

Appendix 7-1 – Factual Report, Site Investigation 2020-2021

### Bord na Móna Drehid Waste Management Facility

Site Investigation for Proposed Landfill Extension

October 2022



### **Document Control Sheet**

Client		Bord na Móna					
Project		Drehid Waste Manage	ement Facility, Timahoe	e, Co. Kildare			
Project No:		263228	263228				
Report		Factual Report for Site Investigation at Drehid Waste Management Facility					
Document Refe	erence:	263228/40/DG/11	263228/40/DG/11				
Version	Author	Checked	Reviewed	Date			
1	C. Fitzgerald	R. O'Carroll	H. Moe	12 October 2022			



i

### **Table of Contents**

Section 1	Introduction1					
1.1	Purpose and Scope1					
1.2	Ground Investigations1					
1.3	Monitoring2					
1.4	Roles and Responsibilities					
Section 2	Ground Investigations					
2.1	Drilling of Boreholes and Testing of Subsurface Materials					
2.2	Installation of Monitoring Wells4					
2.3	Surveying4					
2.4	Well Development4					
2.5	Hydraulic Testing					
Section 3	Monitoring6					
3.1	Groundwater Quality6					
3.2	Groundwater Level					
3.3	Surface Water Quality9					
3.4	Surface Water Level					
Appendix A	Borehole, Monitoring Well and Surface Water Station Maps 1					
Appendix B	Ground Investigation Locations					
Appendix C	Borehole Logs 1					
Appendix D	Geotechnical Laboratory Testing Results1					
Appendix E	Hydraulic Conductivity Tests – Data Plots 1					
Appendix F	Groundwater Hydrographs (Pressure Transducer Data) 1					
Appendix 6	Surface Water Hydrographs (Pressure Transducer Data)1					
List of Table	es					
Table 1 Sumr	nary of Contributions2					
Table 2 Drille	d Diameters3					
Table 3 Groundwater Sampling Frequencies by Parameter						
	Table 4 Groundwater Monitoring Locations					
	meters Analysed in Surface Water Samples9					
	ce Water Monitoring Stations					
Table 7 Flow	Measurements					



#### Section 1 Introduction

CDM Smith Ireland Limited (CDM Smith) was engaged by Bord na Móna (BnM) to lead an expanded site investigation (SI) for the proposed Landfill Expansion Area (LEA) south of the existing Drehid waste management facility (WMF) at Timahoe, Co. Kildare, Ireland. The SI included ground investigations (GI) and enhanced groundwater and surface water monitoring across Timahoe South Bog (TSB), mainly. The SI works (which included enhanced monitoring) were conducted between 13 July 2021 and 22 June 2022.

#### 1.1 Purpose and Scope

The purpose of the SI works was to address the key technical points that were cited by An Bord Pleanála (ABP) in their November 2020 rejection of planning permission to add non-hazardous and hazardous landfill cells to the existing Drehid WMF. The points of refusal were:

- The planned development would, in combination with other projects in the area, contribute to the degradation of the Timahoe Bog, resulting in an excess of ammonia and suspended solids in the Cushaling and Figile Rivers, with a consequent impact in preventing these rivers to develop into a suitable habitat for salmonid species.
- Past hydrological and hydrogeological investigations presented in the previous EIAR of 2017 were insufficient to conclude that the proposed development will not give rise to significant negative impacts on groundwater and surface water receptors.
- The information presented in the previous EIAR of 2017 was insufficient to demonstrate that the subsurface geology of the site is suitable for the proposed hazardous waste cell, referring to the site's high groundwater levels and uncertainty with regards to subsurface conditions.

Although the updated, current planning application does not include hazardous waste cells, each point of rejection guided the scope of the SI works.

#### 1.2 Ground Investigations

The GI comprised:

- 1. Drilling of boreholes within and near the LEA to characterise subsoils and bedrock, and to check the nature of subsurface anomalies which had been identified from a surface geophysical survey programme in 2016 (Apex 2016).
- 2. Converting boreholes into new, temporary and permanent monitoring wells for hydraulic testing, groundwater level and groundwater quality monitoring purposes, in three hydrogeological units: peat, Quaternary sediments, and bedrock.
- 3. Replacing a subset of existing monitoring wells with new ones, such that separate and representative samples from each of the main hydrogeological units could be obtained.

Details of the GI are provided in Section 2.



#### 1.3 Monitoring

Monitoring activity comprised:

- Deploying pressure transducers in select monitoring wells and surface water locations, notably in the Borrow Pit, several artificial drains within and streams leaving Timahoe Bog, including Cushaling River.
- Taking routine manual groundwater level measurements ('dips') across Timahoe Bog.
- Sampling monitoring wells and surface water for water quality characterisation purposes.

Details are provided in Section 3.

#### 1.4 Roles and Responsibilities

Several entities were involved or engaged in the SI works, as summarised in Table 1.

**Table 1 Summary of Contributions** 

Role	Entity	Comment
GI Contractor	Causeway Geotechnical Ltd.	-
GI & SI Supervisor	CDM Smith	-
Geotechnical Laboratory (i)	Causeway Geotechnical Ltd.	Moisture content and PSD
Geotechnical Laboratory (ii)	Pro Soils Ltd.	Permeability in a triaxial cell
Environmental Laboratory	Eurofins Chemtest Ltd.	pH and Fraction Organic Carbon
Borehole Survey	Causeway Geotechnical Ltd.	-
Monitoring Well Survey	Landmark Engineering	-
Groundwater Monitoring	Marron Environmental	Water chemistry and gauging
Surface Water Monitoring	Marron Environmental	Water chemistry and flow measurements
Transducer Deployment	CDM Smith	Surface water and groundwater
Monitoring Well Development	CDM Smith	-
Falling/Rising-Head Testing	CDM Smith	-



### Section 2 Ground Investigations

# 2.1 Drilling of Boreholes and Testing of Subsurface Materials

#### 2.1.1 Summary

A total of 54 boreholes were drilled, as follows:

- 24 boreholes in (20 no.) and near (4 no.) the LEA, along two transects oriented roughly NW-SE and NE-SW, following existing access tracks.
- 30 boreholes in other parts of Timahoe Bog, which included boreholes to/in bedrock to verify the nature of surface geophysical signals highlighted by Apex (2016), including N-S trending low-resistivity features in the LEA and northwest of the Borrow Pit.

A map of the boreholes drilled by CDM Smith is provided in **Appendix A** and a summary of these boreholes is provided in **Appendix B**. The boreholes were drilled with a Beretta T44 air rotary drill rig or an Eijkelkamp Fraste XL Duo sonic drill rig. The air rotary method was applied where coring of subsoils and/or bedrock was not required. The sonic method was applied where cores and sampling for triaxial vertical permeability testing were required.

Drilled diameters are presented in Table 2.

**Table 2 Drilled Diameters** 

Drilling Method	Diameter in Subsoils (mm)	Diameter in Bedrock (mm)	Rotary Coring in Bedrock (mm)	
Air Rotary	127	127	146	
Sonic	177	146	n/a	

All samples and cores were geologically logged and photographed. CDM Smith logged 39 boreholes on site. Thirty cores were transported to the offices of Causeway Geotechnical Ltd. (CGL) in Ballymoney, Co. Antrim or Balbriggan, Co. Dublin. CGL logged 15 cored holes at their offices. CDM Smith inspected all cores and spot-checked the logging by CGL. The resulting logs are presented in **Appendix C**.

22 no. of subsoil samples from 18 no. boreholes were sent for laboratory analysis of moisture content, particle size distribution (PSD) through wet sieving and hydrometer, bulk and dry density, pH, and fraction of organic carbon (FOC).

17 no. samples from 11 no. boreholes were also collected for triaxial vertical permeability testing, bulk and dry density, and moisture content of clay/silt units.

Drilling and logging procedures were in accordance with Eurocode 7 Part 2: Ground Investigation and testing (ISEN 1997- 2:2007) and BS 5930:2015.

Laboratory testing was performed in UKAS accredited laboratories. The results are attached in **Appendix D**, with corresponding Peg IDs indicated in **Appendix B**. A Peg ID is a preliminary ID used to identify the location and purpose of boreholes before being drilled, most Peg IDs were converted to borehole/monitoring well IDs after drilling/installation.



One borehole, WLPC01, was specifically drilled to the northwest of the Borrow Pit near the western margin of the landholding to verify the nature of an apparent north-south trending geophysical (low-resistivity) anomaly identified by Apex (2016).

#### 2.1.2 Difficulties Encountered

Extensive core loss was experienced in subsoils in borehole LFTBH01.

One borehole was redrilled, LFBH10, due to an obstruction downhole. Replacement borehole LFBH10A was drilled close by. LFBH10 was considered in the numbers presented above.

#### 2.2 Installation of Monitoring Wells

#### 2.2.1 Summary

A total of 41 no. new monitoring wells were installed at 23 no. locations, including locations within and downgradient of the LEA, and within the broader landholding, for improved spatial representation of groundwater levels and quality. This included establishing 1 no. well in bedrock in Timahoe North Bog to serve as a groundwater level reference point in the northerly direction from the WMF.

Ten (10 no.) of the 41 no. monitoring wells installed in total serve as replacements of existing wells.

In the construction of all monitoring wells, bentonite pellets were used as fill and seal material, non-carbonate pea gravel was used as filter pack in the annular space, a polyester filter geosock was used to prevent silting of slots, and unplasticized PVC pipe was used for the plain and slotted sections of well casing (HDPE was used in shallow peat standpipes). Bentonite pellets were sourced from Tolsa UK, Scunthorpe, UK. Pea gravel was sourced from Kelly Sand and Gravel, Bendooragh, Ballymoney, Co. Antrim.

#### 2.2.2 Difficulties Encountered

MW01B was damaged in the period between 22<sup>nd</sup> February and 12<sup>th</sup> April 2022, it was further damaged and buried between 12<sup>th</sup> April and 22<sup>nd</sup> June 2022. The hole was found on 27<sup>th</sup> June 2022 and subsequently repaired. The pressure transducer, which was deployed in the well, has not been retrieved.

#### 2.3 Surveying

All boreholes were surveyed upon completion with easting/northing (Irish Transverse Mercator - ITM) and ground level elevation (to metres above Ordnance Datum, Malin Head – m OD).

Monitoring wells were also surveyed for headworks and top of casing elevations, for the highest point of the lip of the casing. Survey information is presented in **Appendix B**.

#### 2.4 Well Development

Well development was undertaken by CDM Smith by purging (inertial pumping) until groundwater was clear of suspended solids or cleared as much as practical. Across the majority of wells, at least 10 well volumes were purged and 14 well volumes were purged on average from each well. Monitoring wells which purged dry had at least three well volumes removed.



#### 2.5 Hydraulic Testing

Falling and rising head tests (FHT/RHT) were carried out by CDM Smith in 15 Quaternary sediments and 6 bedrock wells, specifically to estimate the hydraulic conductivity of the response zone in each well.

A Waterra SLG-50 36mm diameter 3-part calibrated slug was added and subsequently removed from wells to cause a sudden water level change, and the water level response was measured with a pressure transducer and dip meter. An FHT measures the falling water level response after the slug has been added and an RHT measures the rising water level response once the slug has been removed.

The data were subsequently analysed by CDM smith using the AQTESOLV software. A total of 70 repeat RHT/FHT were analysed. A summary of the monitoring wells tested is presented in **Appendix B** and the plotted results are included in **Appendix E**.



### Section 3 Monitoring

### 3.1 Groundwater Quality

Groundwater sampling by Marron Environmental in existing and new monitoring wells followed the schedule shown in Table 3.

**Table 3 Groundwater Sampling Frequencies by Parameter** 

Parameter	Annual	Quarterly	Monthly	Note
рН	X	Х	Х	Field parameter
Temperature	X	Х	Х	Field parameter
Conductivity	Х	Х	Х	Field parameter
Dissolved Oxygen	Х	Х	Х	Field parameter
Redox Potential	X	Х	Х	Field parameter
рН	Х	Х	Х	-
Conductivity	X	Х	Х	-
Chloride	X	Х	Х	-
Ammonia as NH3-N	X	Х	Х	-
Ammonia as NH4	X	Х	Х	-
Sulphate	X	-	-	-
Nitrate as NO3	Х	Х	Х	-
Total Oxidised Nitrogen	Х	Х	Х	-
Orthophosphate	Х	Х	Х	-
Total Phosphorus	Х	Х	Х	-
Calcium-dissolved/filtered	Х	-	-	-
Magnesium-dissolved/filtered	Х	-	-	-
Potassium-dissolved/filtered	Х	-	-	-
Sodium-dissolved/filtered	Х	-	-	-
Iron-dissolved/filtered	Х	-	-	-
Boron -dissolved/filtered	Х	-	-	-
Arsenic-dissolved/filtered	Х	-	-	-
Barium-dissolved/filtered	Х	-	-	-
Cadmium-dissolved/filtered	Х	-	-	-
Cobalt-dissolved/filtered	Х	-	-	-
Chromium-dissolved/filtered	Х	-	-	-
Copper-dissolved/filtered	Х	-	-	-
Mercury-dissolved/filtered	Х	-	-	-
Manganese-dissolved/filtered	Х	-	-	-
Berylium-dissolved/filtered	Х	-	-	-
Nickel-dissolved/filtered	Х	-	-	-
Lead-dissolved/filtered	Х	-	-	-
Antimony-dissolved/filtered	Х	-	-	-
Selenium-dissolved/filtered	Х	-	-	-
Silver-dissolved/filtered	Х	-	-	-
Aluminium-dissolved/filtered	Х	-	-	-



Parameter	Annual	Quarterly	Monthly	Note
Tin-dissolved/filtered	X	-	-	-
Zinc-dissolved/filtered	X	-	-	-
PAHs				
VOCs	Х	-	-	-
Alcohols/Acetates	Х	-	-	-
Acetonitrile	Х	-	-	-
Coliforms	Х	-	-	-

The sampling was specifically carried out in:

- 32 new monitoring wells
- 4 existing wells where regular sampling had ceased
- 19 existing compliance monitoring wells

Details of which wells were sampled and their associated hydrogeological units are presented in Table 4. The laboratory data for groundwater are available through BnM. A map of the wells monitored is provided in **Appendix A.** 

**Table 4 Groundwater Monitoring Locations** 

ID	Peg ID	New/ Existing	Hydrogeological Unit	Sampling Frequency	Transducer Deployment	Comment
MW02P	WLMW02P	New	Peat	Monthly		-
MW02Q	WLMW02Q	New	Quaternary	Quarterly/Annual	х	-
MW02B	WLMW02W	New	Bedrock	Quarterly/Annual		-
MW03P	WLMW03P	New	Peat	Monthly		-
MW03Q	WLMW03Q	New	Quaternary	Quarterly/Annual	х	-
MW03B	WLMW03W	New	Bedrock	Quarterly/Annual	х	-
MW04P	WLMW04P	New	Peat	Monthly		-
MW04Q	WLMW04Q	New	Quaternary	Quarterly/Annual		Suspended <sup>1</sup>
MW04B	WLMW04W	New	Bedrock	Quarterly/Annual		Suspended <sup>1</sup>
MW05P	WLMW05P	New	Peat	Monthly		-
MW05Q	WLMW05Q	New	Quaternary	Quarterly/Annual	х	Suspended <sup>1</sup>
MW05B	WLMW05W	New	Bedrock	Quarterly/Annual	х	Suspended <sup>1</sup>
MW06P	WLMW06P	New	Peat	Monthly		-
MW06Q	WLMW06Q	New	Quaternary	Quarterly/Annual		-
MW06B	WLMW06W	New	Bedrock	Quarterly/Annual		-
MW07P	WLMW07P	New	Peat	Monthly		-
MW07Q	WLMW07Q	New	Quaternary	Quarterly/Annual		-
MW07B	WLMW07W	New	Bedrock	Quarterly/Annual		-
LW01	LFMW01	New	Quaternary	Quarterly/Annual		-
LW02S	LFMW02B	New	Quaternary	Quarterly/Annual	Х	Suspended <sup>1</sup>
LW02D	LFMW02	New	Quaternary	Quarterly/Annual	Х	-
RW02P	RWGW02S	New	Peat	Monthly		-



RW02S RWGW02D New Quaternary Quarterly/Annual X - RW03P RWGW03S New Peat Monthly - RW03S RWGW03D New Quaternary Quarterly/Annual X - RW04P RWGW04S New Peat Monthly - RW04S RWGW04D New Quaternary Quarterly/Annual - RW09A RWGW09D New Quaternary Quarterly/Annual X - RW09A RWGW09D New Quaternary Quarterly/Annual X - RW09B RWGW09D New Quaternary Quarterly/Annual X - RW10P RWGW10D New Quaternary Quarterly/Annual X - RW10S RWGW10D New Quaternary Quarterly/Annual X - LEBH05 LEBH05 New Quaternary Quarterly/Annual - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R11 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual Compliance² GW15 - Existing Bedrock Quarterly/Annual Compliance² GW10 - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Bedrock Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual Compliance² GW5AS - Existing Bedrock Quarterly/Annual Compliance² GW5AS - Existing Bedrock Quarterly/Annual Compliance² GW66 - Existing Bedrock Quarterly/Annual Compliance² GW66 - Existing Bedrock Quarterly/Annual Compliance² GW700 - Existing Bedrock Quarterly/Annual Compliance² GW100 - Existing Bedrock Quarterly/Annual Compliance²	ID	Peg ID	New/ Existing	Hydrogeological Unit	Sampling Frequency	Transducer Deployment	Comment
RW03S RWGW03D New Quaternary Quarterly/Annual X - RW04P RWGW04S New Peat Monthly - RW04S RWGW04D New Quaternary Quarterly/Annual - RW09A RWGW09S New Quaternary Quarterly/Annual X - RW09B RWGW09D New Quaternary Quarterly/Annual X - RW10P RWGW10S New Peat Monthly - RW10S RWGW10D New Quaternary Quarterly/Annual X - LFBH0S LFBH0S New Quaternary Quarterly/Annual X - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Dedrock Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Bedrock Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW5AD - Existing Unknown Quarterly/Annual Compliance²	RW02S	RWGW02D	New	Quaternary	Quarterly/Annual	Х	-
RW04P         RWGW04S         New         Peat         Monthly         -           RW04S         RWGW04D         New         Quaternary         Quarterly/Annual         -           RW09A         RWGW09S         New         Quaternary         Quarterly/Annual         X         -           RW09B         RWGW09D         New         Quaternary         Quarterly/Annual         X         -           RW10P         RWGW10S         New         Peat         Monthly         -         -           RW10S         RWGW10D         New         Quaternary         Quarterly/Annual         X         -           RW10S         RWGW10D         New         Quaternary         Quarterly/Annual         -         -           RW10S         EWBH05         New         Quaternary         Quarterly/Annual         - <td< td=""><td>RW03P</td><td>RWGW03S</td><td>New</td><td>Peat</td><td>Monthly</td><td></td><td>-</td></td<>	RW03P	RWGW03S	New	Peat	Monthly		-
RW04S RWGW04D New Quaternary Quarterly/Annual - RW09A RWGW09S New Quaternary Quarterly/Annual X - RW09B RWGW09D New Quaternary Quarterly/Annual X - RW10P RWGW10S New Peat Monthly - RW10S RWGW10D New Quaternary Quarterly/Annual X - LFBH05 LFBH05 New Quaternary Quarterly/Annual X - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quat Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW66 - Existing Bedrock Quarterly/Annual Compliance² GW60 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW110 - Existing Bedrock Quarterly/Annual Compliance² GW110 - Existing Bedrock Quarterly/Annual Compliance² GW110 - Existing Bedrock Quarterly/Annual	RW03S	RWGW03D	New	Quaternary	Quarterly/Annual	Х	-
RW09A RWGW09S New Quaternary Quarterly/Annual X - RW09B RWGW09D New Quaternary Quarterly/Annual X - RW10P RWGW10S New Peat Monthly - RW10S RWGW10D New Quaternary Quarterly/Annual X - LFBH05 LFBH05 New Quaternary Quarterly/Annual - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Bedrock Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Deaternary Quarterly/Annual Compliance² GW4S - Existing Deaternary Quarterly/Annual Compliance² GW4S - Existing Deaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW6AD - Existing Bedrock Quarterly/Annual Compliance²	RW04P	RWGW04S	New	Peat	Monthly		-
RW09B       RWGW09D       New       Quaternary       Quarterly/Annual       X       -         RW10P       RWGW10S       New       Peat       Monthly       -         RW10S       RWGW10D       New       Quaternary       Quarterly/Annual       X       -         LFBH05       LFBH05       New       Quaternary       Quarterly/Annual       -       -         R8       -       Existing       Bedrock       Quarterly/Annual       -       -         R9       -       Existing       Quaternary       Quarterly/Annual       -       -         R10       -       Existing       Quaternary       Quarterly/Annual       -       -         GW1S       -       Existing       Bedrock       Quarterly/Annual       Compliance²         GW1D       -       Existing       Bedrock       Quarterly/Annual       Compliance²         GW2S       -       Existing       Peat & Quat       Quarterly/Annual       X       Compliance²         GW2D       -       Existing       Peat & Quat       Quarterly/Annual       X       Compliance²         GW3AD       -       Existing       Bedrock       Quarterly/Annual       X       Compliance²	RW04S	RWGW04D	New	Quaternary	Quarterly/Annual		-
RW10P RWGW10S New Peat Monthly - RW10S RWGW10D New Quaternary Quarterly/Annual X - LFBH05 LFBH05 New Quaternary Quarterly/Annual - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quaterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Quaternary Quarterly/Annual Compliance² GW115 - Existing Quaternary Quarterly/Annual Compliance² GW115 - Existing Quaternary Quarterly/Annual Compliance²	RW09A	RWGW09S	New	Quaternary	Quarterly/Annual	Х	-
RW10S RWGW10D New Quaternary Quarterly/Annual X - LFBH05 LFBH05 New Quaternary Quarterly/Annual - R8 - Existing Bedrock Quarterly/Annual - R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quat Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW5AD - Existing Bedrock Quarterly/Annual Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW6 - Existing Unknown Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Quaternary Quarterly/Annual Compliance² GW115 - Existing Quaternary Quarterly/Annual Compliance² GW115 - Existing Quaternary Quarterly/Annual Compliance²	RW09B	RWGW09D	New	Quaternary	Quarterly/Annual	Х	-
LFBH05 LFBH05 New Quaternary Quarterly/Annual -  R8 - Existing Bedrock Quarterly/Annual -  R9 - Existing Quaternary Quarterly/Annual -  R10 - Existing Quaternary Quarterly/Annual -  R11 - Existing Bedrock Quarterly/Annual -  GW1S - Existing Quaternary Quarterly/Annual Compliance²  GW1D - Existing Bedrock Quarterly/Annual Compliance²  GW2S - Existing Peat & Quat Quarterly/Annual Compliance²  GW2D - Existing Bedrock Quarterly/Annual Compliance²  GW3S - Existing Bedrock Quarterly/Annual Compliance²  GW3S - Existing Bedrock Quarterly/Annual Compliance²  GW3AD - Existing Bedrock Quarterly/Annual Compliance²  GW4S - Existing Bedrock Quarterly/Annual Compliance²  GW4S - Existing Bedrock Quarterly/Annual Compliance²  GW4D - Existing Quaternary Quarterly/Annual X Compliance²  GW4D - Existing Bedrock Quarterly/Annual X Compliance²  GW5AS - Existing Bedrock Quarterly/Annual X Compliance²  GW5AS - Existing Bedrock Quarterly/Annual X Compliance²  GW5AD - Existing Bedrock Quarterly/Annual X Compliance²  GW5AD - Existing Bedrock Quarterly/Annual X Compliance²  GW6 - Existing Bedrock Quarterly/Annual Compliance²  GW6 - Existing Bedrock Quarterly/Annual Compliance²  GW70 - Existing Unknown Quarterly/Annual Compliance²  GW10 - Existing Unknown Quarterly/Annual Compliance²  GW11 - Existing Bedrock Quarterly/Annual Compliance²  GW11 - Existing Bedrock Quarterly/Annual Compliance²	RW10P	RWGW10S	New	Peat	Monthly		-
R8 - Existing Bedrock Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW15 - Existing Bedrock Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quat Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Peat & Quat Quarterly/Annual Compliance² GW3S - Existing Bedrock Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Quaternary Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW11 - Existing Quaternary Quarterly/Annual Compliance² GW11 - Existing Bedrock Quarterly/Annual Compliance²	RW10S	RWGW10D	New	Quaternary	Quarterly/Annual	Х	-
R9 - Existing Quaternary Quarterly/Annual - R10 - Existing Quaternary Quarterly/Annual - R11 - Existing Bedrock Quarterly/Annual - GW15 - Existing Quaternary Quarterly/Annual Compliance² GW10 - Existing Bedrock Quarterly/Annual Compliance² GW25 - Existing Peat & Quat Quarterly/Annual Compliance² GW20 - Existing Bedrock Quarterly/Annual Compliance² GW35 - Existing Bedrock Quarterly/Annual Compliance² GW36 - Existing Peat & Quat Quarterly/Annual Compliance² GW37 - Existing Peat & Quat Quarterly/Annual Compliance² GW38 - Existing Bedrock Quarterly/Annual Compliance² GW45 - Existing Quaternary Quarterly/Annual Compliance² GW40 - Existing Bedrock Quarterly/Annual X Compliance² GW58 - Existing Quaternary Quarterly/Annual X Compliance² GW58 - Existing Bedrock Quarterly/Annual X Compliance² GW580 - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW110 - Existing Quaternary Quarterly/Annual Compliance² GW115 - Existing Bedrock Quarterly/Annual Compliance² GW115 - Existing Bedrock Quarterly/Annual Compliance² GW110 - Existing Bedrock Quarterly/Annual Compliance²	LFBH05	LFBH05	New	Quaternary	Quarterly/Annual		-
R10 - Existing Quaternary Quarterly/Annual - GW15 - Existing Bedrock Quarterly/Annual - Compliance²  GW10 - Existing Bedrock Quarterly/Annual Compliance²  GW25 - Existing Peat & Quaterly/Annual Compliance²  GW20 - Existing Bedrock Quarterly/Annual Compliance²  GW35 - Existing Bedrock Quarterly/Annual Compliance²  GW35 - Existing Peat & Quat Quarterly/Annual Compliance²  GW36 - Existing Bedrock Quarterly/Annual Compliance²  GW48 - Existing Bedrock Quarterly/Annual Compliance²  GW40 - Existing Quaternary Quarterly/Annual Compliance²  GW5AS - Existing Bedrock Quarterly/Annual X Compliance²  GW5AS - Existing Bedrock Quarterly/Annual X Compliance²  GW5AS - Existing Bedrock Quarterly/Annual X Compliance²  GW5AD - Existing Bedrock Quarterly/Annual X Compliance²  GW6 - Existing Bedrock Quarterly/Annual Compliance²  GW6 - Existing Bedrock Quarterly/Annual Compliance²  GW9 - Existing Unknown Quarterly/Annual Compliance²  GW10 - Existing Unknown Quarterly/Annual Compliance²  GW11 - Existing Bedrock Quarterly/Annual Compliance²  GW11 - Existing Bedrock Quarterly/Annual Compliance²	R8	-	Existing	Bedrock	Quarterly/Annual		-
R11 - Existing Bedrock Quarterly/Annual - GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quaterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Peat & Quaterly/Annual X Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Quaternary Quarterly/Annual Compliance² GW11S - Existing Quaternary Quarterly/Annual Compliance²	R9	-	Existing	Quaternary	Quarterly/Annual		-
GW1S - Existing Quaternary Quarterly/Annual Compliance² GW1D - Existing Bedrock Quarterly/Annual Compliance² GW2S - Existing Peat & Quat Quarterly/Annual Compliance² GW2D - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Peat & Quat Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Quaternary Quarterly/Annual X Compliance² GW5AS - Existing Quaternary Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW11 - Existing Quaternary Quarterly/Annual Compliance²	R10	-	Existing	Quaternary	Quarterly/Annual		-
GW1D - Existing Bedrock Quarterly/Annual Compliance2 GW2S - Existing Peat & Quat Quarterly/Annual Compliance2 GW2D - Existing Bedrock Quarterly/Annual X Compliance2 GW3S - Existing Peat & Quat Quarterly/Annual Compliance2 GW3AD - Existing Bedrock Quarterly/Annual Compliance2 GW4S - Existing Quaternary Quarterly/Annual Compliance2 GW4D - Existing Bedrock Quarterly/Annual X Compliance2 GW5AS - Existing Quaternary Quarterly/Annual X Compliance2 GW5AS - Existing Quaternary Quarterly/Annual X Compliance2 GW5AD - Existing Bedrock Quarterly/Annual X Compliance2 GW6 - Existing Bedrock Quarterly/Annual X Compliance2 GW6 - Existing Bedrock Quarterly/Annual Compliance2 GW9 - Existing Unknown Quarterly/Annual Compliance2 GW10 - Existing Unknown Quarterly/Annual Compliance2 GW11S - Existing Quaternary Quarterly/Annual Compliance2 GW11D - Existing Bedrock Quarterly/Annual Compliance2	R11	-	Existing	Bedrock	Quarterly/Annual		-
GW2S - Existing Peat & Quat Quarterly/Annual Compliance <sup>2</sup> GW2D - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW3S - Existing Peat & Quat Quarterly/Annual Compliance <sup>2</sup> GW3AD - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW4S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW4D - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW5AS - Existing Quaternary Quarterly/Annual X Compliance <sup>2</sup> GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW1S	-	Existing	Quaternary	Quarterly/Annual		Compliance <sup>2</sup>
GW2D - Existing Bedrock Quarterly/Annual X Compliance² GW3S - Existing Peat & Quat Quarterly/Annual Compliance² GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Quaternary Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW11S - Existing Quaternary Quarterly/Annual Compliance² GW11D - Existing Bedrock Quarterly/Annual Compliance²	GW1D	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>
GW3S - Existing Peat & Quat Quarterly/Annual Compliance <sup>2</sup> GW3AD - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW4S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW4D - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW5AS - Existing Quaternary Quarterly/Annual X Compliance <sup>2</sup> GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup>	GW2S	-	Existing	Peat & Quat	Quarterly/Annual		Compliance <sup>2</sup>
GW3AD - Existing Bedrock Quarterly/Annual Compliance² GW4S - Existing Quaternary Quarterly/Annual Compliance² GW4D - Existing Bedrock Quarterly/Annual X Compliance² GW5AS - Existing Quaternary Quarterly/Annual X Compliance² GW5AD - Existing Bedrock Quarterly/Annual X Compliance² GW6 - Existing Bedrock Quarterly/Annual X Compliance² GW9 - Existing Unknown Quarterly/Annual Compliance² GW10 - Existing Unknown Quarterly/Annual Compliance² GW11S - Existing Quaternary Quarterly/Annual Compliance² GW11D - Existing Bedrock Quarterly/Annual Compliance²	GW2D	-	Existing	Bedrock	Quarterly/Annual	Х	Compliance <sup>2</sup>
GW4S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW4D - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW5AS - Existing Quaternary Quarterly/Annual X Compliance <sup>2</sup> GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW3S	-	Existing	Peat & Quat	Quarterly/Annual		Compliance <sup>2</sup>
GW4D - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW5AS - Existing Quaternary Quarterly/Annual X Compliance <sup>2</sup> GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW3AD	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>
GW5AS - Existing Quaternary Quarterly/Annual X Compliance <sup>2</sup> GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW4S	-	Existing	Quaternary	Quarterly/Annual		Compliance <sup>2</sup>
GW5AD - Existing Bedrock Quarterly/Annual X Compliance <sup>2</sup> GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW4D	-	Existing	Bedrock	Quarterly/Annual	Х	Compliance <sup>2</sup>
GW6 - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup> GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW5AS	-	Existing	Quaternary	Quarterly/Annual	Х	Compliance <sup>2</sup>
GW9 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW5AD	-	Existing	Bedrock	Quarterly/Annual	Х	Compliance <sup>2</sup>
GW10 - Existing Unknown Quarterly/Annual Compliance <sup>2</sup> GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW6	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>
GW11S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup> GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW9	-	Existing	Unknown	Quarterly/Annual		Compliance <sup>2</sup>
GW11D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW10	-	Existing	Unknown	Quarterly/Annual		Compliance <sup>2</sup>
	GW11S	-	Existing	Quaternary	Quarterly/Annual		Compliance <sup>2</sup>
51425	GW11D	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>
GW125   -   Existing   Quaternary   Quarterly/Annual   Compliance <sup>2</sup>	GW12S	-	Existing	Quaternary	Quarterly/Annual		Compliance <sup>2</sup>
GW12D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW12D	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>
GW13S - Existing Quaternary Quarterly/Annual Compliance <sup>2</sup>	GW13S	-	Existing	Quaternary	Quarterly/Annual		Compliance <sup>2</sup>
GW13D - Existing Bedrock Quarterly/Annual Compliance <sup>2</sup>	GW13D	-	Existing	Bedrock	Quarterly/Annual		Compliance <sup>2</sup>

<sup>&</sup>lt;sup>1</sup>Samples taken during one monitoring round but sampling was then suspended.

#### 3.2 Groundwater Level

Monitoring wells were routinely manually measured, mostly on a biweekly or monthly basis between 6 September 2021 and 28 July 2022. Pressure transducers (Rugged TROLL 100) were also employed by CDM Smith in both Quaternary (10 no.) and bedrock (4 no.) wells on a rolling basis over the monitoring period, whereby loggers were moved between wells in order to build up a view of how different wells in both hydrogeological units responded to climatic conditions and events. This included paired wells at the same location but with response zones in different



<sup>&</sup>lt;sup>2</sup> Monitoring well also included in site compliance monitoring.

hydrogeological units. Water level and temperature measurements were recorded by the pressure transducers every 15 minutes and were corrected with a barometric pressure transducer (Rugged Baro TROLL).

The groundwater level transducer data are presented in Appendix F.

#### 3.3 Surface Water Quality

Surface water samples taken by Marron Environmental were analysed for the parameters listed in Table 5 at the locations and frequencies presented in Table 6, between 25 August 2021 to 26 April 2022.

**Table 5 Parameters Analysed in Surface Water Samples** 

Existing Weekly	Existing Monthly	New Monthly
Conductivity	COD	Orthophosphate
Chloride	BOD	Total Phosphorous
Suspended Solids	-	Nitrate as NO3
Ammonia (NH3 as N)	-	Total Oxidised Nitrogen
Ammonia (as NH4)	-	-

The details of surface water stations are presented in Table 6. A map of the surface water stations monitored is provided in **Appendix A.** 

**Table 6 Surface Water Monitoring Stations** 

ID	Water Body	Easting (ITM)	Northing (ITM)	Flows	Transducer Data	Sampling Frequency	Comment
SW4	Cushaling River	671498.74	731249.57	ı	-	Weekly/ Monthly	Compliance <sup>1</sup>
SW5	Outfall of old BnM settlement ponds	674010.97	730832.46	1	-	Weekly/ Monthly	Compliance <sup>1</sup>
SW6	Outflow of ICW	674373.34	731534.74	1	-	Weekly/ Monthly	Compliance <sup>1</sup>
SW7	Inflow of ICW	674350.72	731757.92	1	-	Weekly/ Monthly	-
RS01	Mulgeeth	677294.17	734028.84	Х	Х	Weekly/ Monthly	-
RS02	Cushaling River	673506.14	730828.93	X	X	Weekly/ Monthly	-
RS03	Drainage network (Timahoe South Bog)	675184.05	730244.41	ı	-	Weekly/ Monthly	Suspended <sup>2</sup>
RS04	Abbeylough	671821.37	729214.29	Х	X	Weekly/ Monthly	-
RS05	Drainage network (Timahoe South Bog)	674358.85	728999.73	ı	-	Weekly/ Monthly	-
RS06	Drainage network (Timahoe South Bog)	675021.30	729529.23	-	-	Weekly/ Monthly	-
RS07	Upper Ballynakill	676949.67	728112.44	-	-	Weekly/ Monthly	Suspended <sup>3</sup>
RS08	Allenwood north	675653.96	728080.55	-	-	Weekly/	Suspended <sup>3</sup>



ID	Water Body	Easting (ITM)	Northing (ITM)	Flows	Transducer Data	Sampling Frequency	Comment
						Monthly	
RS09	Drainage network (Timahoe South Bog)	674482.80	730497.82	1	•	Weekly/ Monthly	Added <sup>2</sup>
RS10	Drainage network (Timahoe South Bog)	673605.95	730053.25	ı	-	Weekly/ Monthly	Added <sup>2</sup>

<sup>&</sup>lt;sup>1</sup> Monitoring station also included in site compliance monitoring.

#### 3.4 Surface Water Level

Pressure transducers (Rugged TROLL 100) were installed by CDM Smith at three surface water monitoring stations for continuous recording of depth of water between 13 August 2021 to 22 June 2022. Water level and temperature measurements were recorded by the pressure transducers every 15 minutes. These are identified in Table 6 and related data are presented graphically in **Appendix G**.

The transducer deployments were supplemented by periodic flow measurements with a flow meter () at the same stations. Flow meter measurements involve setting up a transect across the breadth of a stream using a tape measure. The depth of the water column and water velocity are recorded at pre-determined intervals to produce the volume output. The number of intervals required to produce an accurate output is based on the width of the stream. The number of velocity readings taken at each interval depends on the depth of the stream and optimised to reduce the margin of error. The flow estimates are presented in Table 7.

**Table 7 Flow Measurements** 

ID	Date	Mean Depth (m)	Flow (m³/s)	Flow (I/s)
RS01	08/10/2021	0.131	0.010	10.0
RS02	08/10/2021	0.193	0.017	17.0
RS04	08/10/2021	0.193	0.011	11.0
RS01	02/11/2021	0.576	0.094	94.0
RS02	02/11/2021	0.475	0.068	68.0
RS04	02/11/2021	0.334	0.097	97.0
RS01	30/11/2021	0.173	0.013	13.0
RS02	30/11/2021	0.191	0.014	14.0
RS04	30/11/2021	0.180	0.012	12.0
RS01	20/01/2021	0.199	0.040	40.0
RS02	20/01/2021	0.272	0.064	64.0
RS04	20/01/2021	0.300	0.046	46.0
RS01	08/02/2022	0.235	0.065	65.0
RS02	08/02/2022	0.341	0.049	49.0
RS04	08/02/2022	0.361	0.082	82.0
RS01	08/03/2022	0.195	0.048	48.0
RS02	08/03/2022	0.198	0.011	11.1
RS04	08/03/2022	0.247	0.037	36.7



<sup>&</sup>lt;sup>2</sup> RS03 was sampled until November 2021, across which period the drainage channel remained stagnant. The monitoring station was then discontinued and replaced with RS09 and RS10.

<sup>&</sup>lt;sup>3</sup> Sampling was discontinued in October 2021 as no suitable monitoring point could be maintained.

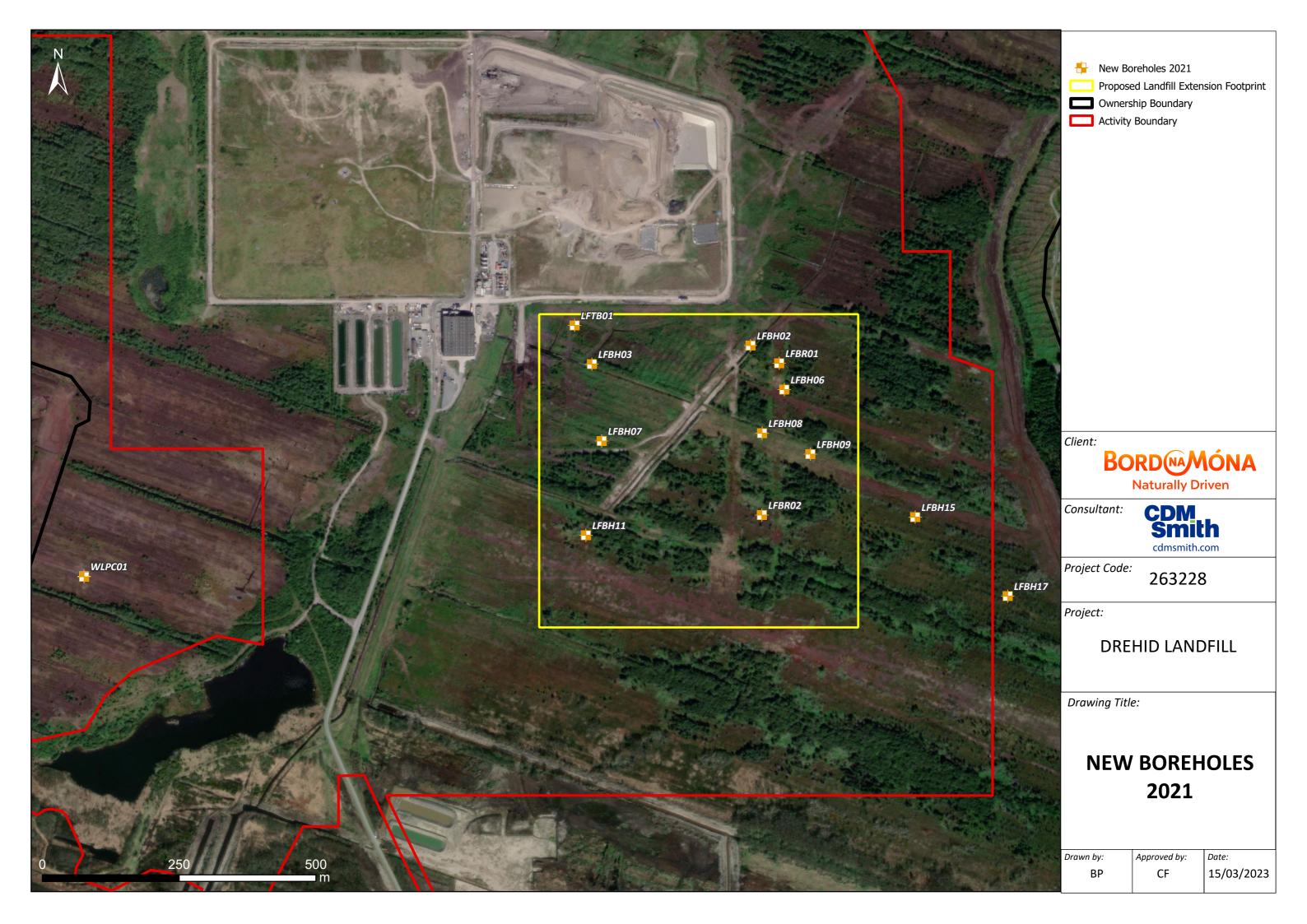
ID	Date	Mean Depth (m)	Flow (m <sup>3</sup> /s)	Flow (I/s)
RS01	05/04/2022	0.164	0.034	33.7
RS02	05/04/2022	0.214	0.004	4.1
RS04	05/04/2022	0.248	0.019	18.7

