS

Date Approved: 15/04/2015



MWH NEW ZEALAND LTD
Hazeldean Business Park
6 Hazeldean Road
Christchurch 8024
Tel: 03 366 7449
Fax: 03 366 7780

BOREHOLE LOG

Job No: 80504548

Hole No: BH1

Sheet: 1 of 7

Client: Marlborough Lines Ltd.

Started: 03/04/14

Project: Riverlands Substation

Finished: 04/04/14

Location: Blenheim

Logged: PJW

Investigation Location: See Site Plan

Checked: JR

Description:

Easting: 1684553

Northing: 5401967

Inclination: Vertical

RL Surface:

Diameter (Int/Ext): /112 ext.mm

Datum:

Depth (m)	Elevation (m)	Samples Type	Shear Vane (kPa) Peak Strength/ Residual Strength	Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
				Blows (Seating // 75mm/150mm, 225mm/300mm)	N Value/ Refusal Data						
0.0						Coarse GRAVEL with some cobbles, coarse sand matrix, rounded greywacke clasts [FILL]		dry			
0.5						Clayey SILT, grey mottled rusty brown. [DILLONS POINT FORMATION]		dry			
1.0						Silty very fine SAND with minor clay, brownish grey		moist			
1.55		SPT sample		5/1/3/2	5	Clayey SILT with some very fine sand, firm, low plasticity, grey		moist			
2.0						Very fine to fine SAND with trace silt, grey		wet			
3.0		SPT sample		7/1/7/7	14						
4.0											
4.3		SPT sample		3/1/5/9	14						

Tan Rafter
MWH
says there is
no groundwater -
He measured
2.1m in
the 9-2-14
it accurate
at time of
investigation
drilling

Fallen
↓

Drilling Method:

Sonic

Casing:

Remarks: Groundwater level 2.1m 3/4/2014

Contractor:

McMillan Drilling Ltd

Flush:

Borehole Completion:

Equipment Type:

Geoprobe Rig

Marlborough District Council

Date Received: 19/3/15



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Job No: 80504548

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Sheet: 2 of 7

Client: Marlborough Lines Ltd.

Started: 03/04/14

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Finished: 04/04/14

Location: Blenheim

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Investigation Location: See Site Plan
Description:

Checked: JR

Easting:

Northing:

Inclination: Vertical

RL Surface:

Diameter (Int/Ext): /112 ext.mm

Datum:

Depth (m)	Elevation (m)	Samples Type	Shear Vane (kPa) Peak Strength/ Residual Strength	Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
				Blows // (50mm/150mm, 75mm/300mm)	N Value/ Refusal Data						
						Very fine to medium sand with some silt and marine shells, grey[continued]		wet			
6.0		SPT sample		10//10/12	22	(6.17)		wet			
						Wood, fibrous, soft, chocolate brown (6.2)					
						Silty very fine to fine SAND, grey, slightly carbonaceous light brown interbeds		wet			
7.0											
		SPT sample		4//6/6	12	(8)					
8.0						Silty SAND, very fine to fine, grey, trace shell fragments		wet			
9.0		SPT sample		1//1/3	4	(9)					
								wet			

Drilling Method:
Sonic

Casing:

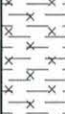
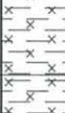
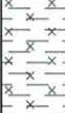
Remarks: Groundwater level 2.1m 3/4/2014

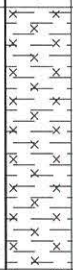
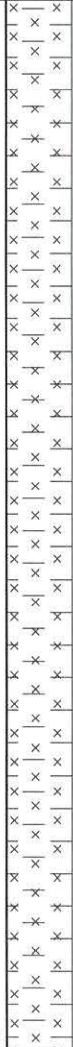
Contractor:
McMillan Drilling Ltd

Flush:

Borehole Completion:

Equipment Type:
Geoprobe Rig

 MWH MWH NEW ZEALAND LTD Hazeldean Business Park 6 Hazeldean Road Christchurch 8024 Tel: 03 366 7449 Fax: 03 366 7780		BOREHOLE LOG				Job No: 80504548					
						Hole No: BH1					
		Client: Marlborough Lines Ltd.				Sheet: 3 of 7					
		Project: Riverlands Substation				Started: 03/04/14					
		Location: Blenheim				Finished: 04/04/14					
		Investigation Location: See Site Plan				Logged: PJW					
Description:				Checked: JR							
Easting:		Northing:		Inclination: Vertical		RL Surface:					
Diameter (Int/Ext): /112 ext.mm						Datum:					
Depth (m)	Elevation (m)	Samples Type	Shear Vane (kPa) Peak Strength/ Residual Strength	Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
				Blows (Seating // 75mm x 150mm, 225mm x 300mm)	N Value/ Refusal Data						
11.0		SPT sample		0/0/3	3	Sandy SILT, soft, grey, trace shell fragments[continued] (10.4)		wet			
						Silty CLAY, soft, dark grey, trace shell fragments, medium plasticity					
12.0						(12)		wet			
						Silty CLAY, soft to firm, dark grey, trace shell fragments, medium plasticity					
13.0								wet			
14.0		SPT sample		0/3/1	4						
Drilling Method: Sonic Contractor: McMillan Drilling Ltd Equipment Type: Geoprobe Rig						Casing: Flush: Remarks: Groundwater level 2.1m 3/4/2014 Borehole Completion:					