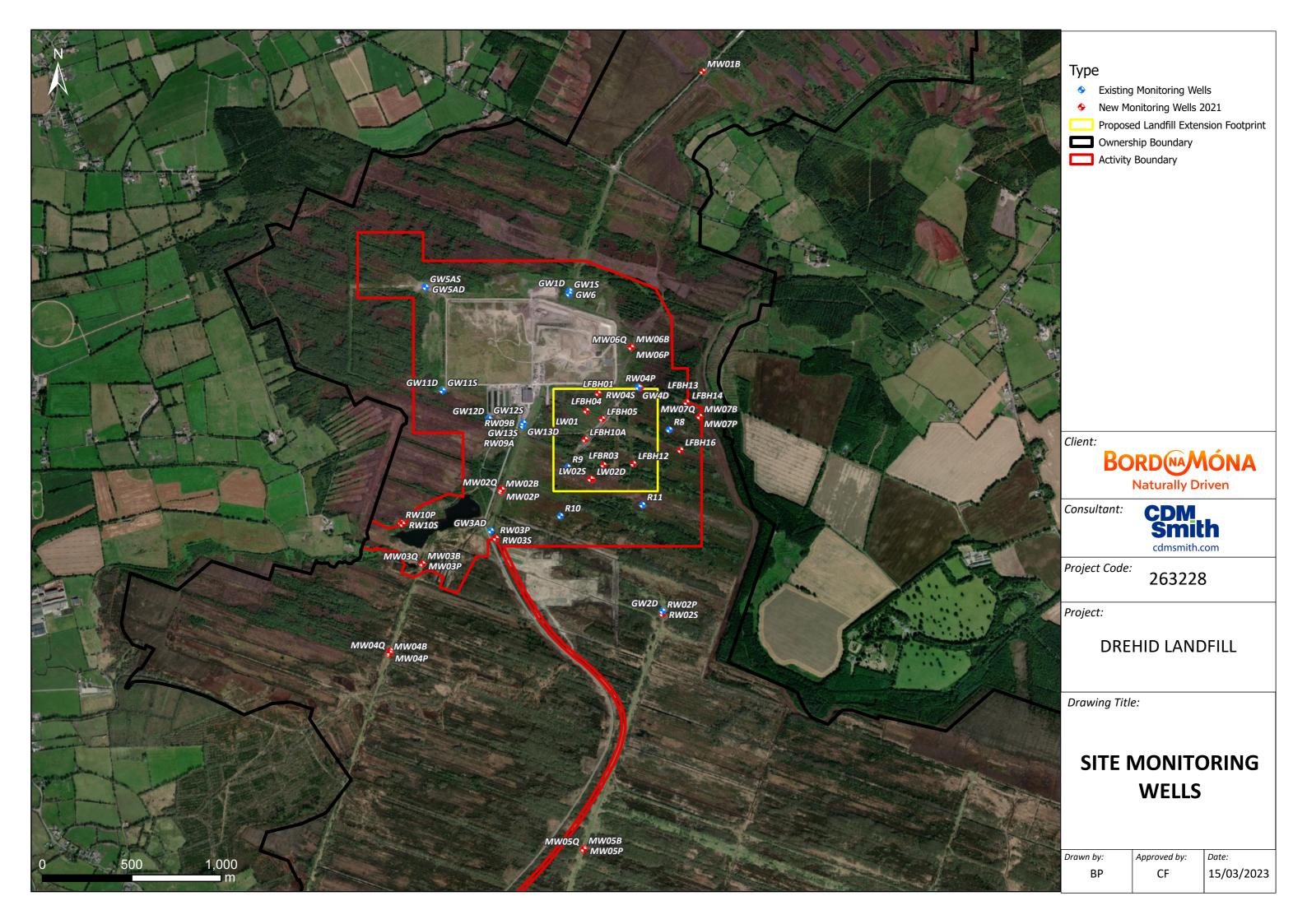


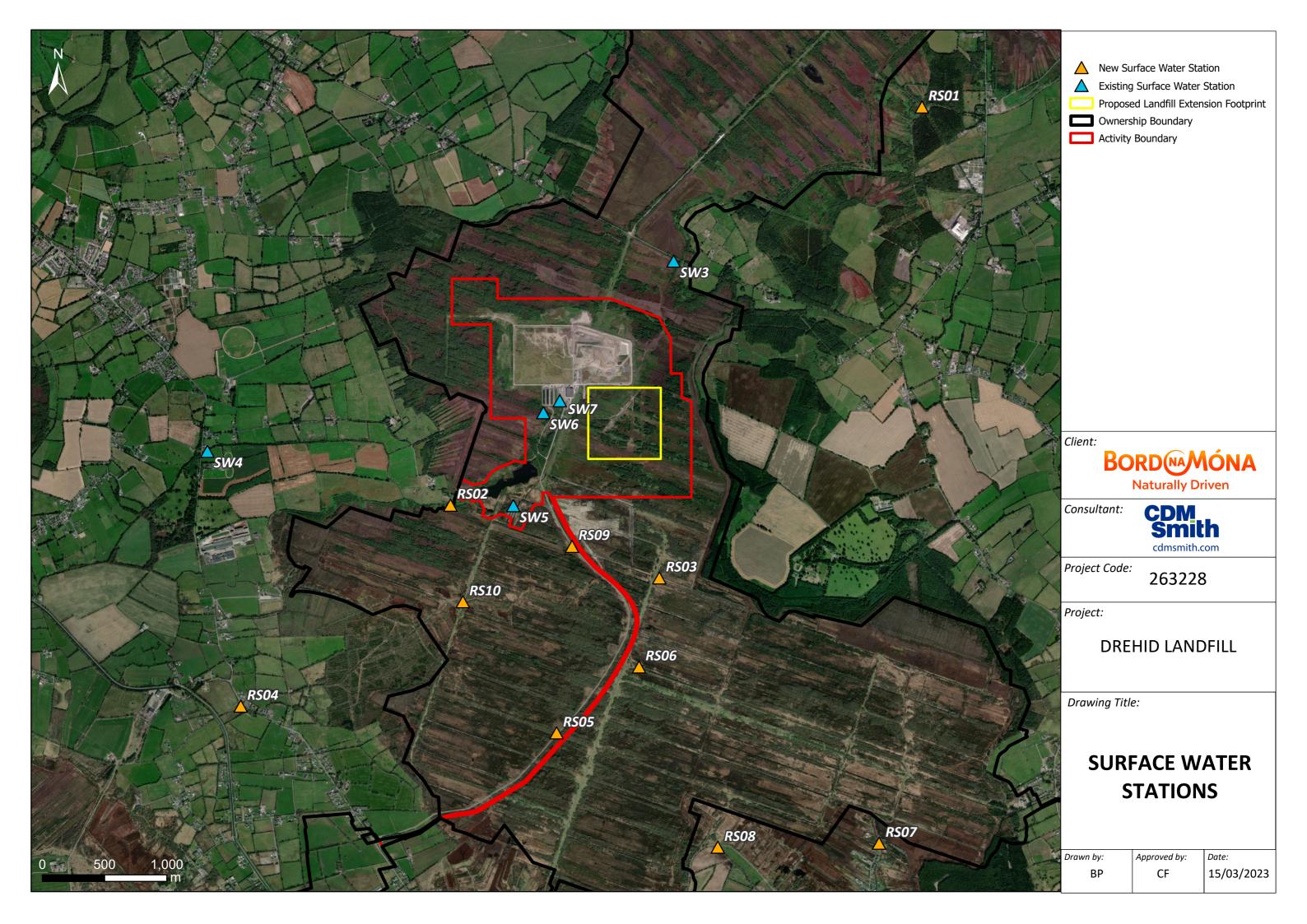
### Appendix A

Borehole, Monitoring Well and Surface Water Station Maps









Appendix B
Ground Investigation Locations





								1														
Borehole ID	Monitoring Well ID	Peg ID	Easting (ITM)	Northing (ITM)	Ground Level (m OD)	Drilling Method	Total Depth (TD)	Geological Unit at TD	PSD Test	Triaxial Test	Elevation (m OD)	Elevation Reference Point	Well Depth (m bToC)	Hydrogeological Unit	Response Zone Top	Zone Bottom	FHT/ RHT	Transducer Start	Transducer End	Cored	Core in Storage	Comment
LFBH01	LFBH01	LFBH01	674863.16	731746.89	83.250	Air Rotary	10.00		Yes		83.424	Plastic Pipe (ToC)	7.50	Quaternary	(m bToC) 6.00	(m bToC) 7.50				No	Storage	
LFBH02	- LLBHOI	LFBH01	674999.32	731740.85	83.002	Air Rotary	7.00	Quaternary (Gravel)	res	-	03.424	- riastic Fipe (TOC)	7.30	Quaternary	0.00	7.30	<u> </u>		-	No	-	
LFBH03	-	LFBH03	674709.35	731680.95	82.278	Air Rotary	7.00	Quaternary (Clavi)	Yes	-	-	-	_	-	-	-	-	-	_	No	_	
LFBH04	LFBH04	LFBH04	674796.81	731650.00	83.818	Air Rotary	14.50	-	-	-	83.929	Plastic Pipe (ToC)	14.50	Quaternary	6.00	7.50	Yes	-	-	No	-	-
LFBH05	LFBH05	LFBH05	674885.47	731603.23	84.507	Air Rotary	7.00	-	-	-	84.715	Plastic Pipe (ToC)	7.00	Quaternary	5.00	7.00	Yes	-	-	No	-	-
LFBH06	-	LFBH06	675060.95	731634.31	83.961	Sonic	7.50	Quaternary (Clayl)	-	-	-	-	-	-	-	-	-	-	-	Yes	_*	-
LFBH07	-	LFBH07	674727.17	731540.43	83.959	Air Rotary	8.50	Quaternary (Sand & Gravel)	-	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH08	-	LFBH08	675020.45	731554.60	84.557	Sonic	10.00	Quaternary (Clayl)	-	-	-		-	-	-	-	-	-	-	Yes	Yes	-
LFBH09	-	LFBH09	675108.70	731516.64	84.510	Sonic	10.50	Quaternary (Clayl)	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBH10	-	LFBH10	674791.96	731490.87	84.512	Sonic	2.30	Quaternary (Clayl)	-	-	-	-	-	-	-	-	-	-	-	Yes	_*	-
LFBH10A	LFBH10A	LFBH10	674789.67	731488.17	84.736	Sonic	8.80	-	-	Yes	84.873	Plastic Pipe (ToC)	7.60	Quaternary	6.00	7.60	Yes	-	-	Yes	Yes	-
LFBH11	-	LFBH11	674698.29	731368.60	84.249	Air Rotary	6.00	Quaternary (Clayl)	Yes	-	-	1	-	-	-	-	-	-	-	No	-	-
LFBH12	LFBH12	LFBH12	675060.26	731353.28	85.782	Air Rotary	7.00	-	Yes	-	86.198	Plastic Pipe (ToC)	3.50	Quaternary	3.00	3.50	-	-	-	No	-	-
LFBH13	LFBH13	LFBH13	675238.07	731741.02	84.185	Air Rotary	7.00	-	-	-	84.341	Plastic Pipe (ToC)	3.50	Quaternary	2.00	3.50	Yes	-	-	No	-	-
LFBH14	LFBH14	LFBH14	675357.48	731697.23	85.130	Sonic	8.50	-	Yes	-	85.542	Plastic Pipe (ToC)	8.50	Quaternary	6.00	8.50	Yes	-	-	Yes	_*	-
LFBH15	-	LFBH15	675300.18	731401.22	85.282	Air Rotary	8.50	Quaternary (Clayl)	-	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBH16	LFBH16	LFBH16	675323.47	731430.02	85.712	Sonic	12.40	-	-	Yes	85.832	Plastic Pipe (ToC)	12.40	Quaternary	2.60	3.00	-	-	-	Yes	Yes	-
LFBH17	-	LFBH17	675469.34	731257.12	86.119	Air Rotary	17.50	Quaternary (Clayl)	Yes	-	-	-	-	-	-	-	-	-	-	No	-	-
LFBR01	-	LFBR01	675051.57	731682.63	83.898	Sonic	18.00	Limestone Bedrock	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBR02	-	LFBR02	675020.00	731405.41	85.361	Sonic	25.70	Limestone Bedrock	-	Yes	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LFBR03	LFBR03	LFBR03	674893.24	731346.47	84.873	Sonic	21.50	-	-	Yes	85.253	Plastic Pipe (ToC)	8.40	Quaternary	6.50	8.40	-	-	-	Yes	Yes	-
LFTB01	-	LFTB01	674677.79	731752.04	83.012	Air Rotary	12.50	Limestone Bedrock	-	-	-	-	-	-	-	-	-	-	-	Yes	Yes	-
LW01	LW01	LFMW01	674610.18	731538.91	83.379	Air Rotary	10.00	-	Yes	-	83.561	Plastic Pipe (ToC)	10.00	Quaternary	7.00	10.00	Yes	-	-	No	-	-
LW02D	LW02D	LFMW02	674829.34	731265.87	84.853	Air Rotary	13.00	-	Yes	-	84.917	Plastic Pipe (ToC)	10.60	Quaternary	8.60	10.60	Yes	12/04/2022	22/06/2022	No	-	-
LW02S	LW02S	LFMW02B	674820.57	731269.13	84.760	Air Rotary	7.00	-	-	-	84.849	Plastic Pipe (ToC)	7.00	Quaternary	5.00	6.20	Yes	12/04/2022	22/06/2022	No	-	-
MW01B	MW01B	WLMW01W	675446.45	733547.55	85.300	Sonic	25.50	-	-	-	85.719	Plastic Pipe (ToC)	25.50	Bedrock	21.50	25.50	-	19/10/2021	22/06/2022	Yes	Yes	Transducer not retrieved. Survey not completed on pipe (ToC)
MW02B	MW02B	WLMW02W	674319.35	731198.76	84.674	Sonic	37.50	-	Yes	Yes	85.119	Plastic Pipe (ToC)	37.50	Bedrock	32.50	37.50	Yes	19/10/2021	22/06/2022	Yes	Yes	-
MW02P	MW02P	WLMW02P	674322.87	731213.62	84.743	Sonic	3.00	-	-	-	85.097	Plastic Pipe (ToC)	3.00	Peat	0.50	3.00	-	-	-	Yes	_*	-
MW02Q	MW02Q	WLMW02Q	674323.89	731207.44	84.854	Sonic	20.00	-	-	-	85.170	Plastic Pipe (ToC)	4.50	Quaternary	3.50	4.50	Yes	12/04/2022	22/06/2022	Yes	_*	-
MW03B	MW03B	WLMW03W	673882.75	730795.54	84.060	Sonic	19.50	-	-	Yes	84.312	Plastic Pipe (ToC)	19.50	Bedrock	14.50	19.50	Yes	08/12/2021	11/04/2022	Yes	Yes	-
MW03P	MW03P	WLMW03P	673878.04	730791.82	84.294	Sonic	4.50	-	-	-	84.560	Plastic Pipe (ToC)	3.55	Peat	1.00	3.55	-	-	-	Yes	.*	·
MW03Q	MW03Q	WLMW03Q	673880.75	730793.72	84.150	Sonic	9.00	-	-	-	84.478	Plastic Pipe (ToC)	8.00	Quaternary	4.30	7.80	Yes	08/12/2021	11/04/2022	Yes	_*	·
MW04B	MW04B	WLMW04W	673695.13	730288.39	84.426	Sonic	24.10	-	-	-	84.717	Plastic Pipe (ToC)	24.10	Bedrock	19.10	24.10	Yes	-	-	Yes	Yes	·
MW04P	MW04P	WLMW04P	673701.44	730308.42	84.423	Sonic	4.50	-	-	-	84.753	Plastic Pipe (ToC)	3.40	Peat	1.00	3.40	-	-	-	Yes	_*	·
MW04Q	MW04Q	WLMW04Q	673697.44	730296.25	84.505	Sonic	11.50	-	-	-	84.767	Plastic Pipe (ToC)	10.80	Quaternary	9.00	10.80	Yes	-	-	Yes	.*	-
MW05B	MW05B	WLMW05W	674783.81	729202.74	85.665	Sonic	27.00	-	Yes	Yes	85.754	Plastic Pipe (ToC)	26.70	Bedrock	17.70	26.70	Yes	20/08/2021	12/04/2022	Yes	Yes	-
MW05P	MW05P	WLMW05P	674781.19	729193.69	85.875	Sonic	4.50	-	-	-	86.000	Plastic Pipe (ToC)	3.00	Peat	1.50	3.00	-	-	-	Yes	.*	-
MW05Q	MW05Q	WLMW05Q	674782.55	729198.25	85.588	Sonic	13.80	-	Yes	-	85.721	Plastic Pipe (ToC)	10.40	Quaternary	7.50	10.40	Yes	19/10/2021	12/04/2022	Yes	.*	-
MW06B	MW06B	WLMW06W	675049.20	732007.37	82.695	Sonic	21.00	-	-	Yes	83.083	Plastic Pipe (ToC)	21.00	Bedrock	17.00	21.00	Yes	-	-	Yes	Yes	-
MW06P	MW06P	WLMW06P	675048.86	732006.48	82.681	Sonic	3.00	-	-	-	83.157	Plastic Pipe (ToC)	3.00	Peat	1.00	2.90	-	-	-	Yes	_*	-
MW06Q	MW06Q	WLMW06Q	675047.90	732004.36	82.740	Sonic	11.70	-	Yes	-	83.129	Plastic Pipe (ToC)	11.40	Quaternary	9.00	11.40	-	-	-	Yes	_*	•
MW07B	MW07B	WLMW07W	675430.17	731615.73	86.592	Sonic	18.00	-	-	Yes	86.788	Plastic Pipe (ToC)	18.00	Bedrock	13.90	17.90	Yes	-	-	Yes	Yes	-
MW07P	MW07P	WLMW07P	675430.19	731619.17	86.556	Sonic	1.50	-	-	-	86.830	Plastic Pipe (ToC)	1.50	Peat	0.50	1.50	-	-	-	Yes	_*	-
MW07Q	MW07Q	WLMW07Q	675430.19	731617.00	86.548	Sonic	6.00	-	Yes	-	86.742	Plastic Pipe (ToC)	6.00	Quaternary	4.50	5.90	-	-	-	Yes	_*	-
RW02P	RW02P	RWGW02S	675222.79	730523.61	84.346	Air Rotary	1.00	-	-	-	87.241	Plastic Pipe (ToC)	0.85	Peat	0.35	0.85	-	-	-	No	-	Replacement of GW2S
RW02S	RW02S	RWGW02D	675222.54	730513.98	84.340	Air Rotary	13.00	-	Yes	-	87.077	Plastic Pipe (ToC)	11.00	Quaternary	8.00	11.00	-	11/08/2021	19/10/2021	No	-	Replacement of GW2S
RW03P	RW03P	RWGW03S	674288.38	730940.10	84.001	Air Rotary	2.20	-	-	-	84.354	Plastic Pipe (ToC)	2.20	Peat	0.50	2.20	-	-	-	No	-	Replacement of GW3S
RW03S	RW03S	RWGW03D	674291.35	730936.25	83.959	Air Rotary	10.00	-	-	-	84.210	Plastic Pipe (ToC)	9.50	Quaternary	8.50	9.50	Yes	19/08/2021	10/09/2021	No	-	Replacement of GW3S
RW04P	RW04P	RWGW04S	675099.16	731778.68	84.268	Air Rotary	3.30	-	<u> </u>	-	84.480	Plastic Pipe (ToC)	3.30	Peat	1.50	3.30	<u> </u>	-	-	No	-	Replacement of GW4S
RW04S	RW04S	RWGW04D	675094.24	731780.42	84.339	Air Rotary	13.00	-	Yes	-	84.652	Plastic Pipe (ToC)	11.00	Quaternary	7.30	10.30	<u> </u>	-		No	-	Replacement of GW4S
RW09A	RW09A	RWGW09S	674309.21	731523.24	83.076	Air Rotary	4.00	-	Yes	-	83.292	Plastic Pipe (ToC)	4.00	Quaternary	2.00	4.00	-	18/08/2021	19/10/2021	No	-	Replacement of GW9
RW09B	RW09B	RWGW09D	674311.37	731527.80	83.003	Air Rotary	10.00	-	Yes	<u> </u>	83.063	Plastic Pipe (ToC)	10.00	Quaternary	8.00	10.00	Yes	18/08/2021	12/04/2022	No	-	Replacement of GW9. Transducer data across two date ranges
RW10P	RW10P	RWGW10S	673760.86	731024.30	83.713	Air Rotary	2.80	-	-	-	83.963	Plastic Pipe (ToC)	2.60	Peat	0.50	2.60	<u> </u>			No	-	Replacement of GW10
RW10S	RW10S	RWGW10D	673768.50	731016.43	83.759	Air Rotary	7.00		Yes	<u> </u>	83.889	Plastic Pipe (ToC)	4.50	Quaternary	3.00	4.50	Yes	18/08/2021	12/04/2022	No	-	Replacement of GW10
WLPC01	-	WLPC01	673781.25	731292.73	83.297	Air Rotary	16.00	Limestone Bedrock	_	-	-	-	-	-	_	-	_	-	-	No		-

#### Notes:

	ToC	Top of Casing (PVC plastic pipe)
Γ	*	Sonic material was logged on site and stored in core boxes

## Appendix C Borehole Logs

#### **Abbreviations**

B = Bulk sample

U = Undisturbed sample

**▼** = Water Strike



									Borehole No	Ο.
G	DM mit	h				Bo	reho	ole Log	LFBH10	0
								•	Sheet 1 of 1	1
Projec	t Name:	Drehid Site	e Inves	itigation	Project No. 263228		Co-ords:	674791.96 - 731490.87	Hole Type SNC	
_ocati	on:	Allenstowr	า, Kilda	ıre			Level:	84.51	Scale 1:25	
Client:		Bord na M	óna				Dates:	09/10/2021 -	Logged By Causeway Geo	
Well	Water			n Situ Testing	Depth	Level	Legend	Stratum Description		
	Strikes	Depth (m)	Туре	Results	1.50 2.30	83.01 82.21	alle,	PEAT		2
										5 —

Obstruction at 2.30 m bgl - stopped drilling - hole abandoned and redrilled in a nearby location

CI	)M					_	ı		Borehole N	
S	MC mil	h				RO	renc	ole Log	LFBHO	
					Project No.		T	_	Sheet 1 of	
Projec	t Name:	Drehid Site	e Inves	tigation	263228		Co-ords:	674863.16 - 731746.89	Hole Type RO	е
Location	on:	Allenstowr	n, Kilda	re			Level:	83.25	Scale 1:25	
Client:		Bord na M	óna				Dates:	13/07/2021 - 13/07/2021	Logged B	Зу
Well	Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	STRIKES	Depth (m)	В	Results	1.00	82.25	SMC SMC SMC  a sMc SMc SMC  a sMc SMc SMC  a sMc SMc SMC  sMc SMc SMC  sMc SMc SMC  a sMc SMC  a sMc SMC  sMc SMC SMC  a sMc SMC  sMc SMC SMC  x SMC	Very soft dark brown fibrous PEAT.  Very soft high plasticity grey slightly slightly gravelly silty CLAY. Sand is coarse. Gravel is subangular to subto coarse	r sandy fine to	2 -
					3.00	80.75		Very soft high plasticity grey slightly slightly sandy silty CLAY. Sand is fit Gravel is subangular to subrounded coarse  Very soft high plasticity grey slightly slightly gravelly silty CLAY. Sand is coarse. Gravel is subangular to subto coarse	ne to coarse. If fine to	4 -
Dar					5.00	78.25	×——×-	Continued on next sheet		5 -
Remar	KS								AGS	8

								Borehole No.
CDM Smil	th				Bo	reho	ole Log	LFBH01
311110							3	Sheet 2 of 2
Project Name	: Drehid Sit	e Investi	gation	Project No. 263228		Co-ords:	674863.16 - 731746.89	Hole Type RO
Location:	Allenstown	n, Kildare	е			Level:	83.25	Scale 1:25
Client:	Bord na M	lóna				Dates:	13/07/2021 - 13/07/2021	Logged By CMC
Well Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1
Suikes	7.50 - 8.50	B	Results	7.50	75.75		Loose grey slightly clayey sandy susubrounded fine to coarse GRAVEL  Stiff to very stiff grey slightly sandy gravelly CLAY. Sand is fine to coars subangular to subrounded fine to coars.	6
				10.00	73.25		End of borehole at 10.00 m	
Remarks	I	1		I	I			AGS

	DM mit				Project No.	Во		ole Log	Borehole I  LFBH(  Sheet 1 o  Hole Typ	<b>02</b> of 2
	t Name:	Drehid Site			263228		Co-ords:	674999.32 - 731715.05	RO Scale	
Locati	on:	Allenstowr	n, Kildaı	e			Level:	83.00	1:25 Logged E	21/
Client	:	Bord na M				1	Dates:	07/09/2021 - 07/09/2021	FP	Jy .
Well	Water Strikes	Samples Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	on	
		1.50 - 1.95	U	IXESUITS	0.50	82.50 81.50		Very soft high plasticity brownish of gravelly slightly sandy CLAY. Mois Very soft low plasticity grey gravel Moist material  Stiff low plasticity grey slightly gray sandy CLAY. Damp material	ly sandy CLAY.	1 —
		2.00 - 2.45	U							2
		4.00 - 4.45	U		3.50	79.50 79.20		Stiff low plasticity dark grey gravel Gravel is angular to subangular fir Damp material  Loose dark grey sandy clayey ang subrounded fine to medium GRAV material	gular to /EL. Damp	4
Rema	rks							Continued on next shee	AG	

	<b>DE</b> 5								Borehole N	۱o.
딚	DM mit	h				Bo	reho	ole Log	LFBH	)2
									Sheet 2 of	f 2
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674999.32 - 731715.05	Hole Typ RO	е
Locati	on:	Allenstowr	n, Kildar	е			Level:	83.00	Scale 1:25	
Client	:	Bord na M	óna				Dates:	07/09/2021 - 07/09/2021	Logged B	Ву
Well	Water	Samples	s and Ir	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
VVCII	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	ı	
		5.50 - 7.00	В		5.50	77.50		Loose sandy clayey angular to sub- medium GRAVEL.	angular fine to	6 —
					7.00	76.00		End of borehole at 7.00 m		7 —
										9
Rema	rks								AGS	10 -

									Borehole N	<b>l</b> o.
G	DM mit	h				LFBH03				
9								ole Log	Sheet 1 of	2
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	674709.35 - 731680.95	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kildar	re			Level:	82.28	Scale 1:25	
Client:	:	Bord na M	óna				Dates:	14/07/2021 - 14/07/2021	Logged B	у
	Water	Samples	and Ir	n Situ Testing	Depth	Level				
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description		
		2.50 - 3.50	В		1.30 1.50	80.98 80.78	SHE SHE SHE E SHE	Very soft high plasticity dark grey sli CLAY. Gravel is subangular to subroto coarse Very soft high plasticity dark grey sli silty CLAY with medium boulder cor is subangular to subrounded fine to  Very soft medium to high plasticity of slightly gravelly silty CLAY. Gravel is subrounded fine to coarse	gently gravelly stent. Gravel coarse	2 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 -
							xxxxxxxx			5 —
Rema	rks							Continued on next sheet		
									AGS	

CDM Smit					RΩ	roh <i>c</i>	ole Log	Borehole No. <b>LFBH03</b>
Smil	h				טט		ne Lug	Sheet 2 of 2
Project Name:	Drehid Sit	e Investiç	gation	Project No. 263228		Co-ords:	674709.35 - 731680.95	Hole Type RO
Location:	Allenstow	n, Kildare	,			Level:	82.28	Scale 1:25
Client:	Bord na M	lóna				Dates:	14/07/2021 - 14/07/2021	Logged By CMC
Well Water Strikes	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	
				7.00	75.28		End of borehole at 7.00 m	6
Remarks		<u> </u>		I	ı			AGS

									Borehole N	lo.
G	DM mit	h				Bo	reho	ole Log	LFBH0	)4
9								<b>.</b>	Sheet 1 of	3
Projec	t Name:	Drehid Sit	e Investi	gation	Project No. 263228		Co-ords:	674796.81 - 731650.00	Hole Type RO	е
Location	on:	Allenstow	n, Kildare	)			Level:	83.82	Scale 1:25	
Client:		Bord na M	lóna				Dates:	03/09/2021 - 06/09/2021	Logged B CF/FP	У
Well	Water Strikes	Sample: Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
		Deptii (iii)	Type	results	0.50	83.32	Mic sille sille a sille sille sille sille sille a sille sille sille sille a sille sille	Very soft high plasticity dark brown pieces of organic matter. Moist mate Medium dense brown slightly sandy angular to subrounded fine to medium sand is fine to coarse. Damp mater	erial  / clayey um GRAVEL.	1 —
	•				1.50	82.32 81.92		Very soft high plasticity pale brown CLAY. Gravel is angular fine to med material  Very soft high plasticity brownish gr	lium. Moist	
					2.30	81.52		CLAY. Gravel is angular fine to med material  Medium dense pale brownish grey	sandy very	2
		2.50 81.32  81.32  Medium dense pale brownish grey sar clayey angular fine to medium GRAVE  Very soft high plasticity grey slightly sa gravelly CLAY. Gravel is angular fine to Sand is fine to coarse. Moist material				sandy e to medium.	3			
					4.00	79.82		Medium dense grey sandy clayey a subrounded fine to medium GRAVE fine to coarse. Moist material	ngular to EL. Sand is	- 4 — - - - - - - - -
					4.50	79.32		Very soft high plasticity grey slightly gravelly CLAY. Gravel is angular fin Sand is fine to coarse. Moist materi	e to medium.	-
Rema	rks							Continued on next sheet	AGS	5 —

Sheet 2 of 3 Project Name: Drehid Site Investigation Project No. 263928 Co-ords: 674796.81 - 731650.00 Hole Type RO RO Ocation: Allenstown, Kildare Level: 83.82 Scale 125 Client: Bord na Móna Dates: 03/09/2021 - 06/09/2021 Cogged By CF/FP Well Water Strikes Depth (m) Type Results Depth (m) Level (m) Legend Stratum Description  5.70 78.12  Very loose grey/dark grey slightly clayey sandy angular to subrounded fine to medium GRAV/EL. Sand is medium to coarse. Wet material  7.50 76.32  Very loose brownish grey slightly clayey gravelly medium to coarse SAND. Gravel is angular to subrounded fine to medium. Wet material	CDM					_	_	_	Borehole N	Ю.
Project Name: Drehid Site Investigation Project No. 263228 Co-ords: 674796.81 - 731650.00 Hole Type RO	Smit	h				LFBH04				
Octoris: Offend state investigation   263228   Co-ords: Offend state   Co-ords							_			
Cocation: Allenstown, Kildere   Level: 83.82   1.25   Legend By CF/FP	Project Name:	Drehid Site	e Investi	gation			Co-ords:	674796.81 - 731650.00		е
Client: Bord na Móna   Dates: 03/09/2021 - 06/09/2021   Logged By CE/FP	Location:	Allenstowr	n, Kildare	)	ı		Level:	83.82		
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description  78.12  Very loose greydark grey slightly clayery sandy angular to subrounded fine to medium GRAVEL. Sand is medium to coarse. Wet material  7.50 76.32  Very loose brownish grey slightly clayery gravelly medium to coarse SAND. Gravel is angular to subrounded fine to medium. Wet material	Client:	Bord na M	óna				Dates:	03/09/2021 - 06/09/2021	Logged B	Ву
7.50 76.32 Very loose grey/dark grey slightly clayey sandy angular to subrounded fine to medium GRAVEL. Sand is medium to coarse. Wet material with the coarse sand is medium to coarse sand is medium. Wet material subrounded fine to medium. Wet material subrounded fine to medium. Wet material	vveii i ⊢						Legend	Stratum Description	1	
	Strikes	Depth (m)	Type	Results	5.70	78.12		Very loose grey/dark grey slightly clangular to subrounded fine to medial Sand is medium to coarse. Wet ma	ayey sandy um GRAVEL. terial ayey gravelly angular to	6
10.00 73.82 Continued on next sheet 1					10.00	73.82			rial	9

C	CDM Smith					Во	reho	ole Log	Borehole No.  LFBH04  Sheet 3 of 3	
		Project No. 263228		Co-ords:	674796.81 - 731650.00	RU				
Locati	ion:	Allenstown	n, Kildaı	re			Level:	83.82	Scale 1:25	
Client	:	Bord na Móna					Dates:	03/09/2021 - 06/09/2021	Logged By CF/FP	
Well	Water Strikes		Samples and In Situ Testin		Depth (m)	Level (m)	Legend	Stratum Description	1	
		Depth (m)	Type	Results	11.50	72.32		Very soft low plasticity grey gravelly Gravel is angular to subangular fine Moist material  LIMESTONE	sandy CLAY.	11
										15 —
Rema	nrks		1			I			AG	

CDM Smit		Borehole Log				Borehole No. <b>LFBH05</b>		
Project Name:	igation	Project No. 263228		Co-ords: 674885.47 - 731603.23		Sheet 1 of 2  Hole Type  RO		
Location: Allenstown, Kildare				1 - 1 - 1		84.51	Scale 1:25	
Client: Bord na Móna					Dates:	08/09/2021 - 08/09/2021	Logged By	
Water			n Situ Testing	Depth	Level	Legend	Stratum Description	
Strikes	Depth (m)	Туре	Results	(m)	(m)		Loose brown angular to slightly sar subrounded fine to medium GRAVE material	idy clayey
							Increased clay content	1
				1.50	83.01		Loose brown angular to slightly sar clayey subrounded fine to medium Damp material	
				2.00	82.51		Loose brownish grey slightly sandy angular to subrounded fine to coars Damp material	very clayey se GRAVEL.
	2.50 - 2.95	U		2.50	82.01		Loose grey angular to sandy slightl subrounded fine to medium GRAVE material	
				3.00	81.51		Loose dark grey SAND and GRAVE angular to subrounded fine to coars material	
				3.50	81.01		Loose grey slightly clayey SAND ar Gravel is angular to subrounded fin Wet material	
				4.00	80.51		Loose grey slightly clayey SAND a Gravel is angular to subrounded fin Increased clay content. Wet materia	e to coarse.
				4.50	80.01		Loose grey very clayey SAND and Gravel is angular to subrounded fin Wet material	GRAVEL. e to coarse.

CDM				,	_		Borehole N	lo.		
	OM mit	h				LFBH0	5			
	••••	••			Borehole Log				Sheet 2 of 2	
Projec				Project No. 263228 Co-ords: 674		674885.47 - 731603.23	885.47 - 731603.23 Hole Typ			
Location	on:	Allenstown, Kildare		Allenstown, Kildare		1		Level: 84.51		
Client:		Bord na Móna					Dates:	08/09/2021 - 08/09/2021	1:25 Logged B FP	У
Well	Water Strikes	Samples Depth (m)	s and In	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
Rema					5.50 7.00	79.01 78.01 77.51		Loose pale grey very clayey SAND GRAVEL. Gravel is angular to subroto coarse. Saturated material  Loose grey very clayey SAND and Gravel is angular to subrounded fin Wet material  End of borehole at 7.00 m	GRAVEL. e to coarse.	6
									AGS	3

	DM mit			4i maki an	Project No.	100-orde: 675060 95 - 731637 31					
			263228				SNC Scale				
Locati	on:	Allenstowr	n, Kilda	re			Level:	83.96	1:25	).,	
Client	:	Bord na M	óna				Dates:	18/09/2021 - 18/09/2021	Logged By FP		
Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description			
	Offices	Depth (m)	Type	Results	1.87	82.09	SHE SHE SHE  SHE SHE SHE  SHE SHE SHE  SHE	Very soft low plasticity dark brown twigs and wood present. Wet mate  Very soft high plasticity pale grey s slightly sandy CLAY with low bould Moist material	lightly gravelly	1	
		3.00 - 3.45	U		3.00	80.96		Very soft low plasticity pale grey gr CLAY with medium boulder conten angular to subrounded fine to coars material (drilling water added)	t. Gravel is	3 -	
					3.50	80.46		Firm low plasticity pale grey slightly sandy CLAY with medium boulder Gravel is angular to subrounded fir Boulders present at bottom of layer material	content. le to medium.		
					4.10	79.86		Very soft low plasticity pale grey gr CLAY with low boulder content and content. Wet material	avelly sandy high cobble	5	
Rema	rks							Continued on next sheet		5 -	
									AG	S	

CDM Smil	th				Во	reho	Borehole No. <b>LFBH06</b>		
Project Name	igation	Project No. 263228 Co-ords:			675060.95 - 731634.31	Sheet 2 of 2 Hole Type SNC			
Location: Allenstown, Kildare					83.96	Scale 1:25			
Client: Bord na Móna					Dates:	18/09/2021 - 18/09/2021	Logged By FP		
Well Water Strikes		Samples and In Situ Testing  Depth (m) Type Results				Level (m)	Legend	Stratum Description	•
Remarks				7.50	76.46		End of borehole at 7.50 m	8 -	
Tomains								AGS	

CDI Sn	M niti	h				Во	reho	ole Log	Borehole N  LFBH0  Sheet 1 of	)7
Project N	ame:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674727.17 - 731540.43	Hole Typ	
_ocation:		Allenstown	ı, Kilda	re			Level:	83.96	Scale 1:25	
Client:		Bord na M	óna				Dates:	06/09/2021 - 07/09/2021	Logged B FP	Ву
	ater _	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
		Бериі (ііі)	Туре	TKGGUIG	0.50	83.46 82.96	shie shie shie shie shie shie shie shie	Soft low plasticity grey slightly sand CLAY. Moist material  Soft high plasticity grey slightly gray sandy CLAY. Gravel is angular to sto medium. Moist material	ly gravelly	- 1 -
	•			2.50	81.46		Loose pale grey slightly sandy clay subrounded fine to medium GRAVE material	ey angular to EL. Moist	2 -	
					3.00	80.96		Loose grey slightly clayey gravelly coarse SAND. Gravel is angular to fine to coarse. Dry material	medium to subrounded	3 -
					4.00	79.96		Soft low plasticity dark grey slightly gravelly CLAY. Gravel is angular to fine to coarse. Damp material	sandy subrounded	- 4 -
Remarks							* * * *	Continued on next sheet		5 -
									AGS	S

	DM Smit			tigation	Project No.	Во	reho	ole Log	Borehole No.  LFBH07  Sheet 2 of 2  Hole Type
					263228				RO Scale
Locati	on:	Allenstowr	n, Kilda	ire			Level:	83.96	1:25 Logged By
Client	:	Bord na M				1	Dates:	06/09/2021 - 07/09/2021	FP FP
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n
	•	6.00 - 7.00		6.00	77.96		Loose grey clayey GRAVEL and S is angular to subrounded fine to comaterial	AND. Gravel arse. Moist	
				7.00	76.96		Loose grey sandy clayey angular t fine to coarse GRAVEL. Saturated	o subrounded material	
					7.50	76.46		Loose grey slightly gravelly fine to Gravel is angular to subrounded fin Wet material	coarse SAND. ne to coarse.
					8.00	75.96		Very loose pale grey slightly clayer GRAVEL. Gravel is angular to sub to coarse.	y SAND and rounded fine
					8.50	75.46		End of borehole at 8.50 n	1
	marke								9 -
Rema	rks								AGS

CI	DM mit	h				Во	reho	ole Log	Borehole N  LFBH0  Sheet 1 of	8(
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675020.45 - 731554.60	Hole Type SNC	е
_ocatio	on:	Allenstown	ı, Kilda	are			Level:	84.56	Scale 1:25	
Client:		Bord na M	óna				Dates:	12/10/2021 -	Logged B Causeway Geote	-
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
		Dopur (III)	1900	rtosuito	0.10	84.46		Grass & TOPSOIL  Very soft greyish brown slightly san	dy gravelly	
					0.30	84.26	2 20162 20162	organic CLAY. Sand is fine to coars subangular fine to coarse Spongy blackish brown fibrous PEA	e. Gravel is	
							હ્યાંદ હ્યાંદ હ્યાંદ દ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ દ હ્યાંદ હયાંદ	fragments of wood (40-50 mm thick		-
					0.60	83.96		Soft to firm pale brown sandy grave Sand is fine to coarse. Gravel is sul to coarse	elly CLAY. brounded fine	1 -
					1.50	83.06		Very soft brown slightly sandy grave with low subrounded cobble content to coarse. Gravel is subrounded fin	t. Sand is fine	2 -
					2.10	82.46		Very soft to soft grey slightly sandy gravelly CLAY. Sand is fine to coars subangular to subrounded fine to co	se. Gravel is	
		3.00 - 3.45	U		3.00	81.56		Very soft brownish grey sandy very CLAY. Sand is fine to coarse. Grave subangular to subrounded fine to co low recovery)	el is	3 -
					4.60	79.96		Stiff brownish grey sandy gravelly C fine to coarse. Gravel is subrounde coarse	CLAY. Sand is d fine to	- 5 -

									Borehole N	١o.
G	DM mit	h				Bo	rehc	ole Log	LFBHO	8
0								J 3	Sheet 2 of	f 2
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675020.45 - 731554.60	Hole Type SNC	е
Locati	on:	Allenstown	ı, Kildar	re			Level:	84.56	Scale 1:25	
Client	:	Bord na M	óna				Dates:	12/10/2021 -	Logged B	
				n Situ Testing					Causeway Geote	ech Ltd.
Well	Water Strikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
					8.25	76.31		Very stiff brownish grey sandy grav with low cobble content. Sand is fin Gravel is subrounded fine to coars	e	6 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
					10.00	74.56	<u> </u>	End of borehole at 10.00 i	n	10 —
Rema	rks								AGS	S

									Borehole N	0.
G	DM mit	h				Bo	reho	ole Log	LFBH0	9
0								J	Sheet 1 of	3
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675108.70 - 731516.64	Hole Type SNC	•
Locati	on.	Allenstowr	. Kildar	e			Level:	84.51	Scale	
Locali		7 inoriotowi	i, raidai				20701.	01.01	1:25 Logged By	.,
Client:	:	Bord na M	óna				Dates:	13/10/2021 - 13/10/2021	Causeway Geotec	
Well	Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Cuntos	Depth (m)	Туре	Results	()	()	X///X/X	Grass & TOPSOIL		_
					0.10	84.41		Very soft pale orangish brown slight sandy CLAY. Sand is fine to coarse subangular to subrounded fine to co	. Gravel is	
					0.50	84.01		Very soft pale orangish brown slight sandy CLAY. Sand is fine to coarse subangular to subrounded fine to co	. Gravel is	
		1.50 - 1.95	U		0.90	83.61		Soft pale grey slightly sandy gravell Sand is fine to coarse. Gravel is sul to coarse	y CLAY. cangular fine	1
				2.30	82.21 82.01		Very soft brown slightly gravelly sar Sand is fine to coarse. Gravel is sul to coarse. Plant material present, lik	pangular fine	2 —	
						02.01		from up-hole  Very soft grey slightly sandy gravell is fine to coarse. Gravel is subangu coarse	y CLAY. Sand	3 —
					3.20	81.31		Stiff to very stiff grey slightly sandy CLAY. Sand is fine to coarse. Grave subangular to subrounded fine to co (predominantly limestone)	el is	4 —
	4.50 B 4.50 - 4.95 U			4.90	79.61		Very soft greyish brown sandy grav Sand is fine to coarse. Gravel is sul to coarse (predominantly limestone Continued on next sheet	prounded fine	5	
Rema	rks				1	1		Sommer of non-direct	AGS	}

Borehole Log Sheet 2 of 3 Project Name: Drehid Site Investigation										Borehole I	No.
Project Name: Drehid Site Investigation 263228 Co-ords 675108.70 - 731516.64 Hole Type SNC Scale 1.25 Social 1.25 Colemt: Bord na Mona Water Samples and In Situ Testing Depth (m) Type Results (m) Level (m) Command Strike Depth (m) Type Results (m) Command Strike Colemt Command Strike Colemt Command Co		mil	h				ole Log	LFBH	)9		
Continue									3	Sheet 2 o	f 3
Cocalion	Projec	t Name:	Drehid Site	e Inves	tigation			Co-ords:	675108.70 - 731516.64	SNC	е
West   Water   Samples and in Situ Testing   Depth (m)   Type   Results   S70   78.81   Depth (m)   Type   Results   S70   78.81   Depth (m)   Type   Results   S70   T78.81   Depth (m)   Type   Results   S70   T78.81   Depth (m)   Type   Results   S70   T78.81   Depth (m)   Type   T78.81   Depth (m)   De	Locati	on:	Allenstowr	n, Kilda	re			Level:	84.51		
Strikes Depth (m) Type Results (m) (m) (m) Legend Stratum Description  5.70 78.81 Greyish brown slightly gravelly clayey fine to coarse SAND. Gravel is subangular fine to medium  6.07 78.44 Very soft brownish grey slightly gravelly very sandy CLAV with low subtrounded cobble content. Sand if the to coarse Gravel is subangular fine to coarse SAND. Gravel is subangular fine to coarse Gravel is subangular for the coarse Gravel is subangular for subtrounded fine to medium  9.00 75.51 Greyish brown dayey very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to medium  9.50 75.01 Creyish brown dayey very gravelly fine to coarse Gravel is subangular for subrounded fine to medium  9.85 74.66 Very soft greyish brown slightly grawelly candly CLAV with low cobble content. Sand is fine to coarse Gravel is subangular fine to medium	Client		Bord na M	óna				Dates:	13/10/2021 - 13/10/2021		
Solution (Servish brown slightly gravelly clayey fine to coarse SAND Gravel is subangular fine to medium)  1.	Well							Legend	Stratum Description	n	
Continued on next sheet			Depth (m)	Туре	Results	5.70 6.07 9.00	78.81 78.44		Coarse SAND. Gravel is subangular medium  Very soft brownish grey slightly grasandy CLAY with low subrounded content. Sand is fine to coarse. Grasubangular fine to coarse  Greyish brown clayey very gravelly SAND. Gravel is subangular to subto medium  Very soft greyish brown slightly gracular coarse. Gravel is subangular fine to Very stiff grey slightly sandy slightly CLAY. Sand is fine to coarse. Gravel subrounded fine	velly very cobble avel is	7 -
										AG	3

								Borehole No.
CDM Smi	th				Bo	reho	ole Log	LFBH09
							9	Sheet 3 of 3
Project Name	: Drehid Sit	e Investi	gation	Project No. 263228		Co-ords:	675108.70 - 731516.64	Hole Type SNC
Location:	Allenstow	n, Kildar	е			Level:	84.51	Scale 1:25
Client:	Bord na M	lóna				Dates:	13/10/2021 - 13/10/2021	Logged By Causeway Geotech Ltd.
Well Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Descriptio	n
Strikes	Depth (m)	Type	Results	10.50	74.01		End of borehole at 10.50	-
								14 —
Remarks								AGS

						_	_	Borehole No.	).							
CDM Smit	h				Bo	reho	ole Log	LFBH10	Α							
								Sheet 1 of 2								
Project Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674789.67 - 731488.17	Hole Type SNC								
_ocation:	Allenstown	ı, Kildar	те			Level:	84.74	Scale 1:25								
Client:	Bord na M	óna				Dates:	09/10/2021 - 10/10/2021	Logged By Causeway Geotech								
Well Water Strikes	-		Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n								
	Depth (m)	Туре	Results		(111)		Soft pale brown becoming grey slig sandy CLAY. Sand is fine to coarse angular to subangular fine to coars predominantly limestone. (Low reco	e. Gravel is e. Gravel is	1 -							
				1.45	83.29		Grey clayey very sandy subangula coarse GRAVEL. Gravel is limestor recovery)	ne. (Low	2 -							
			3.15	81.59		Stiff greyish brown slightly gravelly Sand is fine to coarse. Gravel is su to coarse. Gravel is predominantly	sandy CLAY. bangular fine	3								
												3.70	81.04		Very stiff greyish brown slightly gra sandy CLAY. Sand is fine to coarse subangular fine to coarse. Gravel is predominantly limestone.	e. Gravel is
				4.50	80.24		Very stiff greyish brown to brown sl slightly gravelly CLAY. Sand is fine Gravel is subangular fine to coarse predominantly limestone.	to coarse.	5							

									Borehole No	0.
CIS	OM mit	h				Bo	reho	ole Log	LFBH10	Α
)								0	Sheet 2 of	2
Project	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674789.67 - 731488.17	Hole Type SNC	<del>)</del>
Locatio	on:	Allenstowr	n, Kildar	e	1		Level:	84.74	Scale 1:25	
Client:		Bord na M	óna				Dates:	09/10/2021 - 10/10/2021	Logged By Causeway Geotec	
	Water	Samples	s and In	Situ Testing	Depth	Level				CITELU
	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Descriptio	n	
		6.00 - 6.27	U		8.80	77.99		Very stiff brown sandy gravelly CL fine to coarse. Gravel is subangula coarse. Gravel is predominantly ling.  Bed of angular to subangular fine to coarse.  End of borehole at 8.80 m	ar fine to nestone  e sandy GRAVEL	6 7 8 9 10
Remar	n5								AGS	}

	DM Smit			At most on	Project No.	Во		ole Log	Borehole N  LFBH1  Sheet 1 of  Hole Type	1 <b>1</b>
	ct Name:				263228		Co-ords:	674698.29 - 731368.60	RO Scale	
Locati	ion:	Allenstowr		ire			Level:	84.25	1:25 Logged B	SV
Client	:	Bord na M				1	Dates:	15/07/2021 - 15/07/2021	CMC	y
Well	Water Strikes	Samples Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	ı	
		3.00 - 4.00	В		2.00	83.05 82.25 81.75	silke	Very soft high plasticity grey slightly CLAY. Gravel is subangular to subreto coarse  Firm low plasticity dark grey slightly CLAY. Gravel is subangular to subreto coarse  Stiff to very stiff low plasticity dark gravelly silty CLAY with medium be Gravel is subangular to subrounder coarse	ounded fine  gravelly silty ounded fine  grey slightly ulder content.	3
							× × ×			5 —
Rema	 nrks							Continued on next sheet	AGS	

									Borehole N	lo.
	DM mit	h				Bo	reho	ole Log	LFBH1	1
		•						O	Sheet 2 of	2
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674698.29 - 731368.60	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kilda	re	1		Level:	84.25	Scale 1:25	
Client	:	Bord na M	óna				Dates:	15/07/2021 - 15/07/2021	Logged B	у
Well	Water		т т	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Strikes	Depth (m)	Туре	Results	(m)	(m)	×_^_×	<u> </u>		_
							<u>×</u> _ <u>×</u>			_
							× × ×			_
							××			_
							×_×_×			=
							× × ×			- -
					6.00	78.25	× × →	End of borehole at 6.00 m		6 —
										_
										-
										_
										-
										-
										-
										7 —
										=
										-
										_
										-
										-
										8 _
										-
										_ _ _
										-
										-
										_
										9 _
										-
										-
										-
										-
										10 —
Rema	rks									
									AGS	8
										•

							Borehole N	١o.		
G	DM mit	h				Bo	reho	ole Log	LFBH1	2
		•						9	Sheet 1 of	2
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675060.26 - 731353.28	Hole Type RO	е
Locati	on:	Allenstowr	ı, Kilda	re	1		Level:	85.78	Scale 1:25	
Client	:	Bord na M	óna				Dates:	01/10/2021 - 01/10/2021	Logged B	у
Well	Water	Samples	and I	n Situ Testing	Depth	Level	Logond	Stratum Deparintion		
vveii	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description		
					2.50	85.08	SME SME SME  a SME SME  SME SME  SME SME  SME SME  SME SME  SME	Very soft high plasticity dark brown Organic matter of twigs and roots produced in the produced state of twigs and roots produced in the produced state of twigs and roots produced in the produced state of the produced st	dy gravelly ded fine to	1 —
	•	3.00 - 3.50	В		3.00	82.78		Dense grey slightly sandy silty claye to rounded fine to medium GRAVEL material	Damp	3 —
		3.00 - 3.30	Б					Loose grey clayey sandy subangula subrounded fine to medium GRAVE material	ar to 'L. Wet	3 - - - - - - - -
					3.50	82.28		Medium dense grey slightly sandy s clayey subangular to subrounded G Moist material becoming damp	ilty very RAVEL.	4 -
Rema	rks				5.00	80.78		Continued on next sheet		5 —
Sind									AGS	3

									Borehole N	lo.
G	DM mit	h				Bo	reho	ole Log	LFBH1	2
"		•						J	Sheet 2 of	2
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675060.26 - 731353.28	Hole Type RO	е
Locati	on:	Allenstowr	n, Kildar	re			Level:	85.78	Scale 1:25	
Client	<u> </u>	Bord na M	óna				Dates:	01/10/2021 - 01/10/2021	Logged B	У
Well	Water	Samples	s and Ir	n Situ Testing	Depth	Level	Logond	Stratum Description		
vveii	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description		
					6.50	79.28		Medium dense pale brownish grey silty very clayey subangular to subri GRAVEL. Damp material  Soft high plasticity grey slightly gray Gravel is angular fine to medium. M	velly CLAY.	6 -
					7.00	78.78		End of borehole at 7.00 m		8
Rema	rks								AGS	10 -

						Borehole No.				
	DM mit	h				Bo	reho	ole Log	LFBH13	3
		- <b>-</b>							Sheet 1 of 2	2
Projec	t Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	675238.07 - 731741.02	Hole Type RO	
Locati	on:	Allenstowr	n, Kildare	e			Level:	84.19	Scale 1:25	
Client	:	Bord na M	óna				Dates:	03/08/2021 - 03/08/2021	Logged By CMC	
Well	Water Strikes	Samples Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	ı	
		Берит (ті)	Туре	Results	0.50	83.68	alte alte alte e alte alte	Very soft low plasticity brown slightly slightly clayey PEAT. Gravel is angusubrounded fine to medium.	ular to	
								Soft low plasticity brownish grey slig slightly sandy CLAY. Gravel is angu subrounded fine to medium. Moist r	lar to	
					1.00	83.18		Very soft high plasticity pale grey sl slightly sandy CLAY. Sand is fine to Gravel is subangular to subrounded medium. Moist material	coarse.	1
					1.50	82.68		Very soft high plasticity pale grey sl gravelly CLAY with high boulder col is angular to subrounded fine to me material	ntent. Gravel	
					4.00	82.18		Very soft low plasticity pale grey slig gravelly CLAY. Gravel is angular to fine to medium. Saturated material  Wet material  Stiff low plasticity dark grey slightly CLAY	gnty sandy subrounded	2   3   3   4   1   1   1   1   1   1   1   1   1
						× × × × × × × × × × × × × × × × × × ×	Continued on next sheet		5 —	
Rema	rks					I .		Continued on next sheet		
									AGS	

CDM					D.	<b></b>		Borehole No.
CDM Smit	h				DO	renc	ole Log	LFBH13
Project Name:	Drehid Sit	e Investic	ration	Project No.		Co-ords:	675238.07 - 731741.02	Sheet 2 of 2 Hole Type
Location:	Allenstow			263228		Level:	84.19	RO Scale
			, 					1:25 Logged By
Client:	Bord na M				Г	Dates:	03/08/2021 - 03/08/2021	CMC
Well Water Strikes	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	
				7.00	77.18		End of borehole at 7.00 m	8-
Remarks								10 -
								AGS

CDM	CDM Smith				Borehole Log						
Smil	th				DU	renc	de Log	LFBH1			
Project Name	: Drehid Site	e Investic	ation	Project No.		Co-ords:	675357.48 - 731697.23	Sheet 1 of Hole Type			
i roject ivalile				263228		CO-ords.	010001.40 - 101001.20	SNC Scale			
Location:	Allenstow	n, Kildare				Level:	85.13	1:25			
Client:	Bord na M	lóna				Dates:	18/09/2021 - 18/09/2021	Logged B FP	Зy		
Well Water			Situ Testing	Depth (m)	Level	Legend	Stratum Description	า			
Well Water Strikes D	Depth (m)	Type	Results	(m) 0.75	(m) 84.38	shle shle shle a shle shle shle shle a shle shle a shle shle shle shle shle shle shle shle	Stiff low plasticity dark brown PEAT twigs present, brittle. Brittle and mobecoming damp  Very soft low plasticity pale grey sli sandy CLAY. Gravel is angular to s fine to coarse. Moist material	T. Roots and pist material	1 —		
				2.70	82.43 82.13		Very soft low plasticity pale grey gr CLAY with medium boulder content angular to subrounded fine to coars material Stiff low plasticity pale grey gravelly Gravel is angular to subrounded fir Damp material	t. Gravel is se. Moist y sandy CLAY.	3 -		
				3.80 4.00	81.33 81.13		Very soft low plasticity pale grey sa gravelly CLAY. Saturated material (added)  Stiff becoming very stiff low plastici gravelly sandy CLAY with low bould Gravel is angular to subrounded fin Damp material	drilling water  ty pale grey der content.	4		
				4.65	80.48		Very stiff low plasticity grey gravelly with low boulder content. Gravel is subrounded fine to medium. Damp material  Continued on next sheet	angular to to dry	- 5 -		
Remarks							with low boulder content. Gravel is subrounded fine to medium. Damp material	angular to to dry	 		

CDM						Borehole No.			
CDM Smit	h				BO	rend	ole Log	LFBH14	.
								Sheet 2 of 2	
Project Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	675357.48 - 731697.23	Hole Type SNC	
Location:	Allenstowr	n, Kildar	е			Level:	85.13	Scale 1:25	
Client:	Bord na M	óna				Dates:	18/09/2021 - 18/09/2021	Logged By FP	
Well Water Strikes	Samples Depth (m)	s and In	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
Remarks	6.00 - 8.50	В	NOSUILO	5.44 6.00 7.50	79.69 79.13		Very stiff low plasticity grey slightly sandy CLAY with low boulder contellimestone boulder. Dry material  Dense becoming loose becoming divery gravelly very clayey SAND. Grangular to subrounded fine to coars top and towards end of run. Damp to SAND with medium boulder conten angular to subrounded fine to medimaterial  End of borehole at 8.50 m	ense grey avel is ie. Looser at material  7  gravelly t. Gravel is um. Moist	7
								AGS	

h			Borehole Log				Borehole No.  LFBH15  Sheet 1 of 2	
Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675300.18 - 731401.22	Hole Type RO	
Allenstown	ı, Kildar	re e			Level:	85.28	Scale 1:25	
Bord na M	óna				Dates:	05/08/2021 - 05/08/2021	Logged By CMC	
	I I	n Situ Testing	Depth	Level	Legend	Stratum Description		
Depth (m)	Type	Results	2.00	83.28	SHE SHE SHE  a SHE SHE  sHE SHE SHE  a SHE SHE  sHE SHE SHE  sHE SHE SHE  a	Very soft high plasticity grey slightly slightly gravelly silty CLAY. Sand is coarse. Gravel is subangular to sub to coarse	1 -	
			4.50	80.78	X	Stiff to very stiff dark grey high plast gravelly silty CLAY with medium bot Gravel is subangular to subrounded coarse	ulder content.	
	Allenstowr Bord na M	Allenstown, Kildar Bord na Móna Samples and Ir	Allenstown, Kildare  Bord na Móna  Samples and In Situ Testing	Allenstown, Kildare  Bord na Móna  Samples and In Situ Testing Depth (m) Type Results  2.00	Allenstown, Kildare  Bord na Móna  Samples and In Situ Testing Depth (m) Type Results  2.00 83.28	Allenstown, Kildare  Bord na Móna  Dates:  Samples and In Situ Testing Depth (m) Type Results  Depth (m) Type Results  Depth (m) Situ July July July July July July July Jul	Allenstown, Kildare    Level: 85.28	

						Borehole No.		
CDM Smit	h				Bo	reho	ole Log	LFBH15
311110	••						5	Sheet 2 of 2
Project Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	675300.18 - 731401.22	Hole Type RO
Location:	Allenstowr	n, Kildare	e			Level:	85.28	Scale 1:25
Client:	Bord na M	óna				Dates:	05/08/2021 - 05/08/2021	Logged By CMC
Well Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n
	Depth (m) 6.00 - 6.50	B	Results	8.50	76.78		End of borehole at 8.50 r	6
Remarks				1				AGS

									Borehole N	lo.
	DM mit	h				Bo	reho	ole Log	LFBH1	6
		••						9	Sheet 1 of	3
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675323.47 - 731430.02	Hole Type SNC	
Locati	on:	Allenstowr	n, Kildar	e	1		Level:	85.71	Scale	
Client		Bord na M	óna				Dates: 13/10/2021 - 14/10/2021		1:25 Logged By	
				n Situ Testing			Dates.	10/10/2021 11/10/2021	Causeway Geote	ch Ltd.
Well	Water Strikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
		3.00 - 3.45	U	Results	2.45	84.21 83.26	sille	Spongy brownish black fibrous PEA wood present.  Low plasticity brownish black pseuce PEAT. Pieces of wood present  Soft grey calcareous slightly gravell CLAY. Sand is fine to coarse. Grave to subangular fine to coarse.  Very soft grey slightly sandy slightly CLAY with low subrounded cobble of is fine to coarse. Gravel is subangular subrounded fine to coarse.	y sandy el is angular	2
		4.50 - 4.95	U		4.50	81.21		Grey slightly sandy gravelly CLAY. Sto coarse. Gravel is subangular to sfine to coarse. (Low recovery)	Sand is fine subrounded	4 —
Rema	rks							Continued on next sheet		
									AGS	

G	DM Smit	h				Bo	reho	ole Log	LFBH'	16	
		•						9	Sheet 2 o	f 3	
Projec	ct Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675323.47 - 731430.02	Hole Typ SNC	е	
Locati	ion:	Allenstowr	n, Kildaı	re	1		Level:	85.71	Scale		
Client	:	Bord na M	lóna				Dates:	13/10/2021 - 14/10/2021	1:25 Logged E		
	Ī.,, .	Samples	e and li	n Situ Testing	5 "	l			Causeway Geote	ech Lta.	
Well	Water Strikes	Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	1		
		1 ( )	71								
					5.05	00.40				_	
					5.25	80.46		Very soft grey slightly sandy slightly CLAY with low subrounded cobble	gravelly		
								is fine to coarse. Gravel is subangu subrounded fine to coarse.		_	
								subrounded line to coarse.		_	
					5.70	80.01		Firm brownish grey slightly sandy s	lightly		
								gravelly CLAY with low subrounded content. Sand is fine to coarse. Gra	l cobble		
								subangular fine to coarse.		6 —	
										-	
					6.50	79.21		Greyish brown very gravelly very cl	avey fine to		
								coarse SAND with low subangular content. Gravel is subangular fine t	cobble	-	
						Content. Graver is subuniquial line to mediani					
									_		
					7.10	78.61				7 –	
								Firm brownish grey slightly sandy g with low cobble content. Sand is fin		1 1	
			• <del>-</del>		Gravel is subangular to subrounded		_				
					7.43	78.28		coarse.  Pale brown to brown very gravelly v	very clavey		
								fine to coarse calcareous SAND. G			
								subangular fine to medium		=	
										8 —	
										0 -	
										-	
										=	
										=	
										9 _	
					0.00	70.51					
					9.20	76.51		Stiff greyish brown slightly sandy gr with low subangular cobble content	ravelly CLAY		
								to coarse. Gravel is subangular fine	e to coarse.		
										-	
Rema	ırks							Continued on next sheet		10 —	
. Coma		ks									
									AG	3	
										_	

							Borehole N	No.		
G	DM mit	h				Bo	reho	ole Log	LFBH1	16
		•						9	Sheet 3 of	f 3
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675323.47 - 731430.02	Hole Type SNC	
Locati	on:	Allenstowr	n. Kildar	·e	1		Level:	85.71	Scale	
		7							1:25 Logged E	Rv.
Client	:	Bord na M				ı	Dates:	13/10/2021 - 14/10/2021	Causeway Geote	
Well	Water Strikes	Samples Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
Rema	rks				10.60 11.00 11.25	75.11 74.71 74.46		Very stiff pale brown slightly sandy gravelly CLAY. Sand is fine to coarsubrounded fine to medium  Grey angular to subangular fine to GRAVEL with low subangular cobb Medium strong massive grey LIME rare orangish white calcite veins (a thick). Predominantly fresh. Discon 5-20 degree joints, medium spaced (310/467/780) 2. 30-40 degree join spaced (230/350/356), planar, roug infill on some joint surfaces (approxibility).  End of borehole at 12.65 medium spaced (230/350/356).	coarse le content.  STONE with pprox. 5 mm tinuities: 1. Is, medium h, brown clay c,. 15 mm	12
									AG	S

							Borehole N	lo.		
	DM mit	h				Bo	reho	ole Log	LFBH1	7
7		•						3	Sheet 1 of	4
Projec	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675469.34 - 731257.12	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kilda	re	1		Level:	86.12	Scale 1:25	
Client	:	Bord na M	óna				Dates:	04/08/2021 - 04/08/2021	Logged By CMC	
Well	Water	Samples	s and I	n Situ Testing	Depth	Level	Legend	Stratum Description		
VVOII	Strikes	Depth (m)	Туре	Results	(m)	(m)	عاد عاد عاد	Very soft dark brown fibrous PEAT		
		Allenstown, Kildare  Bord na Mona  Samples and In Situ Testing  Depth (m) Type Results  A.50 - 5.50  B  Alsor and In Situ Testing  Results			2.50	83.62	to able	Very soft high plasticity grey slightly slightly gravelly silty CLAY. Sand is coarse. Gravel is subangular to sub to coarse.  Stiff to very stiff high plasticity dark of gravelly silty CLAY with medium bot Gravel is subangular to subrounded coarse.	grey slightly	1 2 3
							× × ×			
								Continued on next sheet		5 -
Rema	rks								AGS	3

							_	_	Borehole No.	
	DM mit	h				Bo	reho	ole Log	LFBH1	7
								3	Sheet 2 of	
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675469.34 - 731257.12	Hole Type RO	е
Locati	on:	Allenstowr	n, Kildaı	·e	1		Level:	86.12	Scale 1:25	
Client	:	Bord na M	óna				Dates:	04/08/2021 - 04/08/2021	Logged B CMC	у
Well	Water		s and li	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Strikes	Depth (m)	Туре	Results	(m)	(m)		- Chatam 2 coonpact	•	
		7.00 - 8.00	В		6.50	79.62		Dense brown fine silty SAND.  Stiff to very stiff high plasticity dark gravelly silty CLAY with medium bo Gravel is subangular to subrounder coarse.	ulder content.	8
							××-	Continued on next sheet		10 —
Rema	rks					1		Sommand on most sheet	AGS	

								Borehole No.
CDM Smi	th				Bo	reho	ole Log	LFBH17
31111								Sheet 3 of 4
Project Name	e: Drehid Sit	e Investi	gation	Project No. 263228		Co-ords:	675469.34 - 731257.12	Hole Type RO
Location:	Allenstow	n, Kildare	9			Level:	86.12	Scale 1:25
Client:	Bord na M	lóna				Dates:	04/08/2021 - 04/08/2021	Logged By CMC
Well Water Strikes		Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n
							Continued on next sheet	11
Remarks		-				'		
								AGS

CDM	_				P^	robo		Borehole No.
CDM Smit	h				DU	renc	ole Log	LFBH17
Project Name:	Drehid Sit	e Investic	aation	Project No.		Co-ords:	675469.34 - 731257.12	Sheet 4 of 4 Hole Type
Location:	Allenstow			263228		Level:	86.12	RO Scale
								1:25 Logged By
			Situ Toeting					CMC
Client: Well Water Strikes	Bord na M Sample Depth (m)		Results  Results	Depth (m)	Level (m)	Legend	O4/08/2021 - 04/08/2021  Stratum Description  End of borehole at 17.50 m	16 —
Damayka								20
Remarks								AGS

									Borehole No.
G	DM Smit	h				Bo	reho	ole Log	LFBR01
		•						9	Sheet 1 of 4
Projec	ct Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675051.57 - 731682.63	Hole Type SNC
Locati	ion:	Allenstowr	n, Kildaı	re	1		Level:	83.90	Scale 1:25
Client	:	Bord na M	lóna				Dates:	23/09/2021 - 28/09/2021	Logged By Causeway Geotech L
	Water	Sample	s and li	n Situ Testing	Depth	Level			
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	ו
					0.95	82.95	alte alte alte a alte	Low plasticity dark brown pseudofit Occasional fine rootlets and rare fra gravel sized wood  Very soft pale brownish grey slight!	agments of
								slightly gravelly CLAY. Occasional f	ragments of
					1.15	82.75		wood and small pockets of peat (up Sand is fine to coarse. Gravel is su subrounded fine to coarse (various Very soft to soft pale bluish grey sli slightly gravelly CLAY. Sand is fine Gravel is subangular to subrounded coarse (various lithologies)	bangular to lithologies) ghtly sandy to coarse.
		3.00 - 3.45	U		3.90	81.70		Firm to soft pale grey sandy gravel is fine to coarse. Gravel is subangu coarse (various lithologies)	allar fine to
		4.00 4.25	ВВ		5.90		x _ x _ x _ x _ x _ x _ x _ x _ x _ x _	Firm pale grey slightly sandy slightl CLAY. Sand is fine to coarse. Grave subangular fine to coarse (various	el is 4
					4.50	79.40	×_×_×	Stiff pale grey slightly sandy slightly	gravelly silty
					4.65	79.25	× × × × × × × × × × × × × × × × × × ×	CLAY. Sand is fine to coarse. Gravi subangular fine to coarse (various l Very stiff grey slightly sandy gravell Sand is fine to coarse. Gravel is su to coarse (various lithologies)	lithologies) / y silty CLAY. bangular fine
Rema	ırks				4.65	79.25	× x - x - x - x - x - x - x - x - x	<ul> <li>subangular fine to coarse (various)</li> <li>Very stiff grey slightly sandy gravell</li> <li>Sand is fine to coarse. Gravel is su</li> </ul>	ithologies) y silty CLAY.

C	DM Smit	h			Davis st No	Во	reho	ole Log	Borehole N  LFBR(  Sheet 2 or	<b>)1</b>
Projec	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675051.57 - 731682.63	Hole Typ SNC	е
Locati	ion:	Allenstowr	ı, Kilda	re			Level:	83.90	Scale 1:25	
Client	:	Bord na M	óna				Dates:	23/09/2021 - 28/09/2021	Logged E	
Well	Water Strikes		s and I	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n	
		Depth (m)  8.05	В	Results	6.25 6.80 7.05	77.65 77.10 76.85		Stiff to very stiff brownish grey slight gravelly CLAY. Sand is fine to coars subangular fine to coarse (various)  Grey slightly sandy very clayey substitute to coarse GRAVEL. Sand is fine to coarse (various)  Very stiff brownish grey slightly sansilty CLAY. Sand is fine to coarse (various)  Stiff brownish grey sandy gravelly sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is subto coarse (various) lithologies)  Stiff grey slightly sandy slightly gracular fine to coarse (various) subangular fine to coarse (various)	ee. Gravel is lithologies)  coangular fine coarse.  dy gravelly Gravel is lithologies)  silty CLAY. bangular fine	6 7 8 9
Rema	ırks						V	Continued on next sheet		10 —
									AG	S

<b>OD</b> = 5								Borehole l	No.
CDM Smil	th				Bo	reho	ole Log	LFBR	01
								Sheet 3 o	
roject Name	: Drehid Sit	e Inves	tigation	Project No. 263228		Co-ords:	675051.57 - 731682.63	Hole Typ SNC	ре
ocation:	Allenstow	n. Kilda	re			Level:	83.90	Scale	
								1:25 Logged E	Вv
lient:	Bord na M				ı	Dates:	23/09/2021 - 28/09/2021	Causeway Geot	-
Water Strikes		1 1	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n	
	Depth (m)	Туре	Results	()	()	×			
						××			
						×			
				10.50	73.40	×	Dank many alimbih dan saya alimbih dan	avally fina to	
							Dark grey slightly clayey slightly gr coarse SAND. Gravel is subrounde		
							coarse (various lithologies)		
				11.05	72.85		Grey slightly sandy very clayey sub		11
				44.00	70.00		subrounded fine to coarse GRAVE to coarse.	L. Sand is fine	
				11.30	72.60		Very stiff dark grey slightly sandy s CLAY with low cobble content. Sar	lightly gravelly	
							coarse. Gravel is subangular to sul to coarse (various lithologies)		
							( 3 /		
									12
									13
				13.50	70.40		Grey subangular SAND and GRAV	/EL with low	
							cobble content. Sand is fine to coa		
							Medium strong pale grey massive with white calcite veins (up to 15 m		1
							Predominantly fresh: Occasional cl on some fracture surfaces. Discont	ay deposits	14
							60-70 degree joints at 16.90-17.20	m and	
							brownish grey slightly sandy grave	lly clay infill	
							(10 mm thick) on 16.90-17.20 m jo bluish grey clay deposits (1 mm thi	ck) on	
				4475	00.15		17.75-17.85 m joint 2. 50-70 degre	th firm	
				14.75	69.15		brownish grey slightly sandy grave joint surface. 3. 5 degree join at 17	.40 m slightly	
							undulating rough with bluish grey of (<1 mm thick) on fracture surface	ay ueposits	15
emarks							Continued on next sheet		

									Borehole No.
CL	)M Mit	h				Bo	rehc	ole Log	LFBR01
								O	Sheet 4 of 4
Project	Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675051.57 - 731682.63	Hole Type SNC
Locatio	n:	Allenstowr	n, Kilda	ire	1		Level:	83.90	Scale 1:25
Client:		Bord na M	óna				Dates:	23/09/2021 - 28/09/2021	Logged By
	Water	Samples	s and I	n Situ Testing	Depth	Level			Causeway Geotech Ltd.
	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	1
					18.00	65.90		End of borehole at 18.00 n	16
									20 —
Remar	ks								
									AGS

									Borehole N	lo.
C	DM mit	h				Bo	reho	ole Log	LFBR0	2
								O	Sheet 1 of	6
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	675020.00 - 731405.41	Hole Type SNC	Э
Locati	on:	Allenstowr	ı, Kildaı	re	1		Level:	85.36	Scale 1:25	
Client	:	Bord na M	óna				Dates:	01/10/2021 - 02/10/2021	Logged By	
	Matax	Samples	s and li	n Situ Testing	Donth	Laval			Oduseway George	OII Eta.
Well	Water Strikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
					0.85 1.10	84.51 84.26	stile, st	Spongy dark brown pseudofibrous Frequent fine rootlets and occasion sized fragments of wood  Soft pale brownish grey slightly sar gravelly CLAY. Occasional pockets fragments of wood. Sand is fine to Gravel is subangular fine to coarse lithologies)  Soft to firm pale grey slightly gravel CLAY. Sand is fine to coarse. Grave subangular fine to coarse (various lithologies)	dy slightly of peat and coarse. (various ly sandy el is ithologies)	2
								Continued on next sheet		5 —
Rema	rks				ı	ı		Conunued on next sneet	AGS	

									Borehole No.
G	DM mit	h				Bo	reho	ole Log	LFBR02
		•						O	Sheet 2 of 6
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675020.00 - 731405.41	Hole Type SNC
Locati	on:	Allenstowr	ı, Kilda	re	1		Level:	85.36	Scale 1:25
Client	:	Bord na M	óna				Dates:	01/10/2021 - 02/10/2021	Logged By Causeway Geotech Ltd.
	Water	Samples	s and l	n Situ Testing	Depth	Level			
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	1
					6.95	79.36 78.41		Dark grey clayey sandy subangular coarse GRAVEL. Sand is fine to coarse GRAVEL. Sand is fine to coarse. Grave subangular fine to coarse (various IVery stiff dark brownish grey sandy CLAY with low cobble content. San coarse. Gravel is subangular fine to (various lithologies)	gravelly althologies)  gravelly althologies)  gravelly althologies
					9.90	75.46	* * * * * * * * * * * * * * * * * * *	Grey gravelly clayey fine to coarse Gravel is subangular fine to coarse lithologies)	SAND. (various 10 —
Rema	rks					1		Contained on Heat Sheet	AGS

ocation: Allenstown, Kildere	0014								Borehole No.
reject Name: Drahid Site Investigation Project No. 283228 Co-ords: 675020.00 - 731405.41 Hole Type SNC Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Scale 1.25 Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Scale 1.25 Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Scale 1.25 Dates: 01/10/2021 - 02/10/2021 Countries Project No. 28328 Dates: 01/10/2021 - 02/10/2021 Dates: 01/10/2021 Dates: 01/10/2021 - 02/10/2021 Dates: 01/10/2021 - 02/10/2021 Dates: 01/10/2021 Dat	Smit	h				Bo	reho	ole Log	LFBR02
Continue	011110								
Continued on sest sheet   Continued on ses	Project Name:	Drehid Site	e Invest	igation			Co-ords:	675020.00 - 731405.41	SNC
Silent: Bord na Móna    Motel   Water   Samples and In Situ Testing   Depth   Clevel (m)   Loyed   Stratum Description   Stratum Des	Location:	Allenstown	ı, Kildar	e			Level:	85.36	
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description  10.70 74.66 Very stiff brownish grey slightly gravely sandy CLAY. Sand is fine to coarse. Cravel is subangular fine to coarse (various lithologies)  11.90 73.48 Grey gravely clayey fine to coarse (various lithologies)  12.50 72.88 Very stiff duty grayley hown slightly gravely sandy CLAY. Sand is fine to coarse (various lithologies)  13.50 - 13.95 U  13.50 - 13.95 U  14.4 Continued on next site of the coarse (various lithologies)  15.50 - 13.95 U  16.50 - 13.95 U  17.50 - 13.95 U  18.50 - 13.95 U  19.50 - 13.95 U  19.50 - 13.95 U  10.70 - 74.68 Continued on next site of the coarse (various lithologies)  19.50 - 13.95 U  10.70 - 74.68 Continued on next site of the coarse (various lithologies)  19.50 - 13.95 U  10.70 - 74.68 Continued on next site of the coarse (various lithologies)  10.70 - 74.68 Continued on next site of the coarse (various lithologies)  11.50 - 72.88 Continued on next site of the coarse (various lithologies)	Client:	Bord na M	óna				Dates:	01/10/2021 - 02/10/2021	
10.70 74.66  10.70 74.66  11.90 73.46  11.90 73.46  12.50 72.88  12.50 72.88  13.50 - 13.96 U  13.50 - 13.96 U  10.70 74.66  10.70 74.66  10.70 74.66  11.90 73.46  11.90 73.46  11.90 73.46  11.90 73.46  11.90 73.46  11.90 73.46  12.50 Grey gravely clayey fine to coarse (various librologies) (various librolo		Samples	and Ir	Situ Testing			Legend	Stratum Descriptio	
12.50 72.86  12.50 72.86  12.50 72.86  13.50 - 13.95 U  13.50 - 13.95 U  14.50 Continued on next sheet  Continued on next sheet  Continued on next sheet	Strikes	Depth (m)	Type	Results				Very stiff brownish grey slightly gra CLAY. Sand is fine to coarse. Grav	ivelly sandy el is lithologies)
Very surf oxar greyts north signify gravely sandy CLAY Sand is fine to coarse. Gravel is subangular fine to coarse (various lithologies)  13.50 - 13.95 U  14  Continued on next sheet  Continued on next sheet					11.90	73.46		Gravel is subangular fine to coarse	SAND. e (various 12
demarks		13.50 - 13.95	U		12.50	72.86		sandy CLAY. Sand is fine to coarse subangular fine to coarse (various	e. Gravel is lithologies)
AGS	Remarks					I	1	Continued on next sleet	
									AGS

	Project Name: Dreh  Location: Allen  Client: Bord  Water Strikes Depth	na Móna  nples and  (m) Type	In Situ Testing	263228	Level	Co-ords: Level: Dates:	675020.00 - 731405.41 85.36 01/10/2021 - 02/10/2021	Sheet 4 of 6 Hole Type SNC Scale 1:25 Logged By Causeway Geotech
Project Name: Drehid Site Investigation Project No. 263328 Co-ords: 675020.00 - 731405.41 Sheet 4 of 6 Succession: Allenstown, Kildore Level: 85.36 Level: 85.36 1:25 Scale 1:25 Collection: Bord na Móna Dates: 01/10/2021 - 02/10/2021 Logged By Causeway Gendeck In Construction Country of Causeway Gendeck In Construction Country of Causeway Gendeck In Causeway Gendeck In Country of Causeway Gendeck In Causeway Gen	Project Name: Dreh  Location: Allen  Client: Bord  Water Strikes Depth	na Móna  nples and  (m) Type	In Situ Testing	263228	Level	Co-ords: Level: Dates:	675020.00 - 731405.41 85.36 01/10/2021 - 02/10/2021	Hole Type SNC Scale 1:25 Logged By Causeway Geotech
Allenstown, Kildare Level 85.96 Level 85.96 Scale 1.25	Location: Allen  Client: Bord  Water Strikes Depth	na Móna  nples and  (m) Type	In Situ Testing	263228		Level: Dates:	85.36 01/10/2021 - 02/10/2021	SNC Scale 1:25 Logged By Causeway Geotech
Cocation: Allenstown, Kildar=   Level: 85.36   Scale   1.25	Client: Bord  Well Water Strikes Depth	na Móna  nples and  (m) Type	In Situ Testing	Depth		Dates:	01/10/2021 - 02/10/2021	Scale 1:25 Logged By Causeway Geotech
Similar   Samples and in Situ Testing   Depth (m)   Type   Results   Depth (m)   Results   Depth (m)   Type   Results   Depth (m)   Depth (m)   Type   Results   Depth (m)	Well Water Strikes Depth	nples and (m) Type	1					Logged By Causeway Geotech
Well Water Samples and In Situ Toesting Depth Strikes Depth (m) Type Results (m) Level Legend Stratum Description 16 - 16 - 16 - 16 - 16 - 16 - 16 - 16	Well Water Strikes Depth	nples and (m) Type	1			Legend		
Strikes   Depth (m)   Type   Results   Type   Results   Type   Results   Type	Strikes Depth	(m) Type	1			Legend	Stratum Description	n
19.05 66.31  Very stiff pale greyish brown becoming pale grey sandy gravelly CLAY. Sand is fine to coarse (various introdes predominantly limestone)  19.50 65.86  The standard of the standar	16.50 -	6.95						
Continued on next sheet 20	Remarks						sandy gravelly CLAY. Sand is fine to Gravel is angular to subangular fine (various lithologies predominantly li Grey slightly clayey sandy angular fine to coarse GRAVEL. Sand is fin	ning pale grey o coarse. e to coarse imestone)

CDM						_		Borehole No.
CDM Smit	h				Bo	reho	ole Log	LFBR02
								Sheet 5 of 6
Project Name:	Drehid Site	Invest	tigation	Project No. 263228		Co-ords:	675020.00 - 731405.41	Hole Type SNC
Location:	Allenstown	Kildaı	r <u>A</u>			Level:	85.36	Scale
Location.	7 1110110101111	, raidai				207011		1:25 Logged By
Client:	Bord na Mo	óna				Dates:	01/10/2021 - 02/10/2021	Causeway Geotech Ltd
Well Water			n Situ Testing	Depth	Level	Legend	Stratum Description	n
Strikes	Depth (m)	Type	Results	21.10 21.80	64.26 63.56		Pale brown slightly sandy very clay subangular fine to coarse GRAVEL to coarse  Weak massive grey LIMESTONE vorangish greyish white calcite veins thick). Partially weathered, slightly strength, closer fracture spacing, of discolouration on some joint surface Discontinuities: 1. 10-30 degree join spaced (42/228/400), planar, rough clay infill (20-80 mm thick) and oral staining on most joint surfaces. 2. 6 joints, widely spaced (100/683/800 rough, orangish brown staining and most joint surfaces.	with rare s (1-25 mm reduced rangish brown nes. nts, medium n, pale brown ngish brown 65-90 degree ), undulating,
Remarks							Continued on next sheet	
								AGS

									Borehole No.
C	DM mit	h				Bo	reho	ole Log	LFBR02
		•						•	Sheet 6 of 6
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675020.00 - 731405.41	Hole Type SNC
Locati	on:	Allenstowr	n, Kilda	are	1		Level:	85.36	Scale 1:25
Client		Bord na M	óna				Dates:	01/10/2021 - 02/10/2021	Logged By
	10/-4	Sample	s and	In Situ Testing	Danth	11			Causeway Geotech Ltd.
Well	Water Strikes	Depth (m)	Туре		Depth (m)	Level (m)	Legend	Stratum Descriptio	n
									-
					25.90	59.46		End of borehole at 25.90 i	26 —
									27
									28 -
									29
Rema	rks								30 —
									AGS

									Borehole N	٧o.
	DM mil	h				Bo	reho	ole Log	LFBR	)3
								3	Sheet 1 of	f 5
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674893.24 - 731346.47	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.87	Scale 1:25	
Client:	:	Bord na M	lóna				Dates:	29/07/2021 - 30/09/2021	Logged E	
Well	Water Strikes		1 1	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
	Strikes	Depth (m)	Туре	Results	2.85 3.00	84.19 82.02 81.87	SMC SMC SMC  R SMC SMC SMC  R SMC SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC SMC  SMC	Soft to firm pale brown slightly san CLAY with low subangular cobble or is fine to coarse. Gravel is subangular subrounded fine to coarse.  Soft grey slightly sandy slightly grashed sand is fine to coarse. Gravel is suto medium.  Firm to stiff greyish brown sandy g Sand is fine to coarse. Gravel is suto coarse.	velly CLAY.	2
Rema	rks							Continued on next sheet		4
Tellia									AGS	S

									Borehole No.
C	DM mit	h				Bo	reho	ole Log	LFBR03
		•						9	Sheet 2 of 5
Projec	t Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	674893.24 - 731346.47	Hole Type SNC
Locati	on:	Allenstowr	n, Kildare	e			Level:	84.87	Scale 1:25
Client	:	Bord na M	lóna				Dates:	29/07/2021 - 30/09/2021	Logged By Causeway Geotech Ltd
Well	Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Descriptio	n
	OII NES	9.00 - 9.25	U	Results	7.65	78.87		Greyish brown very gravelly very coarse SAND. Gravel is subangula coarse  Very stiff brown slightly sandy grav Sand is fine to coarse. Gravel is su to coarse	relly CLAY.  ubangular fine  8
Rema	rks					L		Continued on next sheet	
. toma									AGS

	DM mil			tigation	Project No.	Во		ole Log	Sheet 3 o	<b>)3</b> f 5
-ocati	t Name:	: Drehid Site			263228		Co-ords:	674893.24 - 731346.47 84.87	SNC Scale	
Client		Bord na M					Dates:	29/07/2021 - 30/09/2021	1:25 Logged E	Ву
JIIGHL.		T					Dates.	29/01/2021 - 30/09/2021	Causeway Geot	ech Ltd
Well	Water Strikes	Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	on	
		10.50 - 10.95	U		10.40	74.47		Greyish brown very gravelly very coarse SAND. Gravel is subangul medium	ar fine to	
					11.00	73.87		Dark grey clayey fine to medium S	SAND.	11 -
					11.60	73.27	× × × × × × × × × × × × × × × × × ×	Dark grey silty fine SAND.		
		13.50 - 13.95	U		11.95	72.92		Very stiff greyish brown slightly sa CLAY. Sand is fine to coarse. Gra subangular fine to coarse	andy gravelly vel is	12
					13.80	71.07		Grey orangish brown subangular to coarse GRAVEL with high cobb Widely spaced medium beds of voclayey subangular to rounded fine gravel.	ole content. ery sandy very	14
								Continued on next shee	et	15

									Borehole No.
CD Sn	Mi Mit	h				Bo	rehc	ole Log	LFBR03
31		•				_		3	Sheet 4 of 5
Project N	Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	674893.24 - 731346.47	Hole Type SNC
Location	1:	Allenstown	ı, Kildaı	re	200220		Level:	84.87	Scale
Client:		Bord na M					Dates:	29/07/2021 - 30/09/2021	1:25 Logged By
10	Votor			n Situ Testing	Donth	Lovel	Duise.	20/07/2021 00/00/2021	Causeway Geotech Ltd
	Vater trikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	1
					18.15	66.72		Greyish black and grey sandy grav COBBLES and BOULDERS. Sand coarse. Gravel is subangular fine to	is fine to
Remarks	5								
									AGS

	1							Borehole No.
CDM Smi	th				Bo	reho	ole Log	LFBR03
							•	Sheet 5 of 5
Project Nam	e: Drehid Sit	e Investi	gation	Project No. 263228		Co-ords:	674893.24 - 731346.47	Hole Type SNC
Location:	Allenstow	n, Kildare	•			Level:	84.87	Scale 1:25
Client:	Bord na M	lóna				Dates:	29/07/2021 - 30/09/2021	Logged By Causeway Geotech Ltd
Well Wate	• 1	s and In	Situ Testing	Depth	Level	Legend	Stratum Descriptio	
Strike	S Depth (m)	Туре	Results	(m)	(m)	-	Ottatam Descriptio	"
				20.50	64.37		Medium strong massive grey LIME Partially weathered: orangish brow discolouration on fracture surfaces	ESTONE.
				21.50	63.37		End of borehole at 21.50 i	n
								22 -
								23 -
								24 -
Remarks								25 —
								AGS

CI	DM mit					Rο	reho	ole Log	Borehole N	
5	mit	n						old Log	Sheet 1 of	
D	4 NI	D1-1-1 014	- 1	t' ti'	Project No.		0	074077 70 704750 04	Hole Type	
Projec	t Name:	Drehid Site	e inves	tigation	263228		Co-ords:	674677.79 - 731752.04	RO	
Locati	on:	Allenstowr	n, Kilda	re			Level:	83.01	Scale 1:25	
Client:		Bord na M	óna				Dates:	30/08/2021 - 02/09/2021	Logged B	у
Well	Water Strikes		1 1	n Situ Testing	Depth (m)	Level	Legend	Stratum Description	1	
	Strikes	Depth (m)	Туре	Results	2.50 3.50	80.51	alle,	PEAT (poor recovery)  Low plasticity dark brown slightly classed pseudofibrous PEAT. Occasional fir rootlets and fragments of wood  Grey slightly clayey very sandy sub subrounded fine to coarse GRAVEL cobble and high boulder content (verecovery)	ayey le to medium angular to	2   3   4   1   1   1   1   1   1   1   1   1
Rema	rks							Continued on next sheet		5 —
									AGS	

C	DM	th Borehole Log			1 - 1	Borehole No.			
S	DM mit	h				BO	renc	ole Log	LFTB01
									Sheet 2 of 3
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	674677.79 - 731752.04	Hole Type RO
Locati	on:	Allenstowr	n, Kildar	re			Level:	83.01	Scale 1:25
Client:		Bord na M	óna				Dates:	30/08/2021 - 02/09/2021	Logged By FP
Well	Water Strikes	Samples Depth (m)		n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptior	1
Rema		Deptil (III)	Type	INCOULD	8.00	75.01		Grey silty clayey gravelly SAND with and high boulder content (poor reco	h high cobble bvery)  8  10
TGITIA	1110								AGS

CIS	DM mit	h				Во	reho	ole Log	Borehole N	
									Sheet 3 of	
Projec	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674677.79 - 731752.04	Hole Typ RO	е
Locati	on:	Allenstowr	n, Kildar	e	1		Level:	83.01	Scale 1:25	
Client	<u> </u>	Bord na M	óna				Dates:	30/08/2021 - 02/09/2021	Logged B	Ву
Well	Water Strikes	Samples Depth (m)	s and Ir	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
Rema	rks				12.50	72.01		Medium strong massive pale grey L Partially weathered: slightly reduces slightly closer fracture spacing, oral discolouration on most fracture surf Discontinuities: 1. 45 degree joints 11.50-11.50 m and 11.60-11.80 m, rough, strong orangish and orangis staining on most joint surfaces, greinfill on some joint surfaces (<1 mm 70-90 degree joints, at 11.00-11.40 11.65-12.10 m, undulating, rough, porangish brown staining and grey s (up to 3 mm thick) on most joint surfaces in the following for the following staining and grey s in the following following for the following fo	d strength, ngish brown faces. at undulating, h brown y sandy clay thick). 2. m and patchy andy clay infill faces	12
									AGS	S

									Borehole N	lo.
C	DM mit	h				Boi	reho	ole Log	LW01	
2									Sheet 1 of	2
Proiec	t Name:	Drehid Site	e Inves	stigation	Project No.		Co-ords:	674610.18 - 731538.91	Hole Type	е
					263228				RO Scale	
Locati	on:	Allenstowr	ı, Kilda	ire			Level:	83.38	1:25	
Client	:	Bord na M	óna				Dates:	14/07/2021 - 14/07/2021	Logged B CMC	У
Well	Water			n Situ Testing	Depth	Level	Legend	Stratum Description		
	Strikes	Depth (m)	Туре	Results	(m)	(m)	216 216 216	Very soft dark brown fibrous PEAT		
							د ماند ماند ماند ماند ماند	very soft dark brown librous i LAI		
							s alis alis alis alis alis s alis alis			
							ماند ماند ماند د ماند ماند			
							216 216 216 2 216 216 216 216 216			=
							د عاد عاد عاد عاد عاد			_
							د عاد عاد عاد عاد عاد			
							s alis alis alis alis alis s alis alis			1 -
							ماند ماند ماند د ماند ماند			_
							216 216 216 2 216 216 216 216 216			_ _
							د عاد عاد عاد عاد عاد			
							s alis alis alis alis alis s alis alis			=
							216 216 216 2 216 216			
							216 216 216 5 216 216 216 216 216			
					2.00	81.38	× × ×	Very soft low plasticity brownish gre	y slightly	2 =
							××	gravely slightly sandy silty CLAY		
							××			=
					2.50	80.88	×			
							× × ×	Very soft low plasticity grey slightly on slightly sandy silty CLAY	gravely	
							× × ×			_
							×			
							×_×_×			3 —
							× × ×			_
							×_×_×			_ _
							×_×_×			$\exists$
							×_×_×			
							× ×			_
							× × ×			
		4.00 - 4.50	В		4.10	79.28	×××	Finns bink ulastisitu dade man alimbth		4 -
							××	Firm high plasticity dark grey slightly silty CLAY with low boulder content.	Gravel is	=
							<u>×</u> _ <u>×</u>	subangular to subrounded fine to co	oarse	=
							× × ×			=
							×××			
							<u>×</u> <u>×</u> _ <u>×</u>			
		5.00 - 6.00	В		5.00	78.38	××			5 —
Rema	rke	5.00 - 0.00	Ь		5.00	10.30		Continued on next sheet		

Remarks Peg ID: LFMW01



Project Name: Drehid Site Investigation 28328										Borehole No.	$\Box$
Sheet 2 of 2  Project Name: Drehid Site Investigation 263228 Co-ords: 674610.18 - 731538.91 Moley per RO  Allenstown, Kildare Level: 83.38 Scale 1.25  Client: Bord na Mohas  Well Water Samples and In Situ Testing CMC  Sinkes Depth (m) Type Results  Bord	C		h				Bo	reho	ole Log	LW01	
Allenstown, Kildare   Lovel: 83.38   Scale   125   Scale			•					T.			
Lovel: 83.38   Scale   125	Projec	t Name:	Drehid Site	e Inves	tigation			Co-ords:	674610.18 - 731538.91		
Dates	Locati	on:	Allenstowr	n, Kilda	re			Level:	83.38	Scale	
Well   Water   Samples and in Situ Testing   Stratum Description	01: 1							D 1	44/07/0004 44/07/0004		
Strike   Depth (m)   Type   Results   Type	Client	: 						Dates:	14/07/2021 - 14/07/2021		
Stiff to very stiff low plastic dyafts grey gravely CLAV with no boulder content. Gravel subangular to subrounded fine to coarse  6.00 77.38 Dense dark grey clayey subangular to subrounded fine to coarse GRAVEL  7 2  8.00 - 10.00 B 8.00 75.38 Dense paile grey slightly clayey sandy subrounded fine to coarse GRAVEL  9 -	Well							Legend	Stratum Description		
g — 10.00 73.38 End of borehole at 10.00 m 10 —			Deptil (III)	Туре	Results				CLAY with low boulder content. Gra subangular to subrounded fine to co	to 6	
Little of boteliole at 10.00 fil			8.00 - 10.00	В					subrounded fine to coarse GRAVEL	9	)
	Rema	rke				10.00	/3.38		End of borehole at 10.00 m	<sub> </sub> 10	

Peg ID: LFMW01



							Borehole N	lo.		
C	DM mit	h				Boi	reho	ole Log	LW02[	o
•									Sheet 1 of	3
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	674829.34 - 731265.87	Hole Type RO	е
Locati	on:	Allenstowr	n, Kilda	ıre	1		Level:	84.85	Scale 1:25	
Client:		Bord na M	lóna				Dates:	15/07/2021 - 15/07/2021	Logged B CMC	у
Well	Water	Samples	s and l	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Strikes	Depth (m)	Туре	Results	(m)	(m)	عالد عالد عالد	Very soft dark brown fibrous PEAT		
							s alto alto alto alto alto s alto alto	,		_ _ _
							alta alta alta s alta alta alta alta alta			_
							s alte alte alte alte alte s alte alte			_ _ _
							عادر عادر عادر در عادر عادر عادر عادر عادر			=
							s als als als als als s als als			- -
							હ્યાંદ હ્યાંદ હ્યાંદ ક હ્યાંદ હ્યાંદ			1 -
					1.20	83.65	2)   2    2   2   2   2   2   2   2   2	Firm high plasticity dark grey slightl	v gravelly	
							<u>×_×</u> _×	silty CLAY. Gravel is subangular to fine to coarse	subrounded	-
							××			_
							<u>×</u> <u>×</u> ×			
							<u>×</u> <u>×</u> <u>×</u>			-
							×			2 =
							<u>×</u> <u>×</u> ×			_
							× × ×			- - -
							<u>×</u> <u>×</u> ×			
							<u>×</u> <u>×</u> ×			_
							× × ×			- - -
							<u>×</u> <u>×</u> <u>×</u>			3 -
							× ×			- - -
							<u>×</u> <u>×</u> ×			
							× × ×			_ _
							<u>×</u> <u>×</u> <u>×</u>			=
							<u>×</u> _ <u>×</u>			
					4.00	80.85	×— —	Loose grey slightly clayey sandy su subrounded fine to coarse GRAVEL	bangular to	4 —
									-	-
										-
										-
Rema	rks				5.00	79.85	. 4.1 4. (2.1 4.14	Continued on next sheet		5 —

Remarks Peg ID: LFMW02



							Borehole N	10.		
CI	OM Mit	h				Boi	reho	ole Log	LW02I	D
9								<b>J</b>	Sheet 2 of	<sup>1</sup> 3
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674829.34 - 731265.87	Hole Type RO	Э
Location	on:	Allenstowr	ı, Kilda	re			Level:	84.85	Scale 1:25	
Client:		Bord na M	óna				Dates:	15/07/2021 - 15/07/2021	Logged B CMC	У
Well	Water			n Situ Testing	Depth	Level	Legend	Stratum Description	<u> </u>	
	Strikes	Depth (m) 6.00 - 7.00	В	Results	(m)	(m)		Stiff to very stiff high plasticity dark gravelly silty CLAY with low boulder Gravel is subangular to subrounder coarse	grey slightly r content.	6 —
***	•	7.00 - 8.00	В		7.00	77.85	X - X X - X X - X X - X	Dense grey slightly clayey sandy si subrounded fine to coarse GRAVEI	ubangular to -	7 -
					8.00	76.85	× × × × × × × × × × × × × × × × × × ×	Stiff to very stiff high plasticity dark gravelly silty CLAY with low boulde Gravel is subangular to subrounded coarse	r content.	8 —
					9.20	75.65	X	Dense grey SAND & GRAVEL. Gra subangular to subrounded fine to c is fine to coarse	ivel is oarse. Sand	9 —
		10.00 - 11.00	В							10 —
Remar	ks	10.00 - 11.00						Continued on next sheet		

Peg ID: LFMW02



								Borehole N	No.
CDM Smith	1				Boi	reho	ole Log	LW02I	D
3111101	•							Sheet 3 of	f 3
Project Name:	Drehid Site	Investi	igation	Project No. 263228		Co-ords:	674829.34 - 731265.87	Hole Type RO	е
Location:	Allenstown,	Kildar	е			Level:	84.85	Scale 1:25	
Client:	Bord na Mó	na				Dates:	15/07/2021 - 15/07/2021	Logged B CMC	Ву
Well Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Depth (m)	Type	Results	11.70	73.15		Very stiff high plasticity dark grey sight CLAY with low boulder content subangular to subrounded fine to c	. Gravel is parse	11 - 13 - 14 - 15 - 15 - 15 - 15 - 15 - 15 - 15

Peg ID: LFMW02



									Borehole N	lo.
C	DM Smit	h				Boi	reho	ole Log	LW029	S
9								3	Sheet 1 of	2
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	674820.57 - 731269.13	Hole Type RO	е
Locati	on:	Allenstowr	n, Kilda	are			Level:	84.76	Scale 1:25	
Client		Bord na M	lóna				Dates:	16/07/2021 - 16/07/2021	Logged B CMC	у
Well	Water	Sample	s and	n Situ Testing	Depth	Level	Legend	Stratum Description		
VVCII	Strikes	Depth (m)	Туре	Results	(m)	(m)	alk alk alk			
							s alta alta alta alta alta	Very soft dark brown fibrous PEAT		-
							s alto alto alto alto alto s alto alto			
							216 216 216 5 216 216 216 216 216			-
							e ale ale ale ale ale			=
							s alis alis alis alis alis s alis alis			
							عادر عادر عادر در عادر عادر عادر عادر عادر			1
							s als als als als als			1 -
					1.20	83.56	××	Firm high plasticity dark grey slightl	y gravelly	1 1
							× × ×	silty CLAY. Gravel is subangular to fine to coarse	subrounded	
							× × ×			
							××			=
							$\times$ $\times$ $\times$			-
							×			2 =
							×			-
							<u>×</u> <u>×</u> ×			=
							<u>×</u> _ <u>×</u>			1
							×			
							<u>×</u> _ <u>×</u>			
							<u>×</u> _ <u>×</u>			3 —
							××			
							<u>×</u> _ <u>×</u>			
							××			
							× × ×			
							<u>×</u> _ <u>×</u> _×			
							<u>×</u> _ <u>×</u>			]
					4.00	80.76	×	Loose grey slightly clayey sandy su subrounded fine to coarse GRAVEL	bangular to	4 -
								Subjourned lille to coalse GRAVEL		=
										-
										-
					5.00	79.76		Continued on next sheet		5 —
Rema	rks			ı	l	I.		Contained on next sheet		_

Remarks Peg ID: LFMW02B



						_	_		Borehole N	lo.
S	)M Mit	h				Bo	reho	ole Log	LW029	S
									Sheet 2 of	
Project	Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674820.57 - 731269.13	Hole Type RO	Э
Locatio	n.	Allenstowr	. Kilda	re			Level:	84.76	Scale	
Locatic	/i i.	Alleristowi	i, Mida				Level.	04.70	1:25	.,
Client:		Bord na M	óna				Dates:	16/07/2021 - 16/07/2021	Logged B CMC	У
	Water	Samples	s and I	n Situ Testing	Depth	Level	Legend	Stratum Description		
****	Strikes	Depth (m)	Туре	Results	(m)	(m)	Logona			
	Strikes	Depth (m)	Type	Results	7.00	77.76		Stiff to very stiff high plasticity dark gravelly silty CLAY with low boulder Gravel is subangular to subrounded coarse  End of borehole at 7.00 m	grey slightly content.	6   7   1   1   1   1   1   1   1   1   1
Remar										10 —

Remarks Peg ID: LFMW02B



									Borehole N	lo.
	DM mit	h				Boi	reho	ole Log	MW01I	В
							T		Sheet 1 of	
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Type SNC	9
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	85.30	Scale 1:25	
Client:		Bord na M	óna				Dates:	05/10/2021 - 07/10/2021	Logged By Causeway Geote	
Well	Water	Samples	s and	n Situ Testing	Depth	Level	Legend	Stratum Description	1	on Eta
	Strikes	Depth (m)	Туре	Results	(m)	(m)		NO RECOVERY		
					1.50	83.80	2. 2016. 201	Spongy dark orangish brown slight fibrous PEAT. Pieces of woods and present.	y gravelly rootlets	1—
							and			2 —
					3.00	82.30	Site site site  a site site  site site site  a site site  site site site  site site site  a site site  site site site	Low plasticity dark orangish brown pseudofibrous PEAT. Pieces of woo	ods present.	3 -
					3.35	81.95		Soft grey slightly sandy gravelly CL cobble content. Medium beds of gr very clayey fine to coarse sand. Gr subangular fine to coarse	ey gravelly	4 —
							1,00 × 1,00 × 0,	Continued on next sheet		5 —
Rema	rks									



									Borehole N	lo.
CIS	DM mit	h				Bo	reho	ole Log	MW01I	В
									Sheet 2 of	
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Type SNC	9
Location	on:	Allenstowr	n, Kilda	ire			Level:	85.30	Scale 1:25	
Client:		Bord na M	lóna				Dates:	05/10/2021 - 07/10/2021	Logged By Causeway Geote	
Well	Water Strikes			n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Stirkes	Depth (m)	Туре	Results	(m) 6.00	79.30		Soft greyish brown slightly sandy g Sand is fine to coarse. Gravel is su subrounded fine to coarse	ravelly CLAY. bangular to	6 —
					7.15	78.15		Stiff greyish brown slightly sandy C fine.	LAY. Sand is	=
					7.40	77.90		Greyish brown sandy gravelly CLA subangular cobble content. Sand is coarse. Gravel is subangular to subto coarse	fine to	
					8.00	77.30		Greyish brown slightly gravelly very to medium SAND. Gravel is subang subrounded fine to coarse	gular to	9
Remai					9.90	75.40		Very stiff brownish grey slightly san gravelly CLAY. Sand is fine to coars subangular fine to coarse. Cobbles subangular cobbles.  Continued on next sheet	se. Gravel is	10 —



									Borehole N	No.
G	DM mit	h				Bo	reho	ole Log	MW01	В
0		•						9	Sheet 3 of	f 6
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	85.30	Scale 1:25	
Client	:	Bord na M	óna				Dates:	05/10/2021 - 07/10/2021	Logged E	
Well	Water	Samples	s and l	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
,,,,,,,	Strikes	Depth (m)	Туре	Results	(m)	(m)	9			
					10.25	75.05		Stiff brownish grey sandy gravelly (subangular cobble content. Sand is coarse. Gravel is subangular to subto coarse	fine to	11 —
					11.55	73.75		Very stiff brownish grey slightly san gravelly CLAY with low cobble cont fine to coarse. Gravel is subangula subrounded fine to coarse	ent. Sand is	12 —
										13 —
					14.20	71.10		Stiff greyish white slightly sandy slightly sandy slightly with low subangular cobble cois fine to coarse. Gravel is angular	ontent. Sand	14 —
					14.50	70.80		Stiff brown sandy gravelly CLAY. Sa coarse. Gravel is angular to subang coarse	and is fine to gular fine to	         
					15.00	70.30		Continued on next sheet		15 —
Rema	rks			1	1			Commission on now shoot		1



									Borehole N	No.
Ç	DM mit	h				Bo	reho	ole Log	MW01	В
3							. •	2.0 209	Sheet 4 of	f 6
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	re			Level:	85.30	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	05/10/2021 - 07/10/2021	Logged B Causeway Geote	
Well	Water Strikes	Sample: Depth (m)	s and I	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
			.,,,,,	, toodito	16.05	69.25		Greyish black subangular fine to co GRAVEL with medium cobble cont are angular to subangular. Gravel are limestone  Weak massive dark grey LIMESTO weathered: slightly reduced streng fracture spacing. Discontinuities: 1 joints, closely spaces (80/136/180) rough.  Medium strong massive dark grey Occasional fossils and white calcit various orientations. Partially weathereduced strength, slightly closer fracture or surfaces. Discontinuities: 1. 15-20 widely spaced (70/850/1400), planundulating, rough, brown gravelly come joint surfaces (25-35 mm thick degree joints, medium spaced (35/planar, rough, brown clay infill on surfaces (2-10 mm thick), orangish staining on some joint surfaces (2010/1214/15 undulating, smooth to rough, calcit mineralisation on most joint surface brown staining on some joint surface greyish white coral with calcite cern m bgl.	ent. Cobbles and cobbles are also as a cobble and cobble and cobble are as a cobble ar	16
Rema								Continued on next sheet		20 -



									Borehole No.
C	DM Smit	h				Bo	reho	ole Log	MW01B
								J	Sheet 5 of 6
Proje	ct Name:	Drehid Site	e Investi	igation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Type SNC
_oca	tion:	Allenstowr	n, Kildar	e	·		Level:	85.30	Scale 1:25
Clier	t:	Bord na M	lóna				Dates:	05/10/2021 - 07/10/2021	Logged By Causeway Geotech Ltd
Wel	Water Strikes	Samples	s and In	n Situ Testing	Depth	Level	Legend	Stratum Description	
	arks	Depth (m)	Type	Results	(m)	(m)		Continued on next sheet	21 -

Peg ID: WLMW01W



								Borehole No.
CDM Smit	h				Bor	reho	ole Log	MW01B
	••							Sheet 6 of 6
Project Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675446.67 - 733547.56	Hole Type SNC
∟ocation:	Allenstown	ո, Kildar	r <b>e</b>			Level:	85.30	Scale 1:25
Client:	Bord na M	óna				Dates:	05/10/2021 - 07/10/2021	Logged By Causeway Geotech Ltd
Well Water			n Situ Testing	Depth	Level	Legend	Stratum Description	
Strikes	Depth (m)	Туре	Results	25.50	(m) 59.80	Legend	End of borehole at 25.50 m	- - - - - - - - - - - - - - - - - - -
								20
Remarks								30 —

Peg ID: WLMW01W



									Borehole N	lo.
Q	DM Smit	h				Bo	reho	ole Log	MW02	В
7							. •	3.0 <b>2</b> 09	Sheet 1 of	8
Projec	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674319.35 - 731198.76	Hole Type SNC	Э
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.67	Scale 1:25	
Client	:	Bord na M	óna				Dates:	07/09/2021 - 09/09/2021	Logged B Causeway Geote	
Well	Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Cumoo	Depth (m)	Туре	Results	()	(,,,	अह अह अह	Low plasticity blackish brown slight	ly gravelly	_
		3.85 - 4.85	В		3.65 3.85	81.02 80.82	e able, able	Soft dark brown slightly sandy slight CLAY with occasional pockets of per Pale greyish brown clayey gravelly SAND. Gravel is subangular to sub to coarse. Gravel is of various lithol predominantly limestone.	tly gravelly y oil deposits.  tty gravelly eat (<5 mm). fine to coarse rounded fine	2
					4.40	80.27		Pale grey slightly clayey very sandy to subangular fine to coarse GRAVI fine to coarse. Gravel is of various I predominantly limestone.	EL. Sand is	5 —
Rema	rke							Continued on next sheet		



									Borehole N	lo.
Ç	DM mit	h				Bo	reho	ole Log	MW02	В
7							. •	3.0 209	Sheet 2 of	8
Projed	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674319.35 - 731198.76	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.67	Scale 1:25	
Client	:	Bord na M	óna				Dates:	07/09/2021 - 09/09/2021	Logged B Causeway Geote	-
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
		7.00	В		7.40	78.17		Stiff grey slightly sandy slightly gray Sand is fine to coarse. Gravel is su to coarse. Gravel is of various lithol predominantly limestone.  Stiff grey sandy gravelly CLAY with content. Sand is fine to coarse. Grafine to coarse. Gravel is of various predominantly limestone.	low cobble avel is angular	6   7   8   9   1   1   1   1   1   1   1   1   1
Domo		9.95	В				* • • • •	Continued on next sheet		10 —



								Borehole I	Vо.
CDM	th				Bo	reho	ole Log	MW02	В
								Sheet 3 o	
roject Nam	e: Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674319.35 - 731198.76	Hole Typ SNC	e
ocation:	Allenstowr	n, Kildar	e			Level:	84.67	Scale 1:25	
ient:	Bord na M	lóna				Dates:	07/09/2021 - 09/09/2021	Logged E	-
, " Wate	r Sample:	s and Ir	n Situ Testing	Depth	Level			Causeway Geot	ecn
/ell Strike		Туре	Results	(m)	(m)	Legend	Stratum Descriptio	n	
				10.25	74.42		Very stiff brown slightly sandy grav Sand is fine to coarse. Gravel is ar coarse. Gravel is of various litholog predominantly limestone.	ngular fine to	11
	12.00 - 12.45 13.00 - 13.45			12.00	72.67		Stiff dark brown slightly sandy slight organic silty CLAY. Sand is fine to is angular fine to coarse. Gravel is lithologies, predominantly limeston	coarse. Gravel of various	11
				13.25	71.42	× × ×			
				.5.25			Very stiff greyish brown slightly gra sandy CLAY. Sand is fine to coarse angular fine to coarse. Gravel is of lithologies, predominantly limeston	e. Gravel is various	
									1
				14.20	70.47		Very stiff greyish brown slightly sar gravelly CLAY. Sand is fine to coar angular fine to coarse. Gravel is of lithologies, predominantly limeston	se. Gravel is various	14

Peg ID: WLMW02W



Level	CDM Smit	Project No.  Co. ords: 67/310 35 731108 76							No. <b>B</b> f 8
Client: Bord na Móna    Water Strikes   Samples and In Situ Testing   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Depth (m)   Type   Results   Depth (m)   Depth (m)				263228				Scale	
Water Strikes   Samples and In Situ Testing   Depth (m)   Type   Results   Results   Depth (m)   Legend   Stratum Description   Stratum Description   16.50 - 16.80   U   16.65   68.02   Wery stiff greyish brown slightly sandy slightly gravelly	Client:	Bord na Mó	ona			Dates:	07/09/2021 - 09/09/2021	Logged E	
16.50 - 16.80 U  16.65 68.02 Very stiff greyish brown slightly sandy slightly gravelly silty organic CLAY. Sand is fine to carse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.					1	Legend	Stratum Description	1	
18.00 - 18.45 U  17.95 66.72  Very stiff grey sandy gravelly CLAY with low cobble content. Sand is fine to coarse. Gravel is angular fine to coarse. Gravel is of various lithologies, predominantly limestone.				17.95	66.72		Very stiff grey sandy gravelly CLAY. Sand is coarse. Gravel is angular fine to co is of various lithologies, predomina  Very stiff grey sandy gravelly CLAY cobble content. Sand is fine to coa angular fine to coarse. Gravel is of lithologies, predominantly limeston  Very stiff greyish brown slightly sar CLAY. Sand is fine to coarse. Gravel is of various predominantly limestone.	of with low rise. Gravel is various e.	17 —



C	DM Smit	_				Borehole No.				
S	mil	h				DU	end	ole Log		
Projed	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674319.35 - 731198.76	Sheet 5 of Hole Type SNC	
Locat	ion:	Allenstowr	n, Kilda	re			Level:	84.67	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	07/09/2021 - 09/09/2021	Logged B Causeway Geote	
Well	Water Strikes	Sample: Depth (m)	s and I	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
		Jopan (III)		rocalic	20.85	63.82		Very stiff brown slightly gravelly sa organic CLAY. Sand is fine to coars angular fine to coarse. Gravel is of lithologies, predominantly limeston	se. Gravel is various	21
					22.95	61.72		Very stiff greyish brown slightly sar gravelly CLAY with low cobble cont fine to coarse. Gravel is subangula coarse. Gravel is of various litholog predominantly limestone.	tent. Sand is ir fine to	22
					24.90	59.77		Grey slightly clayey very sandy sub- to coarse GRAVEL with low cobble Sand is fine to coarse. Gravel is of lithologies, predominantly limeston are limestone.	content. various	24 —



CDM Smith			Во	reho	ole Log	Borehole No.  MW02B	
		Project No.		1		Sheet 6 of 8 Hole Type	
Project Name: Drehid Site	Investigation	263228		Co-ords:	674319.35 - 731198.76	SNC	
ocation: Allenstown	, Kildare			Level:	84.67	Scale 1:25	
Client: Bord na Mo	óna			Dates:	07/09/2021 - 09/09/2021	Logged By Causeway Geotech L	
Nell Lines	Type Results	Depth (m)	Level (m)	Legend	Stratum Descriptio		
		26.60	58.07		Greyish brown slightly clayey sand fine to coarse GRAVEL with high s cobble content. Sand is fine to coapredominantly limestone and sand	rse. Gravel is	

Peg ID: WLMW02W

	CDM Smith oject Name: Drehid Site Investigation				Project No.	Во	ole Log	Borehole No.  MW02B  Sheet 7 of 8  Hole Type		
Projec					263228		Co-ords:	674319.35 - 731198.76	SNC Scale	
		Allenstowr					Level:	84.67	1:25 Logged I	Зу
Client		Bord na M		n Situ Testing		Ι	Dates:	07/09/2021 - 09/09/2021	Causeway Georg	tech Ltd
Well	Water Strikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	on	
					31.20	53.47		Weak grey LIMESTONE with high clay infill. Distinctly weathered, lot to sandy clayey gravel. Discontinu degree joints, closely spaced (70/planar, rough with up to 200 mm obrown sandy gravelly clay infill.	cally destructed uities: 1. 10-30 181/200),	31
Rema					34.10	50.57		Weak massive grey LIMESTONE weathered: reduced strength, oral discolouration on fracture surface. Discontinuities: 1. 10-30 degree jc spaced (40/126/170), planar, roug brown clay infill and orangish brow joint surfaces (up to 250 mm thick degree joints, medium spaced (50 planar to undulating, rough, orang staining and brown clay infill (up to thick)	ngish brown s. pints, closely ih with pale vn staining on ). 2. 70-90 p/486/250), jish brown b. 100 mm	34



CDM								Borehole No.
CDM Smil	:h				Bo	reho	le Log	MW02B Sheet 8 of 8
Project Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	674319.35 - 731198.76	Hole Type SNC
_ocation:	Allenstown	າ, Kildar	e			Level:	84.67	Scale 1:25
Client:	Bord na M	óna				Dates:	07/09/2021 - 09/09/2021	Logged By Causeway Geotech Ltd
Well Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	
Remarks	Depth (m)	Type	Results	37.50	47.17		End of borehole at 37.50 m	38 -

Peg ID: WLMW02W



Sheet 1 of Sheet 1 of Project Name: Drehid Site Investigation Project No. 263228 Co-ords: 674322.87 - 731213.62 Hole Type SNC Scale 1:25  Decation: Allenstown, Kildare Level: 84.74 Scale 1:25  Dates: 10/08/2021 - 10/08/2021 Logged By FP	Project Name: Drehid Site Investigation Project No. 263228  Location: Allenstown, Kildare Level: 84.74  Scala Level: 84.74  Scala 1:25  Client: Bord na Móna  Samples and In Situ Testing (m)  Depth (m) Type Results  Depth (m) Type Results  1.50  83.24  1.50  83.24  Very soft low plasticity brownish red silty PEAT with low boulder content and low cobble content. Roots and twigs present  Very soft low plasticity thinly laminated dark red with silty and the silty seems of the present with seems	CDM Smith		Rο	reha	ole Loa	Borehole No.  MW02P	
Toject Name: Drehid Site Investigation 263228  Co-ords: 674322.87 - 731213.62  Hole Type SNC  Co-ords: 674322.87 - 731213.62  Hole Type SNC  Co-ords: 674322.87 - 731213.62  Hole Type SNC  Co-ords: 674322.87 - 731213.62  Level: 84.74  Scale 1:25  Logged B' FP  Well Water Strikes  Depth (m) Type Results  Depth (m) Type Results  Depth (m) Type Results  Total Strikes Succession of the strikes Succession of th	Project Name: Drehid Site Investigation 263228  Co-ords: 674322.87 - 731213.62 Scale 1:25  Client: Bord na Mona  Well Water Strikes Depth (m) Type Results  Depth (m) Type Results  1.50  83.24  1.50  83.24  Project No. 263228  Co-ords: 674322.87 - 731213.62 M4 Per Scale 1:25  Level: 84.74  Co-ords: 674322.87 - 731213.62 M4 Per Scale 1:25  Level: 84.74  Co-ords: 674322.87 - 731213.62 M4 Per Scale 1:25  Collect: 84.74  Col	<b>Smith</b>				JIO LOG		
Dates: 10/08/2021 - 10/08/2021   Leged By FP    Water Strikes   Samples and In Situ Testing   Depth (m)   Type   Results   Depth (m)	Level: 84.74   Scale   1:25   Scale   1:25   Scale   1:25   Scale   1:25   Scale   S	oject Name: Drehid Site Investigation			Co-ords:	674322.87 - 731213.62	Hole Typ	
Bord na Móna   Dates: 10/08/2021 - 10/08/2021   Logged By FP	Dates: 10/08/2021 - 10/08/2021   Logged FP	cation: Allenstown, Kildare			Level:	84.74	Scale	
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description    Strikes Depth (m) Type Results (m) (m)   Legend (m)   Stratum Description (m)	Strikes Depth (m) Type Results (m) (m) Legend (m) Stratum Description    Strikes Depth (m) Type Results (m) (m) (m)   Legend (m)   Stratum Description (m)   Stratum Descripti	ent: Bord na Móna			Dates:	10/08/2021 - 10/08/2021	Logged B	Ву
Very soft low plasticity brownish red silty PEAT with low boulder content and low cobble content. Roots and twigs present  1.50 83.24  1.5	## Very soft low plasticity brownish red sitty PEAT with low boulder content and low cobble content. Roots and twigs present  ## Very soft low plasticity brownish red sitty PEAT with low boulder content and low cobble content. Roots and twigs present  ## Very soft low plasticity brownish red sitty PEAT with low boulder content and low cobble content. Roots and twigs present  ## Very soft low plasticity brownish red sitty PEAT with low boulder content and low cobble content. Roots and twigs present  ## Very soft low plasticity bring laminated dark red sitty ## Very soft low plasticity thinly laminated dark red sitty ## Very soft low plasticity thinly laminated dark red dish brown clayey PEAT. Roots and twigs present. Moist material becoming brittle at the bottom of layer  ## Very soft low plasticity thinly laminated dark red dish brown clayey PEAT. Roots and twigs present. Moist material becoming brittle at the bottom of layer  ## Very soft low plasticity thinly laminated dark red dish brown clayey PEAT. Roots and twigs present. Moist material becoming brittle at the bottom of layer	ell Cuit			Legend	Stratum Description	1	
		Strikes Depth (m) Type Results	1.50	83.24	Alle Alle Alle Alle Alle Alle Alle Alle	Very soft low plasticity brownish receivith low boulder content and low contents and twigs present  Very soft low plasticity thinly laminar reddish brown clayey PEAT. Roots present. Moist material becoming bottom of layer	ated dark and twigs writtle at the	1 1 4
			3.00	81.74	alk alk alk alk alk alk alk alk alk alk alk alk	End of borehole at 3.00 m		