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						Hole No: BH1					
		Client: Marlborough Lines Ltd.				Sheet: 4 of 7					
		Project: Riverlands Substation Location: Blenheim				Started: 03/04/14					
		Investigation Location: See Site Plan Description:				Finished: 04/04/14					
		Easting: Northing: Inclination: Vertical				Logged: PJW					
Diameter (Int/Ext): /112 ext.mm				Checked: JR							
				RL Surface:							
				Datum:							
Depth (m)	Elevation (m)	Samples Type	Shear Vane (kPa) Peak Strength/ Residual Strength	Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
				Blows / (Seating // 75mm/150mm, 225mm/300mm)	N Value/ Refusal Data						
16.0						Silty CLAY, soft to firm, dark grey, trace shell fragments, medium plasticity[continued]		wet			
						Clayey SILT with minor fine sand and trace shell fragments, firm, grey. Wood fragments at 19.3 - 19.4m (fibrous)					
17.0		SPT sample		4//5/5	10			wet			
18.0											
19.0		SPT sample		2//4/3	7						
Drilling Method: Sonic Contractor: McMillan Drilling Ltd Equipment Type: Geoprobe Rig						Casing: _____ Flush: _____ Remarks: Groundwater level 2.1m 3/4/2014 Borehole Completion: _____					

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MARLBOROUGH DISTRICT COUNCIL



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BOREHOLE LOG

Doc No: 80504548

Hole No: BH1

Sheet: 5 of 7

Client: Marlborough Lines Ltd.

Started: 03/04/14

Project: Riverlands Substation

Finished: 04/04/14

Location: Blenheim

Logged: PJW

Investigation Location: See Site Plan
Description:

Checked: JR

Easting:

Northing:

Inclination: Vertical

RL Surface:

Diameter (Int/Ext): /112 ext.mm

Datum:

Depth (m)	Elevation (m)	Samples		Shear Vane (kPa)		Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
		Type	Peak Strength/ Residual Strength	Blows (Standard) 75mm/150mm, 225mm/300mm	N Value/ Refusal Data								
21.0								Clayey SILT with minor fine sand and trace shell fragments, soft, grey					

Drilling Method:

Sonic

Casing:

Remarks: Groundwater level 2.1m 3/4/2014

Contractor:

McMillan Drilling Ltd

Flush:

Borehole Completion:

Equipment Type:

Geoprobe Rig

01/05/14 MWH NEW ZEALAND LTD. Project: 80504548, Riverlands Substation, Blenheim www.mwhglobal.com/nz

Marlborough District Council
Date Received: 19/3/15

Depth (m)		Elevation (m)	Samples	Shear Vane (kPa)	Standard Penetration Tests	Material Description	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
		Type	Peak Strength/Residual Strength	Blows (Seating // 75mm/150mm, 225mm/300mm)	N Value/Refusal Data	(Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes, New Zealand Geotechnical Society, 2005)					
26.0		SPT sample			0/47/13	50+	Sandy GRAVEL, medium-coarse, trace shell fragments, rounded greywacke clasts, grey (MARINE) <i>[continued]</i>		wet		SPT 50+ for 40mm
27.0							(27.24)				
28.0		SPT sample			15/9/4	13	Shelly SAND, coarse, grey		wet		
							(27.4)				
							Sandy GRAVEL with some silt, medium-coarse (MARINE)		wet		
							(27.55)				
							Gravelly silt with some clay, firm, gravel is fine, rounded gravel clasts, grey (MARINE)		wet		
							(27.9)				
28.0							Sandy GRAVEL, medium, with minor silt and clay, trace wood fragments, rounded (MARINE)		wet		
							(28.4)				
							Clayey GRAVEL with some sand and silt, gravels, subrounded to subangular, yellowish grey (NON MARINE) [LOWER RAPAU FORMATION]		wet		
							(28.7)				
29.0		SPT sample			16/9/13	22	Gravelly SILT with some clay, grey mottled rusty brown		wet		
							(29.1)				
							SILT with minor sand, trace fine gravel, firm, grey mottled yellow brown		wet		
							(29.65)				
							Clayey GRAVEL with some silt, minor sand, dense, gravels, subangular to subrounded yellowish brown [SPEARGRASS FORMATION]		wet		

Drilling Method: Sonic	Casing:	Remarks: Groundwater level 2.1m 3/4/2014
Contractor: McMillan Drilling Ltd	Flush:	
Equipment Type: Geoprobe Rig		Borehole Completion:

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Description:				Checked: JR					
Easting:		Northing:		Inclination: Vertical		RL Surface:			
Diameter (Int/Ext): 112 ext.mm				Datum:					

Depth (m)	Elevation (m)	Samples Type	Shear Vane (kPa) Peak Strength/ Residual Strength	Standard Penetration Tests		Material Description (Logging carried out in accordance with Guidelines for the Field Classification of Soil and Rock for Engineering Purposes. New Zealand Geotechnical Society, 2005)	Graphic Log	Moisture Condition	Groundwater	Other Observations	Installation
				Blows (Seating // 75mm/150mm, 225mm/300mm)	N Value/ Refusal Data						
						Clayey GRAVEL with some silt, minor sand, dense, gravels, subangular to subrounded yellowish brown [SPEARGRASS FORMATION][continued]		wet			
		SPT sample		24//40/21	50+	Borehole terminated at 30.28m due to Target Depth (30.28)				SPT 50+ for 75mm	
31.0											
32.0											
33.0											
34.0											

Drilling Method: Sonic	Casing:	Remarks: Groundwater level 2.1m 3/4/2014
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Equipment Type: Geoprobe Rig	Borehole Completion:	