Peg ID: WLMW02P

C	CDM Smith					Borehole No.				
	ct Name:		e Inves	tigation	Project No. 263228		Co-ords:	674323.89 - 731207.44	Sheet 1 of 4 Hole Type SNC	
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.85	Scale 1:25	
Client	:	Bord na M	óna				Dates:	11/08/2021 - 12/08/2021	Logged By	′
Well	Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		
	Strikes	Depth (m)	Type	Results	1.50 3.05	83.35 81.80	Alle Salle, Salle  Salle  Salle Salle  Salle	Very soft low plasticity brownish rewith low boulder content and low or Roots and twigs present  Very soft low plasticity thinly lamina reddish brown clayey PEAT. Roots present. Moist material becoming to bottom of layer  Loose brownish grey/green/grey ve SAND and GRAVEL. Gravel is and subangular medium to coarse. Root and present. Transition zone from player. Saturated material	ated dark and twigs brittle at the	1
					4.50	80.35		Loose dark brown/brown/brownish sandy clayey angular to subrounde coarse GRAVEL with low boulder clow cobble content. Large subrounbottom of layer. Cobbles are subro and twigs present. Clay content incidenth. Saturated material	ed medium to content and ded boulder at unded. Roots	4 -

AGS

					Borehole No.					
Q	DM mit	h				Bo	reho	ole Log	MW02	Q
•									Sheet 2 of	4
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	674323.89 - 731207.44	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	ıre	1		Level:	84.85	Scale 1:25	
Client:		Bord na M	lóna				Dates:	11/08/2021 - 12/08/2021	Logged B FP	Бу
Well	Water Strikes		1	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Suikes	Depth (m)	Туре	Results	6.00	78.85		Very stiff low plasticity pale grey slig gravelly CLAY with low cobble cont angular to subrounded fine to medi material (drilling water added)  Very stiff low plasticity pale grey slig	ent. Gravel is um. Saturated	7
					9.90	74.95		sandy CLAY. Damp material	given y	10
Rema	narks				I		Continued on next sheet			

Peg ID: WLMW02Q



							Borehole No.			
G	DM Smit	h				Boi	reho	ole Log	MW020	Q
•									Sheet 3 of	4
Projec	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674323.89 - 731207.44	Hole Type SNC	9
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.85	Scale 1:25	
Client	•	Bord na M	lóna				Dates:	11/08/2021 - 12/08/2021	Logged By FP	У
Well	Water Strikes	Samples Depth (m)	s and I	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
					13.00	71.85		Stiff low plasticity dark grey slightly gravelly CLAY. Gravel is angular to medium to coarse. Damp material  Very stiff low plasticity dark grey slig CLAY. Decreased gravel content with Pale grey undisturbed and dark grey material. Dry material	ghtly gravelly th depth.	11   12   13   14   14   15   16   17   17   17   17   17   17   17
Rema	rks							Continued on next sheet		15 —

Peg ID: WLMW02Q



	DM Smit		 ar a ti a ra	Project No.	Во	1	ole Log	Borehole I  MW02  Sheet 4 o  Hole Typ			
Locati	ot Name:	Drehid Site		263228		Co-ords:	674323.89 - 731207.44 84.85	Scale			
Client		Bord na M				Dates:	11/08/2021 - 12/08/2021	1:25 Logged B	Ву		
Well	Water Strikes		Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	FP on			
				17.00	67.85		Very stiff low plasticity grey slightly slightly sandy CLAY. Gravel is ang subrounded fine to coarse. Dry ma	aterial	16 - 17 - 19 - 19 - 19 - 19 - 19 - 19 - 19		
Rema	rks			20.00	64.85	. 6. 4 . 5 . 5. 4	End of borehole at 20.00	m	20 —		

Peg ID: WLMW02Q



CDM Smith						Borehole No.			
Smil	th				Bo	reho	ole Log	MW03	B
				Project No.				Sheet 1 c	
oject Name	: Drehid Site	e Invest	tigation	263228		Co-ords:	673882.75 - 730795.54	Hole Typ SNC	Э
cation:	Allenstowr	n, Kildar	re			Level:	84.06	Scale 1:25	
iont	Pord no M	lána				Detec	04/00/2024 06/00/2024	Logged By	
ient:	Bord na M				ı	Dates:	04/09/2021 - 06/09/2021	Causeway Geo	tech I
/ell Water Strikes		1 1	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
	Depth (m)	Type	Results	3.90	80.16	Alle Alle Alle Alle Alle Alle Alle Alle	Spongy dark brownish black and opseudofibrous PEAT with occasion of wood up to 40 mm in diameter.  Firm grey slightly sandy slightly gracLAY with low cobble content. Sar coarse. Gravel is subangular fine to subrounded cobble content. Sar low subrounded cobble content.	avelly silty nd is fine to o coarse	2 3

Peg ID: WLMW03W



									Borehole N	lo.
C	DM mit	h				Bo	reho	ole Log	MW03	в
7								<b>J</b>	Sheet 2 of	4
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673882.75 - 730795.54	Hole Type SNC	Э
Locati	on:	Allenstown	ı, Kilda	re	1		Level:	84.06	Scale 1:25	
Client:		Bord na M	óna				Dates:	04/09/2021 - 06/09/2021	Logged B	
Well	Water	Samples	s and I	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
770	Strikes	Depth (m)	Туре	Results	(m)	(m)		- Cuatam Booshpuol		
		7.00	В		6.00	78.06		Stiff to very stiff grey sandy gravelly is fine to coarse. Gravel is subangu coarse	CLAY. Sand llar fine to	7 —
					7.50 8.50	76.56 75.56		Very stiff brownish grey slightly gracular cobble of the color of the	ontent. Sand llar fine to	8 —
								coarse GRAVEL. Sand is fine to co is limestone.	arse. Gravel	-
Rema					9.00	75.06		Medium strong massive grey LIME Partially weathered: slightly reduce closer fracture spacing, faint and partially surfaces. Discontinuities: 1. 0-20 dc closely spaced (11/136/320), plana and patchy pale orangish brown states some joint surfaces. 2. 30-50 degrec closely spaced (25/150/472), plana undulating, rough, brownish grey closely spaced (25/150/472) mm thick	d strength, atch pale ome joint egree joints, r, rough, faint aining on be joints, r to ay infill on	9 —



CI	DM mit	h				Во	reho	ole Log	MW03 Sheet 3 o	В
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673882.75 - 730795.54	Hole Typ	
.ocati	on:	Allenstowr	n, Kilda	re	200220		Level:	84.06	Scale 1:25	
Client:		Bord na M	óna				Dates:	04/09/2021 - 06/09/2021	Logged E	
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	-	
					15.00	69.06		Medium strong grey indistinctly be LIMESTONE. Partially weathered: reduced strength, slightly closer fr. Discontinuities: 1. 5-20 degree joir spaced (31/196/670), planar, roug brown clay infill on some joint surf. mm thick). 2. 30-60 degree joints, (460/750/810), planar, smooth to rorangish brown staining on most joil. 75-90 degree joints, at 10.50-10. 11.75-12.18 m and 14.20-14.60 m smooth, pale orangish brown stair joint surfaces, pale brown clay infil surfaces (1-5 mm thick).	slightly acture spacing. hts, closely h, pale greyish aces (20-25 widely spaced ough, patchy bint surfaces. 0.80 m, undulating, hing on some I on some joint	11 · 12 · 13 · 14 · -
Rema					15.00	09.00		Continued on next shee		15

	CDM Smith						Borehole I	No.		
Ç	DM.	h				Bo	reho	ole Log	MW03	В
2								310 <b>L</b> 09	Sheet 4 o	f 4
Projed	t Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	673882.75 - 730795.54	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kildar	re			Level:	84.06	Scale 1:25	
Client		Bord na M	lóna				Dates:	04/09/2021 - 06/09/2021	Logged E Causeway Geot	
Well	Water Strikes		т т	Situ Testing	Depth (m)	Level (m)	Legend	Stratum Descriptio	1	
		Depth (m)	Type	Results	19.50	64.56		Strong grey indistinctly thinly bedd LIMESTONE. Partially weathered: patchy pale orangish brown staining joint surfaces. Discontinuities: 1. 0 joints, medium spaced (60/563/19) rough. 2. 20-50 degree joints, wide (400/750/1440), planar, rough, pat brown staining on some joint surface orangish brown clay infill on some (30-100 mm thick).	faint and g on some -10 degree 50), planar, ely spaced chy orangish ces, pale joint surfaces	16   18   19   19   19   19   19   19   19
Rema	marks			l	1					

Peg ID: WLMW03W

	CDM Smith								Borehole N	No.
C	DM Smit	h				Bo	reho	ole Log	MW03	Р
									Sheet 1 of	
Projed	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673878.04 - 730791.82	Hole Type SNC	е
Locat	ion:	Allenstown	n, Kilda	re			Level:	84.29	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	03/09/2021 - 03/09/2021	Logged B FP	Ву
Well	Water		s and I	n Situ Testing	Depth	Level	Legend	Stratum Descriptior	1	
	Strikes	Depth (m)	Туре	Results	(m)	(m)	9	No recovery	-	_
					3.55	82.79	a Mic	twigs present. Moist material at the material at the bottom	gravelly I on the	1 2 3 3
Rema	irks	emarks			1	1	1			

Peg ID: WLMW03P



C	<b>DM</b> Smith					Во	reho	ole Log	Borehole No  MW03C  Sheet 1 of 2	2
Projed	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673880.75 - 730793.72	Hole Type SNC	
Locati	ion:	Allenstowr	ı, Kilda	re			Level:	84.15	Scale 1:25	
Client	•	Bord na M	óna				Dates:	04/09/2021 - 04/09/2021	Logged By FP	
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
					3.80	80.35	shie shie shie shie shie shie shie shie	Very soft low plasticity reddish dark Roots and twigs. Damp material  Stiff low plasticity pale grey slightly with low boulder content. Damp ma	sandy CLAY terial	2 - 3 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4
		4.50 - 7.00	В		4.27	79.88	-60 -61 -61	Loose pale grey clayey GRAVEL ar medium boulder content. Gravel is subrounded fine to coarse. Large b of layer. Wet material	angular to	
<u>'                                    </u>	1							Continued on next sheet		5 —

Remarks Peg ID: WLMW02Q



								Borehole N	lo.
CDM Smi	th				Bo	reho	ole Log	MW030	Q
								Sheet 2 of	2
Project Name	: Drehid Site	e Invest		Project No. 263228		Co-ords:	673880.75 - 730793.72	Hole Type SNC	)
_ocation:	Allenstown	ı, Kildaı	re			Level:	84.15	Scale 1:25	
Client:	Bord na M	óna				Dates:	04/09/2021 - 04/09/2021	Logged By FP	y
Well Water Strikes		Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description		
Remarks				7.83	76.32	P 4 P 4 P 4 P 4 P 4 P 4 P 4 P 4 P 4 P 4	Increased clay content  Very stiff low plasticity pale grey slig sandy CLAY with medium boulder of borehole at 9.00 m.	htly gravelly ontent .	6 —

Peg ID: WLMW02Q



							Borehole N	No.		
S	DM mit	h				Bo	reho	ole Log	MW04	В
					Desired No.				Sheet 1 of	
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	673695.13 - 730288.39	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	84.43	Scale 1:25	
Client	ŀ	Bord na M	óna				Dates:	31/08/2021 - 01/09/2021	Logged B Causeway Geote	
Well	Water	Samples	s and I	n Situ Testing	Depth	Level	Legend	Stratum Description	n	
VVCII	Strikes	Depth (m)	Туре	Results	(m)	(m)	Logona			
					0.15	84.28		TOPSOIL	AT	_
							६ और और और और और	Spongy brownish black fibrous PE	AI	
							s alte alte alte alte alte s alte alte			
							जीरः जीरः जीरः ६ जीरः जीरः			
							alis alis alis s alis alis alis alis alis			_
							६ असि असि असि असि असि			
							s alte alte alte alte alte s alte alte			1 -
							હોલ હોલ હોલ ૬ હોલ હોલ			_
							alis alis alis s alis alis alis alis alis			-
					4.50	00.00	६ वीह वीह वीह वीह वीह			=
					1.50 82.93		a alta alta alta alta alta a alta alta	Spongy brownish black pseudofibrous PEAT (low recovery)		] ]
					عادد عادد عاد د عادد عادد	,				
						alis alis alis s alis alis alis alis alis				
							s alk alk alk alk			2 =
							्र और और और और और			_
							s alte alte alte alte alte s alte alte			_
							alka alka alka ka alka alka			
							alis alis alis s alis alis alis alis alis			_
							६ असि असि असि असि असि			_
							s alte alte alte alte alte s alte alte			-
							હોલ હોલ હોલ ૬ હોલ હોલ			3 —
							alis alis alis s alis alis alis alis alis			_
							د عادد عادد عادد عادد عاد			
							s alts alts alts alts alts s alts alts			_
							ઝોલ ઝોલ ઝોલ ૬ ગોલ ઝોલ			_
							alis alis alis s alis alis alis alis alis			_
					3.90	80.53	24 32 8 6	Soft to firm grey slightly sandy sligh		+ $=$
								CLAY with low subrounded cobble is fine to coarse. Gravel is subangu		4 —
								coarse		
										_
										5 —
Rema	rks							Continued on next sheet		

Remarks Peg ID: WLMW04W



Sheet 2 of 5  Sheet 2 of 5  Project Name: Drehid Site Investigation  Project No. 263228  Co-ords: 673695.13 - 730288.39  Solution: Allenstown, Kildare  Level: 84.43  Bord na Móna  Dates: 31/08/2021 - 01/09/2021  Logged By Causeway Geotech Lt	Ç	CDM Smith				Bο	Borehole Log		Borehole N	
Allenstown, Kildare   Level: 84.43   Scale   1.25   Single   Sin	3						0110	no Log		
Allenstown, Kildare  Bord na Móna  Dates: 31/08/2021 - 01/09/2021 Logged By Causeway Gactecte Lts  Bord na Móna  Dates: 31/08/2021 - 01/09/2021 Logged By Causeway Gactecte Lts  Causeway Gactecte Lts  Bort na Móna  Dates: 31/08/2021 - 01/09/2021 Logged By Causeway Gactecte Lts  Causeway Gactecte Lts  Stiff grey slightly sandy gravelly CLAY with low subrounded cobbie content. Sand is fine to coarse. Gravel is subangular fine to medium  7.50	rojec	t Name:	Drehid Site	e Invest	tigation		Co-ords:	673695.13 - 730288.39		е
Water Survives Depth (m) Type Results    Strikes   Samples and In Situ Testing   Depth (m)   Type   Results   Depth (m)   Stratum Description   Depth (m)   Stratum Description   Depth (m)   Stratum Description   Depth (m)   Stratum Description   Depth (m)   Depth (m)	.ocati	on:	Allenstowr	n, Kildar	re		Level:	84.43		
Water Strikes Samples and In Situ Testing Depth (m) Type Results  6.00 78.43  Sitif grey slightly sandy gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Gravel is subangular fine to medium  7.50 76.93  Very stiff grey sandy gravely CLAY. Sand is fine to coarse. Gravel is subangular fine to medium	lient:		Bord na M	óna			Dates:	31/08/2021 - 01/09/2021	Logged E	
7.50 76.93  Stiff grey slightly sandy gravelly CLAY with low subrounded cobble content. Sand is fine to coarse. Gravel is subangular fine to coarse. Very stiff grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is subangular fine to medium	Vell						Legend	Stratum Descriptio	'	
Continued on next sheet								subrounded cobble content. Sand coarse. Gravel is subangular fine to Very stiff grey sandy gravelly CLA to coarse. Gravel is subangular fine to coarse.	Y. Sand is fine e to medium	7 8 9

Peg ID: WLMW04W

									Borehole N	No.
Ç	DM	h				Bo	reho	ole Log	MW04	В
3	miu	n					0110	olo Log	Sheet 3 of	
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673695.13 - 730288.39	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	re			Level:	84.43	Scale 1:25	
Client		Bord na M	óna				Dates:	31/08/2021 - 01/09/2021	Logged B Causeway Geote	-
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
			.,,	, totalio	12.50	71.93 71.58		Very stiff grey slightly gravelly very Sand is fine to coarse. Gravel is su to coarse  Pale grey subangular GRAVEL witt cobble content. Gravel and cobbles limestone  Medium strong massive pale grey Cocasional calcite veins of various (2-10 mm thick). Partially weathere reduced strength, slightly closer fraorangish brown discolouration on surfaces. Discontinuities: 1. 10-20 medium spaced (70/563/650), undiclean. 2. 30-45 degree joints, medi (25/322/890), planar to undulating, patchy orangish brown staining on (5-15 mm thick). 3. 55-70 degree jc spaced (100/450/910), planar, or undupated (100/450/910)	LIMESTONE. orientations d: slightly icture spacing, nost fracture degree joints. ulating, rough, um spaced smooth, joint surfaces ints, medium ih, patchy int surfaces, infill on some ). 4. 80-90 ipient from in, undulating g on joint	12 —
Rema	rko							Continued on next sheet		15 —

Remarks Peg ID: WLMW04W



C	DM mit	h				Во	reho	ole Log	Borehole N MW04 Sheet 4 o	В
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673695.13 - 730288.39	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	re	•		Level:	84.43	Scale 1:25	
Client		Bord na M	óna				Dates:	31/08/2021 - 01/09/2021	Logged E Causeway Geot	-
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
		Dopar (III)	Type	T COMIG	15.10	69.33		Weak massive grey LIMESTONE valcite veins of various orientations thick). Partially weathered: reduced closer fracture spacing, orangish by discolouration on most fracture sur Discontinuities: 1. 10-20 degree joi spaced (16/167/400), undulating, rorangish brown staining on most joorangish brown staining on most joorangish brown clay infill on some 15 mm thick). 2. 30-40 degree joint spaced (80/375/740), planar to undusting, orangish brown staining on surfaces. 3. 55-70 degree joints, m (40/321/900), planar to undulating, orangish brown staining on joint surfaces (60/1125/200), undulating, rough, obrown staining on joint surfaces, bron most joint surfaces (approx. 5 m	s (1-17 mm d strength, rown faces. nts, closely ough, patchy oint surfaces, joints (approx. ts, medium dulating, n most joint ledium spaced smooth, ledium spaced smooth, orrangish rown clay infill	16 -
					19.60	64.83		Medium strong massive grey LIME Partially weathered: patchy orangis staining on most joint surfaces. Dis 1. 10-20 degree joints, medium spa (45/409/1240), planar, rough strong orangish brown staining on most jo 2. 30-40 degree joints, widely spac (390/1500/1600), planar, rough, str brown staining in some joint surfac degree joint, at 20.90-21.10 m bgl, rough, brown sandy gravelly clay ir surface (25-30 mm thick).	sh brown scontinuities: aced g dark sint surfaces. sed rong orangish es. 3. 70-80 undulating, nfill on joint	-20 -

Remarks Peg ID: WLMW04W

AGS

								Borehole No.
CDM Smi	th				Bo	reho	ole Log	MW04B
								Sheet 5 of 5
Project Name	: Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	673695.13 - 730288.39	Hole Type SNC
Location:	Allenstowr	n, Kildare	e			Level:	84.43	Scale 1:25
Client:	Bord na M	óna				Dates:	31/08/2021 - 01/09/2021	Logged By Causeway Geotech Ltd
Well Water			Situ Testing	Depth	Level	Legend	Stratum Description	1
Well Strikes		Type	Results	24.10	60.33	Legend	Stratum Description	22 —
Remarks								25 —

Peg ID: WLMW04W



CDM Smit	h			Во	reho	ole Log	MW04F Sheet 1 of 1	1
roject Name:	Drehid Site Inves	tigation	Project No. 263228		Co-ords:	673701.44 - 730308.42	Hole Type SNC	
ocation:	Allenstown, Kilda	re			Level:	84.42	Scale 1:25	
lient:	Bord na Móna				Dates:	03/09/2021 - 03/09/2021	Logged By FP	
Water Strikes	Samples and I		Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
	Depth (m) Type	Results	1.50	82.92	alte,	Brownish black PEAT. Roots and to material. Poor recovery (5%)  Very soft low plasticity reddish bro Roots and twigs present. Brittle motous of layer. Moist material	wn PEAT.	1 -
			3.00	81.42	silie silie silie is silie silie silie silie silie is silie silie silie silie silie is silie silie	Very soft low plasticity brown PEA roots and twigs. Wet material	T. Occasional	3 -
Remarks			3.40 4.50	79.92	slle, slle slle	Very soft low plasticity pale grey si sandy CLAY. Gravel is angular to s to medium. Damp material	Subangular fine	4
								5

Peg ID: WLMW04P



Project Name: Drehid Site Investigation 263228  Cocardis: Alternation, Kildare  Well Water Samples and In Situ Testing Depth (m) Type Results  Occordis: Depth (m) Type Results  Occordis: G73697.44-730296.25 Socie 125  Sales: O2/09/2021-02/09/2021 Logged By FP  Sinkes Depth (m) Type Results  Occordis: G73697.44-730296.25 Socie 125  Sales: O2/09/2021-02/09/2021 Logged By FP  PEAT. Roads and Mysis present. Most material (MADEGROUND)  PEAT. Roads and My	CI	DM mit	h				Во	reho	ole Log	Borehole N MW04 Sheet 1 of	Q
Client:   Bord na Móna   Samples and in Situ Testing   Depth (m)   Type   Results   Depth (m)   De	Projec	t Name:	Drehid Site	e Inves	tigation			Co-ords:	673697.44 - 730296.25	Hole Typ	
West   Water   Stratum	Locati	on:	Allenstowr	n, Kilda	re			Level:	84.51		
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description  PEAT. Too May present. Moist material (MADE GROUND)  1	Client	:	Bord na M	óna				Dates:	02/09/2021 - 02/09/2021		У
PEAT. Roots and twigs present. Moist material (MADEGROUND)  Why and the present of the present o	Well			1 1				Legend	Stratum Description		
gravelly sandy CLAY with low boulder content. Gravel is angular to subangular fine to coarse. Wet material								e able	Very soft low plasticity thinly bedded brownish black PEAT. Twigs and room to be a soft brownish black of the brownish black PEAT. Twigs and room to be a soft black plastic.	d dark ots present	2
, , , , , , , , , , , , , , , , , , ,						4.72	79.78		gravelly sandy CLAY with low bould Gravel is angular to subangular fine Wet material	er content.	, , , , , , , , , , , , , , , , , , ,

Remarks Peg ID: WLMW04Q



Co	DM Smil	h				Во	reho	ole Log	Borehole No.  MW04Q  Sheet 2 of 3
Proje	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673697.44 - 730296.25	Hole Type SNC Scale
Loca	tion:	Allenstowr	n, Kilda	re			Level:	84.51	1:25
Clien	t:	Bord na M	óna				Dates:	02/09/2021 - 02/09/2021	Logged By FP
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n
	*	9.00 - 10.80	В		7.50	77.00 75.50	1.60 1.60 1.60 1.60 1.60 1.60 1.60 1.61 1.61	Very stiff low plasticity pale grey gresandy CLAY with low cobble conterangular to subrounded fine to coars material  Dense becoming very dense pale of clayey SAND and GRAVEL with mecontent. Gravel is angular to subrocoarse. Moist material  Dense pale grey clayey SAND and Gravel is angular to subrounded fir Damp material	grey very edium boulder unded fine to  GRAVEL. le to coarse.

Remarks Peg ID: WLMW04Q



CDM Smi	th		Davis st N	Во	reho	ole Log	Borehole No.  MW04Q  Sheet 3 of 3
Project Name	Drehid Site	Investigation	Project No. 263228		Co-ords:	673697.44 - 730296.25	Hole Type SNC
Location:	Allenstown	, Kildare			Level:	84.51	Scale 1:25
Client:	Bord na Mo	óna			Dates:	02/09/2021 - 02/09/2021	Logged By FP
Well Water Strikes		and In Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n
	Depth (m)	Type Results	10.95	73.56		Wholly decomposed very pale gre  End of borehole at 11.50	
							15 —
Remarks	NO40						

Peg ID: WLMW04Q



									Borehole N	lo.
G	DM mit	h				Bo	reho	ole Log	MW05	В
7								3	Sheet 1 of	6
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	674783.81 - 729202.74	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	are			Level:	85.67	Scale 1:25	
Client		Bord na M	lóna				Dates:	17/08/2021 - 18/08/2021	Logged B	
	Water	Samples	s and	In Situ Testing	Depth	Level			Causeway Geote	ech Ltd
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	1	
					1.50	84.16 83.86	salle, sa	Spongy brownish black fibrous PEA of wood and occasional rootlets.  Low plasticity brownish black pseud PEAT.  Pale greyish brown slightly gravelly medium SAND. Gravel is angular file.	dofibrous	1 —
					2.25	83.42		medium.  Soft brown slightly sandy slightly gr with a thin bed of greyish brown fin SAND. Sand is fine to coarse. Grav subangular fine to coarse.	ravelly CLAY e to medium	2 -
		3.00 - 3.45	U		3.00	82.66		Soft to firm grey slightly sandy grav with low subangular cobble content to coarse. Gravel is subrounded fin	t. Sand is fine	3
					4.50	81.17		Stiff grey slightly gravelly sandy CL fine to coarse. Gravel is subangular coarse.  Continued on next sheet	AY. Sand is r fine to	5 —
Rema	rks			•						

Remarks Peg ID: WLMW05W



						Borehole No.				
G	DM mil	h				Bo	reho	ole Log	MW05	В
					Duning A No		1		Sheet 2 of	
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674783.81 - 729202.74	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	ire			Level:	85.67	Scale 1:25	
Client:		Bord na M	óna				Dates:	17/08/2021 - 18/08/2021	Logged B	
0110111.				n Situ Testing		l	Dutos.	17/00/2021 10/00/2021	Causeway Geote	ech Lte
Well	Water Strikes	Depth (m)	Туре	Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
					6.00	79.67		Very stiff grey sandy gravelly CLAY to coarse. Gravel is subangular fine (Low recovery)	. Sand is fine et to coarse.	7 -
		7.50 - 9.00	В		7.50	78.17		Grey clayey very gravelly fine to co with low subrounded cobble conter subangular fine to coarse.		8
					9.00	76.67		Very stiff grey slightly gravelly very with low subangular cobble content to coarse. Gravel is subrounded fin	t. Sand is fine	9
lema	rko							Continued on next sheet		10

Peg ID: WLMW05W



2.74    Zero   Cause   Cause	AW05B Sheet 3 of 6 Hole Type SNC Scale 1:25 Logged By Loway Geotech Ltd
2.74  /2021  Cause Description	Hole Type SNC Scale 1:25 Logged By
/2021 L Cause Description	SNC Scale 1:25 Logged By
Description  Illy sandy CLAY. Sar	1:25 _ogged By
Description  Ily sandy CLAY. Sar	_ogged By
Description	
lly sandy CLAY. Sar	- - - - - -
	- - - - - - -
s subangular fine to	
	11 -
n slightly sandy very dium subrounded c o coarse. Gravel is rse.	y   -
e grey LIMESTONE arious orientations of athered: slightly red fracture spacing, pouration on most fraces: 1. 20-30 degree (3/415), planar to ngish brown staining lay infill on joint at 15-65 degree joints, a undulating, rough, pg on joint surfaces. ee joint, at 14.40-14	(1-4   13 — duced bale cuture joints, — duced bale labele
	14
	e grey LIMESTONIarious orientations athered: slightly red fracture spacing, puration on most frais: 1. 20-30 degree 3/415), planar to igish brown staining ay infill on joint at 16-65 degree joints, undulating, rough, g on joint surfaces.

Remarks
Peg ID: WLMW05W



C	DM Smit	h				Во	reho	ole Log	Borehole No.  MW05B	
	ct Name:		e Investig	ation	Project No. 263228		Co-ords:	674783.81 - 729202.74	Sheet 4 of Hole Typ SNC	
Locat	ion:	Allenstown	, Kildare		203226		Level:	85.67	Scale 1:25	
Client		Bord na M	óna				Dates:	17/08/2021 - 18/08/2021	Logged B	
Well	Water Strikes			Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		SOIT ELG
Rema		Depth (m)	Type	Results				Medium strong massive grey LIME yellowish white calcite veins of variorientations (1-3 mm thick). Predor orangish brown discolouration on n surfaces. Discontinuities: 1. 10-15 widely spaced (78/750/2600), plana undulating, rough, pale orangish bron most joint surfaces. 2. 20-30 de medium spaced (93/462/730), plan dark orangish brown staining on m surfaces, dark brown clay infill on jom. 3. 50-60 degree joints, widely sp (90/1500/4000), planar, rough, strobrown staining on joint surfaces. 4. joints, at 16.10-16.90 m, 22.10-22. 23.80-24.10 m and 24.08-24.37 m undulating, rough, strong, orangish staining on joint surfaces.	ous ninantly fresh: nost joint degree joints. ar to own staining gree joints, ar, rough, ost joint bint at 18.42 baced ng orangish 70-90 degree 50 m, bgl, planar to	16   17   18   19   20

Remarks Peg ID: WLMW05W



CDM Smil					Ro	raha	le Log	MW05E	
Smil	in				טט	CIIC	ne Log	Sheet 5 of 6	
Project Name	: Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	674783.81 - 729202.74	Hole Type SNC	
_ocation:	Allenstowr	n, Kildare	)			Level:	85.67	Scale 1:25	
Client:	Bord na M	lóna				Dates:	17/08/2021 - 18/08/2021	Logged By Causeway Geoted	
Well Water Strikes		s and In	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
							Continued on next sheet		21

Peg ID: WLMW05W



00-					_			Borehole N	NO.
Smit	n: Allenstown, Kildare  Bord na Móna  Water Samples and In Situ Test				Bo	rehc	ole Log	MW05	
				Project No.				Sheet 6 of Hole Typ	
Project Name:	Drehid Sit	e Investi	gation	263228		Co-ords:	674783.81 - 729202.74	SNC	
Location:	Allenstow	n, Kildare	е			Level:	85.67	Scale 1:25	
Client:	Bord na M	1óna				Dates:	17/08/2021 - 18/08/2021	Logged B	
Well Water	Sample	s and In	Situ Testing	Depth	Level	Legend	Stratum Description	<u>'</u>	CON Eta
Strikes →   →   →   →   →   →   →   →   →   →	Depth (m)	Туре	Results	(m)	(m)	Legend	Ottatum Description		_
									-
									-
									-
									-
									-
									26 –
									-
									-
									-   -
				27.00	58.66		End of borehole at 27.00	 m	27 _
									-
									-
									-
									_
									28 _
									-
									-
									-
									29 _
									-
									=
									-
									-
									30 —
Remarks Peg ID: WLMV	V05W	. 1						AGS	1
								ACK	3

									Borehole N	10.
G	DM mit	h				Bo	reho	ole Log	MW05	Р
"								<b>J</b>	Sheet 1 of	1
Projec	ct Name:	Drehid Sit	e Inves	tigation	Project No. 263228		Co-ords:	674781.19 - 729193.69	Hole Type SNC	е
Locati	on:	Allenstow	n, Kilda	ire			Level:	85.88	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	13/08/2021 - 16/08/2021	Logged B CF	у
Well	Water		1 1	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Strikes	Depth (m)	Type	Results	3.00 4.50	82.88 81.38	Alle Alle Alle  Alle  Alle Alle  Alle  Alle Alle  Alle	Very soft low plasticity dark reddish Roots and twigs present. Saturated becoming wet  Soft to stiff high plasticity grey sligh gravelly CLAY with low cobble contangular to subrounded fine to coarse coarse Subrounded cobbles. Moist	tly sandy ent. Gravel is se. Sand is t material	1 -   -   -   -   -   -   -   -   -   -
Rema	rks									_ 1

Peg ID: WLMW05P



									Borehole N	lo.
C	DM Smit	h				Bo	reho	ole Log	MW05	Q
7								3	Sheet 1 of	3
Projec	t Name:	Drehid Site	e Inves	tigation	Project No.		Co-ords:	674782.55 - 729198.25	Hole Type	е
					263228				SNC Scale	
Locati	on:	Allenstowr	n, Kilda	ire			Level:	85.59	1:25	
Client	:	Bord na M	lóna				Dates:	16/08/2021 - 17/08/2021	Logged B CF	У
	Water	Samples	s and l	n Situ Testing	Depth	Level			1	
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	1	
					1.40	84.19	Alle Alle Alle  a Alle Alle  a Alle Alle  Alle Alle  Alle Alle  Al	Soft to firm high plasticity grey sligh gravelly CLAY. Gravel is subangula subrounded fine to coarse. Sand is material	tly sandy r to	1 —
					2.95 3.80 3.90	82.64 81.79 81.69		Soft to firm high plasticity grey sligh gravelly CLAY with low cobble contrangular to subrounded fine to coars coarse. Cobbles are subrounded. No Loose bluish grey slightly gravelly fine SAND. Gravel is rounded fine to me	ent. Gravel is se. Sand is floist material	3 -
					3.90	81.69		SAND. Gravel is rounded fine to me material  Stiff low plasticity brownish grey grawith low cobble content. Gravel is a subrounded fine to medium. Cobble subrounded. Damp material	avelly CLAY ngular to	4 -
					4.50	81.09		Firm low plasticity grey slightly sand gravelly CLAY with medium cobble Gravel is very angular to subrounded medium. Cobbles are subrounded.	content. ed fine to	5 —
Rema	rke							Continued on next sheet		

Remarks Peg ID: WLMW05Q



C	CDM Smith					Во	reho	ole Log	Borehole N	Q
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674782.55 - 729198.25	Hole Typ SNC	
Locati	on:	Allenstowr	ı, Kilda	re			Level:	85.59	Scale 1:25	
Client	:	Bord na M	óna				Dates:	16/08/2021 - 17/08/2021	Logged E CF	Ву
Well	Water Strikes		г т	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	١	
Well		7.50 - 10.40	В	Results			Legend	Very stiff low plasticity brownish gresandy gravelly CLAY with low cobb Gravel is angular to subrounded fin Cobbles are subrounded. Damp makes and angular to subrounded fine to GRAVEL with low cobble and low both content. Sand is fine to coarse. Cobboulders are subrounded. Wet materials.	ey slightly le content. e to coarse aterial  ayey very o coarse oulder obles and	6
Rema	rks							Continued on next sheet		10 —

Remarks Peg ID: WLMW05Q



CDM Smith							Borehole No.			
G	mil	h				Bo	reho	ole Log	MW05	Q
									Sheet 3 of	
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	674782.55 - 729198.25	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	re	1		Level:	85.59	Scale 1:25	
Client:		Bord na M	óna				Dates:	16/08/2021 - 17/08/2021	Logged By CF	
Well	Water Strikes		1 1	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Stikes	Depth (m)	Туре	Results	10.40	75.19		Very stiff low plasticity brownish gre sandy gravelly CLAY. Gravel is ang subrounded fine to coarse. Sand is	ular to	
								medium and in discrete lenses. Da material	mp to moist	11 -
					12.20	73.39		Very stiff low plasticity greyish brow CLAY. Clay is laminated in discrete is very angular to subrounded fine Transitional zone into bedrock. Dar	areas. Gravel to coarse.	_
					12.80	72.79		Medium strong pale brown/pale gre LIMESTONE. Partially discoloured and fairly stable	ey to pale brown	13
					13.80	71.79		End of borehole at 13.80 n	,	14
Rema	rks									15

Peg ID: WLMW05Q

									Borehole N	No.
C	DM mit	h				Bo	reho	ole Log	MW06	В
9								<b>J</b>	Sheet 1 of	f 5
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675049.20 - 732007.37	Hole Typ	е
Locati	on:	Allenstowr	n, Kilda	ire			Level:	82.70	Scale 1:25	
Client	:	Bord na M	óna				Dates:	20/09/2021 - 22/09/2021	Logged B Causeway Geote	
Well	Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	า	
	Otrikes	Depth (m)	Туре	Results	(111)	(111)	316 316 316	Spongy brownish black fibrous PE	AT. (Low	_
							ર કોઇ કોઇ કોઇ કોઇ કોઇ ર કોઇ કોઇ	recovery)		
							એલ એલ એલ ૬ એલ એલ એલ એલ એલ			
							د عاد عاد عاد عاد عاد			=
							s alis alis alis alis alis s alis alis			=
							عادہ عادہ عادہ بر عادہ عادہ			
							એલ એલ એલ ૬ એલ એલ એલ એલ એલ			
							د عاد عاد عاد عاد عاد			1 -
							s alte alte alte alte alte s alte alte			=
							مادر مادر مادر در مادر مادر			_
							હ્યાંદ હ્યાંદ હ્યાંદ દ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ			
							s alis alis alis alis alis s alis alis			
							2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 16 2) 17 2) 18 2) 18 2) 18 2) 18 2)			
							عادہ عادہ عاد د عادہ عادہ عادہ عادہ عادہ			2 -
							د عاد عاد عاد عاد عاد			
							s alte alte alte alte alte s alte alte			
							عادہ عادہ عادہ بر عادہ عادہ			
							એલ એલ એલ ૬ એલ એલ એલ એલ એલ			
							د عاد عاد عاد عاد عاد			
							s alte alte alte alte alte s alte alte			
							مادر مادر مادر در مادر مادر			3 —
							હ્યાંદ હ્યાંદ હ્યાંદ દ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ			_ 
							s alis alis alis alis alis s alis alis			
							عادہ عادہ عادہ بر عادہ عادہ			_
							એલ એલ એલ ૬ એલ એલ એલ એલ એલ			
							د عاد عاد عاد عاد عاد			
							s alis alis alis alis alis s alis alis			4 -
							عادہ عادہ عادہ بر عادہ عادہ			
							હ્યાંદ હ્યાંદ હ્યાંદ દ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ હ્યાંદ			
					4.50	70.40	s als als als als als s als als			=
					4.50	78.19	عاد عاد عاد عاد عاد ع	Spongy brownish black slightly grapseudofibrous PEAT. Occasional f		] ]
							മിഗ വ്ധ ചി പ്രചിക ചിക മിഗ വ്യ ചിക	wood. Gravel is subrounded to roun		=
							2 . 31k . 31k 31k . 31k . 31k			=
							عالْد غالد . ٢	Continued on next sheet		5 —
Rema	rks									1

Remarks Peg ID: WLMW06W



								Borehole N	lo.
CDI	M nith				Bo	reho	ole Log	MW06	В
							O	Sheet 2 of	5
Project Na	ame: Drehid	Site Inves	stigation	Project No. 263228		Co-ords:	675049.20 - 732007.37	Hole Type SNC	е
Location:	Allensto	wn, Kilda	are			Level:	82.70	Scale 1:25	
Client:	Bord na	Móna				Dates:	20/09/2021 - 22/09/2021	Logged B Causeway Geote	
	rater Samp		In Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
	7.25	В		6.60 6.90	76.10 75.80	Silk Sik Sik Silk Sik Sik Sik Sik Sik Sik Sik Sik Sik Si	Brownish grey gravelly clayey fine SAND with low subangular cobble Gravel is subrounded to rounded  Very stiff greyish brown sandy gravel is subtocoarse  Stiff grey slightly sandy slightly grays and is fine to coarse. Gravel is substantial to coarse.	elly CLAY. bangular fine	6
Remarks							to coarse  Continued on next sheet		-10 —

Peg ID: WLMW06W



									Borehole N	lo.
Q	DM mit	h				Bo	reho	ole Log	MW06	В
7							. •	3.0 _09	Sheet 3 of	5
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675049.20 - 732007.37	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	ire			Level:	82.70	Scale 1:25	
Client		Bord na M	óna				Dates:	20/09/2021 - 22/09/2021	Logged B Causeway Geote	
Well	Water Strikes	Samples Depth (m)	s and I	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
		Deptil (III)	Туре	ivesuits	10.50	72.19		Firm brownish grey slightly sandy g Sand is fine to coarse. Gravel is su to coarse		11 —
					12.00	70.69		Grey subangular fine to coarse GR is limestone	AVEL. Gravel	12 —
					13.00	69.69		Weak massive grey LIMESTONE v occasional yellowish white calcite v mm thick). Partially weathered: red much closer fracture spacing, pale brown discolouration on most fracti Discontinuities: 1. 0-30 degree join spaced (5/74/165), planar to undult pale orangish brown staining on joi 65-85 degree joints, at 13.67-14.60 13.50-15.28 m and 15.20-15.75 m, brown gravelly clay infill on joint su mm thick)  Greyish brown gravelly clay	veins (4-40 uced strength, orangish ure surfaces. ts, closely atting, smooth, nt surfaces. 2.	14 —
Rema								Continued on next sheet		15 —

Remarks Peg ID: WLMW06W



C	DM mit	h				Во	reho	ole Log	Borehole NW06	<b>B</b> f 5
Projec	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675049.20 - 732007.37	Hole Typ SNC	е
Locati	on:	Allenstowr	n, Kilda	re			Level:	82.70	Scale 1:25	
Client		Bord na M	óna				Dates:	20/09/2021 - 22/09/2021	Logged E	
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
Rema					15.75	66.94		Medium strong massive grey LIME occasional yellowish white calcite various orientations (1-15 mm thick weathered: slightly reduced streng closer fracture spacing, patchy pal brown discolouration on most fract Discontinuities: 1. 0-30 degree joir spaced (30/164/724), planar to unrough, patchy pale orangish brown some joint surfaces, brown clay infjoint surfaces (10-20 mm thick). 2. joints, at 15.80-16.23 m, 16.50-16. 17.00-17.20 m, 17.65-17.94 m, 18 19.70-20.16 m and 20.40-20.65 m smooth, patchy orangish brown stajoint surfaces, pale brown clay infil surfaces (25-40 mm thick).	veins of k). Partially th, slightly e orangish ure surfaces. Its, closely dulating, a staining on fill on some 60-90 degree 74 m, .15-19.80 m, , undulating, aining on some I on most joint	16   17   18   19   19   19   19   19   19   19

Remarks Peg ID: WLMW06W



									Borehole No	
S	DM mil	h				Bo	reho	ole Log	MW06E	
					Project No.		1		Sheet 5 of Hole Type	
Projec	t Name:	Drehid Site	e Invest	igation	263228		Co-ords:	675049.20 - 732007.37	SNC	;
_ocati	on:	Allenstowr	ո, Kildar	е			Level:	82.70	Scale 1:25	
Client		Bord na M	lóna				Dates:	20/09/2021 - 22/09/2021	Logged By Causeway Geoted	
	Water	Sample	s and Ir	n Situ Testing	Depth	Level				CITELL
Well	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend	Stratum Description	1	
	Strikes	Depth (m)	Type	Results	21.00	61.70		End of borehole at 21.00 m		21 –
										24
										24 -
										- - - - - - - - - - - - - - - - - - -
										25 —
Rama	rke					I	1			

Remarks

Peg ID: WLMW06W



									Borehole N	No.
Ç	DM Smit	h				Bo	reho	ole Log	MW06	Р
2							. •	J.G _ G _ G	Sheet 1 of	f 1
Projed	ct Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	675048.86 - 732006.48	Hole Typ SNC	е
Locati	ion:	Allenstow	n, Kildar	e			Level:	82.68	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	22/09/2021 - 22/09/2021	Logged B FP	Ву
Well	Water Strikes	Sample: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
Rema	r				3.00	79.68	able able able able able able able able	Roots and twigs present. Damp ma	iterial	2   3   4   5
Rema	irks									

Peg ID: WLMW06P



CIS	CDM Smith					Во	reho	ole Log	Borehole N	
					Project No.				Sheet 1 of Hole Typ	
Projec	t Name:	Drehid Site	e Inves	tigation	263228		Co-ords:	675047.90 - 732004.36	SNC	
Locati	on:	Allenstowr	ı, Kilda	re			Level:	82.74	Scale 1:25	
Client:		Bord na M	óna				Dates:	22/09/2021 - 23/09/2021	Logged B FP	Зу
Well	Water Strikes	Sample: Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
							SHE SHE SHE  SHE	Very soft low plasticity dark brown and twigs. Damp material becomin		1 - 2 - 3 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4 - 4
							a alta alta alta alta alta alta alta alta alta			

Peg ID: WLMW06Q



Sheet 2 of 3 Sheet	CDM Smith						Во	reho	ole Log	Borehole N	
Toget water. Urend still investigation   263228   Co-Ords: 07047-99-7-32004-39   SNC   Scale   1.25   Scale   1						Project No		Τ			
Second content	Project	Name:	Drehid Site	e Inves	tigation			Co-ords:	675047.90 - 732004.36	SNC	
Sort   Samples and In Situ Testing   Depth (m)   Type   Results   Depth (m)   Type   Results   Stratum Description     Strat	ocation	n:	Allenstowr	n, Kilda	re			Level:	82.74		
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description    Strike   Depth (m)   Type   Results   Stratum Description	lient:		Bord na M	óna				Dates:	22/09/2021 - 23/09/2021		Ву
7.80  74.94  7.80  74.94  7.80  74.94  7.80  74.94							1	Legend	Stratum Description	1	
Continued on next sheet			9.00 - 11.40	В				c. Mc. Mc.  SMC MC.	PEAT. Gravel is angular to subroun coarse. Wet material  Very stiff low plasticity grey gravelly with high cobble content. Gravel is subrounded fine to coarse. Moist m	ded fine to  r sandy CLAY angular to	7

Peg ID: WLMW06Q



_									Borehole N	No.
C	DM Smit	h				Bo	reho	ole Log	MW06	Q
		••						<b>.</b>	Sheet 3 of	f 3
Proje	ct Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675047.90 - 732004.36	Hole Typ SNC	e
Locat	ion:	Allenstowr	n, Kilda	are			Level:	82.74	Scale 1:25	
Client	:	Bord na M	óna				Dates:	22/09/2021 - 23/09/2021	Logged E FP	Ву
Well	Water Strikes			In Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
		Depth (m)	Type	Results	11.40	71.34		Wholly decomposed very pale grey End of borehole at 11.70 m		11 - 12 - 1 14 - 1 14 - 1 14 - 1 1 1 1 1 1 1 1
										15 —

Peg ID: WLMW06Q



CI	MC					Da	- d -		Borehole N	
S	)M Mil	h				RO	renc	ole Log	MW07	
	Nama	Dunkid City	- 1	*i*i	Project No.		Co anda:	675400 47 704645 70	Sheet 1 o	
roject	Name:	Drehid Site	e inves	tigation	263228		Co-ords:	675430.17 - 731615.73	SNC Scale	
ocatio	n:	Allenstowr	n, Kilda	re			Level:	86.59	1:25	
lient:		Bord na M	óna				Dates:	13/09/2021 - 15/09/2021	Logged E Causeway Geot	
	Water	Samples	s and l	n Situ Testing	Depth	Level	Legend	Stratum Description	-	
ven ;	Strikes	Depth (m)	Туре	Results	(m)	(m)	ale ale ale	•		
					1.14	85.45	smig smig smig smig smig smig smig smig	Spongy blackish brown pseudofibr Frequent fine rootlets and rare frag gravel sized wood.  Soft brownish grey slightly sandy s	ments of	1
					4.70	04.00		CLAY. Occasional fragments of wo pockets of peat (<5 mm).		
					1.70	84.89		Very soft grey slightly sandy slightly CLAY. Sand is fine to coarse. Subaangular gravel. Gravel is of various	ngular to	2
		4.30	В		3.95	82.64 81.69		Soft grey slightly sandy slightly gra Sand is fine to coarse. Gravel is su angular fine to coarse. Gravel is of lithologies.  Firm grey sandy gravelly CLAY. Sa coarse. Gravel is subrounded to su	bangular to various nd is fine to bangular fine	4
					4.90	01.09		to coarse. Gravel is of various litho		5

Peg ID: WLMW07W



								Borehole N	No.
CDM Smitl	<b>L</b>				Rο	reho	ole Log	MW07	в
Smiti	n						nc Log	Sheet 2 of	
Project Name:	Drehid Site	Invest	igation	Project No. 263228		Co-ords:	675430.17 - 731615.73	Hole Type SNC	е
Location:	Allenstown	, Kildar	е			Level:	86.59	Scale 1:25	
Client:	Bord na Má	óna				Dates:	13/09/2021 - 15/09/2021	Logged B Causeway Geote	-
Well Water Strikes		and Ir	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
				6.00	79.79		Greyish white slightly sandy very c subangular fine to coarse GRAVEL to coarse.  Pale greyish white slightly sandy sl highly calcareous CLAY. Sand is fir Gravel is subangular fine to coarse limestone  Medium strong to strong massive of LIMESTONE with pale orange calc to 15 mm thick). Partially weathere reduced strength, slight closer fract with discolouration and clay deposi fracture surfaces. Discontinuities: 1 joints, medium spaced (10/275/590 undulating, rough, with pale brown deposits (<1 mm thick) and occasio brown staining on some fracture surfaces. 30-40 degree joins widely spaced (500/1250/190) slightly undulating, pale brown clay deposits (<1 mm the fracture surfaces. 3. 70-90 degree 7.60-8.05 m, 8.15-8.50 m, 9.60-10.14.0-16.20 m, 16.20-16.65 m, 16.5 undulating rough with occasional of staining and pale brown clay deposite mm thick) on most joint surfaces.  Continued on next sheet	ightly gravelly ne to coarse. Gravel is  grey ite veins (up dc slightly ture spacing its on most 1.5-15 degree 1) slightly sandy clay onal orangish urfaces. 2.  rough with nick) on some joints at 50 m, 0-16.90 m rangish brown	8 - 10 - 10 - 10

Remarks Peg ID: WLMW07W



CDM Smi					Ro	reho	ole Log	Borehole No.
Smi	th				וטט	GIIC	ne Log	Sheet 3 of 4
roject Name	e: Drehid Site	e Inves	tigation	Project No.		Co-ords:	675430.17 - 731615.73	Hole Type
ocation:	Allenstow			263228		Level:	86.59	SNC Scale
lient:	Bord na M					Dates:	13/09/2021 - 15/09/2021	1:25 Logged By
\\/ata			n Situ Testing	Depth	Level			Causeway Geotech Lt
Vell Strikes		Туре	Results	(m)	(m)	Legend	Stratum Descriptio	n
								11
								12
								13
								14
							Continued on next sheet	15
emarks	114/0714/	,		1	1			

Peg ID: WLMW07W

									Borehole No.
C	DM mit	h				Boi	reho	ole Log	MW07B
								•	Sheet 4 of 4
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675430.17 - 731615.73	Hole Type SNC
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	86.59	Scale 1:25
Client		Bord na M	óna				Dates:	13/09/2021 - 15/09/2021	Logged By Causeway Geotech Ltd
Well	Water	Samples	s and I	n Situ Testing	Depth	Level	Legend	Stratum Description	
	Strikes	Depth (m)	Туре	Results	(m)	(m)	Logonia		-
									16
									17 =
	<u>.</u>				18.00	68.59		End of borehole at 18.00 m	18 —
									19 —
									20 —
Rema	rks • WLMV	VOZVV				I .			

Peg ID: WLMW07W



Project Name: Drehid Site Investigation 263228    Co-crids	CI	DM mit	h				Во	reho	ole Log	Borehole N  MW07F  Sheet 1 of	>
Cole	Projec	t Name:	Drehid Site	e Investi	igation			Co-ords:	675430.19 - 731619.17	Hole Type	
Cilent	Locati	on:	Allenstowr	n, Kildar	e			Level:	86.56	Scale	
Water   Survives   S	Client		Bord na M	lóna				Dates:	17/09/2021 - 17/09/2021	Logged By	/
1.00 85.56  1.00 8	Well							Legend	Stratum Descriptio	n	
				7,900	, rosults	1.00	85.56	e, shle, shl	Soft low plasticity pale grey gravell Gravel is angular to subrounded fil Moist material	y sandy CLAY. ne to medium.	2   3   - 1

Peg ID: WLMW07P



									Borehole N	No.
C	DM mit	h				Bo	reho	ole Log	MW07	Q
								<u> </u>	Sheet 1 of	f 2
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675430.19 - 731617.00	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	ire			Level:	86.55	Scale 1:25	
Client	:	Bord na M	óna				Dates:	17/09/2021 - 17/09/2021	Logged B FP	Ву
Well	Water Strikes	-		n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Silikes	Depth (m)  1.50 - 1.95	U	Results	2.50	85.35 84.05	Silk Silk Silk  Silk Silk Silk  Silk Silk Silk  Silk Silk Silk  Si	Soft low plasticity brownish grey slig sandy CLAY. Gravel is angular to st to medium. Moist material  Soft low plasticity pale grey gravelly with low boulder content. Gravel is subrounded fine to coarse. Moist m	ghtly gravelly ubangular fine  v sandy CLAY angular to aterial	2   3
		4.50 - 4.95	U					graveny sngriny sarity CLAY. MOIST	material	
<u>.:⊢</u> .:		4.95 - 6.00	В					Cantinuad an mant street		5 —
Rema	rks					1	1	Continued on next sheet		

Peg ID: WLMW07Q



	<b>DE</b> =								Borehole N	lo.
	DM mit	h				Boi	reho	ole Log	MW07	Q
								9	Sheet 2 of	2
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675430.19 - 731617.00	Hole Type SNC	е
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	86.55	Scale 1:25	
Client:		Bord na M	lóna				Dates:	17/09/2021 - 17/09/2021	Logged B FP	У
Well	Water Strikes	Sample: Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
			.,,,,	T COOLIG	6.00	80.55		End of borehole at 6.00 m		8
Rema	rks									10 —

Peg ID: WLMW07Q



									Borehole N	lo.
C	DM mit	h				Bo	reho	ole Log	RW02I	Ρ
								0	Sheet 1 of	1
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675222.79 - 730523.61	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kilda	ıre			Level:	84.35	Scale 1:25	
Client		Bord na M	óna				Dates:	21/07/2021 - 22/07/2021	Logged B	У
Well	Water		1	n Situ Testing	Depth	Level	Legend	Stratum Description	•	
	Strikes	Depth (m)	Type	Results	0.50 0.85 1.00	83.85 83.50 83.35	SHE SHE SHE  R. SHE SHE  R. SHE SHE  R. SHE SHE  R. SHE SHE  SHE SHE  SHE SHE  A	Soft low plasticity dark brown slight PEAT with low cobble content and content. Roots, twigs and shells prematerial  Very stiff low plasticity thinly lamina brownish red PEAT. Roots and twig Damp material	ly gravelly low boulder esent. Dry lesent lost lost lost lost lost lost lost los	2   3   4
Rema	rko									5 —

Remarks Peg ID: RWGW02S



Sheet	CDN	_							Borehole N	No.
Project No. 263228  Co-ords: 675222.54 - 730513.98 Hole for the contain state of the contain		l ith				Bo	reho	ole Loa	RW02	S
Co-ofgs: 0/5222.54 - 730513.98   Fraction   Co-ofgs: 0/5222.54 - 730513.98   Fraction: Allenstown, Kildare   Level: 84.34   Status   Status   Co-ofgs: 0/5222.54 - 730513.98   Fraction: Allenstown, Kildare   Level: 84.34   Status   Co-ofgs: 0/5222.54 - 730513.98   Fraction: Allenstown, Kildare   Level: 84.34   Status   Co-ofgs: 0/5222.54 - 730513.98   Status   Co-ofgs: 0/5222.54 - 730513.98   Fraction: Allenstown, Kildare   Level: 84.34   Status   Co-ofgs: 0/5222.54 - 730513.98   Status   Co-ofgs: 0/5222.54	3111	ICII							Sheet 1 of	f 3
Depth   Dept	roject Narr	ne: Drehid Sit	e Invest	igation	-		Co-ords:	675222.54 - 730513.98	Hole Typ RO	е
Bord na Móna   Dates: 22/07/2021 - 22/07/2021   Logg		Allonotow	n Kildor		203220		Lovel	94.24	Scale	
Water   Strikes   Depth (m)   Type   Results   Depth (m)   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Depth (m)   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)   Depth (m)   Depth (m)   Type   Results   Depth (m)   Type   Results   Depth (m)		Alleristowi	ii, Kiluai	e 			Levei.	04.34	1:25	). <i>.</i>
Strikes Depth (m) Type Results (m) (m) Legend Stratum Description  0.50 83.84  1.00 83.34  2.00 82.34  Soft low plasticity brown PEAT. Twigs, roc and worms present. Damp material very slightly gravelly slightly sandy PEAT. Roots present. Damp material very slightly gravelly cLAY. Gravel is angular to subrounde fine to medium. Increased gravel content at boulders. Damp material  Pale grey colour and material becoming brittle	lient:	Bord na M	1óna				Dates:	22/07/2021 - 22/07/2021	Logged E CF	эу
Very soft low plasticity brown PEAT. Twigs, roc and worms present. Damp material  1.00 83.34  1.00 83.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  2.00 82.34  3.00 82.34  3.00 83.		" <del>  </del>					Legend	Stratum Descriptio	n	
2.00 82.34  Soft low plasticity brownish grey slightly sandy CLAY. Percontent decreases with depth. Damp material soft of the property of the			,,,,,,	roduc	0.50	83.84	alle	and worms present. Damp materia  Very soft high plasticity brown slightly gravelly slightly sandy PEA	ntly clayey	
Soft low plasticity brownish grey slightly sandy gravelly CLAY. Gravel is angular to subrounde fine to medium. Increased gravel content at bottom of layer. Driller notes cobbles and boulders. Damp material  Pale grey colour and material becoming brittle					1.00	83.34	عالد عالد عالا عالم عالد عالا	peaty slightly gravelly slightly sand	y CLAY. Peat	1
3.00 - 4.00 B					2.00	82.34		gravelly CLAY. Gravel is angular to fine to medium. Increased gravel of bottom of layer. Driller notes cobble boulders. Damp material	subrounded ontent at es and	2
		3.00 - 4.00	В							
4.00 - 10.00 B  4.00 80.34  Loose brownish grey slightly silty sandy angulate to subrounded fine to medium GRAVEL. Drille notes cobbles and boulders. Damp material		4.00 - 10.00	В		4.00	80.34		to subrounded fine to medium GRA	AVEL. Driller	
<b>1 ■</b>							× × × × × × × × × × × × × × × × ×			

Peg ID: RWGW02D

AGS

C	DM mil	h				Во	reho	ole Log	RW02 Sheet 2 of	s
Projed	ct Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675222.54 - 730513.98	Hole Typ RO	е
Locat	ion:	Allenstowr	n, Kilda	re			Level:	84.34	Scale 1:25	
Client		Bord na M	óna				Dates:	22/07/2021 - 22/07/2021	Logged B CF	Ву
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	n	
Rema	rks							Continued on next sheet		6

Peg ID: RWGW02D



									Borehole No.	-
C	DM mit	h				Bo	reho	ole Log	RW02S	
"								3	Sheet 3 of 3	
Projec	t Name:	Drehid Site	e Inves	stigation	Project No. 263228		Co-ords:	675222.54 - 730513.98	Hole Type RO	
Locati	on:	Allenstowr	n, Kilda	ire			Level:	84.34	Scale 1:25	
Client	:	Bord na M	óna				Dates:	22/07/2021 - 22/07/2021	Logged By CF	
Well	Water Strikes			n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		
		11.00 - 13.00	В	Results	11.00	71.34		Loose brownish grey slightly sandy angular to subrounded fine to medi Damp material becoming wet	1.	2
Rema	rks					I .	1 1			

Peg ID: RWGW02D



									Borehole N	10.
G	DM mit	h				Bo	reho	ole Log	RW03	P
_		•						313 — 3 9	Sheet 1 of	1
Projed	ct Name:	Drehid Sit	e Inves	stigation	Project No. 263228		Co-ords:	674288.38 - 730940.10	Hole Typ	е
Locati	on:	Allenstown	n, Kilda	ire			Level:	84.00	Scale 1:25	
Client	:	Bord na M	lóna				Dates:	21/07/2021 - 21/07/2021	Logged B CF	У
Well	Water Strikes		1 1	n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	n	
		Depth (m)	Type	Results	2.20	81.80	alle	Roots and twigs present. Damp ma becoming wet	aterial	3   3   5
Rema	rks									_

Peg ID: RWGW03S



CI	DM mil	th				Во	reho	ole Log	RW03 Sheet 1 of	S
rojec	t Name:	: Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	674291.35 - 730936.25	Hole Typ RO	
ocati	on:	Allenstown	ı, Kildaı	re			Level:	83.96	Scale 1:25	
lient		Bord na M	óna				Dates:	20/07/2021 - 21/07/2021	Logged E	Зу
Well	Water Strikes	Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	1	
					2.20 2.60 3.00	81.76 81.36 80.96	alle alle alle alle alle alle alle alle	Soft low plasticity dark brown PEAT becoming twigs. Dry material become becoming twigs. Dry material become becoming twigs. Dry material become becom	lightly gravelly dium. Damp  ayey EL. Damp  lightly gravelly ular fine to	1 2 - 3
					4.00	79.96		Loose pale grey very clayey angula subrounded fine to medium GRAVE material	ar to EL. Damp	4
								Wet material (drilling water added)		
					5.00	78.96	********	Continued on next sheet		5

Peg ID: RWGW03D



CI						_	ı		Borehole I	
S	OM Mil	h				Bo	renc	ole Log	RW03	
					Project No.				Sheet 2 o Hole Typ	
Project	t Name:	Drehid Site	e Invest	tigation	263228		Co-ords:	674291.35 - 730936.25	RO	
ocatio	on:	Allenstowr	n, Kildaı	re			Level:	83.96	Scale 1:25	
Client:		Bord na M	óna				Dates:	20/07/2021 - 21/07/2021	Logged E	Зу
,iieiii.							Dates.	20/07/2021 - 21/07/2021	CF	1
Well	Water Strikes	Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description	า	
		Dopar (III)	Type	results				Dense grey slightly sandy very clay subrounded fine to medium GRAVE Decreased clay content and gravel depth. Limestone parent material o Driller notes cobbles/boulders. Dan	EL. fining with f gravel.	
					6.00	77.96		Loose grey slightly clayey very san subrounded fine to medium GRAVE material	dy angular to EL. Dry	7
	•				7.50	76.46		Very soft high plasticity pale grey s gravelly CLAY. Gravel is angular to fine to medium. Moist material		8
	•				8.50	75.46		Very loose pale grey slightly clayey angular to subrounded fine to coars Increased clay content with depth. material	se GRAVEL.	9
• •					9.50	74.46		Very soft low plasticity pale grey sli slightly sandy CLAY. Gravel is angu subrounded fine. Wet material	ghtly gravelly ılar to	
					10.00	73.96		End of borehole at 10.00 n	 1	10

Peg ID: RWGW03D



C	DM mil	l.				Bο	reho	ole Log	Borehole N	
3		in .						ole Log	Sheet 1 of	
Projec	t Name:	Drehid Site	e Invest	tigation	Project No.		Co-ords:	675099.16 - 731778.68	Hole Typ	е
					263228		<u> </u>		RO Scale	
.ocati	on:	Allenstowr	n, Kildai	re			Level:	84.27	1:25	
Client		Bord na M	óna				Dates:	29/07/2021 - 29/07/2021	Logged E CF	3y
Well	Water Strikes			Results	Depth (m)	Level (m)	Legend	Stratum Description	ı	
Well		Depth (m)	Type	Results		1	Legend  Legend  Lalle able able able able able able able	Stratum Description  Very soft high plasticity grey/brown. CLAY AND PEAT (MADEGROUND twigs present. Likely historic ground area due to embankment and drain material becoming damp  Slightly gravelly and slightly sandy  Very soft high plasticity dark brown. Roots and twigs present. Dark brown undisturbed and brown disturbed material	/dark brown ). Roots and d works in present. Dry  /brown PEAT. vn naterial. Moist	2 3
ema										5

Peg ID: RWGW04S

roject Name: Drehid Site Investigation 263228 Co-ords: 675094 24 - 731780.42 Hole Type RO 263228 Hole Type RO 263	CI	DM mil	h				Во	reho	ole Log	Borehole N	
Docation: Allenstown, Kildare Level: 84.34 Scale 1.25  Illent: Bord na Mona  Samples and In Situ Testing Depth Strikes Depth (m) Type Results (m) Type Results (m) Strikes Depth (m) Type Results						Project No.					
Depth (m) Type Results (m) Stratum Description CAY Ann PEAT Likely historic ground works in material and origin present. Day material earning and the present of the presen	Projec	t Name:	Drehid Site	e Inves	tigation			Co-ords:	675094.24 - 731780.42	RO	
Well Strikes Depth (m) Type Results Depth (m) Type Results Depth (m) Level (m) Legend (m) Stratum Description CLAY AND PEAT (MADE GROUND). Roots and twigs present. Likely historic ground works in area due to embewshered and drain present. Dry material becoming damp area due to embewshered and drain present. Dry material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist material becoming damp area due to embewshered and drain present. Moist area days present. Dark brown unabstrial area due to embewshered and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are deposited and brown disturbed material. Moist area days are days are days are days are days are days are days area. The days are days area. The days are days area. The days are days are days are days are days ar	_ocati	on:	Allenstowr	n, Kilda	ire			Level:	84.34		
Strikes   Depth (m)   Type   Results   (m)   (m)   (m)   Legend   Stratum Description	Client:		Bord na M	óna				Dates:	29/07/2021 - 29/07/2021		Ву
1.00 83.34  1.00 8	Well						1	Legend	Stratum Description	1	
3.50 - 5.50 B   and a standard and brown disturbed material. Moist material and standard and sta			Dopar (III)	Турс	results			e alke	CLAY AND PEAT (MADEGROUND twigs present. Likely historic ground area due to embankment and drain material becoming damp  Slightly gravelly and slightly sandy  Very soft high plasticity dark brown.	). Roots and d works in present. Dry	- 1 -
3.20 81.14 Very soft low plasticity grey/pale grey slightly sandy gravelly CLAY. Gravel is angular to subrounded fine to medium. Wet material								e, Me, Me, Me, Me, Me, Me, Me, Me, Me, M	undisturbed and brown disturbed m		
			3.50 - 5.50	В		3.20	81.14		sandy gravelly CLAY. Gravel is ang	ular to	4 -

Peg ID: RWGW04D



									Borehole N	lo.
	DM mit	h				Bo	reho	ole Log	RW04	S
							1		Sheet 2 of	
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	675094.24 - 731780.42	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kilda	ire	1		Level:	84.34	Scale 1:25	
Client:		Bord na M	óna				Dates:	29/07/2021 - 29/07/2021	Logged B CF	У
Well	Water			n Situ Testing	Depth	Level	Legend	Stratum Description	1	
	Strikes	Bepth (m)  8.00 - 10.00	В	Results	(m) 5.50 6.00 7.00 8.00	78.84 78.34 76.84		Medium dense grey slightly sandy vangular to subrounded fine to medium Wet material  Dense grey slightly sandy very clay subrounded fine to medium GRAVE in clay with depth. Damp material  Dense grey slightly sandy clayey ar subrounded fine to medium GRAVE material  Dense grey slightly sandy slightly closubrounded fine to medium GRAM material  Dense grey slightly sandy clayey ar subrounded fine to medium GRAVE material	rery clayey um GRAVEL.  ey angular to EL. Decrease  agular to EL. Damp	9 -
Rema	rks				10.00	74.34	* • • • • • • • • • • • • • • • • • • •	Continued on next sheet		10 —

Remarks Peg ID: RWGW04D



									Borehole N	lo.
CDI	M nith					Bo	reho	ole Log	RW04	S
								<u> </u>	Sheet 3 of	3
Project N	lame: Dre	hid Site	Invest	tigation	Project No. 263228		Co-ords:	675094.24 - 731780.42	Hole Type RO	Э
Location:	Alle	nstown,	Kildaı	re			Level:	84.34	Scale 1:25	
Client:	Bor	d na Mó	na				Dates:	29/07/2021 - 29/07/2021	Logged B CF	У
				n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description	1	
	Дерт	h (m)	Type	Results	10.50	73.84		Loose grey slightly clayey slightly s to subrounded fine to medium GRA to wet material	VEL. Damp	-
								Dense grey sandy very clayey angu subangular fine to medium GRAVE material	Jiar to L. Wet	-
					11.00	73.34		Very soft high plasticity grey slightly gravelly CLAY. Gravel is angular to fine to medium. Wet material	/ sandy subrounded	11 -
					11.50	72.84		Very soft high plasticity grey slightly slightly gravelly CLAY. Moist materi	v sandy al	12 —
					13.00	71.34		End of borehole at 13.00 n		13
Remarks										15

Remarks Peg ID: RWGW04D



Co	DM mit	h				Во	reho	ole Log	Borehole No RW09A Sheet 1 of 1	1
Projec	t Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	674309.21 - 731523.24	Hole Type RO	
Locati	on:	Allenstowr	n, Kildare	е			Level:	83.08	Scale 1:25	
Client:		Bord na M	óna				Dates:	26/07/2021 - 26/06/2021	Logged By CF	
Well	Water Strikes	Samples Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Description	ı	
		Zopar (III)	Турс	TOGGIG	0.50	82.58		Very loose pale grey very sandy sil subrounded fine to medium GRAVE boulder and low cobble content (MADEGROUND). Dry material  Very loose brownish grey gravelly f SAND (MADEGROUND). Gravel is subrounded fine to medium. Dry m.	ine to medium	
					1.00	82.08		Loose brownish grey slightly grave subangular very fine to fine SAND. material	lly angular to Damp	1 -
					1.50	81.58		Loose brownish grey GRAVEL and is angular to subangular fine to me is angular to rounded fine to mediu material	dium. Gravel	-
		2.00 - 4.00	В		2.00	81.08		Loose dark grey slightly clayey very angular to rounded fine to medium Sand is medium to coarse. Wet ma	y sandy GRAVEL. terial	3
					4.00	79.08		End of borehole at 4.00 m		4
Rema										5 -

Peg ID: RWGW09S



									Borehole N	lo.
CD Sr	)Ni Mit	h				Bo	reho	ole Log	RW09	В
	1116	•							Sheet 1 of	2
Project N	Name:	Drehid Site	e Inves	tigation	Project No.		Co-ords:	674311.37 - 731527.80	Hole Type	Э
,					263228				RO Scale	
Location	า:	Allenstown	ı, Kilda	re			Level:	83.00	1:25	
Client:		Bord na M	óna				Dates:	23/07/2021 - 26/07/2021	Logged B	У
	Nater Strikes	•		n Situ Testing	Depth (m)	Level (m)	Legend	Stratum Description		
		Depth (m)	Туре	Results	0.50	82.50		Very loose pale grey slightly silty ve angular to subrounded fine to mediu with low boulder and low cobble cor (MADEGROUND). Dry material  Very loose brownish grey gravelly fi SAND (MADEGROUND). Gravel is subrounded fine to medium. Dry to material	im GRAVEL itent  ne to medium angular to	-
					1.00	82.00		Loose brownish grey slightly gravell subangular very fine to fine SAND. material	y angular to Damp	1 -
					1.50	81.50		Loose brownish grey GRAVEL and is angular to subangular fine to medis angular to rounded fine to mediur material	lium. Gravel	
		2.00 - 4.00	В		2.00	81.00		Loose dark grey slightly clayey very angular to rounded fine to medium of Sand is medium to coarse. Wet mat	GRAVEL.	3
					5.00	78.00		Continued on next sheet		5 —

Remarks Peg ID: RWGW09D



CE	)M mit	h				Во	reho	ole Log	Borehole No.  RW09B  Sheet 2 of 2
Project	Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	674311.37 - 731527.80	Hole Type RO
Locatio	n:	Allenstown	ı, Kildaı	re			Level:	83.00	Scale 1:25
Client:		Bord na M	óna				Dates:	23/07/2021 - 26/07/2021	Logged By CF
		Samples Depth (m)	Type	n Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n
	Vell Water				6.00	77.00		Loose dark grey clayey sandy ang rounded medium to coarse GRAVI material  Loose pale grey slightly sandy ver	EL. Wet
								angular to subrounded medium to GRAVEL. Saturated material	coarse
					6.50	76.50		Very soft low plasticity grey gravell Gravel is angular to subrounded fi Wet material	ly CLAY. ne to medium.
		8.00 - 10.00	В		8.00	75.00		Loose dark grey slightly clayey sat subrounded fine to medium GRAV material  Saturated and clay rich appearance of 9.0 settlement after weekend	EL. Damp
·H					10.00	73.00	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	End of borehole at 10.00	10

Peg ID: RWGW09D

AGS

Ç	<b>DM Smith</b> ect Name: Drehid Site Investigation					Rο	reho	ole Log	Borehole N	
3		in .						no Log	Sheet 1 of	
Proje	ct Name:	Drehid Site	e Investi	gation	Project No. 263228		Co-ords:	673760.86 - 731024.30	Hole Type RO	
Locat	ion:	Allenstowr	n, Kildare	e	200220		Level:	83.71	Scale 1:25	
Client	:	Bord na M	óna				Dates:	27/07/2021 - 27/07/2021	Logged B	Ву
Well	Water Strikes			Situ Testing	Depth	Level	Legend	Stratum Description	1	
Rema		Depth (m)	Type	Results	2.60 2.80	81.11 80.91	able,	Very soft low plasticity dark brown and twigs present. Damp to moist in the second sec	rey slightly el is angular to ne to medium.	2 - 4 - 5 -

Peg ID: RWGW10S

									Borehole N	lo.
C	DM mit	h				Bo	reho	ole Log	RW10	S
		•						3	Sheet 1 of	2
Projec	t Name:	Drehid Site	e Inves	tigation	Project No. 263228		Co-ords:	673768.50 - 731016.43	Hole Type RO	Э
Locati	on:	Allenstowr	ı, Kilda	re			Level:	83.76	Scale 1:25	
Client		Bord na M	óna				Dates:	27/07/2021 - 27/07/2021	Logged B CF	У
Well	Water	Samples	and I	n Situ Testing	Depth	Level	Legend	Stratum Descriptior		
	Strikes	Depth (m)	Type	Results	0.60	(m) 83.16	Silke	Very loose grey/brown SAND AND Gravel is angular fine to medium. S coarse. Dry material  Very soft low plasticity dark brown F and twigs present. Damp to moist n	GRAVEL. sand is fine to	1 —
					1.80	81.96	e alle alle alle alle alle e alle alle	Very soft high plasticity brownish gr gravelly slightly sandy CLAY. Grave rounded fine to medium. Sand is fir Moist material	el is angular to	2 —
					2.50	81.26		Loose brownish grey slightly sandy subangular to rounded fine to medi Wet material	clayey um GRAVEL.	- - - - - - - - - - -
		3.00 - 4.50	В		3.00	80.76		Very loose grey gravelly angular to to medium SAND. Gravel is angula fine to medium. Moist material	rounded fine r to rounded	3
Rema		4.50 - 5.50	В		4.50	79.26		Very soft low plasticity grey sandy g Gravel is angular fine to medium. N becoming saturate (drilling water ad	loist material	5 —

Remarks Peg ID: RWGW10D

AGS

CIS	DM mit	h			Project No.	Во	reho	ole Log	RW103 Sheet 2 of Hole Type	<b>S</b>
	t Name:				263228		Co-ords:	673768.50 - 731016.43	RO Scale	e 
Locati	on:	Allenstowr	n, Kildare	=			Level:	83.76	1:25	
Client:		Bord na M	óna				Dates:	27/07/2021 - 27/07/2021	Logged B CF	У
Well	Water	Samples Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descriptio	n	
	_	6.00 - 7.00	В		5.50	78.26 77.76		Medium dense grey slightly sandy angular to rounded fine to medium Damp material	GRAVEL.	- 6 -
								Loose brownish grey sandy clayey subrounded fine to medium GRAV material	angular to EL. Saturated	
					7.00	76.76		End of borehole at 7.00 n	n	7 -
										8 -
										9 -
Rema										10 -

Peg ID: RWGW10D



									Borehole N	lo.
C	DM Smit	h				Bo	reho	ole Log	WLPC	)1
								J	Sheet 1 of	4
Projec	ct Name:	Drehid Site	e Invest	igation	Project No. 263228		Co-ords:	673781.25 - 731292.73	Hole Type RO	Э
Locati	ion:	Allenstowr	n, Kildar	re			Level:	83.30	Scale 1:25	
Client	:	Bord na M	óna				Dates:	09/09/2021 -	Logged B	у
Well	Water	Samples	s and Ir	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
VVCII	Strikes	Depth (m)	Туре	Results	(m)	(m)	जीह जीह जीह	Very soft low plasticity dark brown I		
Rema	rks		Allenstown, Kildare  Bord na Móna  Samples and In Situ Testing Depth (m) Type Results		4.00	79.30	e able	Very soft low plasticity pale grey sligslightly sandy CLAY. Gravel is angusubrounded fine to medium. Moist is	ghtly gravelly	1 2 3
									VG	
									AUD	<b>4</b>

	ct Name: Drehid Site Investigation tion: Allenstown, Kildare				Project No.	Во		ole Log	Sheet 2 o	<b>01</b> of 4
					263228		Co-ords:	673781.25 - 731292.73 83.30	RO Scale	
Client		Bord na M					Dates:	09/09/2021 -	1:25 Logged E	Зу
Well	Water Strikes	Г	s and In	Situ Testing Results	Depth (m)	Level (m)	Legend	Stratum Descripti	on FP	
		Deput (III)	Type	Results	5.50	77.80		Very soft low plasticity pale grey s gravelly CLAY. Gravel is angular fine to coarse. Moist material	sandy very to subrounded	6 -
				7.00	76.30		Dense pale grey very clayey SAN GRAVEL. Gravel is angular to sul to coarse. Wet material	ID and brounded fine	7 -	
					8.50	74.80		Loose pale grey very clayey SAN GRAVEL. Gravel is angular to sul to medium. Saturated material	D and brounded fine	8 -
										9 -
					10.00	73.30		Continued on next she	et	10 -

									Borehole N	10.
G	DM mit	h				Bo	reho	ole Log	WLPC	)1
9								<b>J</b>	Sheet 3 of	4
Projec	t Name:	Drehid Site	e Invest	tigation	Project No. 263228		Co-ords:	673781.25 - 731292.73	Hole Type RO	Э
Locati	on:	Allenstowr	n, Kildar	re			Level:	83.30	Scale 1:25	
Client:		Bord na M	óna				Dates:	09/09/2021 -	Logged B	у
Well	Water	Samples	s and Ir	n Situ Testing	Depth	Level	Legend	Stratum Description	1	
vveii	Strikes	Depth (m)	Туре	Results	(m)	(m)	Legend			
					13.00	70.30		Loose grey very clayey SAND and Gravel is angular to subrounded fin Wet material  Loose pale grey slightly sandy slight angular to subrounded fine to medi Damp material	e to coarse.	11 —
					14.50	68.80		Medium strong pale grey LIMESTC	NE	14 —
D.								Continued on next sheet		15 —
Rema	rks								AGS	

								Borehole No.		
CDM Smi	th				WLPC01					
					Sheet 4 of 4					
Project Name				Project No. 263228 Co-ords: 673781.25 - 731292				73 Hole Type RO		
Location: Allenstown, Kildare			Э	·		Level:	83.30	Scale 1:25		
Client: Bord na Móna						Dates:	09/09/2021 -	Logged By FP		
Well Water	-		Situ Testing	Depth	Level	Legend	Stratum Descripti			
Strikes	Depth (m)	Type	Results	(m)	(m) 67.30		End of borehole at 16.00			
								18 —		
								19 -		
Remarks								AGS		

Appendix D
Geotechnical Laboratory Testing Results





### **HEAD OFFICE** Causeway Geotech Ltd

Registered in Northern Ireland. Company Number: NI610766

#### **REGIONAL OFFICE** Causeway Geotech (IRL) Ltd

Unit 1 Fingal House Stephenstown Industrial Estate Balbriggan, Co Dublin, Ireland, K32 VR66 ROI: +353 (0)1 526 7465

> Registered in Ireland. Company Number: 633786

www.causewaygeotech.com

## **SOIL AND ROCK SAMPLE ANALYSIS** LABORATORY TEST REPORT

19 October 2021

Project Name:	Drehid Waste Management Facility – Further Landfill Development 2021			
Project No.:	21-0709			
Client:	Bord na Móna			
Engineer:	CDM Smith			

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

John Worm

**Laboratory Manager** 

Signed for and on behalf of Causeway Geotech Ltd















**Project Name:** Drehid Waste Management Facility – Further Landfill Development 2021

**Report Reference:** Schedule 1

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with\* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Moisture Content of Soil	BS 1377-2: 1990: Cl 3.2	1
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	12
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	8

### **SUB-CONTRACTED TESTS**

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited (UKAS 4043)	Permeability in a triaxial cell (up to 4 days)	BS 1377-6:1990	1
	Extra over days (more than initial 4 days)		1
SOIL – Subcontracted to Eurofins Chemtest Ltd (UKAS 2183)	pH Value of Soil		1
SOIL – Subcontracted to Eurofins Chemtest Ltd (UKAS 2183)	Fraction Organic Carbon		1



# **Summary of Classification Test Results**

Project No.

Project Name

21-0709

Drehid Waste Management Facility - Further Landfill Development 2021

		Sar	mple			Dens	ity	w	Passing	LL	PL	ΡI	Particle	Casagrande
Hole No.	Ref	Тор	Base	Туре	Soil Description	bulk			425µm				density	Casagrande Classification
				,, .		Mg/m	13	%	%	%	%	%	Mg/m3	
LFBH01	2	7.50	8.50	В	Grey sandy gravelly silty CLAY.			14.0						
												_		
													•	
All tests perfor	Il tests performed in accordance with BS1377:1990 unless specified otherwise LAB 01R Version 4													

All tests performed in accordance with BS1377:1990 unless specified otherwise

Key

Density test Liquid Limit Particle density

gj - gas jar

Approved By

Linear measurement unless:

4pt cone unless:

sp - small pyknometer 18/10/2021

Date Printed

Stephen.Watson

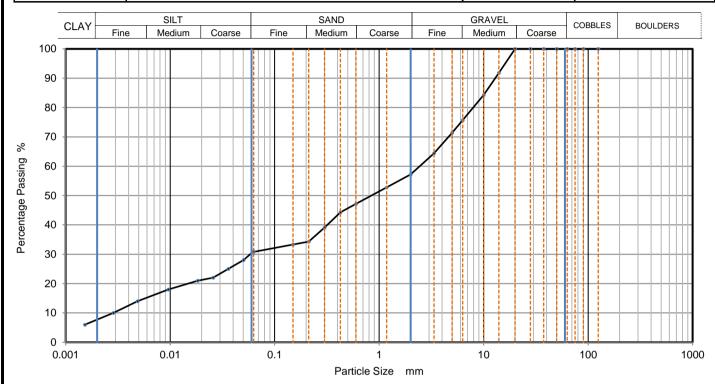


wd - water displacement wi - immersion in water

1pt - single point test

cas - Casagrande method

CAUSEWAY	PARTI	Job Ref	21-0709			
——GEOTECH	PARII	Borehole/Pit No.	LFBH01			
Site Name	Drehid Waste Manage 2021	ment Facility – Fu	ırther Landfill Deve	elopment	Sample No.	2
Soil Description	Grey sandy gravelly silty	CLAY.	Depth, m	7.50		
Specimen Reference	4	Specimen Depth	7.5	Sample Type	В	
Test Method	BS1377:Part 2:1990, clau	ses 9.2 and 9.5			KeyLAB ID	Caus2021091610



Sievi	ng	Sedimo	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	31
90	100	0.05034	28
75	100	0.03603	25
63	100	0.02579	22
50	100	0.01834	21
37.5	100	0.00958	18
28	100	0.00487	14
20	100	0.00286	10
14	92	0.00153	6
10	84		
6.3	76		
5	71		
3.35	64		
2	57		
1.18	53		
0.6	47	Particle density	(assumed)
0.425	44	2.65	Mg/m3
0.3	39		
0.212	34	1	
0.15	33	1	
0.063	31	1	

Dry Mass of sample, g	206
-----------------------	-----

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	42.8		
Sand	26.3		
Silt	23.5		
Clay	7.4		

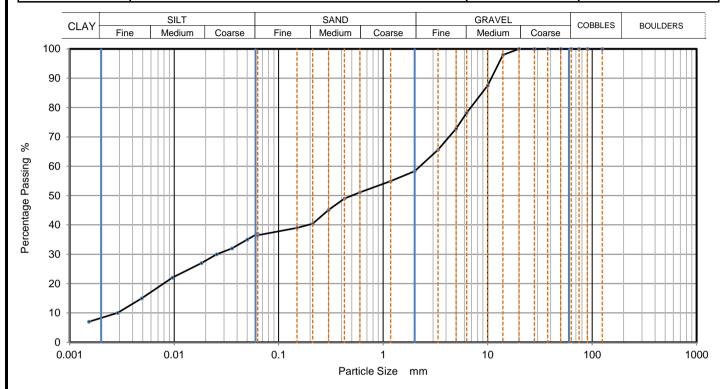
Grading Analysis		
D100	mm	
D60	mm	2.45
D30	mm	0.059
D10	mm	0.00293
Uniformity Coefficient		830
Curvature Coefficient	0.48	

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	

PARTICLE SIZE DISTRIBUTION			DISTRIBUTION		Job Ref	21-0709
			Borehole/Pit No.	LFMW01		
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	2	
Soil Description	Grey sandy slightly gravelly silty CLAY.			Depth, m	5.00	
Specimen Reference	2 Specimen 5 m			Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091611	



Siev	/ing	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.06300	37	
90	100	0.05002	35	
75	100	0.03581	32	
63	100	0.02548	30	
50	100	0.01823	27	
37.5	100	0.00958	22	
28	100	0.00490	15	
20	100	0.00287	10	
14	98	0.00153	7	
10	88			
6.3	78			
5	73			
3.35	66			
2	58			
1.18	55			
0.6	51	Particle density	(assumed)	
0.425	49	2.65	Mg/m3	
0.3	45			
0.212	40			
0.15	39			
0.063	37			

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	41.7		
Sand	21.8		
Silt	28.5		
Clay	8.0		

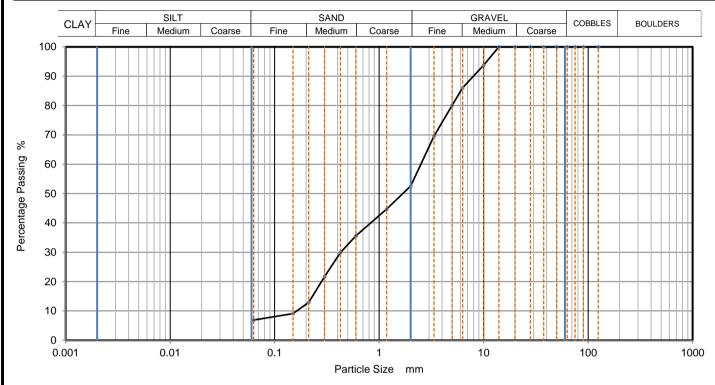
Grading Analysis		
D100	mm	
D60	mm	2.25
D30	mm	0.0262
D10	mm	0.00289
Uniformity Coefficient		780
Curvature Coefficient		0.11

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	

CAUSEWAY	DARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
PARTICLE SIZE DISTRIBUTION			RIBUTION	Borehole/Pit No.	LFMW01
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	3
Soil Description	Grey slightly gravelly silty fine to coarse SAND.			Depth, m	8.00
Specimen Reference	2 Specimen 8 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021091612



Siev	ving	Sedime	ntation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	94		
6.3	86		
5	80		
3.35	70		
2	53		
1.18	45		
0.6	36		
0.425	30	1	
0.3	22		
0.212	13	]	
0.15	9	]	
0.063	7		

Dry Mass of sample, g	207

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	47.4
Sand	45.7
Fines < 0.063mm	7.0

Grading Analysis		
D100	mm	
D60	mm	2.5
D30	mm	0.428
D10	mm	0.162
Uniformity Coefficient		15
Curvature Coefficient		0.45

Preparation and testing in accordance with BS1377-2:1990 unless noted below

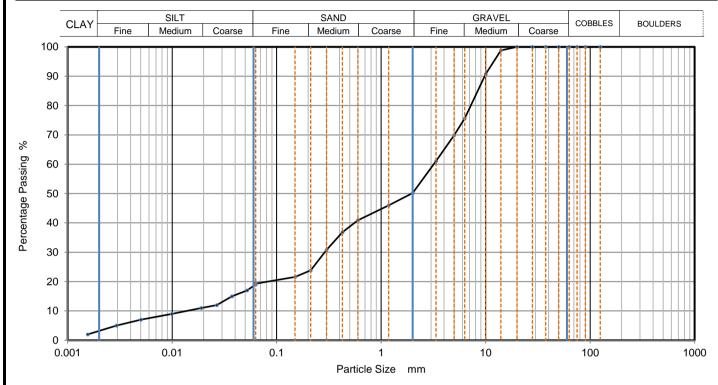


Approved

Stephen.Watson

LAB 05R Version 4

CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
GEOTECH PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	LFMW02	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	2
Soil Description	Greyish brown sandy gravelly silty CLAY.			Depth, m	7.00
Specimen Reference	2 Specimen 7 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091613



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	19
90	100	0.05222	17
75	100	0.03736	15
63	100	0.02672	12
50	100	0.01900	11
37.5	100	0.00992	9
28	100	0.00501	7
20	100	0.00293	5
14	99	0.00156	2
10	91		
6.3	76		
5	70		
3.35	61		
2	50		
1.18	46		
0.6	41	Particle density	(assumed)
0.425	37	2.65	Mg/m3
0.3	31		
0.212	24		
0.15	22		
0.063	19		

Dry Mass of sample, g	207
-----------------------	-----

Sample Proportions	% dry mass	
Cobbles	0.0	
Gravel	49.8	
Sand	30.9	
Silt	16.1	
Clay	3.2	

Grading Analysis		
D100	mm	
D60	mm	3.18
D30	mm	0.288
D10	mm	0.0129
Uniformity Coefficient		250
Curvature Coefficient		2

Preparation and testing in accordance with BS1377-2:1990 unless noted below

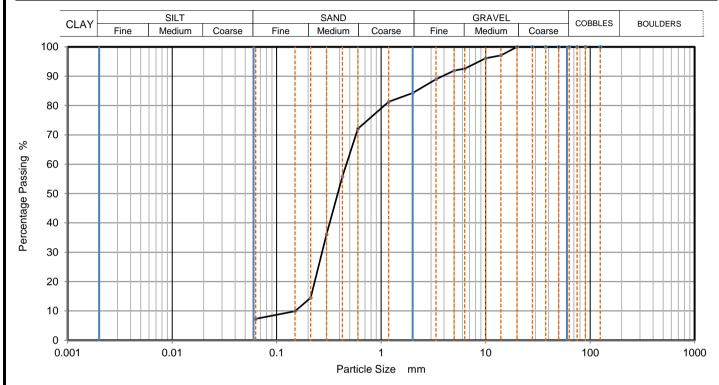


Approved

Stephen.Watson

LAB 05R Version 4

CAUSEWAY PARTICLE SIZE DISTRIBUTION		Job Ref	21-0709		
GEOTECH	PARTICLE SIZE DISTRIBUTION -		Borehole/Pit No.	LFMW02	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	3
Soil Description	Dark grey slightly gravelly slightly silty fine to coarse SAND.		Depth, m	10.00	
Specimen Reference	2 Specimen 10 m		Sample Type	В	
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021091614



Sieving		Sedime	ntation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	97		
10	96		
6.3	93		
5	92		
3.35	89		
2	84		
1.18	81		
0.6	72		
0.425	56	]	
0.3	36		
0.212	15		
0.15	10	]	
0.063	7		

Dry Mass of sample, g	206
-----------------------	-----

Sample Proportions	% dry mass	
Cobbles	0.0	
Gravel	15.7	
Sand	77.0	
Fines < 0.063mm	7.0	

Grading Analysis		
D100	mm	
D60	mm	0.465
D30	mm	0.272
D10	mm	0.151
Uniformity Coefficient		3.1
Curvature Coefficient		1.1

Preparation and testing in accordance with BS1377-2:1990 unless noted below

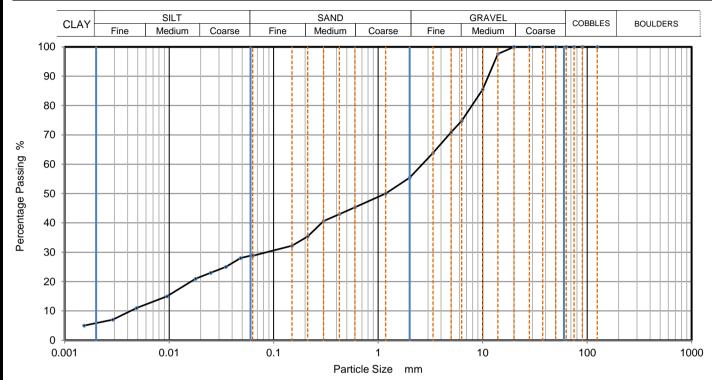


LAB 05R Version 4

Approved

Stephen.Watson

CAUSEWAY PARTICLE SIZE DISTRIBUTION		Job Ref	21-0709		
—— GEOTECH	PARTICLE SIZE DISTRIBUTION -			Borehole/Pit No.	RWGW02D
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	2
Soil Description	Grey sandy slightly gravelly silty CLAY.		Depth, m	4.00	
Specimen Reference	2 Specimen 4 m Depth		Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091615



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.06300	29	
90	100	0.04837	28	
75	100	0.03490	25	
63	100	0.02501	23	
50	100	0.01791	21	
37.5	100	0.00953	15	
28	100	0.00488	11	
20	100	0.00288	7	
14	98	0.00153	5	
10	86			
6.3	75			
5	71			
3.35	64			
2	55			
1.18	50			
0.6	45	Particle density	(assumed)	
0.425	43	2.65	Mg/m3	
0.3	41			
0.212	35	1		
0.15	32	1		
0.063	29			

Dry Mass of sample, g	211

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	44.6		
Sand	26.6		
Silt	22.8		
Clay	6.0		

Grading Analysis		
D100	mm	
D60	mm	2.64
D30	mm	0.0856
D10	mm	0.00412
Uniformity Coefficient		640
Curvature Coefficient		0.67

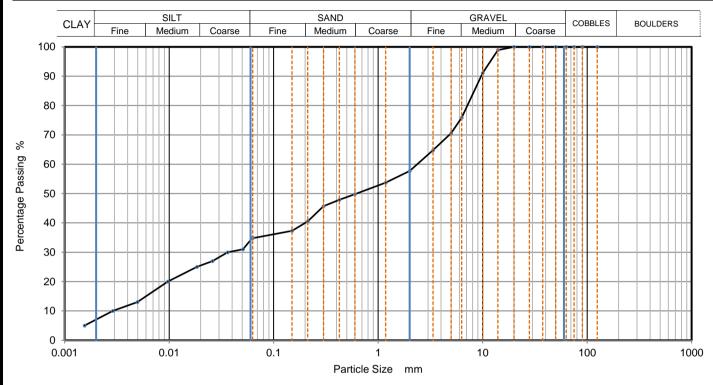
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved
Stephen.Watson

LAB 05R Version 4

CAUSEWAY	CALISEWAY DADTICLE CIZE DISTRIBUTION		Job Ref	21-0709		
GEOTECH	PAR	PARTICLE SIZE DISTRIBUTION		Borehole/Pit No.	RWGW04D	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021		Sample No.	1		
Soil Description	Grey sandy slightly gravelly silty CLAY.			Depth, m	3.50	
Specimen Reference	2	Specimen Depth	3.5	m	Sample Type	В
Test Method BS1377:Part 2:1990, clauses 9.2 and 9.5				KeyLAB ID	Caus2021091616	



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.06300	35	
90	100	0.05097	31	
75	100	0.03627	30	
63	100	0.02596	27	
50	100	0.01846	25	
37.5	100	0.00970	20	
28	100	0.00496	13	
20	100	0.00290	10	
14	99	0.00155	5	
10	91			
6.3	76			
5	71			
3.35	65			
2	58			
1.18	54			
0.6	50	Particle density	(assumed)	
0.425	48	2.65	Mg/m3	
0.3	46			
0.212	41			
0.15	37			
0.063	35			

Dry Mass of sample, g	209

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	42.3
Sand	23.0
Silt	27.7
Clay	7.0

Grading Analysis		
D100	mm	
D60	mm	2.36
D30	mm	0.0376
D10	mm	0.00292
Uniformity Coefficient		810
Curvature Coefficient		0.2

Preparation and testing in accordance with BS1377-2:1990 unless noted below

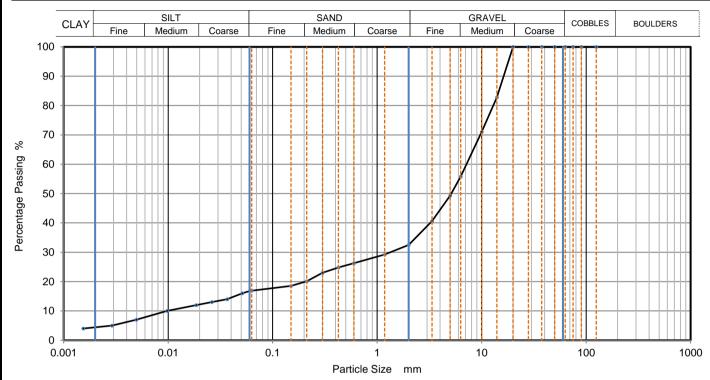


Approved

Stephen.Watson

LAB 05R Version 4

CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
GEOTECH PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	RWGW04D	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	2
Soil Description	Grey very gravelly silty fine to coarse SAND.			Depth, m	8.00
Specimen Reference	2 Specimen 8 m Depth			Sample Type	В
Test Method	3S1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091617



Sievi	ng	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	17
90	100	0.05129	16
75	100	0.03671	14
63	100	0.02611	13
50	100	0.01857	12
37.5	100	0.00976	10
28	100	0.00496	7
20	100	0.00290	5
14	83	0.00154	4
10	71		
6.3	56		
5	49		
3.35	41		
2	33		
1.18	29		
0.6	26	Particle density	(assumed)
0.425	25	2.65	Mg/m3
0.3	23		
0.212	20	1	
0.15	19	1	
0.063	17	7	

206

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	67.5
Sand	15.6
Silt	12.6
Clay	4.3

Grading Analysis		
D100	mm	
D60	mm	7.17
D30	mm	1.33
D10	mm	0.0103
Uniformity Coefficient		700
Curvature Coefficient		24

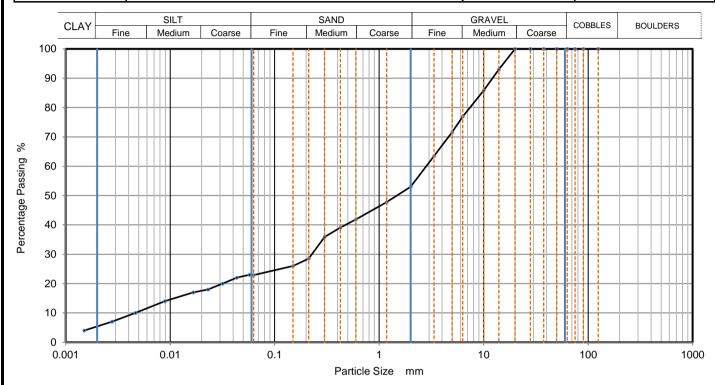
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson

CAUSEWAY PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709		
—— GEOTECH	PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	RWGW09D	
Site Name	Drehid Waste Manage 2021	Orehid Waste Management Facility – Further Landfill Development 2021			Sample No.	2
Soil Description	Brown sandy gravelly silty CLAY.			Depth, m	8.00	
Specimen Reference	2 Specimen 8 m Depth			Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091618	



Sievi	ng	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05742	23
90	100	0.04344	22
75	100	0.03175	20
63	100	0.02299	18
50	100	0.01662	17
37.5	100	0.00889	14
28	100	0.00465	10
20	100	0.00277	7
14	93	0.00151	4
10	86		
6.3	77		
5	72		
3.35	64		
2	53		
1.18	48		
0.6	42	Particle density	(assumed)
0.425	39	2.65	Mg/m3
0.3	36		
0.212	29		
0.15	26	1	
0.063	23	1	

Dry Mass of sample, g	212

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	47.0		
Sand	30.1		
Silt	17.2		
Clay	5.7		

Grading Analysis		
D100	mm	
D60	mm	2.82
D30	mm	0.228
D10	mm	0.00455
Uniformity Coefficient		620
Curvature Coefficient		4

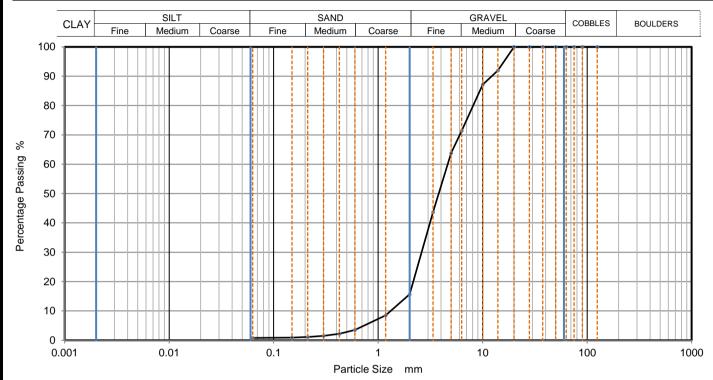
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson

CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
GEOTECH PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	RWGW09S	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	1
Soil Description	Dark grey slightly gravelly slightly silty fine to coarse SAND.			Depth, m	2.00
Specimen Reference	2 Specimen 2 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021091619



Siev	ing	Sedimer	ntation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	92		
10	87		
6.3	71		
5	64		
3.35	44		
2	16		
1.18	9		
0.6	4		
0.425	2	1	
0.3	2		
0.212	1	1	
0.15	1	1	
0.063	1		

Approved

Stephen.Watson

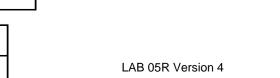
Dry Mass of sample, g	205

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	84.3
Sand	14.9
Fines < 0.063mm	1.0

Grading Analysis		
D100	mm	
D60	mm	4.63
D30	mm	2.6
D10	mm	1.32
Uniformity Coefficient		3.5
Curvature Coefficient		1.1

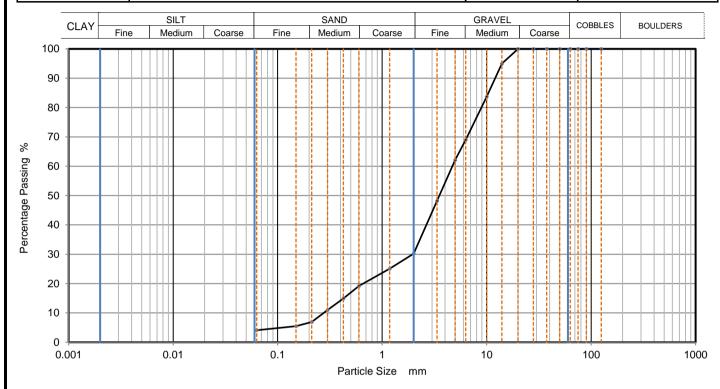
#### Remarks

Preparation and testing in accordance with BS1377-2:1990 unless noted below





CAUSEWAY	DARTI	PARTICLE SIZE DISTRIBUTION		Job Ref	21-0709
—— GEOTECH	PANII			Borehole/Pit No.	RWGW10D
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	1
Soil Description	Dark grey slightly gravelly slightly silty fine to coarse SAND.			Depth, m	3.00
Specimen Reference	2 Specimen 3 m Depth		Sample Type	В	
Test Method	BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021091620



Sieving		Sedimer	ıtation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	84		
6.3	69		
5	62		
3.35	48		
2	30		
1.18	25		
0.6	19		
0.425	15		
0.3	11		
0.212	7		
0.15	6		
0.063	4		

Dry Mass of sample, g	215

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	69.8
Sand	26.1
Fines < 0.063 mm	4.0

Grading Analysis		
D100	mm	
D60	mm	4.7
D30	mm	1.95
D10	mm	0.277
Uniformity Coefficient		17
Curvature Coefficient		2.9

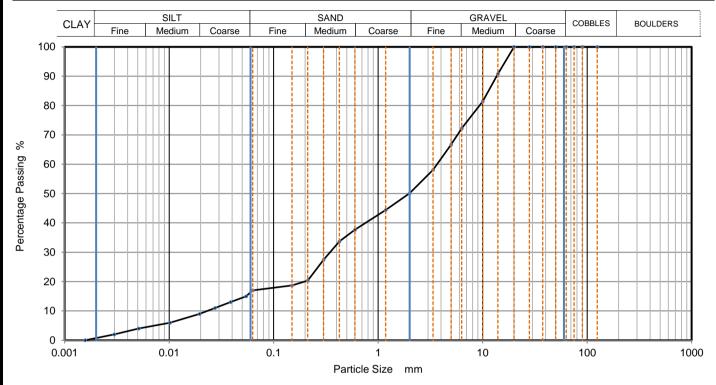
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson

CAUSEWAY PARTICIF SIZE DISTRIBUTION		Job Ref	21-0709		
GEOTECH	PARTICLE SIZE DISTRIBUTION -		Borehole/Pit No.	WLMW05Q	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	8
Soil Description	Dark grey sandy very gravelly silty CLAY.			Depth, m	7.50
Specimen Reference	2 Specimen 7.5 m		Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021091621



Sieving		Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing	
125	100	0.06300	17	
90	100	0.05434	15	
75	100	0.03864	13	
63	100	0.02747	11	
50	100	0.01953	9	
37.5	100	0.01019	6	
28	100	0.00512	4	
20	100	0.00297	2	
14	91	0.00157	0	
10	81			
6.3	72			
5	67			
3.35	58			
2	50			
1.18	44			
0.6	38	Particle density	(assumed)	
0.425	34	2.65	Mg/m3	
0.3	27			
0.212	20			
0.15	19			
0.063	17			

Dry Mass of sample, g	209

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	49.9
Sand	33.2
Silt	16.2
Clay	0.7

Grading Analysis		
D100	mm	
D60	mm	3.65
D30	mm	0.347
D10	mm	0.0216
Uniformity Coefficient		170
Curvature Coefficient		1.5

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	



## LABORATORY **REPORT**



Contract Number: PSL21/7814

19 October 2021 Report Date:

Client's Reference: 21-0709

Client Name: Causeway Geotech

8 Drumahiskey Road

Ballymoney Co.Antrim **BT53 7QL** 

For the attention of: Stephen Watson

Contract Title: Drehid Waste Management Facility - Further Landfill Development 2021

Date Received: 30/9/2021 Date Commenced: 30/9/2021 Date Completed: 19/10/2021

**Notes:** Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

### Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

L Knight S Eyre D Burton

(Senior Technician) (Senior Technician) (Advanced Testing Manager)

5 – 7 Hexthorpe Road, Hexthorpe,

**Doncaster DN4 0AR** tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

Page 1 of

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW05W Top Depth (m): 3.00

Sample Number: 1 Base Depth (m): 3.45

Sample Type: UT Lift Number:

Date Grid Reference:

Description of Specimen
Brownish grey very gravelly sandy CLAY.
Remarks
Undisturbed

Initial Specimen Conditions			
Height	mm	101.40	
Diameter	mm	101.97	
Area	mm <sup>2</sup>	8166.48	
Volume	cm <sup>3</sup>	828.08	
Mass	g	1878	
Dry Mass	g	1698	
Bulk Density	$Mg/m^3$	2.27	
Dry Density	$Mg/m^3$	2.05	
Moisture Content	%	11	
Voids Ratio	-	0.292	
Specific Gravity	$Mg/m^3$	2.65	
(assumed/measured)	-	assumed	

Final Specimen Conditions		
Moisture Content	%	9.1
Bulk Density	Mg/m <sup>3</sup>	2.24
Dry Density	Mg/m <sup>3</sup>	2.05

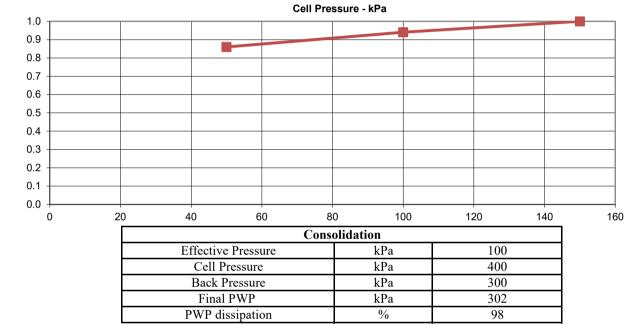
Test Setup			
Date Started		13/10/2021	
Date Finished		17/10/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	3	
Permeability Time	Days	1	



Contract No.
PSL21/7814
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		WLMW05W	
Sample Depth	m	3.00	
Sample No,		1	
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	150	
Final B Value	-	1.00	



B Value

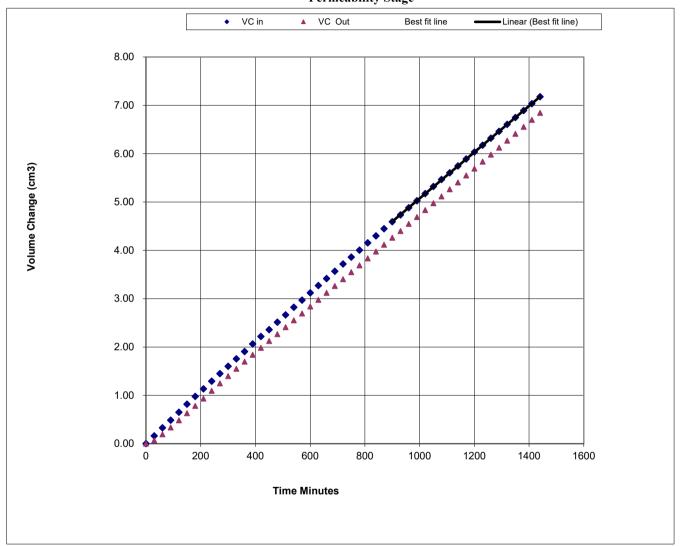


	PSL	Drehid Waste Management Facility - Further	Contract No. PSL21/7814
UKAS TESTING 4043	Professional Soils Laboratory	Landfill Development 2021	Client Ref 21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		WLMW05W	
Sample Depth	m	3.00	
Sample No.		1	
Grid Reference			
Lift Number			

### **Permeability Stage**



Permeability Stage			
Cell Pressure	kPa	400	
Mean Effective Stress	kPa	100	
Back Pressure Diff.	kPa	20	
Mean Rate of Flow	ml/min	0.0048	
Average Temperature	'C	20	
Vertical Permeability Kv	m/s	4.9E-10	





Contract No.
PSL21/7814
Client Ref
21-0709



eurofins Chemtest

Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

**Report No.:** 21-32601-1

Initial Date of Issue: 24-Sep-2021

Client Causeway Geotech Ltd

Client Address: 8 Drumahiskey Road

Balnamore Ballymoney County Antrim BT53 7QL

Contact(s): Carin Cornwall

Colm Hurley
Darren O'Mahony
Gabriella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Michelle Gaffney
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen Watson

**Project** 21-0709 Drehid Waste Management

Stuart Abraham Thomas McAllist

Facility

Quotation No.: Date Received: 20-Sep-2021

Order No.: Date Instructed: 20-Sep-2021

No. of Samples: 1

Turnaround (Wkdays): 7 Results Due: 28-Sep-2021

Date Approved: 24-Sep-2021

Approved By:

Details: Glynn Harvey, Technical Manager



Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

## Results - Soil

### Project: 21-0709 Drehid Waste Management Facility

Client: Causeway Geotech Ltd		Chemtest Job No.:			
Quotation No.:		Chemtest Sample ID.:			
Order No.:		Cli	ent Sam	ple Ref.:	2
		5	Sample I	_ocation:	LFBH01
		Sample Type:			SOIL
		Top Depth (m):			7.5
		Date Sampled:			17-Sep-2021
Determinand	Accred.	Accred. SOP Units LOD			
Moisture	N	2030	%	0.020	11
рН	U	2010		4.0	8.4
Fraction of Organic Carbon	U	2625		0.0010	0.0033

## **Test Methods**

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	рН	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.

### **Report Information**

#### Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

#### Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



#### **HEAD OFFICE** Causeway Geotech Ltd

Registered in Northern Ireland. Company Number: NI610766

#### **REGIONAL OFFICE** Causeway Geotech (IRL) Ltd

Unit 1 Fingal House Stephenstown Industrial Estate Balbriggan, Co Dublin, Ireland, K32 VR66 ROI: +353 (0)1 526 7465

> Registered in Ireland. Company Number: 633786

www.causewaygeotech.com

### **SOIL AND ROCK SAMPLE ANALYSIS** LABORATORY TEST REPORT

24 November 2021

Project Name:	Drehid Waste Management Facility – Further Landfill Development 2021			
Project No.:	21-0709			
Client:	Bord na Móna			
Engineer:	CDM Smith			

We are pleased to attach the results of laboratory testing carried out for the above project. This memo and its attachments constitute a report of the results of tests as detailed in the Contents page(s).

The attached results complete the testing requested and we would therefore wish to confirm that samples will be retained without charge for a period of 28 days from the above date after which they will be appropriately disposed of unless we receive written instructions to the contrary prior to that date.

We trust our report meets with your approval but if you have any queries or require additional information, please do not hesitate to contact the undersigned.

Stephen Watson

John Worm

**Laboratory Manager** 

Signed for and on behalf of Causeway Geotech Ltd















**Project Name:** Drehid Waste Management Facility – Further Landfill Development 2021

**Report Reference:** Schedule 2

The table below details the tests carried out, the specifications used, and the number of tests included in this report.

Tests marked with\* in this report are not United Kingdom Accreditation Service (UKAS) accredited and are not included in Causeway Geotech Limited's scope of UKAS Accreditation Schedule of Tests. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

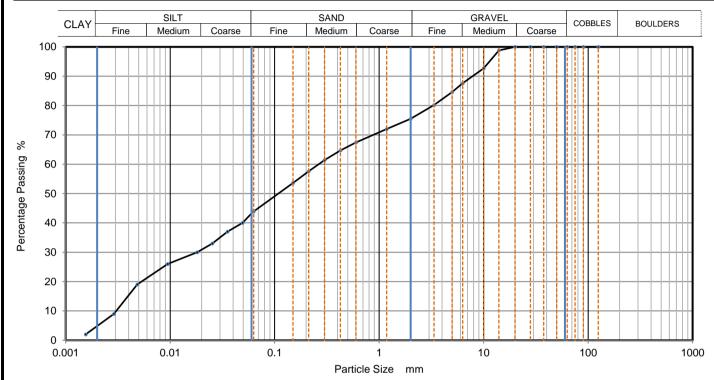
Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL	Particle size distribution - wet sieving	BS 1377-2: 1990: Cl 9.2	10
SOIL	Particle size distribution - sedimentation hydrometer method	BS 1377-2: 1990: Cl 9.5	8

### **SUB-CONTRACTED TESTS**

In agreement with Client, the following tests were conducted by an approved sub-contractor. All sub-contracting laboratories used are UKAS accredited.

Material tested	Type of test/Properties measured/Range of measurement	Standard specifications	No. of results included in the report
SOIL – subcontracted to Pro Soils Limited (UKAS 4043)	Permeability in a triaxial cell (up to 4 days)	BS 1377-6:1990	16
	Extra over days (more than initial 4 days)		0
SOIL – subcontracted to Pro Soils Limited (UKAS 4043)	Bulk and dry density by Linear Measurement Method	BS 1377-2: 1990: Cl 7.2	16
SOIL – Subcontracted to Eurofins Chemtest Ltd (UKAS 2183)	pH Value of Soil		7
SOIL – Subcontracted to Eurofins Chemtest Ltd (UKAS 2183)	Fraction Organic Carbon		7

CAUSEWAY	DART	ICI E SIZE DISI	FRIRITION .	Job Ref <b>21-0709</b>	
PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	LFBH03	
Site Name	Drehid Waste Manag 2021	Orehid Waste Management Facility – Further Landfill Development 2021			4
Soil Description	Brown sandy slightly gravelly silty CLAY.			Depth, m	2.50
Specimen Reference	3 Specimen 2.5 m			Sample Type	В
Test Method	BS1377:Part 2:1990, cla	S1377:Part 2:1990, clauses 9.2 and 9.5			Caus2021102731



Sievi	ng	Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	44
90	100	0.04939	40
75	100	0.03537	37
63	100	0.02532	33
50	100	0.01813	30
37.5	100	0.00947	26
28	100	0.00485	19
20	100	0.00289	9
14	99	0.00155	2
10	93		
6.3	88		
5	85		
3.35	80		
2	76		
1.18	72		
0.6	67	Particle density	(assumed)
0.425	65	2.65	Mg/m3
0.3	61		
0.212	58	1	
0.15	54	1	
0.063	44	1	

Dry Mass of sample, g	508
-----------------------	-----

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	24.5
Sand	31.6
Silt	39.3
Clay	4.6

Grading Analysis		
D100	mm	
D60	mm	0.264
D30	mm	0.0184
D10	mm	0.00307
Uniformity Coefficient		86
Curvature Coefficient		0.42

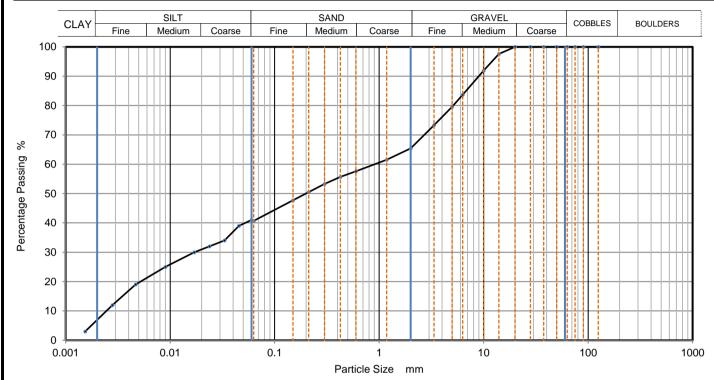
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson

CAUSEWAY	DART	CI E SIZE DIST	DIBLITION	Job Ref <b>21-0709</b>	
PARTICLE SIZE DISTRIBUTION			Borehole/Pit No.	LFBH11	
Site Name	Drehid Waste Manage 2021	Orehid Waste Management Facility – Further Landfill Development 2021			4
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.			Depth, m	3.00
Specimen Reference	3 Specimen 3 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clau	S1377:Part 2:1990, clauses 9.2 and 9.5			Caus2021102732



Sie	ving	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06013	41
90	100	0.04541	39
75	100	0.03307	34
63	100	0.02372	32
50	100	0.01701	30
37.5	100	0.00902	25
28	100	0.00468	19
20	100	0.00280	12
14	98	0.00154	3
10	92		
6.3	84		
5	80		
3.35	73		
2	65		
1.18	62		
0.6	58	Particle density	(assumed)
0.425	56	2.65	Mg/m3
0.3	53		
0.212	51		
0.15	48		
0.063	41		

Dry Mass of sample, g	506

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	34.6		
Sand	24.8		
Silt	33.4		
Clay	7.2		

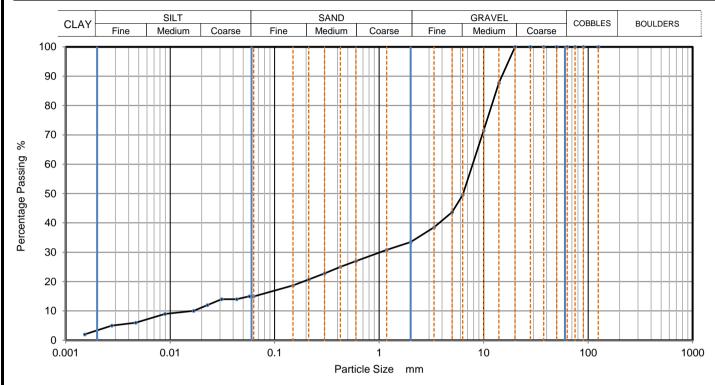
Grading Analysis		
D100	mm	
D60	mm	0.906
D30	mm	0.0178
D10	mm	0.00242
Uniformity Coefficient		370
Curvature Coefficient		0.14

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	

CAUSEWAY PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709	
GEOTECH	PARTICLE SIZE DISTRIBUTION		Borehole/Pit No.	LFBH12	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Grey sandy slightly clayey subangular fine to medium GRAVEL.			Depth, m	3.00
Specimen Reference	Specimen 3 m Depth		Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102726



Sievi	ng	Sedim	Sedimentation		
Particle Size mm	% Passing	Particle Size mm	% Passing		
125	100	0.05722	15		
90	100	0.04328	14		
75	100	0.03111	14		
63	100	0.02270	12		
50	100	0.01677	10		
37.5	100	0.00890	9		
28	100	0.00468	6		
20	100	0.00277	5		
14	88	0.00152	2		
10	72				
6.3	50				
5	44				
3.35	39				
2	34				
1.18	31				
0.6	27	Particle density	(assumed)		
0.425	25	2.65	Mg/m3		
0.3	23				
0.212	21	1			
0.15	19	1			
0.063	15				

Sample Proportions	% dry mass		
Cobbles	0.0		
Gravel	66.5		
Sand	18.6		
Silt	11.9		
Clay	3.0		

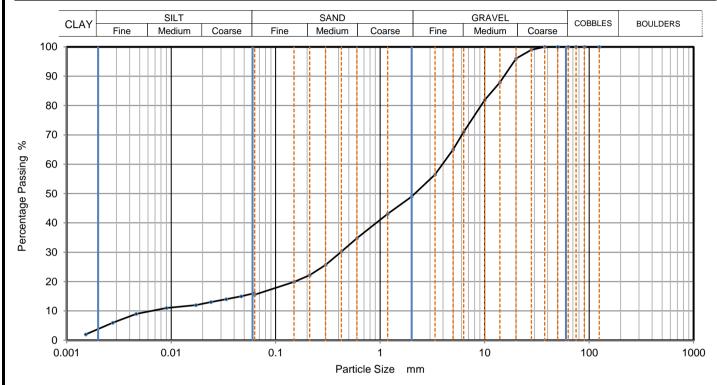
Grading Analysis		
D100	mm	
D60	mm	7.85
D30	mm	1.02
D10	mm	0.0164
Uniformity Coefficient		480
Curvature Coefficient		8.1

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Watson LAB 05R Version 4

CAUSEWAY PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709	
GEOTECH	PARTICLE SIZE DISTRIBUTION		Borehole/Pit No.	LFBH14	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Grey sandy slightly clayey subangular fine to medium GRAVEL.			Depth, m	6.00
Specimen Reference	Specimen 6 m Depth		Sample Type	В	
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102728



Sieving		Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06199	16
90	100	0.04677	15
75	100	0.03355	14
63	100	0.02405	13
50	100	0.01724	12
37.5	100	0.00902	11
28	99	0.00462	9
20	96	0.00277	6
14	88	0.00152	2
10	82		
6.3	71		
5	65		
3.35	57		
2	49		
1.18	43		
0.6	35	Particle density	(assumed)
0.425	30	2.65	Mg/m3
0.3	26		
0.212	22		
0.15	20		
0.063	16		

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	51.0
Sand	33.5
Silt	11.4
Clay	4.1

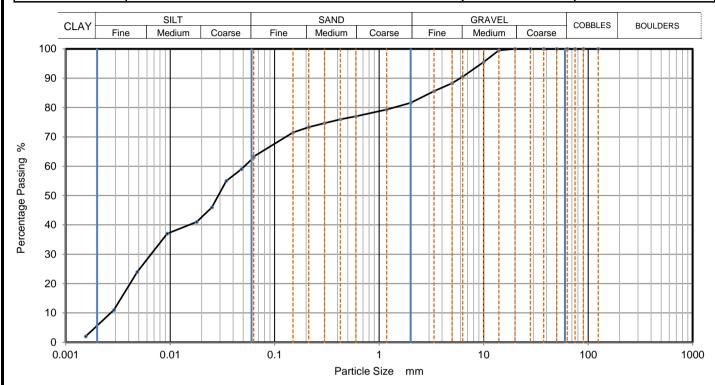
Grading Analysis		
D100	mm	
D60	mm	3.95
D30	mm	0.419
D10	mm	0.00678
Uniformity Coefficient		580
Curvature Coefficient		6.5

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	

CAUSEWAY	DARTI	PARTICLE SIZE DISTRIBUTION -		Job Ref	21-0709
—— GEOTECH	PANII			Borehole/Pit No.	LFBH17
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.			Depth, m	4.50
Specimen Reference	Specimen 4.5 m			Sample Type	В
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102733



Sieving		Sedim	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	63
90	100	0.04810	59
75	100	0.03447	55
63	100	0.02501	46
50	100	0.01791	41
37.5	100	0.00936	37
28	100	0.00485	24
20	100	0.00289	11
14	100	0.00155	2
10	96		
6.3	91		
5	88		
3.35	86		
2	82		
1.18	79		
0.6	77	Particle density	(assumed)
0.425	76	2.65	Mg/m3
0.3	75		
0.212	73	1	
0.15	72	1	
0.063	63	1	

Approved

Dry Mass of sample, g 505	Dry Mass of sample, g
---------------------------	-----------------------

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	18.4
Sand	18.3
Silt	57.6
Clay	5.7

Grading Analysis		
D100	mm	
D60	mm	0.0514
D30	mm	0.00655
D10	mm	0.00271
Uniformity Coefficient		19
Curvature Coefficient		0.31

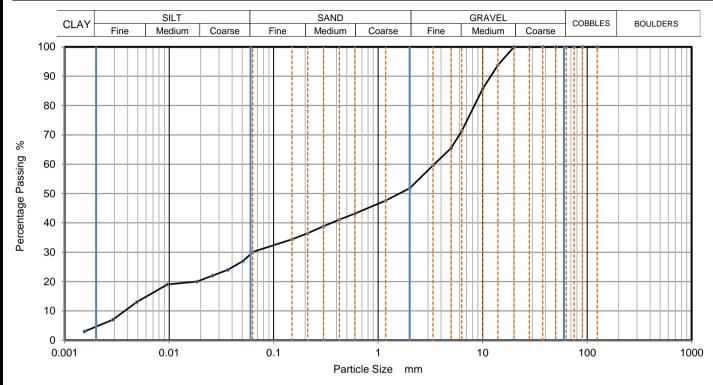
#### Remarks

Preparation and testing in accordance with BS1377-2:1990 unless noted below



LAB 05R Version 4 Stephen.Watson

CAUSEWAY PARTICLE SIZE DISTRIBUTION		Job Ref	21-0709		
—— GEOTECH	PARTICLE SIZE DISTRIBUTION -		Borehole/Pit No.	LFBH17	
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.			Depth, m	7.00
Specimen Reference	Specimen 7 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102734



Sieving		Sedimo	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06300	30
90	100	0.05065	27
75	100	0.03625	24
63	100	0.02594	22
50	100	0.01845	20
37.5	100	0.00958	19
28	100	0.00490	13
20	100	0.00289	7
14	94	0.00154	3
10	86		
6.3	71		
5	66		
3.35	60		
2	52		
1.18	48		
0.6	43	Particle density	(assumed)
0.425	41	2.65	Mg/m3
0.3	39		
0.212	37		
0.15	34		
0.063	30		

Dry Mass of sample, g	502

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	48.2
Sand	21.7
Silt	25.5
Clay	4.6

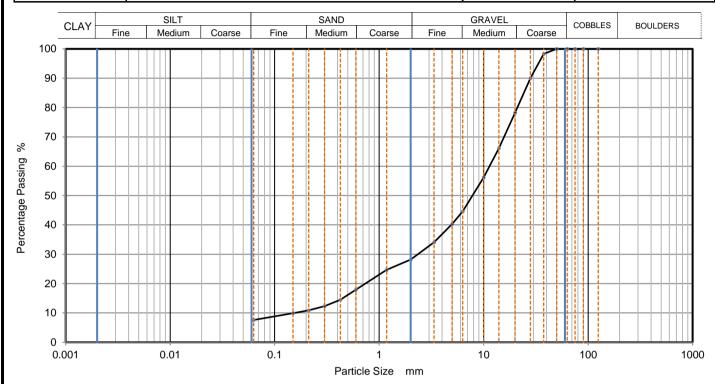
Grading Analysis		
D100	mm	
D60	mm	3.45
D30	mm	0.0625
D10	mm	0.00375
Uniformity Coefficient		920
Curvature Coefficient		0.3

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved	
Stephen.Watson	

CAUSEWAY	DARTI	TOLE SIZE DISTRIBUTION		Job Ref	21-0709	
—— GEOTECH		TICLE SIZE DISTRIBUTION			Borehole/Pit No.	WLMW02W
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4	
Soil Description	Greyish brown sandy slightly silty subangular fine to coarse GRAVEL.			Depth, m	3.85	
Specimen Reference	3 Specimen 3.85 m			Sample Type	В	
Test Method	Method BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021102724	



Sieving		Sedimen	ntation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	98		
28	90		
20	78		
14	66		
10	56		
6.3	45		
5	40		
3.35	34		
2	28		
1.18	25		
0.6	18		
0.425	15	1	
0.3	12		
0.212	11	1	
0.15	10	1	
0.063	8	1	

Dry Mass of sample, g	2949

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	71.8
Sand	20.6
Fines < 0.063mm	8.0

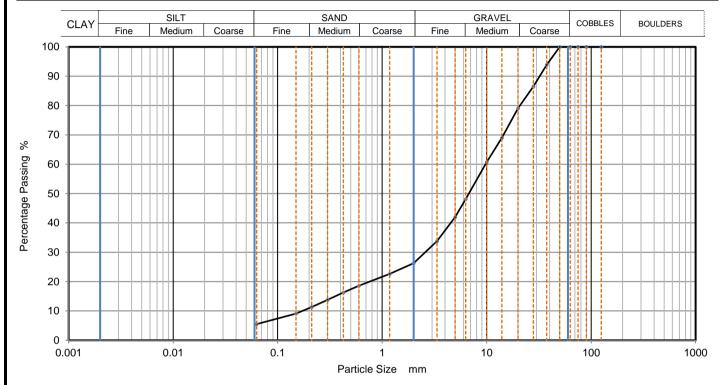
Grading Analysis		
D100	mm	
D60	mm	11.4
D30	mm	2.34
D10	mm	0.157
Uniformity Coefficient		73
Curvature Coefficient		3.1

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved
Stephen.Watson

CAUSEWAY	DARTI	PARTICLE SIZE DISTRIBUTION			21-0709
GEOTECH	PARII	CLE SIZE DIST	IKIBUTION	Borehole/Pit No.	WLMW05W
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Greyish brown sandy slightly silty subangular fine to coarse GRAVEL.			Depth, m	7.50
Specimen Reference	3 Specimen 7.5 m			Sample Type	В
Test Method	nod BS1377:Part 2:1990, clause 9.2			KeyLAB ID	Caus2021102725



Sieving		Sedime	ntation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	94		
28	87		
20	79		
14	69		
10	61		
6.3	48		
5	42		
3.35	34		
2	26		
1.18	23		
0.6	19		
0.425	16	1	
0.3	14		
0.212	11	]	
0.15	9	]	
0.063	6		

Dry Mass of sample, g	3072
-----------------------	------

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	73.7
Sand	20.8
Fines < 0.063mm	6.0

Grading Analysis		
D100	mm	
D60	mm	9.74
D30	mm	2.58
D10	mm	0.172
Uniformity Coefficient		57
Curvature Coefficient		4

Preparation and testing in accordance with BS1377-2:1990 unless noted below

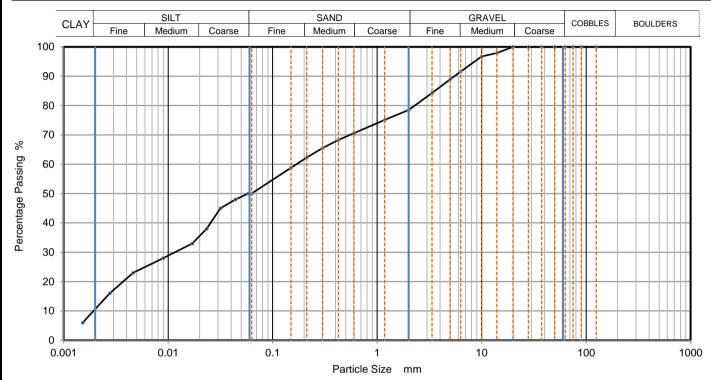


nhan Watson

Stephen.Watson

Approved

CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
GEOTECH				Borehole/Pit No.	WLMW06Q
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.			Depth, m	9.00
Specimen Reference	Specimen 9 m Depth			Sample Type	В
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102729



Sievi	ng	Sedimo	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.05820	50
90	100	0.04400	48
75	100	0.03161	45
63	100	0.02339	38
50	100	0.01701	33
37.5	100	0.00902	28
28	100	0.00462	23
20	100	0.00277	16
14	98	0.00152	6
10	97		
6.3	92		
5	89		
3.35	84		
2	79		
1.18	75		
0.6	71	Particle density	(assumed)
0.425	68	2.65	Mg/m3
0.3	66		
0.212	62	1	
0.15	59	1	
0.063	50	1	

Dry Mass of sample, g	506
-----------------------	-----

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	21.5
Sand	28.5
Silt	39.4
Clay	10.6

Grading Analysis		
D100	mm	
D60	mm	0.169
D30	mm	0.0116
D10	mm	0.00193
Uniformity Coefficient		88
Curvature Coefficient		0.41

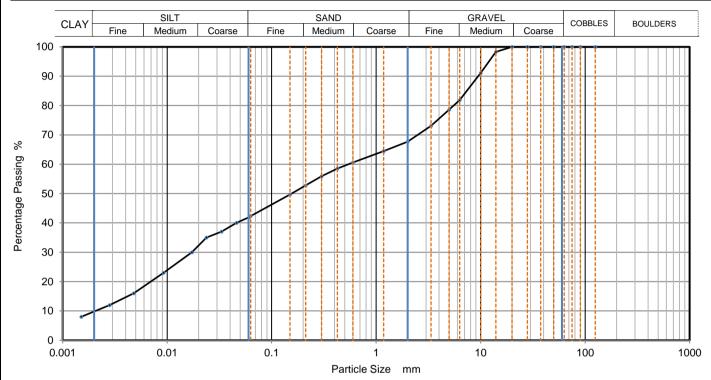
Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson

CAUSEWAY	PARTICLE SIZE DISTRIBUTION			Job Ref	21-0709
GEOTECH				Borehole/Pit No.	WLMW07Q
Site Name	Drehid Waste Management Facility – Further Landfill Development 2021			Sample No.	4
Soil Description	Greyish brown sandy slightly gravelly silty CLAY.			Depth, m	4.95
Specimen Reference	Specimen 4.95 m			Sample Type	В
Test Method	BS1377:Part 2:1990, clauses 9.2 and 9.5			KeyLAB ID	Caus2021102730



Sievi	ing	Sedime	entation
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.06107	42
90	100	0.04609	40
75	100	0.03307	37
63	100	0.02372	35
50	100	0.01724	30
37.5	100	0.00925	23
28	100	0.00479	16
20	100	0.00281	12
14	98	0.00150	8
10	91		
6.3	82		
5	79		
3.35	73		
2	68		
1.18	65		
0.6	61	Particle density	(assumed)
0.425	59	2.65	Mg/m3
0.3	56		
0.212	53	1	
0.15	50	1	
0.063	42	1	

Dry Mass of sample, g 507
---------------------------

Sample Proportions	% dry mass
Cobbles	0.0
Gravel	32.3
Sand	25.4
Silt	32.2
Clay	10.1

Grading Analysis		
D100	mm	
D60	mm	0.544
D30	mm	0.0169
D10	mm	0.00196
Uniformity Coefficient		280
Curvature Coefficient		0.27

Preparation and testing in accordance with BS1377-2:1990 unless noted below



Approved

Stephen.Watson



## LABORATORY REPORT



4043

Contract Number: PSL21/8716

Report Date: 24 November 2021

Client's Reference: 21-0709

Client Name: Causeway Geotech

8 Drumahiskey Road

Ballymoney Co.Antrim BT53 7QL

For the attention of: Stephen Watson

Contract Title: Drehid Waste Management Facility - Further Landfill Development 2021

Date Received: 4/11/2021
Date Commenced: 4/11/2021
Date Completed: 24/11/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

### Checked and Approved Signatories:

A Watkins R Berriman S Royle

(Director) (Quality Manager) (Laboratory Manager)

(Director) (Quality Manager) (Laboratory Manager)

L Knight S Eyre D Burton
(Senior Technician) (Senior Technician) (Advanced Testing Manager)

Page 1 of

5 – 7 Hexthorpe Road, Hexthorpe,

Doncaster DN4 0AR tel: +44 (0)844 815 6641 fax: +44 (0)844 815 6642

e-mail: rberriman@prosoils.co.uk awatkins@prosoils.co.uk

# **SUMMARY OF LABORATORY SOIL DESCRIPTIONS**

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
LFBH16	2	U	4.50		Brownish grey slightly gravelly sandy slightly clayey SILT.
LFBR02	3	U	13.50		Greyish brown very gravelly sandy clayey SILT.
LFBR02	4	U	16.50		Brown very gravelly sandy silty CLAY.
LFBR03	3	U	9.00		Greyish brown very gravelly very sandy SILT.
LFBR03	4	U	10.50		Greyish brown very gravelly very sandy CLAY.
LFBR09		U	4.50		Greyish brown very gravelly sandy silty CLAY.
LFBH10		U	6.00		Greyish brown very gravelly sandy SILT.
LFBR01		В	4.00		Brownish grey very gravelly slightly sandy SILT.
LFBR01		В	4.25		Brownish grey very gravelly slightly sandy SILT.
WLMW07W		В	4.30		Greyish brown very gravelly slightly sandy clayey SILT.
WLMW02W		В	7.00		Greyish brown gravelly SILT.
WLMW06W		В	7.25		Greyish brown very gravelly sandy very silty CLAY.
LFBR01		В	8.05		Greyish brown very gravelly slightly sandy silty CLAY.
WLMW06W		В	8.75		Brown gravelly slightly sandy silty CLAY.
WLMW03W		В	7.00		Greyish brown very gravelly sandy SILT.
WLMW02W		В	9.95		Greyish brown very gravelly sandy slightly clayey SILT.





<b>Contract No:</b>	
PSL21/8716	
Client Ref:	
21-0709	

# SUMMARY OF SOIL DENSITY RELATED TESTS

(BS1377: PART 2 & 4:1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content %	Bulk Density Mg/m <sup>3</sup>	Dry Density Mg/m <sup>3</sup>	Retained 20mm	Retained 37.5mm	Method of compaction kg	Dry	Minimum Dry Density Mg/m <sup>3</sup>	Remarks
LFBH16	2	U	4.5	4.95	13	2.23	1.97	/0	/0	, Kg	IVI g/III	IVIg/III	
LFBR02	3	U	13.50	13.95	12	2.25	2.01						
LFBR02	4	U	16.50	16.95	12.0	2.25	2.01						
LFBR03	3	U	9.00	9.25	9	2.32	2.13						
LFBR03	4	U	10.50	10.95	10	2.22	2.02						
LFBH09		U	4.50	4.95	11	2.25	2.03						
LFBH10		U	6.00	6.27	9	2.33	2.14						
LFBR01		В	4.00	4.00	10	2.30	2.09						
LFBR01		В	4.25	4.25	10	2.30	2.09						
WLMW07W		В	4.30	4.30	15	2.15	1.87						
WLMW02W		В	7.00	7.00	11	2.27	2.05						
WLMW06W		В	7.25	7.25	9	2.33	2.14						
LFBR01		В	8.05	8.05	8	2.34	2.17						
WLMW06W		В	8.75	8.75	12	2.27	2.03						
WLMW03W		В	7.00	7.00	8	2.36	2.19						
WLMW02W		В	9.95	9.95	7	2.39	2.23						



<b>Contract No:</b>
PSL21/8716
Client Ref:
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBH16 Top Depth (m): 4.50

Sample Number: 2 Base Depth (m): 4.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen
See summary of soil descriptions.
Remarks
Undisturbed

Initial Specimen Conditions					
Height	mm	101.18			
Diameter	mm	102.81			
Area	$mm^2$	8301.58			
Volume	cm <sup>3</sup>	839.95			
Mass	g	1871			
Dry Mass	g	1653			
Bulk Density	$Mg/m^3$	2.23			
Dry Density	$Mg/m^3$	1.97			
Moisture Content	%	13			
Voids Ratio	-	0.347			
Specific Gravity	$Mg/m^3$	2.65			
(assumed/measured)	-	assumed			

Final Specimen Conditions				
Moisture Content	%	11		
Bulk Density	Mg/m <sup>3</sup>	2.18		
Dry Density	Mg/m <sup>3</sup>	1.97		

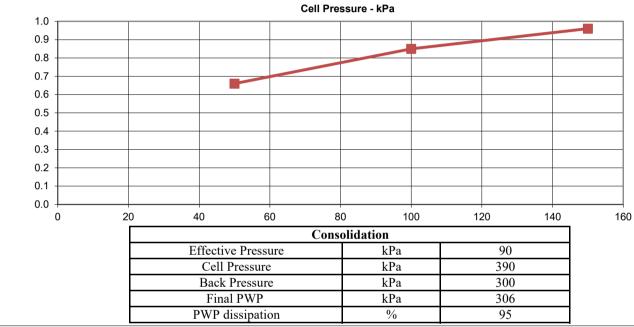
Te	est Setup	
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



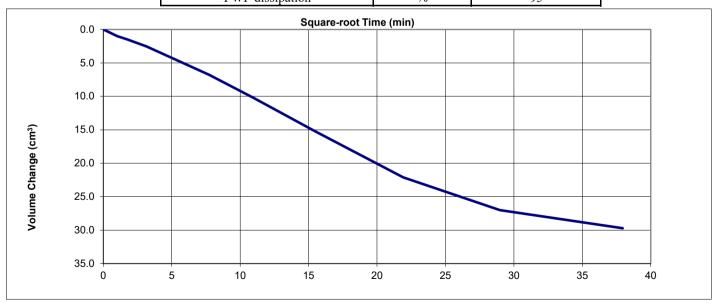
Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details					
Hole Number		LFBH16			
Sample Depth	m	4.50			
Sample No,		2			
Grid Reference					
Lift Number					
Satu	ıration				
Cell Pressure Incr.	kPa	50			
Back Pressure Incr.	kPa	50			
Differential Pressure	kPa	10			
Final Cell Pressure	kPa	150			
Final B Value	-	0.96			



B Value

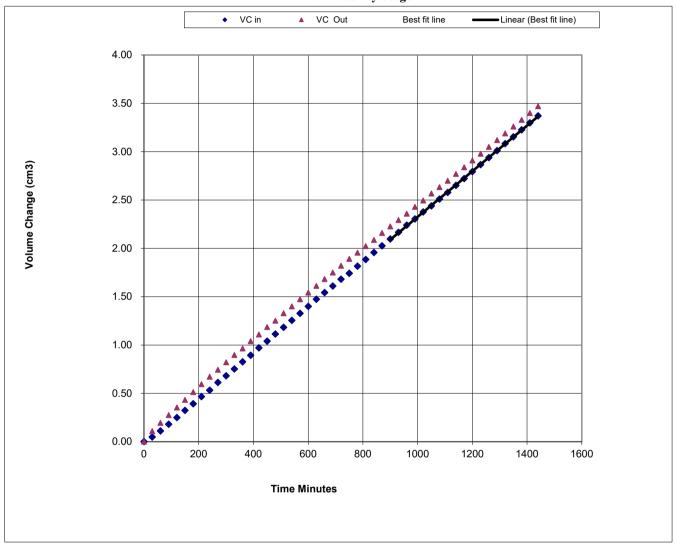




BS 1377: Part 6: 1990 Clause 6

Specim	en Details	
Hole Number		LFBH16
Sample Depth	m	4.50
Sample No.		2
Grid Reference		
Lift Number		

### **Permeability Stage**



Perme	ability Stage	
Cell Pressure	kPa	390
Mean Effective Stress	kPa	90
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0024
Average Temperature	'C	20
Vertical Permeability Kv	m/s	2.3E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR02 Top Depth (m): 13.50

Sample Number: 3 Base Depth (m): 13.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen
See summary of soil descriptions.
Remarks
Undisturbed

Initial Specimen Conditions		
Height	mm	99.01
Diameter	mm	104.57
Area	$mm^2$	8588.24
Volume	cm <sup>3</sup>	850.32
Mass	g	1913
Dry Mass	g	1709
Bulk Density	$Mg/m^3$	2.25
Dry Density	$Mg/m^3$	2.01
Moisture Content	%	12
Voids Ratio	-	0.319
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

Final Specin	nen Conditions	
Moisture Content	%	11
Bulk Density	Mg/m <sup>3</sup>	2.23
Dry Density	Mg/m <sup>3</sup>	2.01

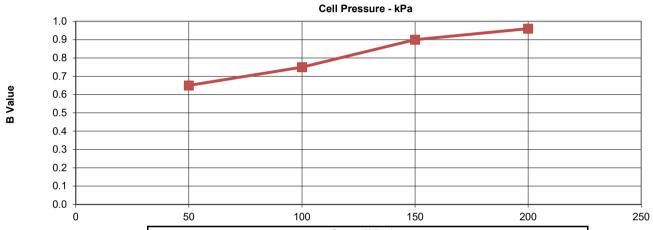
Т	est Setup	
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



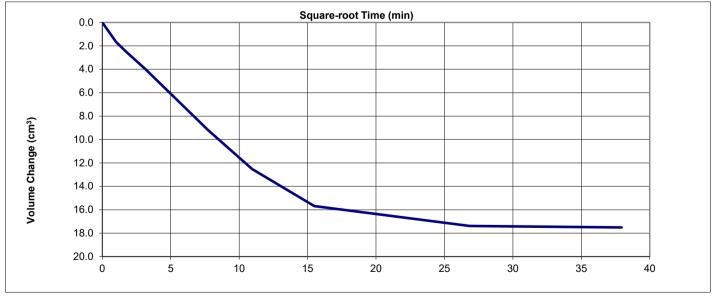
Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		LFBR02	
Sample Depth	m	13.50	
Sample No,		3	
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	200	
Final B Value	-	0.96	



Consolidation		
Effective Pressure	kPa	270
Cell Pressure	kPa	570
Back Pressure	kPa	300
Final PWP	kPa	300
PWP dissipation	%	100



**************************************	
UKAS TESTING 4043	Profess

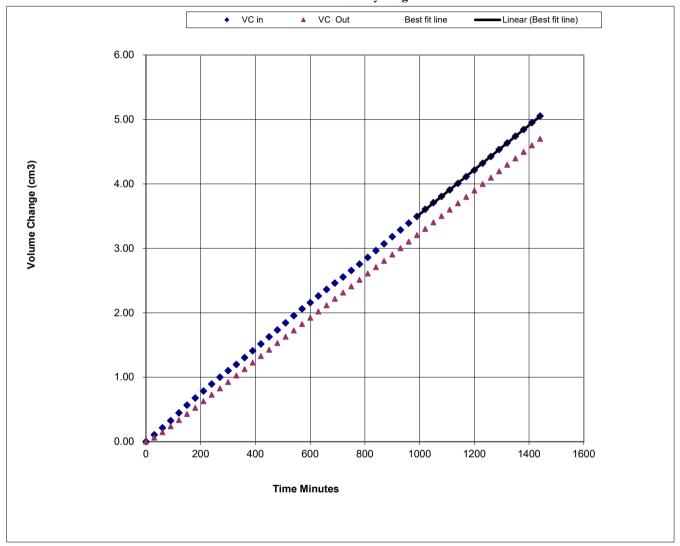
PSL
Professional Soils Laboratory

Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specim	en Details	
Hole Number		LFBR02
Sample Depth	m	13.50
Sample No.		3
Grid Reference		
Lift Number		

### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	570
Mean Effective Stress	kPa	270
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0034
Average Temperature	'C	20
Vertical Permeability Kv	m/s	3.2E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR02 Top Depth (m): 16.50

Sample Number: 4 Base Depth (m): 16.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen
See summary of soil descriptions.
Remarks
Undisturbed

Initial Specimen Conditions			
Height	mm	101.19	
Diameter	mm	104.18	
Area	mm <sup>2</sup>	8524.30	
Volume	cm <sup>3</sup>	862.57	
Mass	g	1942	
Dry Mass	g	1735	
Bulk Density	$Mg/m^3$	2.25	
Dry Density	$Mg/m^3$	2.01	
Moisture Content	%	12	
Voids Ratio	-	0.318	
Specific Gravity	$Mg/m^3$	2.65	
(assumed/measured)	-	assumed	

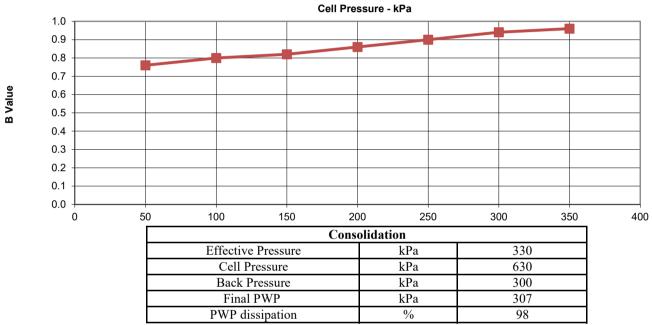
Final Specimen Conditions			
Moisture Content	%	10	
Bulk Density	Mg/m <sup>3</sup>	2.21	
Dry Density	Mg/m <sup>3</sup>	2.01	

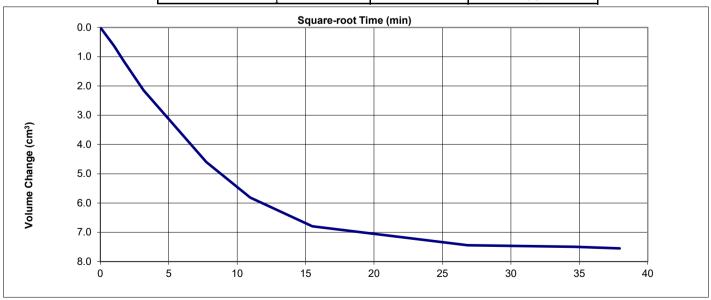
Te	est Setup	
Date Started		15/11/2021
Date Finished		19/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	16.50
Sample No,		4
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.96



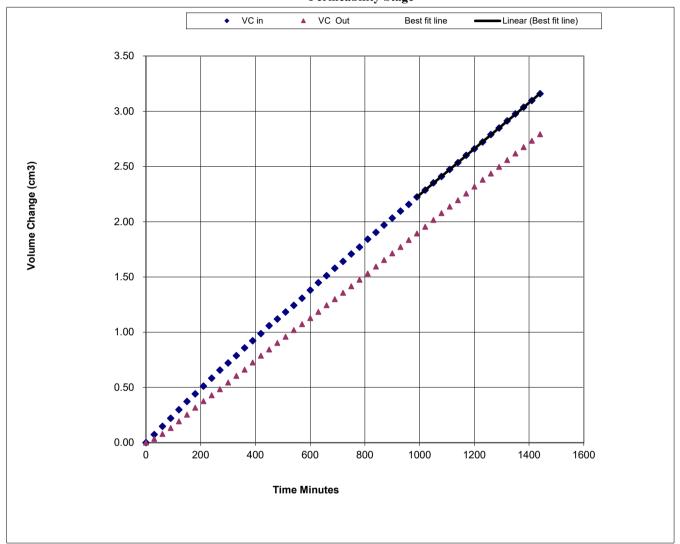




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		LFBR02
Sample Depth	m	16.50
Sample No.		4
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	630
Mean Effective Stress	kPa	330
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0021
Average Temperature	'C	20
Vertical Permeability Kv	m/s	2.0E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR03 Top Depth (m): 9.00

Sample Number: 3 Base Depth (m): 9.25

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions		
Height	mm	101.22
Diameter	mm	101.18
Area	$mm^2$	8040.43
Volume	cm <sup>3</sup>	813.85
Mass	g	1892
Dry Mass	g	1736
Bulk Density	$Mg/m^3$	2.32
Dry Density	$Mg/m^3$	2.13
Moisture Content	%	9.0
Voids Ratio	-	0.242
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

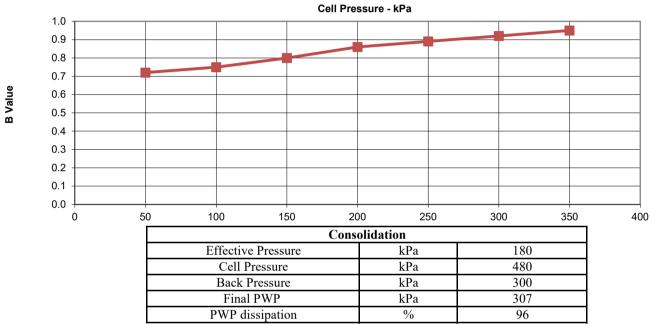
Final Specimen Conditions		
Moisture Content	%	8.6
Bulk Density	Mg/m <sup>3</sup>	2.32
Dry Density	Mg/m <sup>3</sup>	2.13

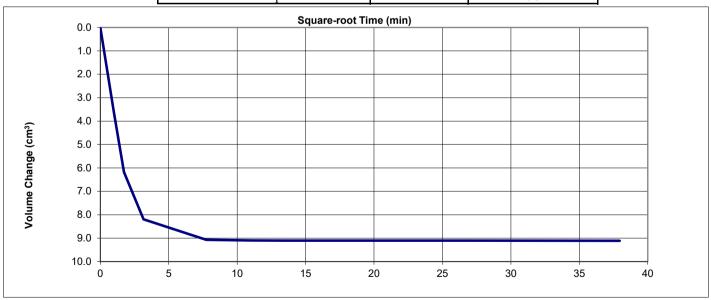
Test Setup		
Date Started		14/11/2021
Date Finished		18/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	9.00
Sample No,		3
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.95



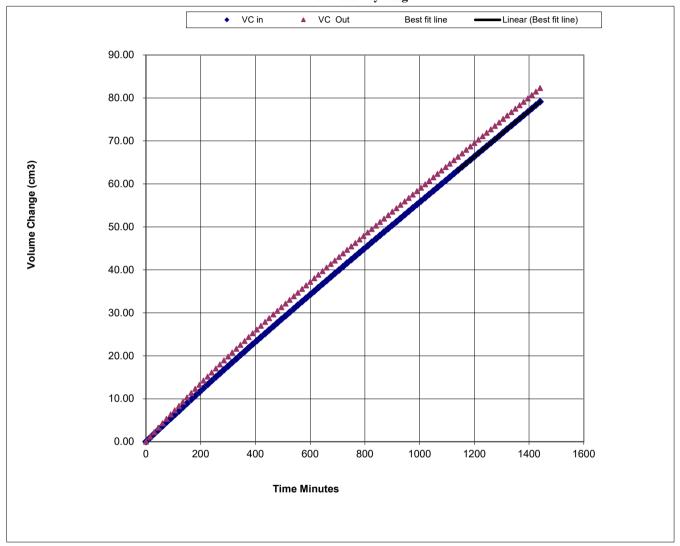




BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	9.00
Sample No.		3
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	480
Mean Effective Stress	kPa	180
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0532
Average Temperature	'C	20
Vertical Permeability Kv	m/s	5.5E-09





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR03 Top Depth (m): 10.50

Sample Number: 4 Base Depth (m): 10.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil description	18.	
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	99.28
Diameter	mm	103.65
Area	$mm^2$	8437.79
Volume	cm <sup>3</sup>	837.70
Mass	g	1856
Dry Mass	g	1689
Bulk Density	Mg/m <sup>3</sup>	2.22
Dry Density	$Mg/m^3$	2.02
Moisture Content	%	9.9
Voids Ratio	-	0.314
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

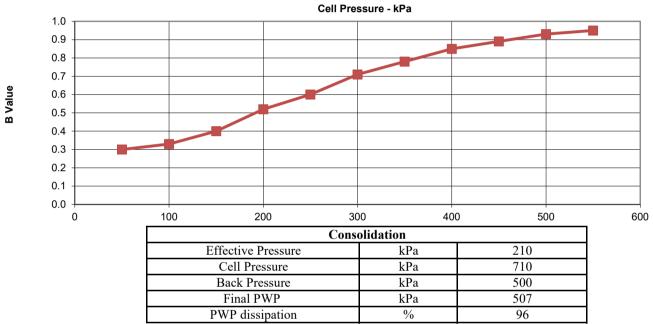
Final Specimen Conditions		
Moisture Content	%	11
Bulk Density	Mg/m <sup>3</sup>	2.24
Dry Density	Mg/m <sup>3</sup>	2.02

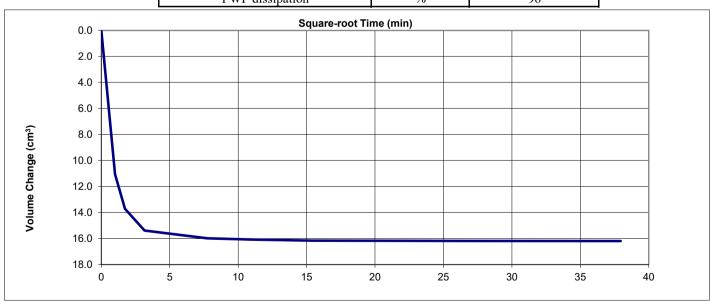
Test Setup		
Date Started		14/11/2021
Date Finished		18/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		LFBR03	
Sample Depth	m	10.50	
Sample No,		4	
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	550	
Final B Value	-	0.95	



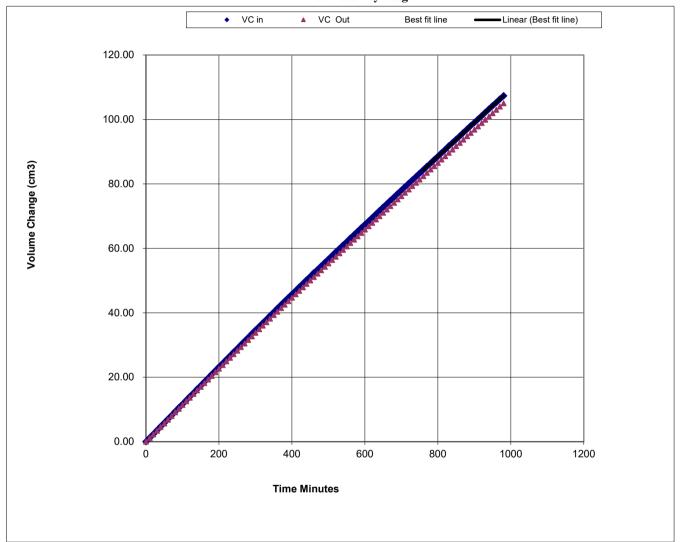




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		LFBR03
Sample Depth	m	10.50
Sample No.		4
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	710
Mean Effective Stress	kPa	210
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.1046
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.0E-08





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBH09 Top Depth (m): 4.50

Sample Number: Base Depth (m): 4.95

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	100.20
Diameter	mm	104.49
Area	$mm^2$	8575.10
Volume	cm <sup>3</sup>	859.23
Mass	g	1931
Dry Mass	g	1736
Bulk Density	Mg/m <sup>3</sup>	2.25
Dry Density	Mg/m <sup>3</sup>	2.02
Moisture Content	%	11
Voids Ratio	-	0.312
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

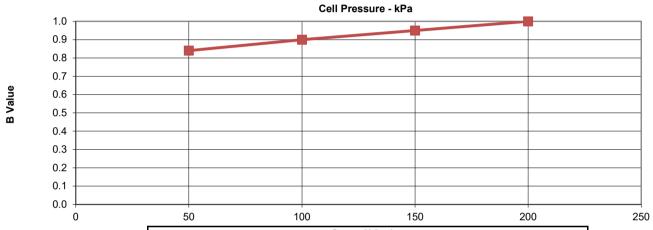
Final Specimen Conditions		
Moisture Content	%	10
Bulk Density	Mg/m <sup>3</sup>	2.23
Dry Density	Mg/m <sup>3</sup>	2.02

Test Setup		
Date Started		16/11/2021
Date Finished		20/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

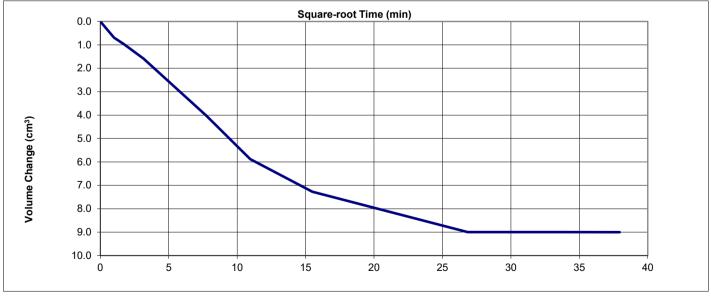


Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		LFBH09	
Sample Depth	m	4.50	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	200	
Final B Value	-	1.00	



Consolidation		
Effective Pressure	kPa	90
Cell Pressure	kPa	390
Back Pressure	kPa	300
Final PWP	kPa	300
PWP dissipation	%	100

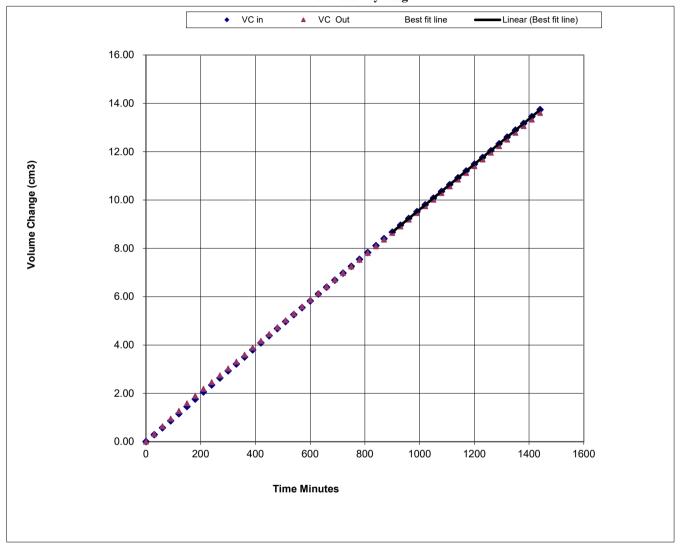


Professional Soils Laboratory  Landfill Development 2021  Client Ref 21-0709
--

BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		LFBH09
Sample Depth	m	4.50
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	390
Mean Effective Stress	kPa	90
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0094
Average Temperature	'C	20
Vertical Permeability Kv	m/s	8.9E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBH10 Top Depth (m): 6.00

Sample Number: Base Depth (m): 6.27

Sample Type: U Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	99.99
Diameter	mm	104.51
Area	$mm^2$	8578.39
Volume	cm <sup>3</sup>	857.75
Mass	g	2000
Dry Mass	g	1835
Bulk Density	$Mg/m^3$	2.33
Dry Density	$Mg/m^3$	2.14
Moisture Content	%	8.9
Voids Ratio	-	0.238
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	8.6
Bulk Density	Mg/m <sup>3</sup>	2.32
Dry Density	Mg/m <sup>3</sup>	2.14

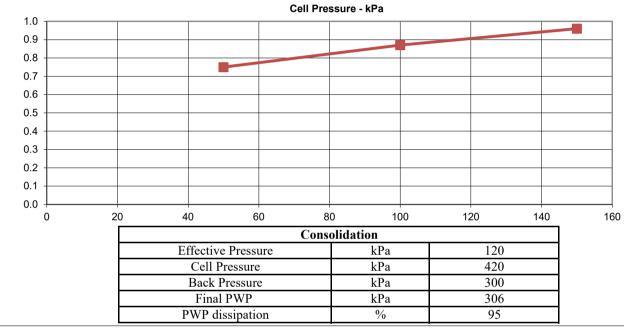
Test Setup			
Date Started		16/11/2021	
Date Finished		20/11/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	1	
Permeability Time	Days	1	



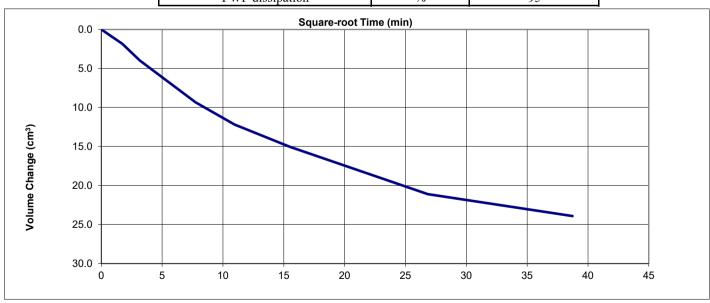
Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		LFBH10	
Sample Depth	m	6.00	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	150	
Final B Value	-	0.96	



B Value

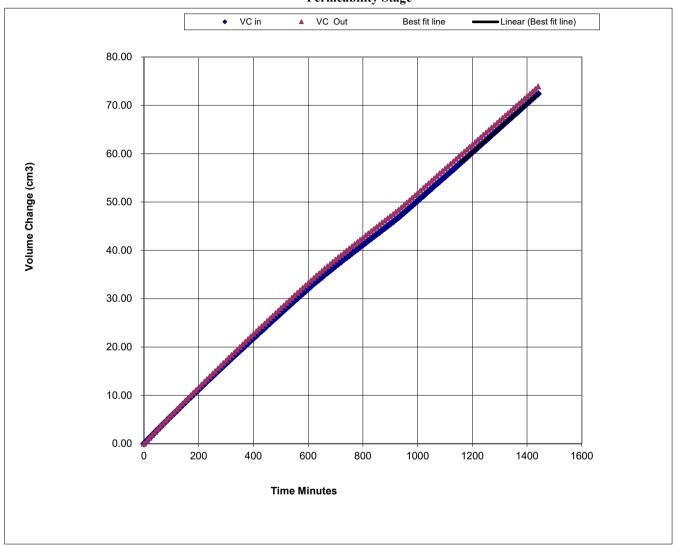




BS 1377 : Part 6 : 1990 Clause 6

Specimen Details		
Hole Number		LFBH10
Sample Depth	m	6.00
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	420
Mean Effective Stress	kPa	120
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0505
Average Temperature	'C	20
Vertical Permeability Kv	m/s	4.8E-09





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR01 Top Depth (m): 4.00

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions			
Height	mm	101.47	
Diameter	mm	101.98	
Area	$mm^2$	8168.08	
Volume	cm <sup>3</sup>	828.81	
Mass	g	1908	
Dry Mass	g	1740	
Bulk Density	$Mg/m^3$	2.30	
Dry Density	$Mg/m^3$	2.10	
Moisture Content	%	9.7	
Voids Ratio	-	0.262	
Specific Gravity	$Mg/m^3$	2.65	
(assumed/measured)	-	assumed	

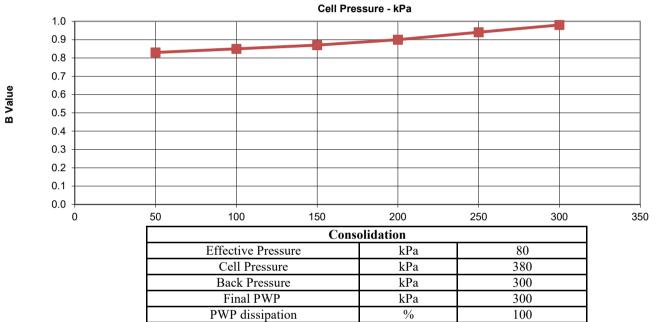
Final Specimen Conditions		
Moisture Content	%	8.5
Bulk Density	Mg/m <sup>3</sup>	2.28
Dry Density	Mg/m <sup>3</sup>	2.10

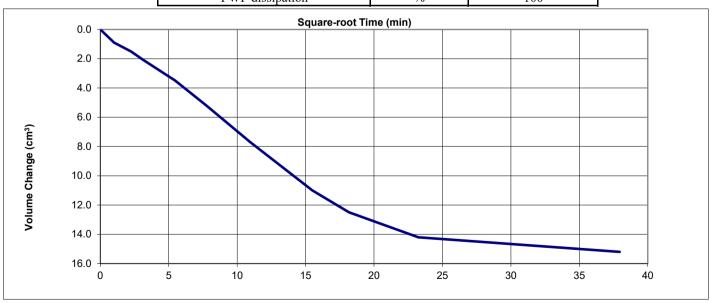
Test Setup			
Date Started		09/11/2021	
Date Finished		14/11/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	1	
Permeability Time	Days	2	



Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		LFBR01	
Sample Depth	m	4.00	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	300	
Final B Value	-	0.98	



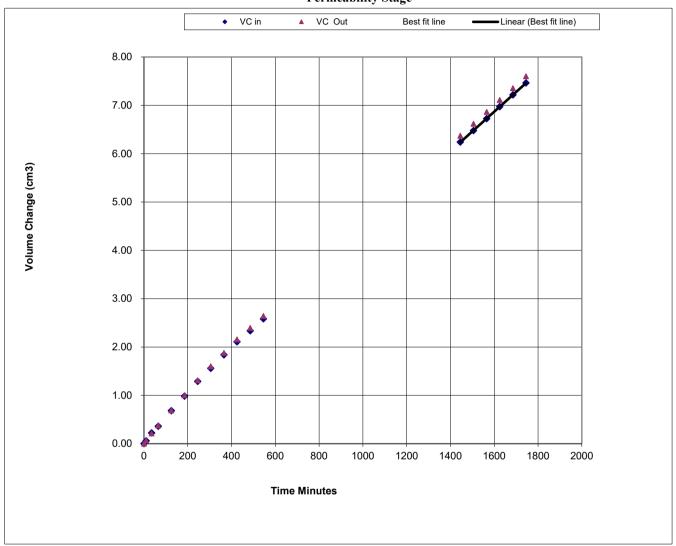




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.00
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	380
Mean Effective Stress	kPa	80
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0041
Average Temperature	'C	20
Vertical Permeability Kv	m/s	4.1E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR01 Top Depth (m): 4.25

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	
See summary of soil descriptions.	
Remarks	
Undisturbed	

Initial Specimen Conditions			
Height	mm	101.27	
Diameter	mm	103.00	
Area	$mm^2$	8332.29	
Volume	cm <sup>3</sup>	843.81	
Mass	g	1939	
Dry Mass	g	1768	
Bulk Density	Mg/m <sup>3</sup>	2.30	
Dry Density	$Mg/m^3$	2.10	
Moisture Content	%	9.6	
Voids Ratio	-	0.264	
Specific Gravity	$Mg/m^3$	2.65	
(assumed/measured)	-	assumed	

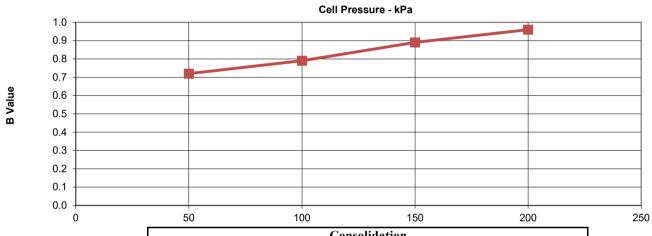
Final Specimen Conditions					
Moisture Content % 8.3					
Bulk Density	Mg/m <sup>3</sup>	2.27			
Dry Density	Mg/m <sup>3</sup>	2.10			

Test Setup			
Date Started		09/11/2021	
Date Finished		13/11/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	1	
Permeability Time	Days	1	

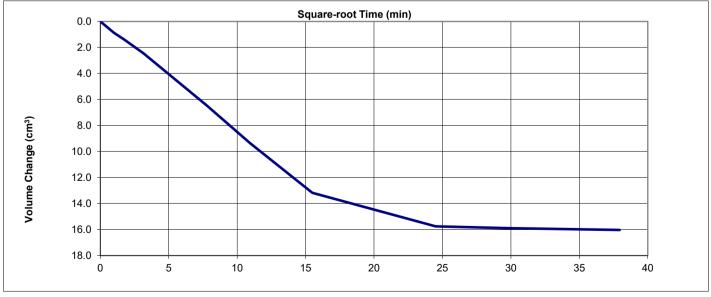


Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		LFBR01	
Sample Depth	m	4.25	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	200	
Final B Value	-	0.96	



Consolidation				
Effective Pressure	kPa	85		
Cell Pressure	kPa	385		
Back Pressure	kPa	300		
Final PWP	kPa	304		
PWP dissipation	%	96		

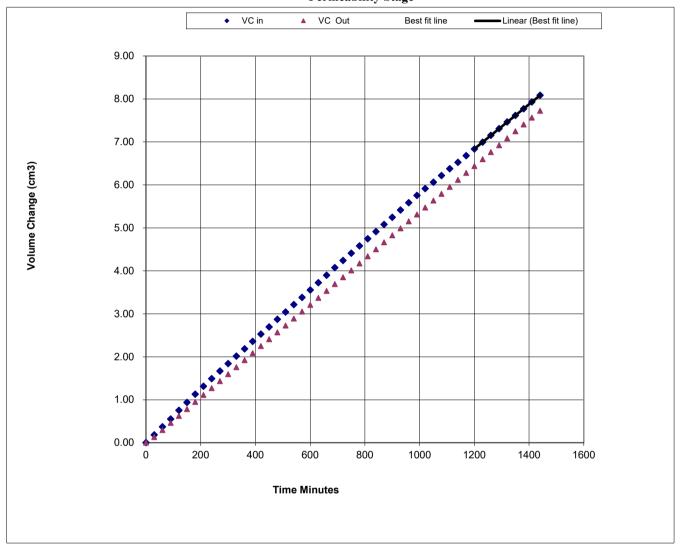


1 4043	UKAS TISTING 4043	Professional Soils Laboratory	Drehid Waste Management Facility - Further Landfill Development 2021	Contract No. PSL21/8716 Client Ref 21-0709
--------	-------------------------	-------------------------------	---	--

BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		LFBR01
Sample Depth	m	4.25
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	385
Mean Effective Stress	kPa	85
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0052
Average Temperature	'C	20
Vertical Permeability Kv	m/s	5.1E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW07W Top Depth (m): 4.30

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen
See summary of soil descriptions.
Remarks
Undisturbed

Initial Specimen Conditions		
Height	mm	101.73
Diameter	mm	103.93
Area	$mm^2$	8483.43
Volume	cm <sup>3</sup>	863.02
Mass	g	1857
Dry Mass	g	1614
Bulk Density	$Mg/m^3$	2.15
Dry Density	$Mg/m^3$	1.87
Moisture Content	%	15
Voids Ratio	-	0.417
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	14
Bulk Density	Mg/m <sup>3</sup>	2.13
Dry Density	Mg/m <sup>3</sup>	1.87

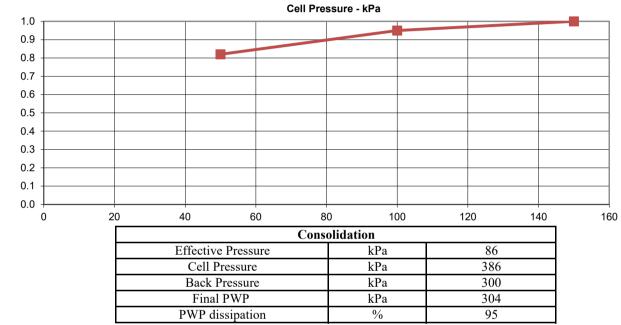
Te	est Setup	
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



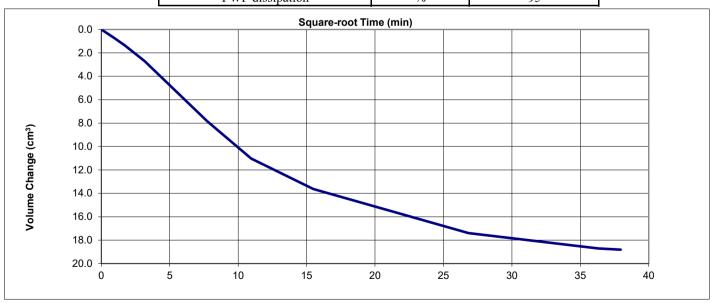
Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details				
Hole Number		WLMW07W		
Sample Depth	m	4.30		
Sample No,				
Grid Reference				
Lift Number				
Satu	Saturation			
Cell Pressure Incr.	kPa	50		
Back Pressure Incr.	kPa	50		
Differential Pressure	kPa	10		
Final Cell Pressure	kPa	150		
Final B Value	-	1.00		



B Value

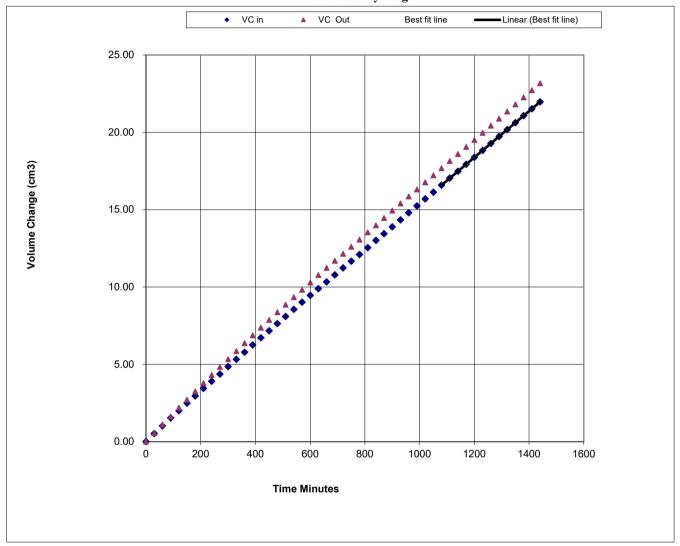


Drehid Waste Management Facility - Further Landfill Development 2021	ontract No. SL21/8716 Client Ref 21-0709
--	---

BS 1377: Part 6: 1990 Clause 6

Specim	en Details	
Hole Number		WLMW07W
Sample Depth	m	4.30
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	386
Mean Effective Stress	kPa	86
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0149
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.5E-09





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW02W Top Depth (m): 7.00

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	101.20
Diameter	mm	102.41
Area	$mm^2$	8237.11
Volume	cm <sup>3</sup>	833.60
Mass	g	1894
Dry Mass	g	1704
Bulk Density	$Mg/m^3$	2.27
Dry Density	$Mg/m^3$	2.04
Moisture Content	%	11
Voids Ratio	-	0.297
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

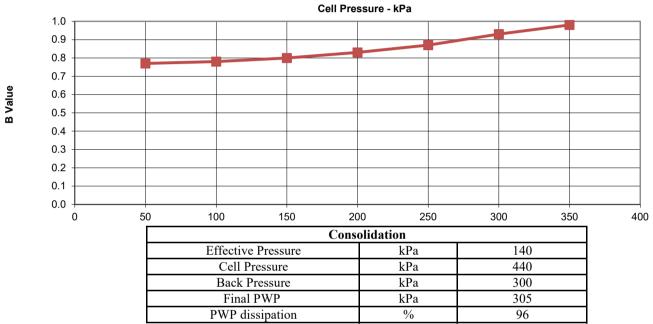
Final Specimen Conditions		
Moisture Content	%	10
Bulk Density	Mg/m <sup>3</sup>	2.25
Dry Density	Mg/m <sup>3</sup>	2.04

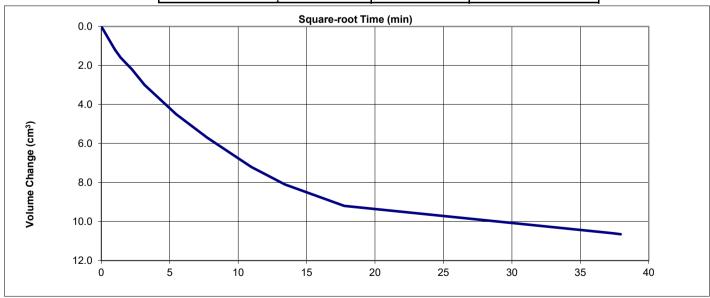
Test Setup		
Date Started		10/11/2021
Date Finished		14/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	2

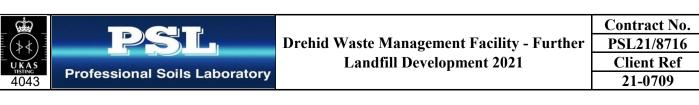


Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		WLMW02W	
Sample Depth	m	7.00	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	350	
Final B Value	-	0.98	



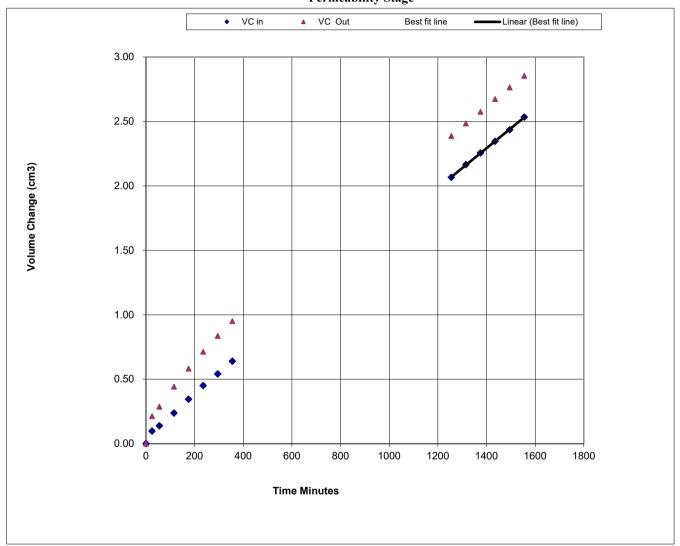




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	7.00
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	440
Mean Effective Stress	kPa	140
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0015
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.5E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW06W Top Depth (m): 7.25

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	99.99
Diameter	mm	105.35
Area	$mm^2$	8716.84
Volume	cm <sup>3</sup>	871.60
Mass	g	2034
Dry Mass	g	1863
Bulk Density	$Mg/m^3$	2.33
Dry Density	$Mg/m^3$	2.14
Moisture Content	%	9.2
Voids Ratio	-	0.240
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

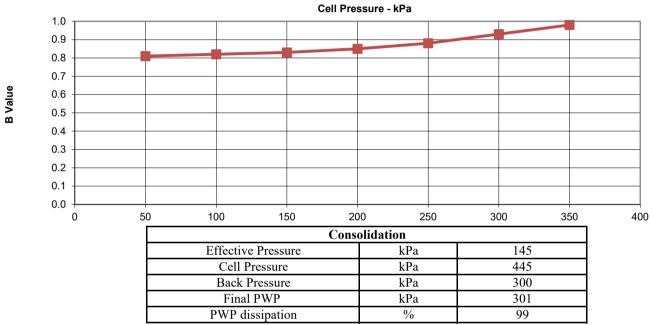
Final Specimen Conditions		
Moisture Content	%	8.8
Bulk Density	Mg/m <sup>3</sup>	2.32
Dry Density	Mg/m <sup>3</sup>	2.14

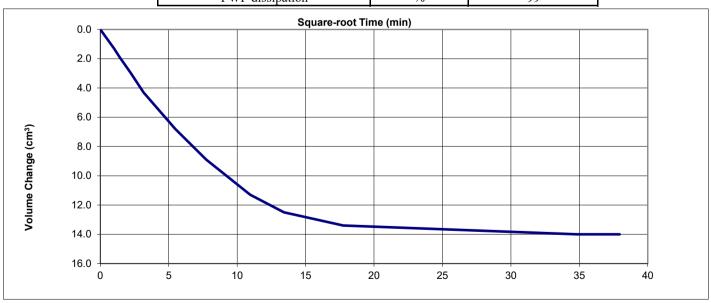
Test Setup			
Date Started		10/11/2021	
Date Finished		14/11/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	1	
Permeability Time	Days	2	



Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		WLMW06W	
Sample Depth	m	7.25	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	350	
Final B Value	-	0.98	



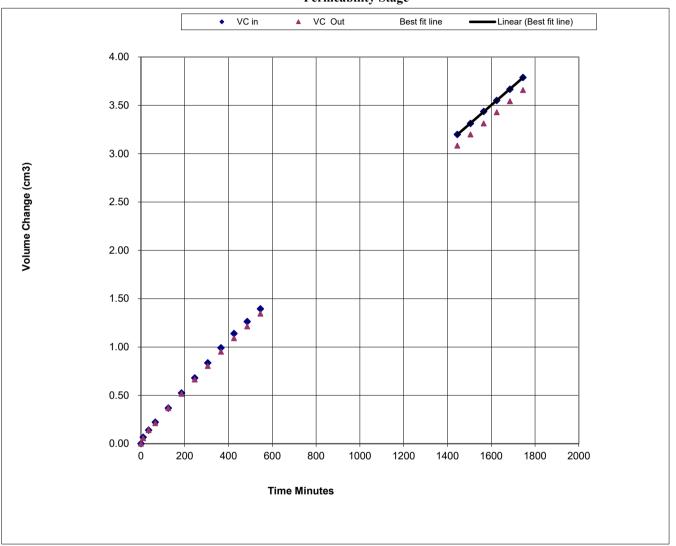




BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		WLMW06W	
Sample Depth	m	7.25	
Sample No.			
Grid Reference			
Lift Number			

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	445
Mean Effective Stress	kPa	145
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0020
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.8E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: LFBR01 Top Depth (m): 8.05

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen	1	
See summary of soil description	18.	
Remarks		
Undisturbed		

Initial Specimen Conditions		
Height	mm	99.19
Diameter	mm	104.44
Area	$mm^2$	8566.90
Volume	cm <sup>3</sup>	849.75
Mass	g	1985
Dry Mass	g	1836
Bulk Density	Mg/m <sup>3</sup>	2.34
Dry Density	$Mg/m^3$	2.16
Moisture Content	%	8.1
Voids Ratio	-	0.227
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

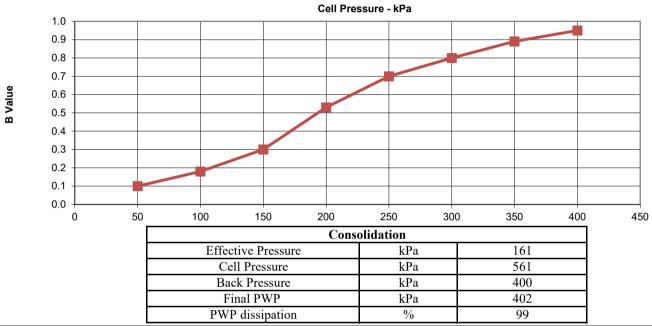
Final Specimen Conditions		
Moisture Content	%	8.5
Bulk Density	Mg/m <sup>3</sup>	2.34
Dry Density	Mg/m <sup>3</sup>	2.16

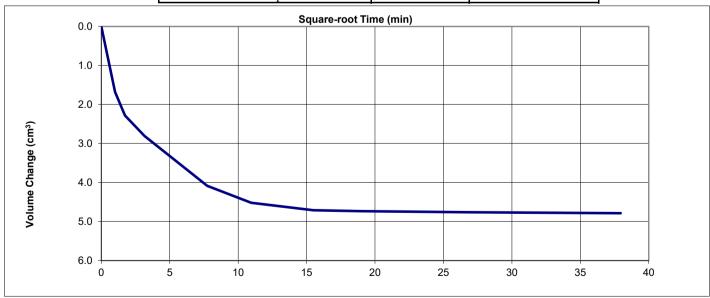
Test Setup			
Date Started		09/11/2021	
Date Finished		14/11/2021	
Top Drain Used		Y	
Base Drain Used		Y	
Method of Saturation		By back pressure	
Direction Of Flow		Vertically Downwards	
Saturation Time	Days	1	
Consolidation Time	Days	1	
Permeability Time	Days	1	

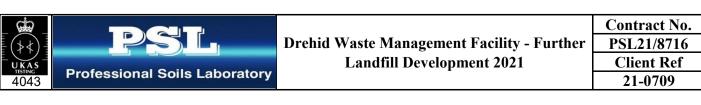


Contract No.
PSL21/8716
Client Ref
21-0709

Specimen Details			
Hole Number		LFBR01	
Sample Depth	m	8.05	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	400	
Final B Value	-	0.95	



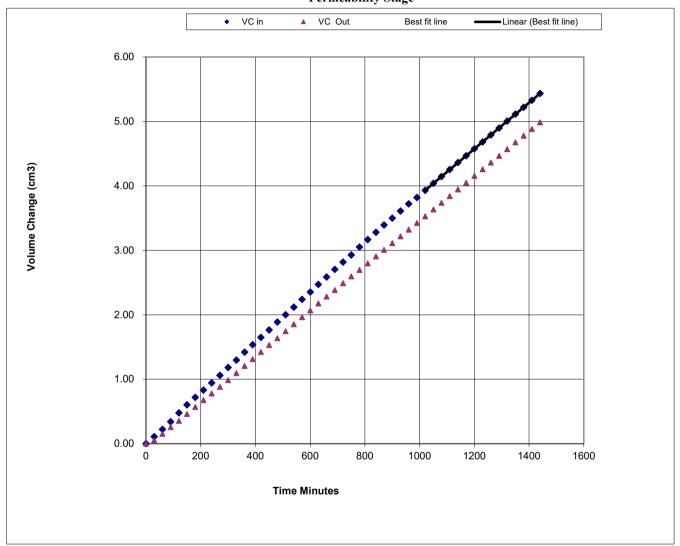




BS 1377: Part 6: 1990 Clause 6

Specim	en Details	
Hole Number		LFBR01
Sample Depth	m	8.05
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	561
Mean Effective Stress	kPa	161
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0036
Average Temperature	'C	20
Vertical Permeability Kv	m/s	3.4E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW06W Top Depth (m): 8.75

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen
See summary of soil descriptions.
Remarks
Undisturbed

Initial Specimen Conditions		
Height	mm	100.65
Diameter	mm	103.99
Area	$mm^2$	8493.23
Volume	cm <sup>3</sup>	854.84
Mass	g	1941
Dry Mass	g	1726
Bulk Density	Mg/m <sup>3</sup>	2.27
Dry Density	Mg/m <sup>3</sup>	2.02
Moisture Content	%	12
Voids Ratio	-	0.312
Specific Gravity	Mg/m <sup>3</sup>	2.65
(assumed/measured)	-	assumed

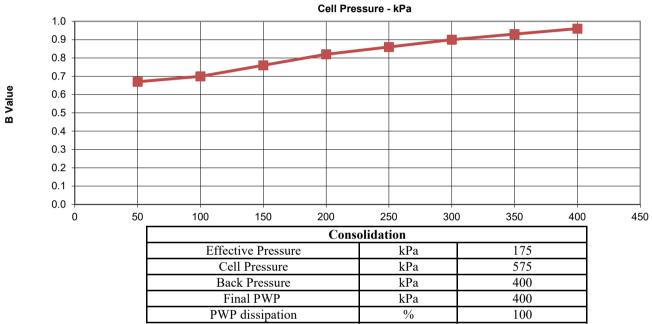
Final Specin	nen Conditions	
Moisture Content	%	12
Bulk Density	Mg/m <sup>3</sup>	2.27
Dry Density	Mg/m <sup>3</sup>	2.02

Т	est Setup	
Date Started		09/11/2021
Date Finished		13/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1



Contract No.
PSL21/8716
Client Ref
21-0709

Specim	en Details		
Hole Number		WLMW06W	
Sample Depth	m	8.75	
Sample No,			
Grid Reference			
Lift Number			
Saturation			
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	400	
Final B Value	-	0.96	



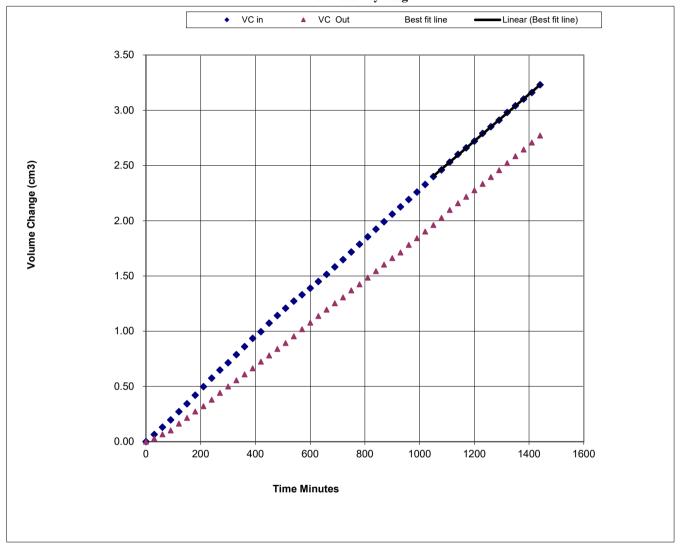




BS 1377: Part 6: 1990 Clause 6

Specim	en Details	
Hole Number		WLMW06W
Sample Depth	m	8.75
Sample No.		
Grid Reference		
Lift Number		

#### **Permeability Stage**



Perme	ability Stage	
Cell Pressure	kPa	575
Mean Effective Stress	kPa	175
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0021
Average Temperature	'C	20
Vertical Permeability Kv	m/s	2.1E-10





Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW02W Top Depth (m): 9.95

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Undisturbed		

Initial Specimen Conditions			
Height	mm	99.44	
Diameter	mm	103.67	
Area	$mm^2$	8441.04	
Volume	cm <sup>3</sup>	839.38	
Mass	g	1982	
Dry Mass	g	1832	
Bulk Density	Mg/m <sup>3</sup>	2.36	
Dry Density	$Mg/m^3$	2.18	
Moisture Content	%	8.2	
Voids Ratio	-	0.214	
Specific Gravity	$Mg/m^3$	2.65	
(assumed/measured)	-	assumed	

Final Specimen Conditions				
Moisture Content	%	7.8		
Bulk Density	Mg/m <sup>3</sup>	2.35		
Dry Density	Mg/m <sup>3</sup>	2.18		

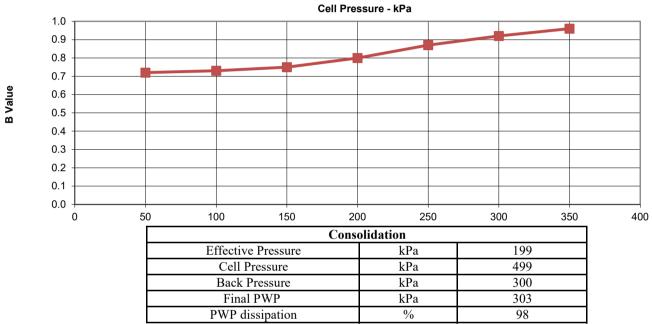
Test Setup				
Date Started		10/11/2021		
Date Finished		14/11/2021		
Top Drain Used		Y		
Base Drain Used		Y		
Method of Saturation		By back pressure		
Direction Of Flow		Vertically Downwards		
Saturation Time	Days	1		
Consolidation Time	Days	1		
Permeability Time	Days	1		

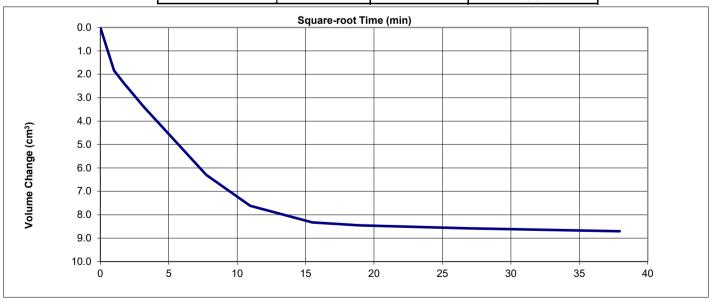


Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	9.95
Sample No,		
Grid Reference		
Lift Number		
Saturation		
Cell Pressure Incr.	kPa	50
Back Pressure Incr.	kPa	50
Differential Pressure	kPa	10
Final Cell Pressure	kPa	350
Final B Value	-	0.96



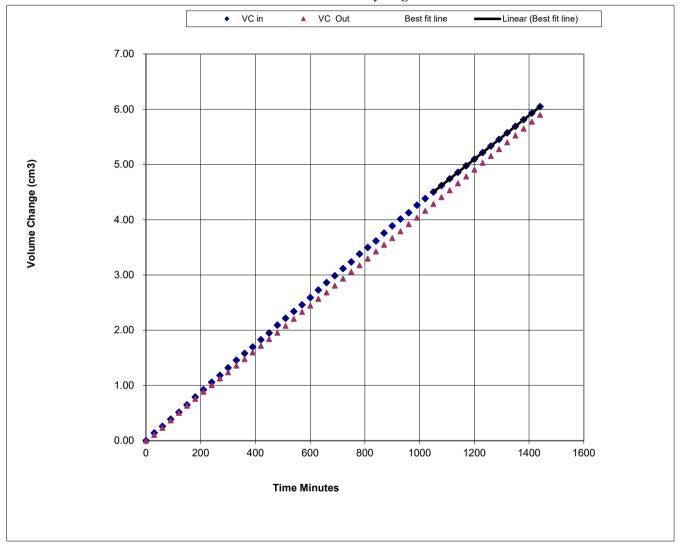




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		WLMW02W
Sample Depth	m	9.95
Sample No.		
Grid Reference		
Lift Number		

# **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	499
Mean Effective Stress	kPa	199
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0040
Average Temperature	'C	20
Vertical Permeability Kv	m/s	3.8E-10





Drehid Waste Management Facility - Further Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990: Clause 6

Hole Number: WLMW03W Top Depth (m): 7.00

Sample Number: Base Depth (m):

Sample Type: B Lift Number:

Date Grid Reference:

Description of Specimen		
See summary of soil descriptions.		
Remarks		
Remoulded with 2.5Kg effort, natural moisture content.		

Initial Specimen Conditions		
Height	mm	101.17
Diameter	mm	101.51
Area	$mm^2$	8092.96
Volume	cm <sup>3</sup>	818.77
Mass	g	1955
Dry Mass	g	1818
Bulk Density	$Mg/m^3$	2.39
Dry Density	$Mg/m^3$	2.22
Moisture Content	%	7.5
Voids Ratio	-	0.193
Specific Gravity	$Mg/m^3$	2.65
(assumed/measured)	-	assumed

Final Specimen Conditions		
Moisture Content	%	7.0
Bulk Density	Mg/m <sup>3</sup>	2.38
Dry Density	Mg/m <sup>3</sup>	2.22

Test Setup		
Date Started		12/11/2021
Date Finished		16/11/2021
Top Drain Used		Y
Base Drain Used		Y
Method of Saturation		By back pressure
Direction Of Flow		Vertically Downwards
Saturation Time	Days	1
Consolidation Time	Days	1
Permeability Time	Days	1

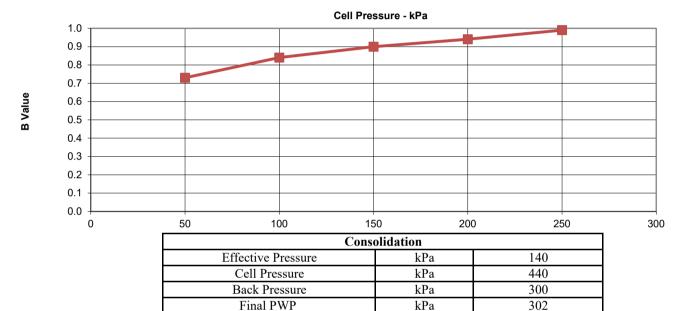


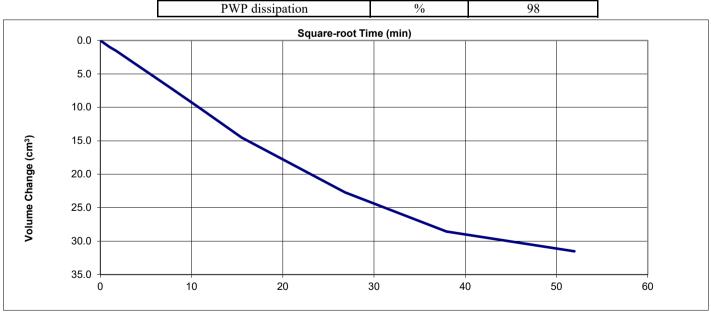
Drehid Waste Management Facility - Further Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709

BS 1377: Part 6: 1990 Clause 6

Specimen Details			
Hole Number		WLMW03W	
Sample Depth	m	7.00	
Sample No,			
Grid Reference			
Lift Number			
Satu	Saturation		
Cell Pressure Incr.	kPa	50	
Back Pressure Incr.	kPa	50	
Differential Pressure	kPa	10	
Final Cell Pressure	kPa	250	
Final B Value	-	0.99	



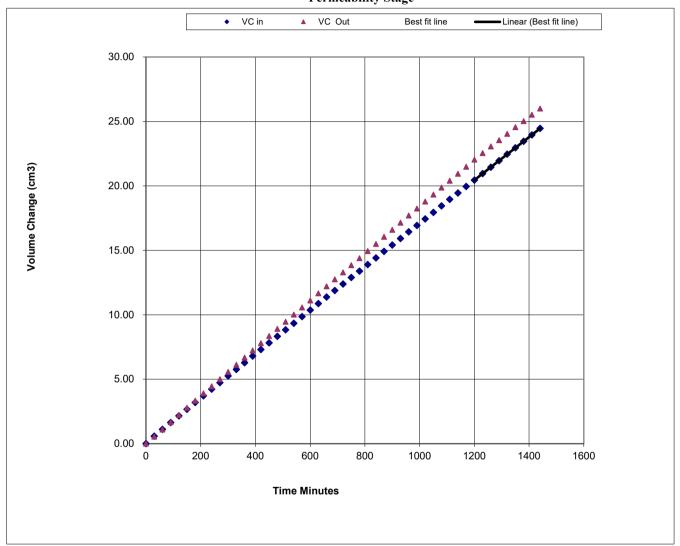




BS 1377: Part 6: 1990 Clause 6

Specimen Details		
Hole Number		WLMW03W
Sample Depth	m	7.00
Sample No.		
Grid Reference		
Lift Number		

# **Permeability Stage**



Permeability Stage		
Cell Pressure	kPa	440
Mean Effective Stress	kPa	140
Back Pressure Diff.	kPa	20
Mean Rate of Flow	ml/min	0.0167
Average Temperature	'C	20
Vertical Permeability Kv	m/s	1.7E-09





Drehid Waste Management Facility - Further Landfill Development 2021

Contract No.
PSL21/8716
Client Ref
21-0709



eurofins

Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

# **Final Report**

**Report No.:** 21-39383-1

Initial Date of Issue: 15-Nov-2021

Client Causeway Geotech Ltd

Client Address: 8 Drumahiskey Road

Balnamore Ballymoney County Antrim BT53 7QL

Contact(s): Carin Cornwall

Colm Hurley
Darren O'Mahony
Gabriella Horan
Joe Gervin
John Cameron
Lucy Newland
Martin Gardiner
Matthew Gilbert
Michelle Gaffney
Neil Haggan
Paul Dunlop
Sean Ross
Stephen Franey
Stephen Watson

**Project** 21-0709 Drehid Waste Management

Stuart Abraham Thomas McAllist

Facility

Quotation No.: Date Received: 10-Nov-2021

Order No.: Date Instructed: 10-Nov-2021

No. of Samples: 7

Turnaround (Wkdays): 7 Results Due: 18-Nov-2021

Date Approved: 15-Nov-2021

Approved By:

Details: Glynn Harvey, Technical Manager



Eurofins Chemtest Ltd Depot Road Newmarket CB8 0AL

Tel: 01638 606070 Email: info@chemtest.com

# Results - Soil

# Project: 21-0709 Drehid Waste Management Facility

Client: Causeway Geotech Ltd		Cho	emtest .	Job No.:	21-39383	21-39383	21-39383	21-39383	21-39383	21-39383	21-39383
Quotation No.:		Chem	est San	nple ID.:	1316767	1316768	1316769	1316770	1316771	1316772	1316773
		S	Sample L	ocation:	WLMW02W	WLMW05W	LFBH12	LFBH14	WLMW06Q	WLMW07Q	LFBH17
			Samp	le Type:	SOIL						
			Top De	epth (m):	3.85	7.50	3.00	6.00	9.00	4.95	4.50
			Date S	Sampled:	08-Nov-2021						
Determinand	Accred.	SOP	Units	LOD							
Moisture	N	2030	%	0.020	6.3	3.4	2.2	7.4	7.8	6.9	11
pH	U	2010		4.0	8.7	8.7	8.7	8.8	8.5	8.6	8.6
Fraction of Organic Carbon	U	2625		0.0010	0.0050	0.0020	0.0020	0.0010	0.0050	0.0020	0.0040

# **Test Methods**

SOP	Title	Parameters included	Method summary		
2010	pH Value of Soils	рН	pH Meter		
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.		
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930		
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.		

### **Report Information**

#### Key **UKAS** accredited MCERTS and UKAS accredited M Unaccredited Ν This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for S this analysis This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited SN for this analysis Т This analysis has been subcontracted to an unaccredited laboratory I/S Insufficient Sample U/S Unsuitable Sample N/E not evaluated < "less than" "greater than" > SOP Standard operating procedure LOD Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

### **Sample Deviation Codes**

- A Date of sampling not supplied
- B Sample age exceeds stability time (sampling to extraction)
- C Sample not received in appropriate containers
- D Broken Container
- E Insufficient Sample (Applies to LOI in Trommel Fines Only)

#### Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to: customerservices@chemtest.com



# LABORATORY RESTRICTION REPORT

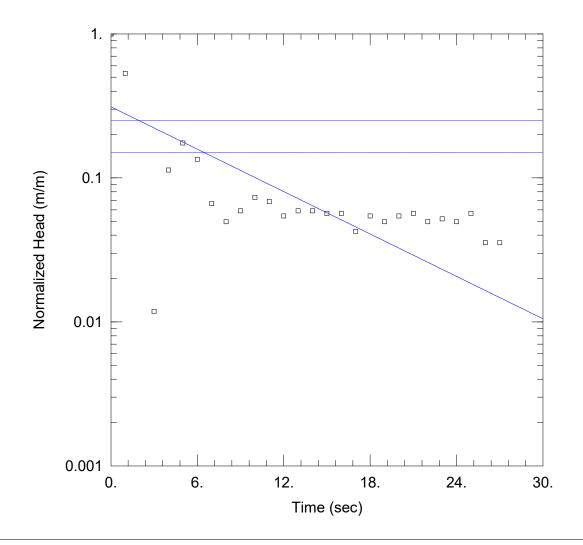
5		2	1-0709	То	Darren O'Mahoney Project Manager Joseph Nicholl	
Project Name		Drehid Waste N	lanagement Facility	Position		
TR reference		21-0709	/ G02	From		
	-144(-)			Position	Laboratory Quality Manage	
m to the laboratory.	u test(s) are res	incled as detailed	below. Could you please complete the	e Required Action	column and return the completed	
Hole Sam	ple	Test	Reason for Restric	tion	Required Action	
	epth Type	Туре	Neason for Nestric	uon	Required Action	
FBH12 3	.00 D	MCV	Insufficient material passing 2 conduct test	20mm sieve to	CANCEL	
			Laboratory Signat	ure	Project Manager Signature	

04 November 2021

Appendix E

Hydraulic Conductivity Tests – Data Plots





Data Set: LFBH04 FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:10:38</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m Anisotropy Ratio (Kz/Kr): 0.1

# WELL DATA (LFBH04 FHT1)

Initial Displacement: 0.423 m Static Water Column Height: 6.81 m

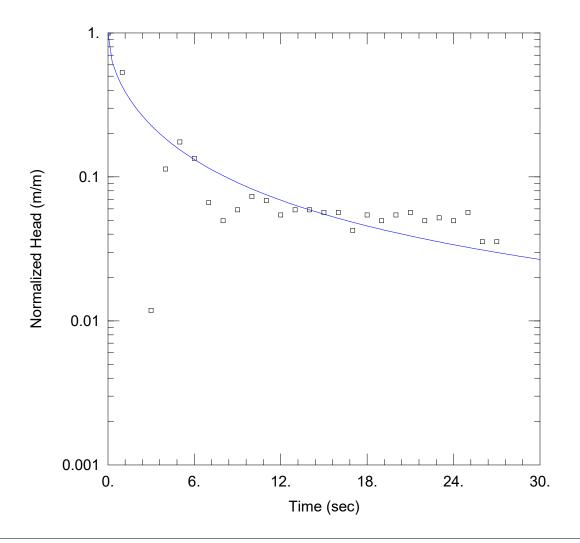
Total Well Penetration Depth: 7.701 m Screen Length: 3. m

Casing Radius: 0.025 m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.084 m/dayy0 = 0.1319 m



Data Set: LFBH04 FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:11:23</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 FHT1)

Initial Displacement: 0.423 m Static Water Column Height: 6.81 m

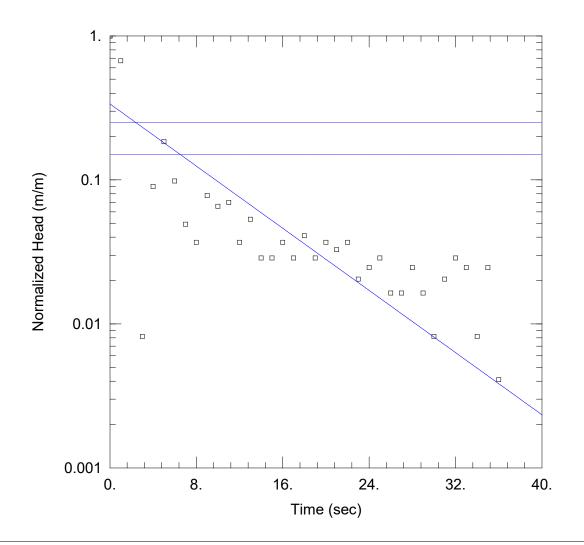
Total Well Penetration Depth: 7.701 m Screen Length: 3. m

Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.01862 \text{ m}^{-1}$ Ss = 5.833 m/day Kr



Data Set: LFBH04 FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:11:27</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>10.2</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH04 FHT2)

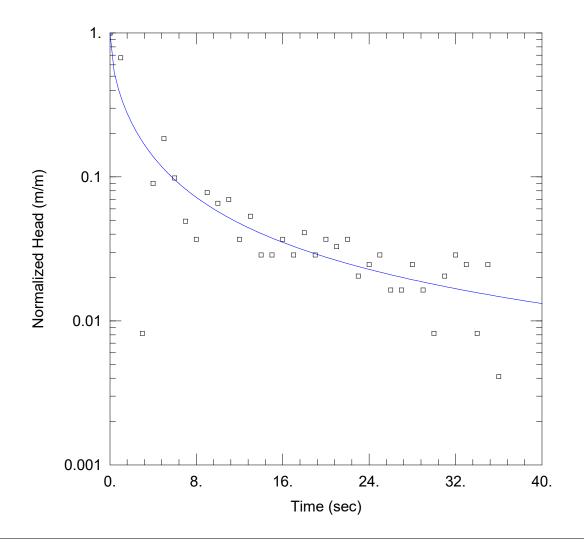
Initial Displacement: <u>0.244</u> m Static Water Column Height: <u>6.81</u> m

Total Well Penetration Depth: 7.701 m Screen Length: 3. m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.592 m/day y0 = 0.08229 m



Data Set: LFBH04 FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:11:30</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 FHT2)

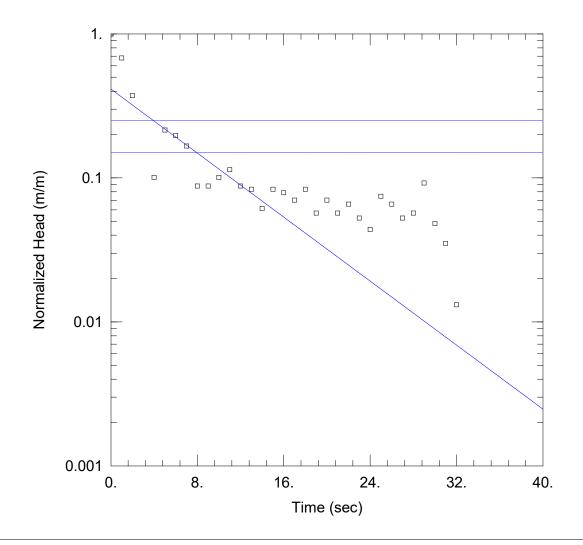
Initial Displacement: <u>0.244</u> m Static Water Column Height: <u>6.81</u> m

Total Well Penetration Depth: 7.701 m Screen Length: 3. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 8.536 m/day Ss = 0.01679 m<sup>-1</sup>



Data Set: LFBH04 FHT3 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:11:33</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m Anisotropy Ratio (Kz/Kr): 0.1

# WELL DATA (LFBH04 FHT3)

Initial Displacement: 0.228 m Static Water Column Height: 6.81 m

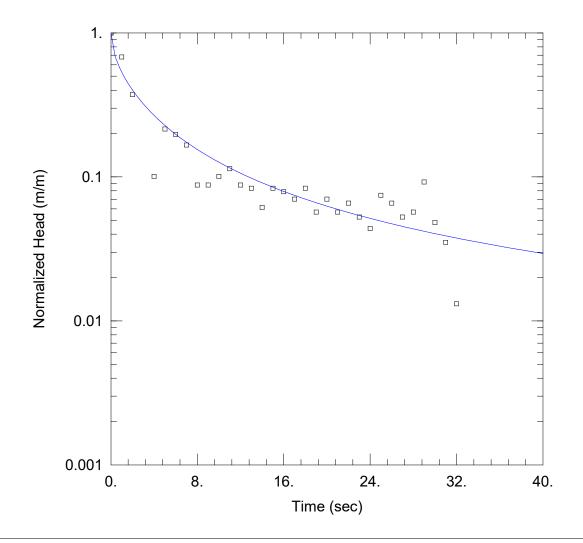
Total Well Penetration Depth: 7.701 m Screen Length: 3. m

Casing Radius: 0.025 m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.756 m/dayy0 = 0.09441 m



Data Set: LFBH04 FHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:11:36</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 FHT3)

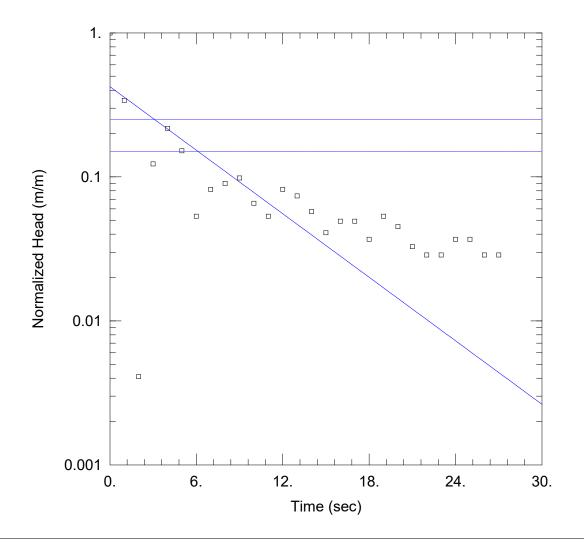
Initial Displacement: <u>0.228</u> m Static Water Column Height: <u>6.81</u> m

Total Well Penetration Depth: 7.701 m Screen Length: 3. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 4.161 m/day Ss = 0.01175 m<sup>-1</sup>



Data Set: LFBH04 RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:14:52</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>10.2</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH04 RHT1)

Initial Displacement: -0.244 m

244 m Static Water Column Height: 6.81 m

Total Well Penetration Depth: 7.701 m

Screen Length: 3. m Well Radius: 0.064 m

Casing Radius: 0.025 m

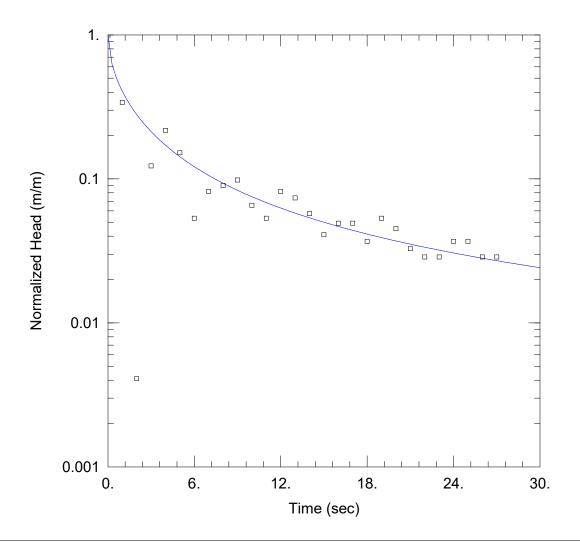
# SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 7.619 m/day y0 =

y0 = -0.1033 m



Data Set: LFBH04 RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:14:54</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u>
Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 RHT1)

Initial Displacement: <u>-0.244</u> m

Total Well Penetration Depth: 7.701 m

Casing Radius: 0.025 m

Static Water Column Height: 6.81 m

Screen Length: 3. m Well Radius: 0.064 m

# **SOLUTION**

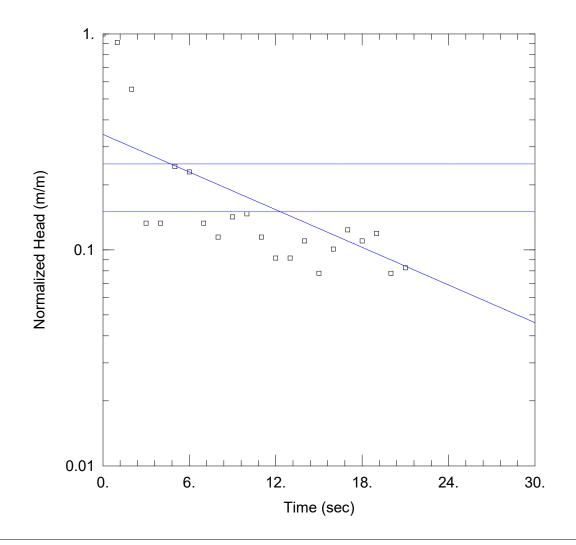
Aquifer Model: Unconfined

Kr = 6.413 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss =  $0.01862 \text{ m}^{-1}$ 



Data Set: LFBH04 RHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:14:57</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>10.2</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH04 RHT2)

Initial Displacement: -0.218 m

Total Well Penetration Depth: 7.701 m

Casing Radius: 0.025 m

Static Water Column Height: 6.81 m

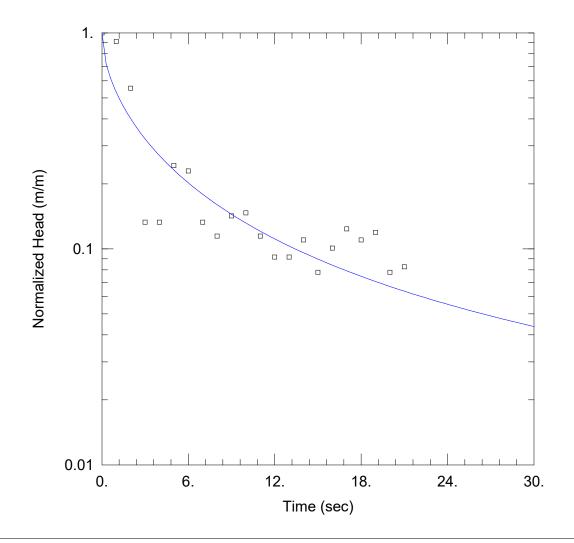
Screen Length: 3. m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.01 m/day y0 = -0.0747 m



Data Set: LFBH04 RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:14:59</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 RHT2)

Initial Displacement: -0.218 m

Total Well Penetration Depth: 7.701 m

Casing Radius: 0.025 m

Static Water Column Height: 6.81 m

Screen Length: 3. m Well Radius: 0.064 m

# **SOLUTION**

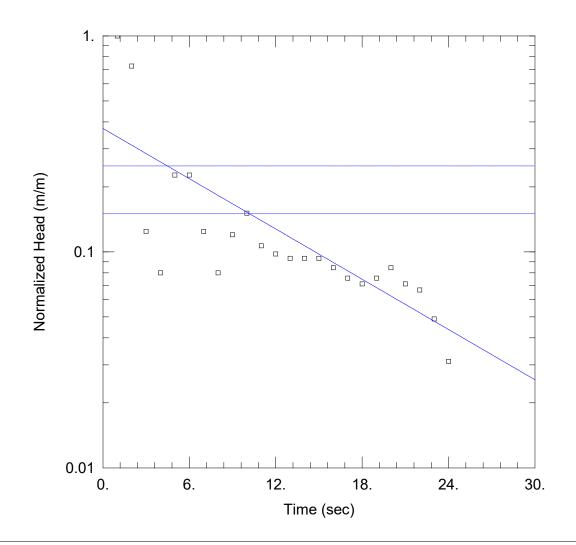
Aquifer Model: Unconfined

Kr = 3.774 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.01446 \text{ m}^{-1}$ 



Data Set: LFBH04 RHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:15:02</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>10.2</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH04 RHT3)

Initial Displacement: <u>-0.225</u> m

Total Well Penetration Depth: 7.701 m

Casing Radius: 0.025 m

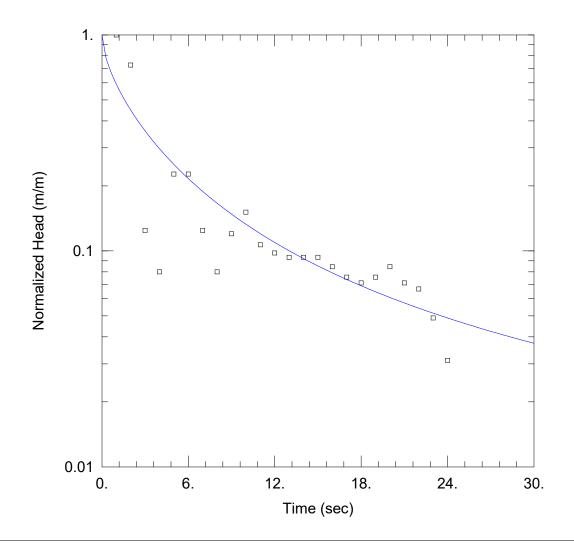
Static Water Column Height: 6.81 m

Screen Length: 3. m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.019 m/day y0 = -0.08392 m



Data Set: LFBH04 RHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:15:05</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 10.2 m

# WELL DATA (LFBH04 RHT3)

Initial Displacement: -0.225 m

Total Well Penetration Depth: 7.701 m

Casing Radius: 0.025 m

Static Water Column Height: 6.81 m

Screen Length: 3. m Well Radius: 0.064 m

# **SOLUTION**

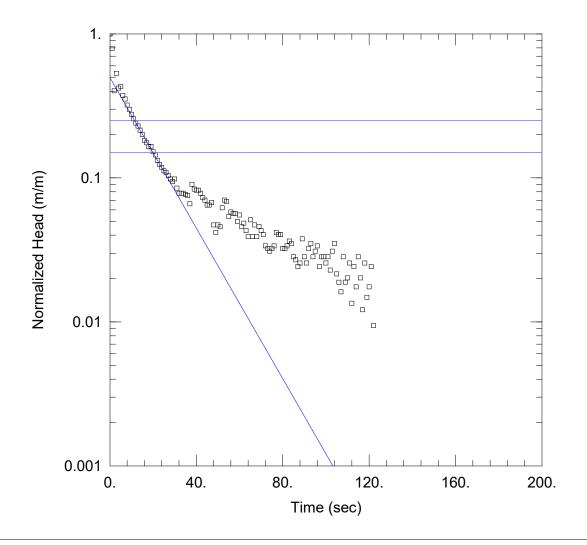
Aquifer Model: Unconfined

Kr = 4.812 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.004842 \text{ m}^{-1}$ 



Data Set: LFBH05 FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:25:59</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 4.45 m Anisotropy Ratio (Kz/Kr): 0.1

# WELL DATA (LFBH05 FHT1)

Initial Displacement: 0.742 m Static Water Column Height: 4.45 m

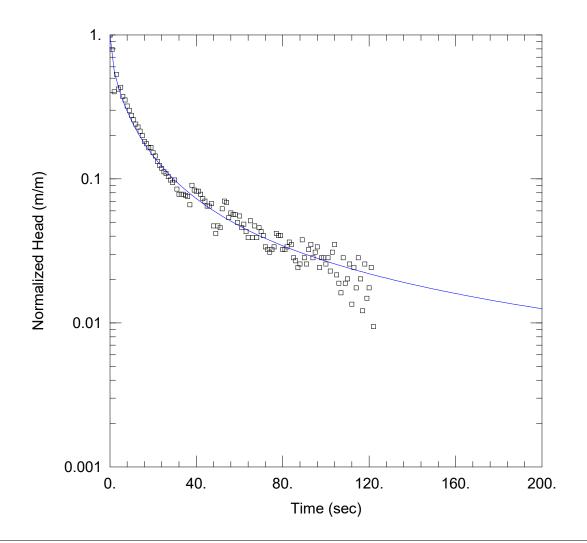
Total Well Penetration Depth: 4.39 m Screen Length: 2. m

Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.732 m/dayy0 = 0.3695 m



Data Set: LFBH05 FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:26:03</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 FHT1)

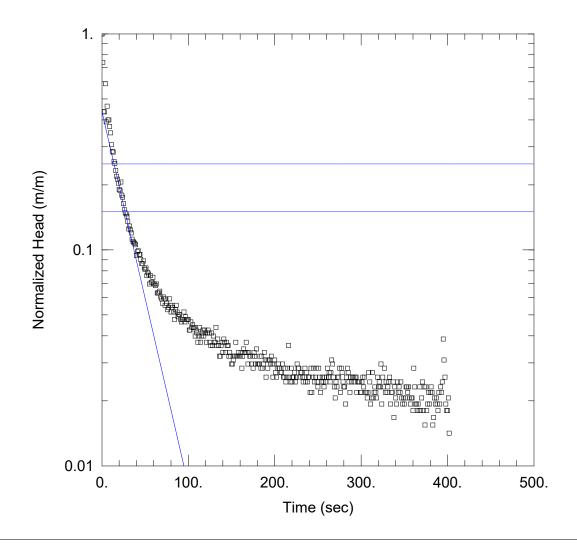
Initial Displacement: <u>0.742</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 2.685 m/day Ss = 0.01744 m<sup>-1</sup>



Data Set: LFBH05 FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:26:09</u>

# PROJECT INFORMATION

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>4.45</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH05 FHT2)

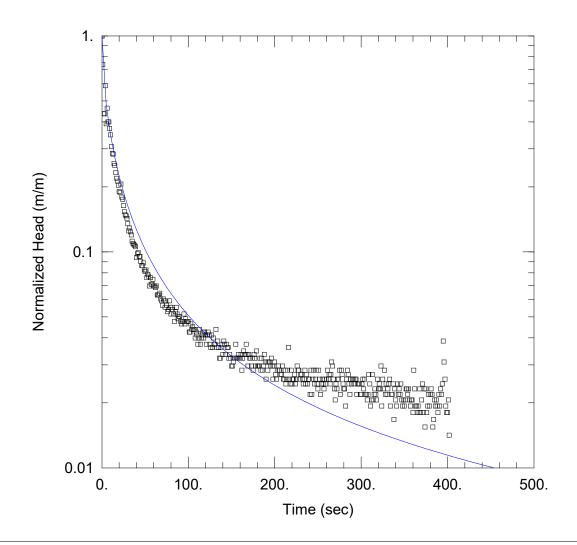
Initial Displacement: <u>0.776</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.468 m/day y0 = 0.3398 m



Data Set: LFBH05 FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:26:13</u>

# **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u>
Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 FHT2)

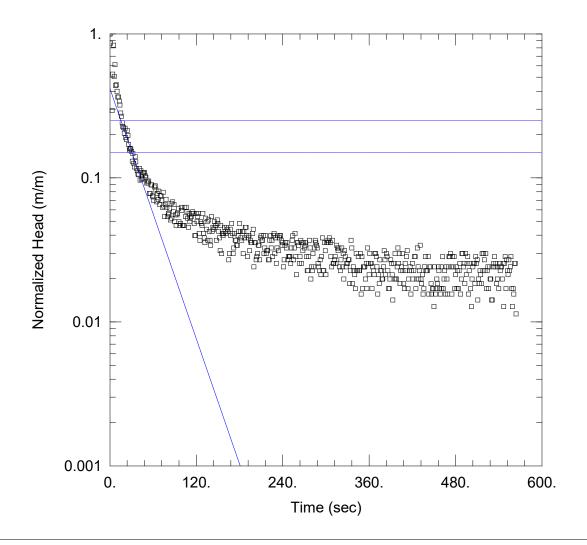
Initial Displacement: <u>0.776</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 1.452 m/day Ss = 0.02247 m<sup>-1</sup>



Data Set: <u>LFBH05 FHT3 - Hvorslev.aqt</u>

Date: <u>08/26/22</u> Time: <u>15:26:21</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: <u>Timahoe</u>

Test Well: \_ \_ Test Date: \_

### **AQUIFER DATA**

Saturated Thickness: <u>4.45</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH05 FHT3)

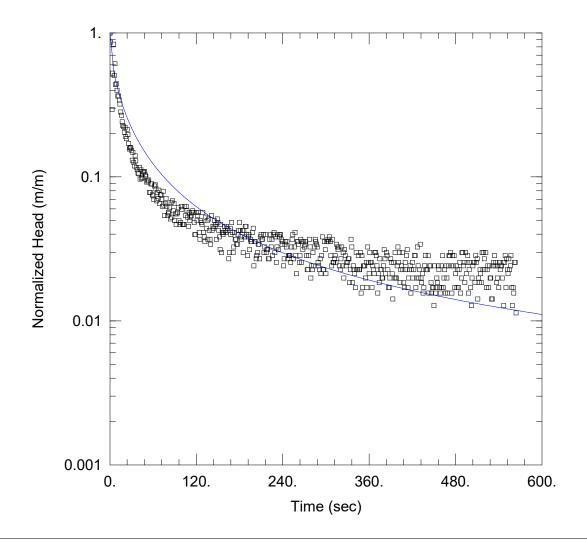
Initial Displacement: <u>0.705</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.068 m/day y0 = 0.2945 m



Data Set: LFBH05 FHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:26:25</u>

# **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 FHT3)

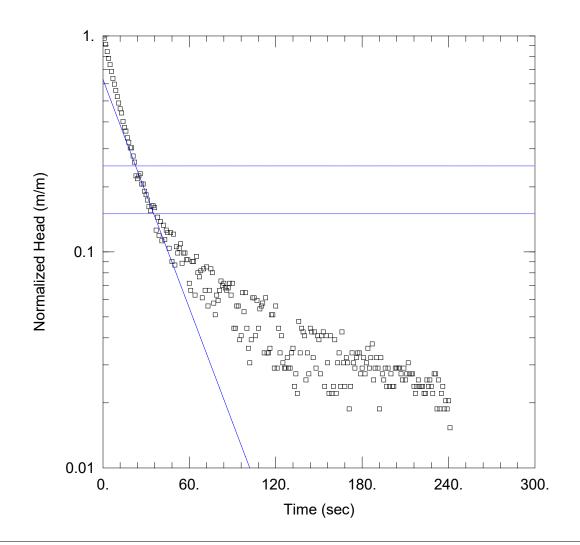
Initial Displacement: <u>0.705</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 0.9983 m/day Ss = 0.02247 m<sup>-1</sup>



Data Set: LFBH05 RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:27:03</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: <u>Timahoe</u>

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>4.45</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

# WELL DATA (LFBH05 RHT1)

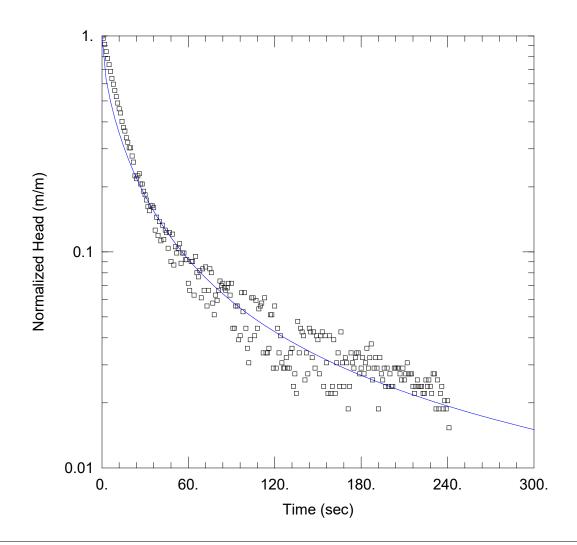
Initial Displacement: <u>-0.587</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.52 m/day y0 = -0.3696 m



Data Set: LFBH05 RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:27:05</u>

# **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 RHT1)

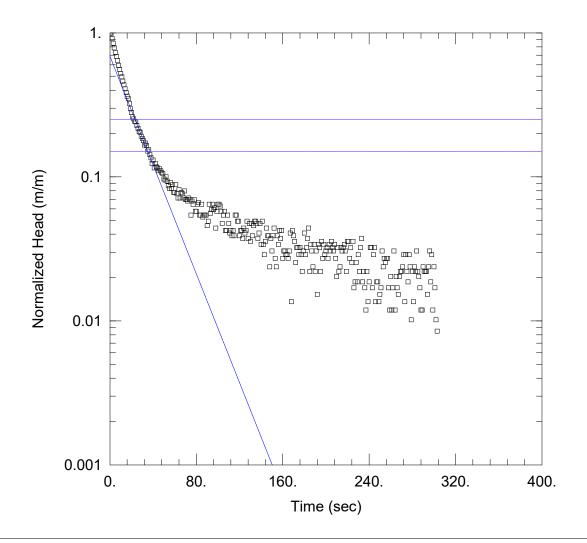
Initial Displacement: <u>-0.587</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 1.529 m/day Ss = 0.01207 m<sup>-1</sup>



Data Set: LFBH05 RHT2 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:27:08</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 4.45 m Anisotropy Ratio (Kz/Kr): 0.1

# WELL DATA (LFBH05 RHT2)

Initial Displacement: -0.589 m Static Water Column Height: 4.45 m

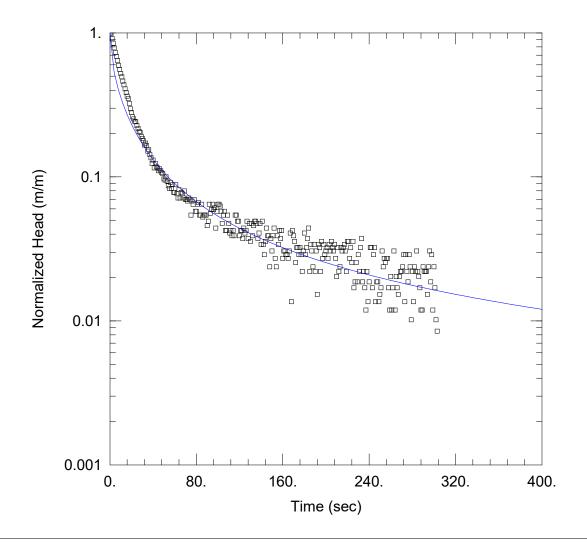
Total Well Penetration Depth: 4.39 m Screen Length: 2. m Well Radius: 0.064 m

Casing Radius: 0.025 m

### SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

 $K = 2.697 \, \text{m/day}$ y0 = -0.4062 m



Data Set: LFBH05 RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:27:10</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 RHT2)

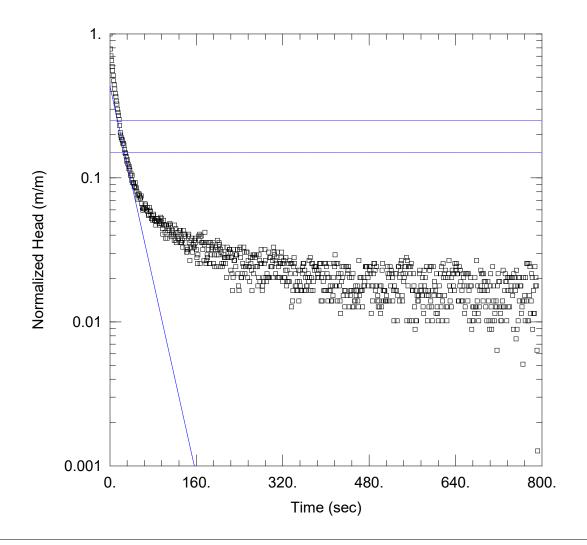
Initial Displacement: <u>-0.589</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 1.387 m/day Ss = 0.02247 m<sup>-1</sup>



Data Set: LFBH05 RHT3 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:27:12</u>

# **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 4.45 m Anisotropy Ratio (Kz/Kr): 0.1

# WELL DATA (LFBH05 RHT3)

Initial Displacement: <u>-0.787</u> m Static Water Column Height: 4.45 m

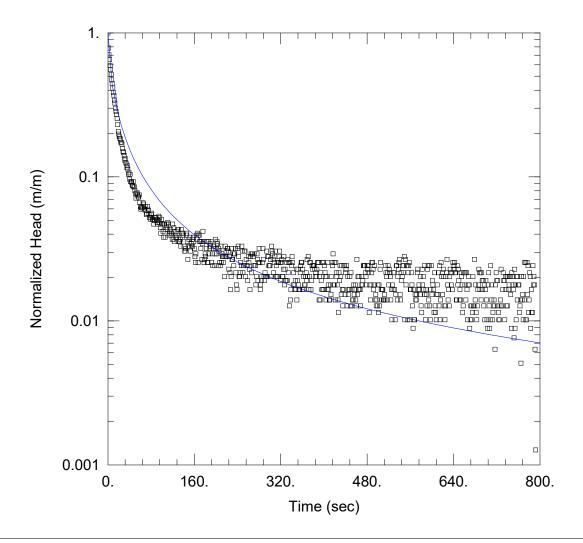
Total Well Penetration Depth: 4.39 m Screen Length: 2. m

Casing Radius: 0.025 m Well Radius: 0.064 m

# **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.41 m/dayy0 = -0.3423 m



Data Set: LFBH05 RHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:27:16</u>

# **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 4.45 m

# WELL DATA (LFBH05 RHT3)

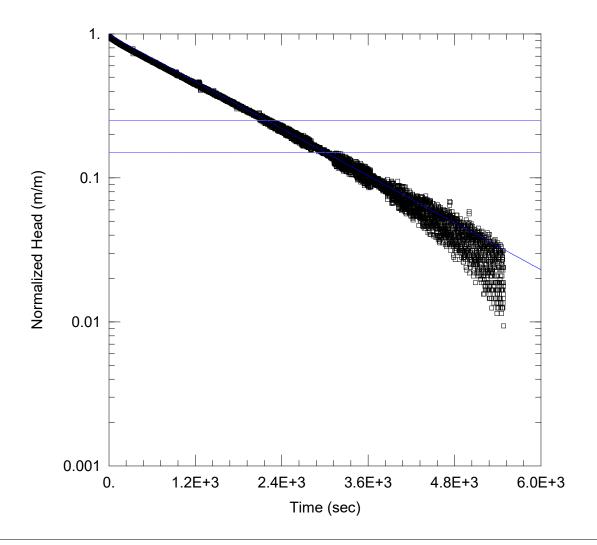
Initial Displacement: <u>-0.787</u> m Static Water Column Height: <u>4.45</u> m

Total Well Penetration Depth: 4.39 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 1.145 m/day Ss = 0.02247 m<sup>-1</sup>



Data Set: LFBH10A FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:28:14</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LFBH10A Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: <u>5.5</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LFBH10A)

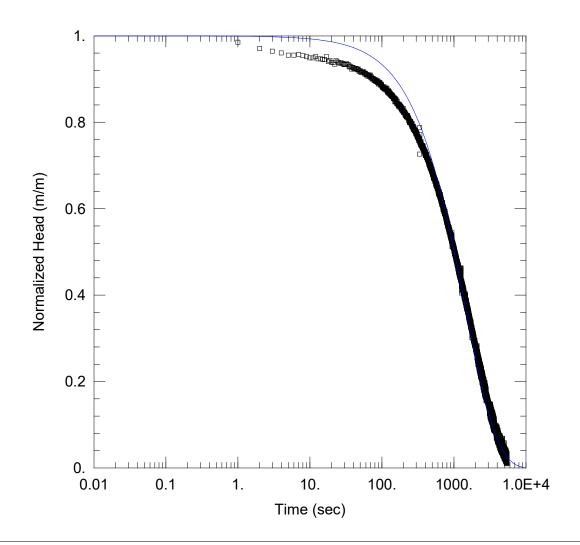
Initial Displacement: <u>0.961</u> m Static Water Column Height: <u>5.5</u> m

Total Well Penetration Depth: 5.77 m Screen Length: 1.6 m Casing Radius: 0.025 m Well Radius: 0.089 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.05006 m/day y0 = 0.9505 m



Data Set: <u>LFBH10A FHT1 - KGS.aqt</u>

Date: <u>08/26/22</u> Time: <u>15:28:20</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LFBH10A Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.5 m

### WELL DATA (LFBH10A)

Initial Displacement: 0.961 m

Total Well Penetration Depth: 5.77

Total Well Penetration Depth: 5.77 m

Casing Radius: 0.025 m

Static Water Column Height: <u>5.5</u> m

Screen Length: 1.6 m Well Radius: 0.089 m

### SOLUTION

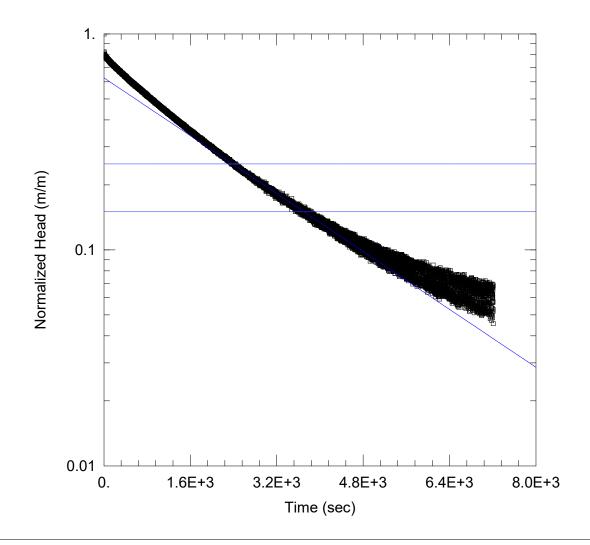
Aquifer Model: Unconfined

Kr = 0.06168 m/day

 $Kz/Kr = \frac{0.05}{0.1}$ 

Solution Method: KGS Model

Ss =  $1.379E-8 \text{ m}^{-1}$ 



Data Set: LFBH10A RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:28:25</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LFBH10A Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.5 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LFBH10A RHT1)

Initial Displacement: -1.183 m

Total Well Penetration Depth: 5.77 m

Casing Radius: 0.025 m

Static Water Column Height: 5.5 m

Screen Length: 1.6 m Well Radius: 0.089 m

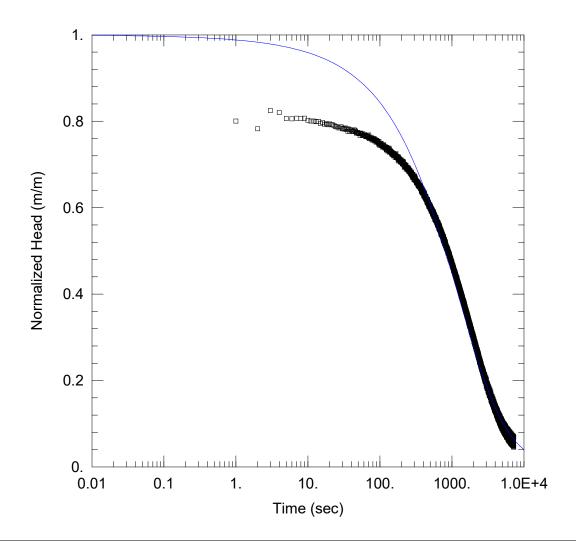
### SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03082 m/day

y0 = -0.7409 m



Data Set: LFBH10A RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:28:31</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LFBH10A Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.5 m

### WELL DATA (LFBH10A RHT1)

Initial Displacement: -1.183 m

Static Water Column Height: 5.5 m

Total Well Penetration Depth: 5.77 m

Screen Length: 1.6 m Well Radius: 0.089 m

Casing Radius: 0.025 m

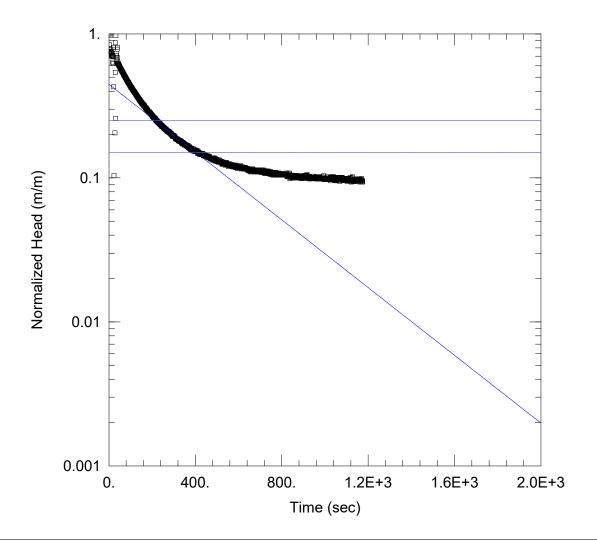
### SOLUTION

Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 0.03439 m/day

Ss =  $0.002064 \text{ m}^{-1}$ 



Data Set: <u>LFBH13 FHT1 - Hvorslev.aqt</u>

Date: 08/26/22 Time: <u>15:28:38</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 5.75 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LFBH13 FHT1)

Initial Displacement: 1.11 m Total Well Penetration Depth: 3. m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

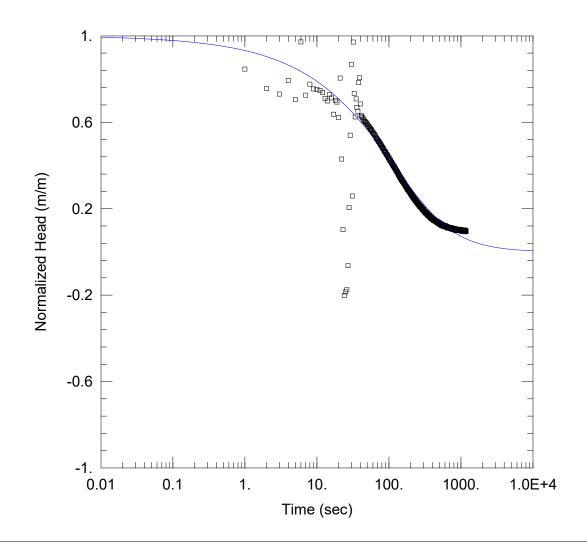
Screen Length: 1.5 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.21 m/day

y0 = 0.4962 m



Data Set: <u>LFBH13 FHT1 - KGS.aqt</u>

Date: <u>08/26/22</u> Time: <u>15:28:42</u>

#### PROJECT INFORMATION

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 5.75 m

### WELL DATA (LFBH13 FHT1)

Initial Displacement: <u>1.11</u> m Total Well Penetration Depth: <u>3.</u> m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

Screen Length: 1.5 m Well Radius: 0.064 m

### **SOLUTION**

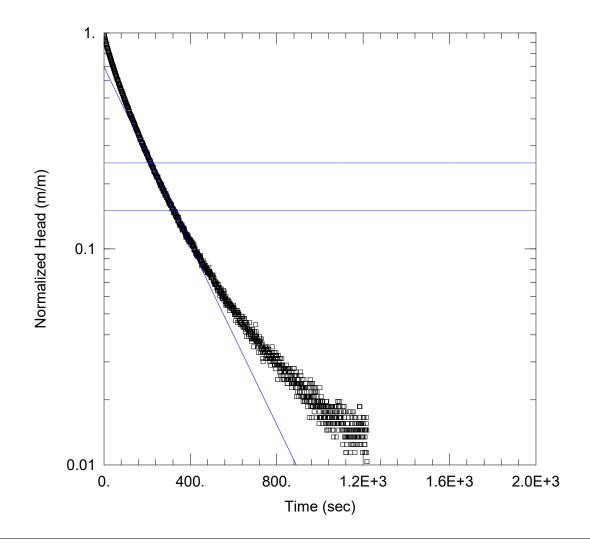
Aquifer Model: Unconfined

Kr = 0.1433 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: LFBH13 RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:28:45</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>5.75</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LFBH13 RHT1)

Initial Displacement: <u>-0.966</u> m Total Well Penetration Depth: <u>3.</u> m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

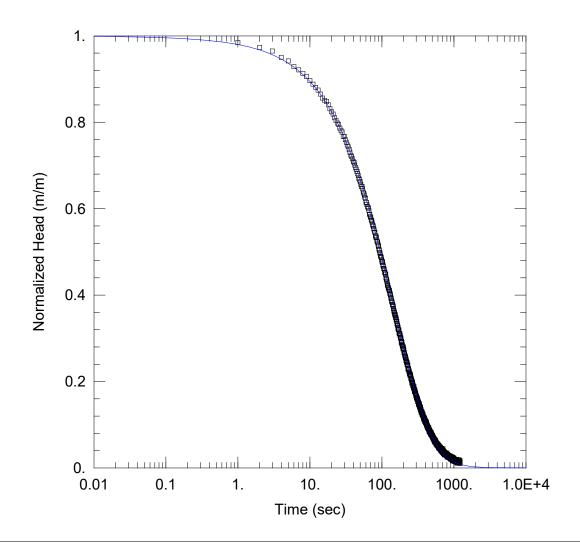
Screen Length: 1.5 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.3696 m/day y0 = -0.674 m



Data Set: LFBH13 RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:28:48</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 5.75 m

### WELL DATA (LFBH13 RHT1)

Initial Displacement: <u>-0.966</u> m Total Well Penetration Depth: <u>3.</u> m

Casing Radius: 0.025 m

Static Water Column Height: 2.06 m

Screen Length: 1.5 m Well Radius: 0.064 m

### **SOLUTION**

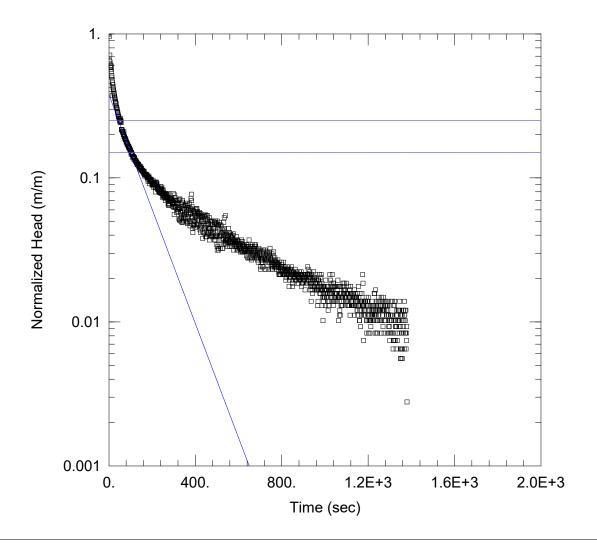
Aquifer Model: Unconfined

Kr = 0.3954 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.0002247 \text{ m}^{-1}$ 



Data Set: LFBH14 FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:29:35</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>6.79</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LFBH14 FHT1)

Initial Displacement: 1.078 m

Total Well Penetration Depth: 6.73 m

Casing Radius: 0.025 m

Static Water Column Height: 6.79 m

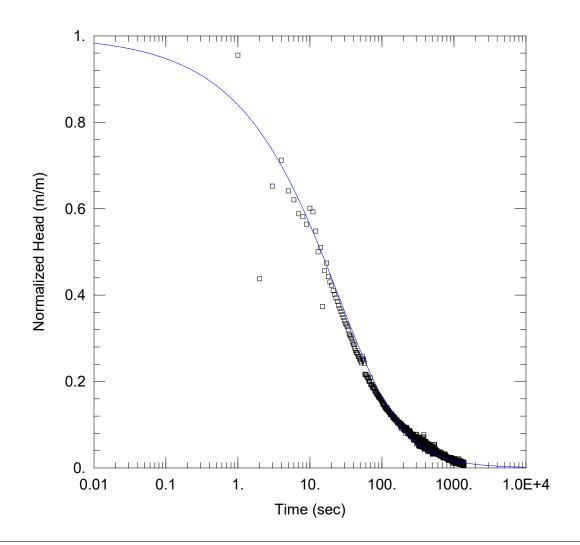
Screen Length: 2.5 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.4754 m/day y0 = 0.4072 m



Data Set: LFBH14 FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:29:38</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 6.79 m

### WELL DATA (LFBH14 FHT1)

Initial Displacement: 1.078 m

Total Well Penetration Depth: 6.73 m

Casing Radius: 0.025 m

Static Water Column Height: 6.79 m

Screen Length: 2.5 m Well Radius: 0.064 m

### **SOLUTION**

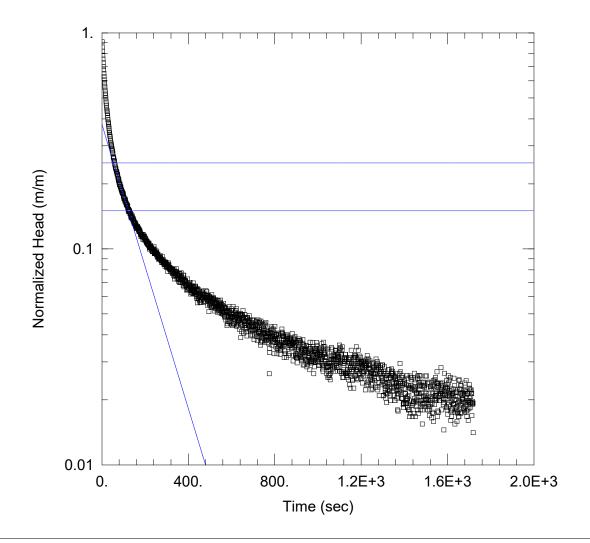
Aquifer Model: Unconfined

Kr = 0.3216 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: LFBH14 RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:29:41</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.79 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LFBH14 RHT1)

Initial Displacement: -0.976 m Static Water Column Height: 6.79 m

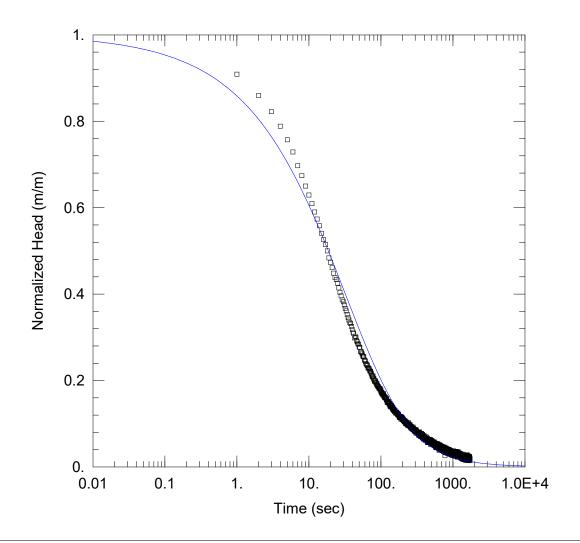
Total Well Penetration Depth: 6.73 m Screen Length: 2.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.3936 m/dayy0 = -0.3682 m



Data Set: LFBH14 RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:29:44</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.79 m

### WELL DATA (LFBH14 RHT1)

Initial Displacement: -0.976 m

Total Well Penetration Depth: 6.73 m

Casing Radius: 0.025 m

Static Water Column Height: 6.79 m

Screen Length: 2.5 m Well Radius: 0.064 m

### **SOLUTION**

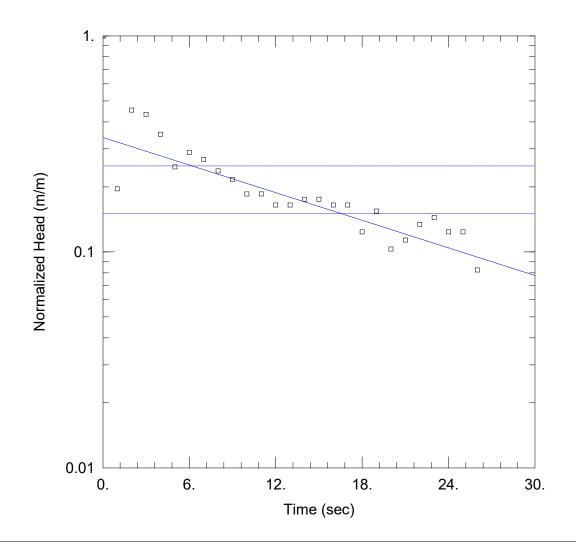
Aquifer Model: Unconfined

Kr = 0.2481 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: LW01 FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:29:50</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 8.42 m Anisotropy Ratio (Kz/Kr): 0.1

#### WELL DATA (LW01 FHT2)

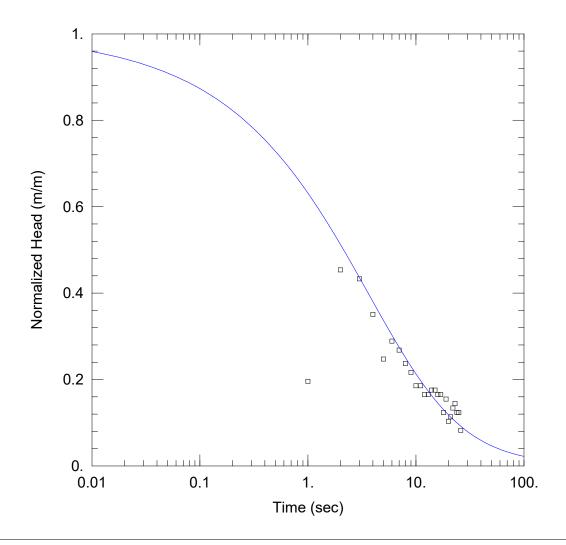
Initial Displacement: <u>0.097</u> m Static Water Column Height: <u>8.42</u> m

Total Well Penetration Depth: 8.97 m Screen Length: 3. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.514 m/day y0 = 0.03286 m



Data Set: LW01 FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:29:52</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 8.42 m

## WELL DATA (LW01 FHT2)

Initial Displacement: 0.097 m

Total Well Penetration Depth: 8.97 m

Casing Radius: 0.025 m

Static Water Column Height: 8.42 m

Screen Length: 3. m Well Radius: 0.064 m

### **SOLUTION**

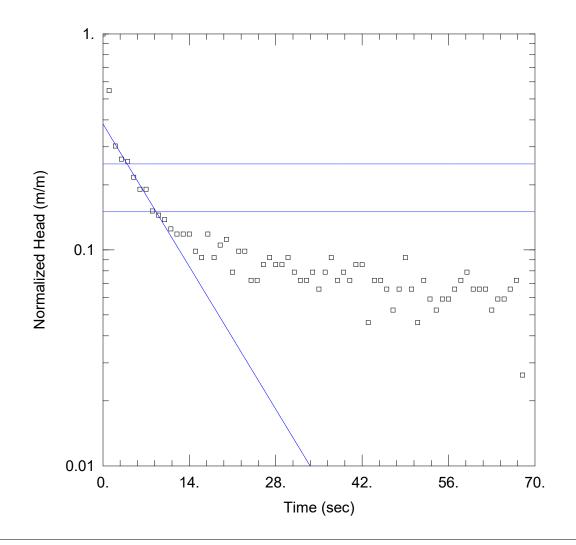
Aquifer Model: Unconfined

Kr = 2.962 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.01862 \text{ m}^{-1}$ 



Data Set: LW01 RHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:29:55</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 8.42 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LW01 RHT2)

Initial Displacement: -0.152 m

Total Well Penetration Depth: 8.97 m

Casing Radius: 0.025 m

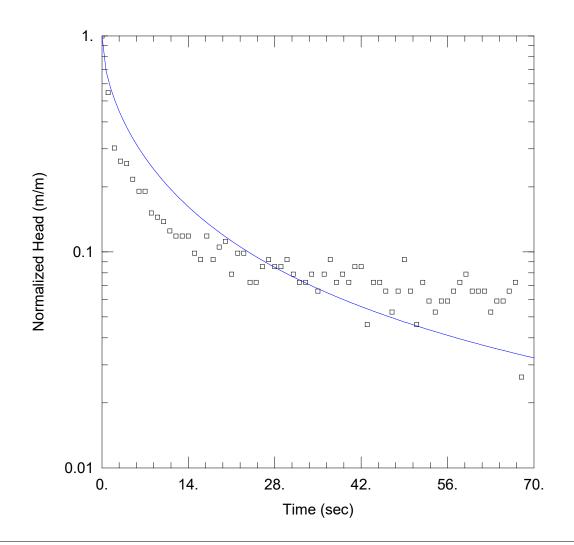
Static Water Column Height: 8.42 m

Screen Length: 3. m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.564 m/day y0 = -0.05825 m



Data Set: LW01 RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:29:58</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 8.42 m

## WELL DATA (LW01 RHT2)

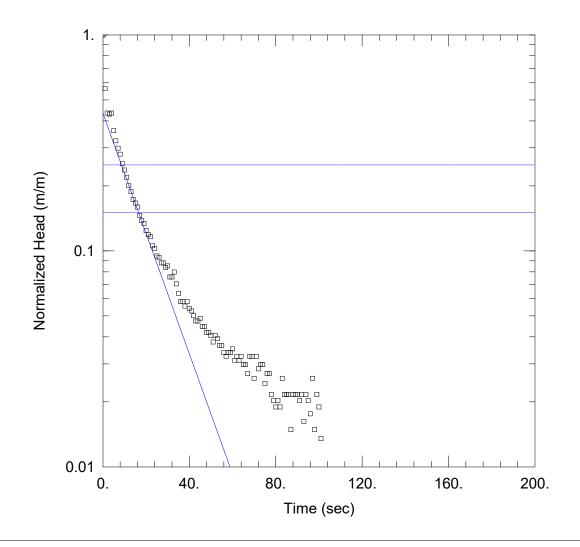
Initial Displacement: <u>-0.152</u> m Static Water Column Height: <u>8.42</u> m

Total Well Penetration Depth: 8.97 m Screen Length: 3. m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 2.974 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: LW02D FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:30:41</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D FHT1)

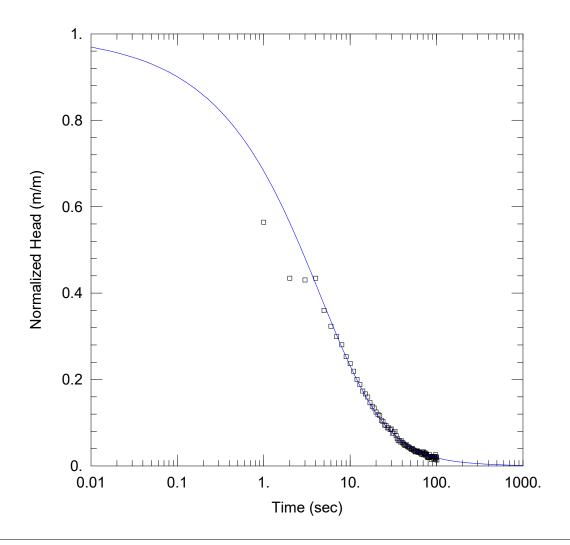
Initial Displacement: <u>0.739</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.975 m/day y0 = 0.3209 m



Data Set: LW02D FHT1 - KGS.aqt

Date: 08/26/22 Time: 15:30:44

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: <u>29/10/2022</u>

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D FHT1)

Initial Displacement: 0.739 m Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

### **SOLUTION**

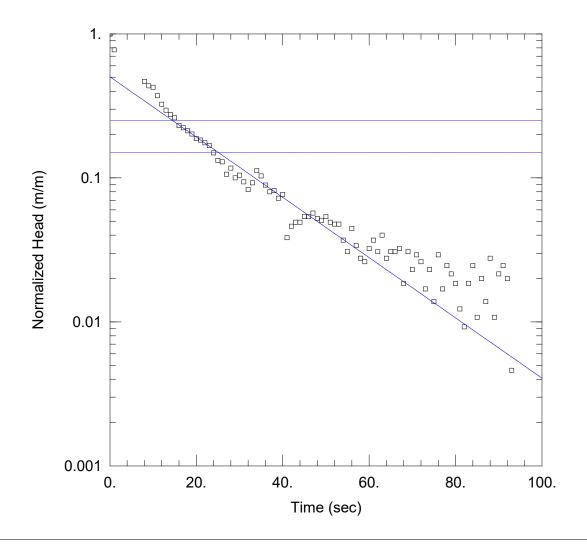
Aquifer Model: Unconfined

Solution Method: KGS Model

Static Water Column Height: 9.18 m

= 3.669 m/day Kr

 $= 0.00955 \text{ m}^{-1}$ Ss



Data Set: LW02D FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:30:48</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### AQUIFER DATA

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D FHT2)

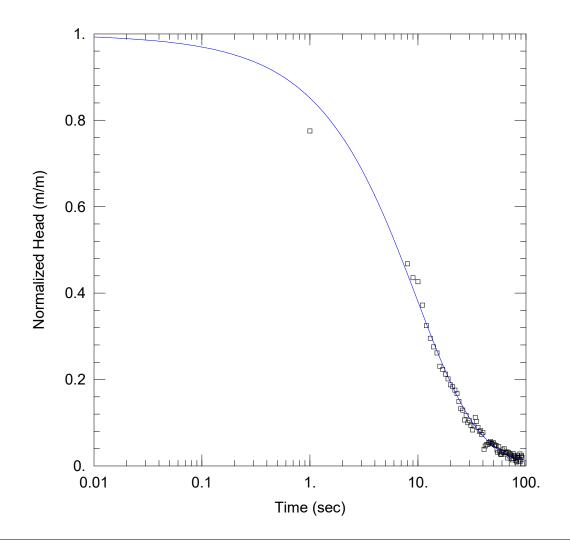
Initial Displacement: <u>0.65</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 2.988 m/day y0 = 0.3273 m



Data Set: LW02D FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:30:50</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D FHT2)

Initial Displacement: 0.65 m

Total Well Penetration Depth: 8.9 m

Casing Radius: 0.025 m

Static Water Column Height: 9.18 m

Screen Length: 2. m Well Radius: 0.064 m

### **SOLUTION**

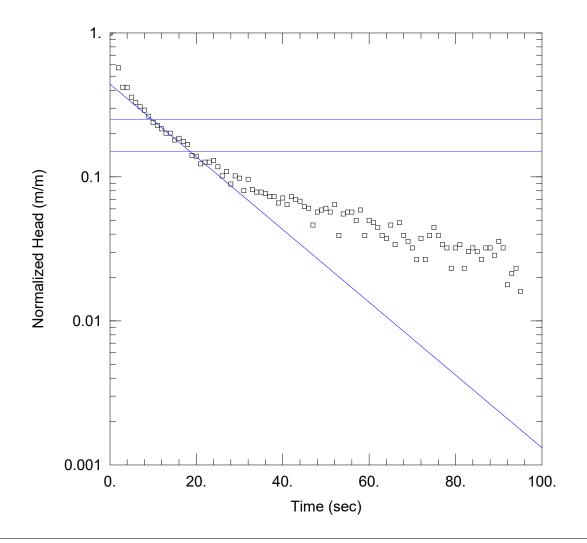
Aquifer Model: Unconfined

Kr = 3.941 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.0003468 \text{ m}^{-1}$ 



Data Set: LW02D FHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:30:53</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D FHT3)

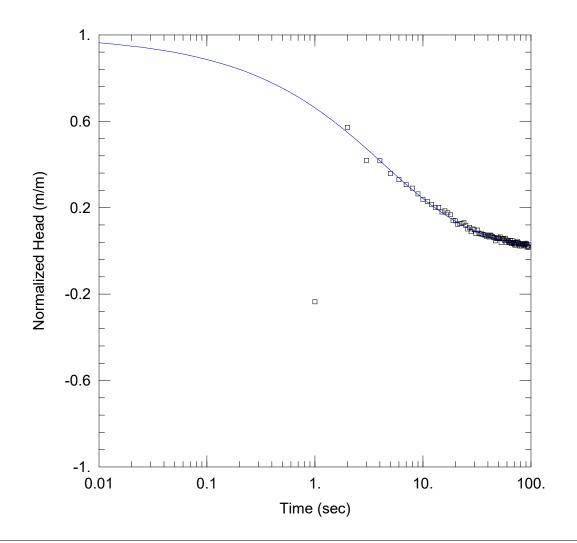
Initial Displacement: <u>0.561</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.607 m/day y0 = 0.2476 m



Data Set: LW02D FHT3 - KGS.aqt

Date: 08/26/22 Time: <u>15:30:56</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D FHT3)

Initial Displacement: 0.561 m Total Well Penetration Depth: 8.9 m

Casing Radius: 0.025 m

Static Water Column Height: 9.18 m

Screen Length: 2. m Well Radius: 0.064 m

### **SOLUTION**

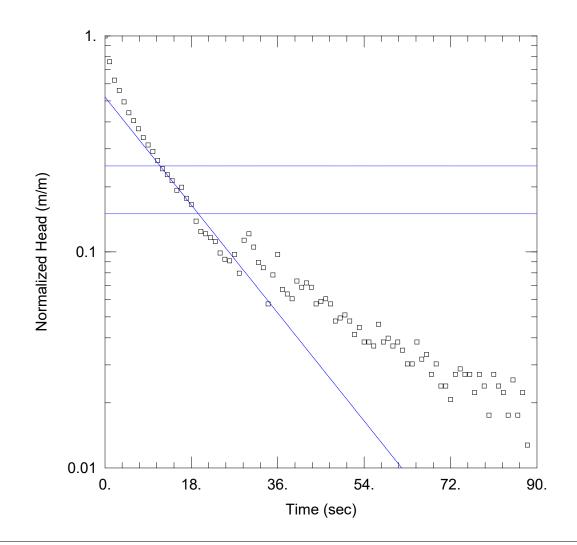
Aquifer Model: Unconfined

= 2.796 m/day Kr

Kz/Kr = 0.1

Solution Method: KGS Model

 $= 0.01862 \text{ m}^{-1}$ Ss



Data Set: LW02D RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:35:03</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D RHT1)

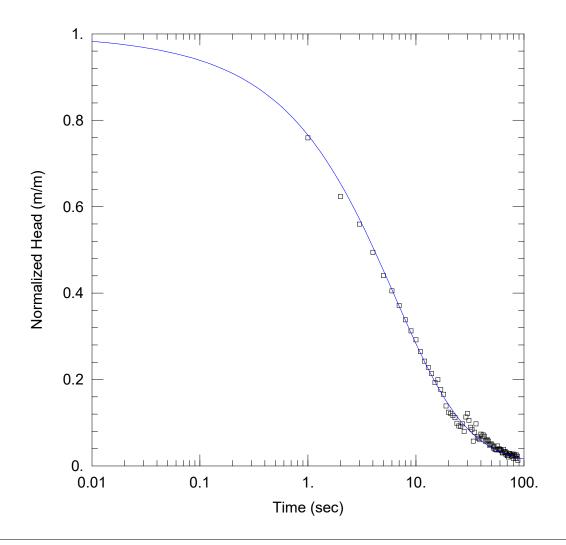
Initial Displacement: <u>-0.627</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.967 m/day y0 = -0.3271 m



Data Set: LW02D RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:35:07</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D RHT1)

Initial Displacement: -0.627 m Total Well Penetration Depth: 8.9 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

### **SOLUTION**

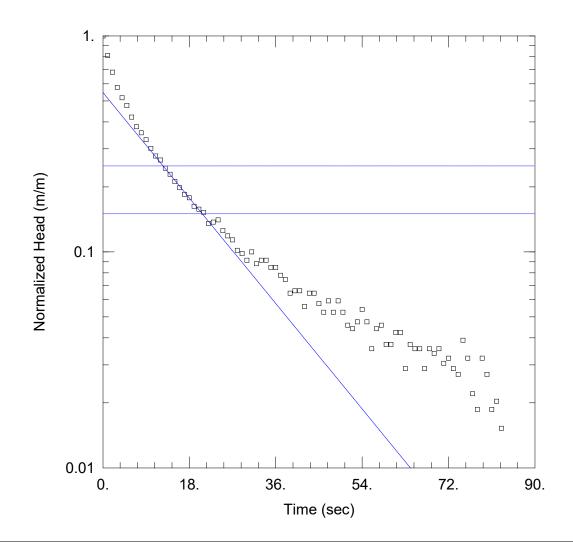
Aquifer Model: Unconfined

Solution Method: KGS Model

Static Water Column Height: 9.18 m

Kr = 4.013 m/day

 $= 0.002483 \text{ m}^{-1}$ Ss



Data Set: LW02D RHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:35:09</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D RHT2)

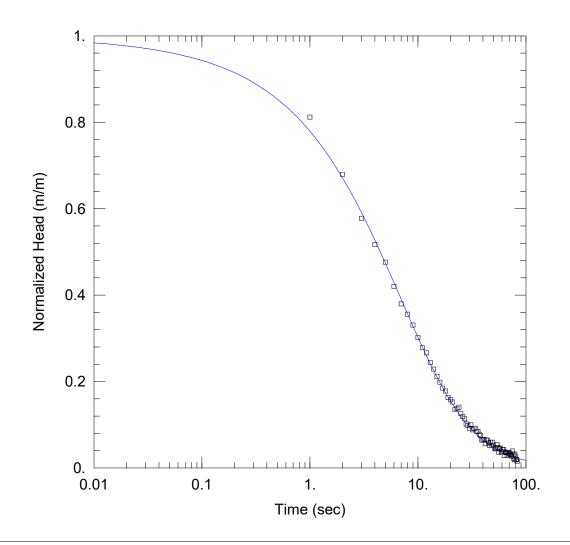
Initial Displacement: <u>-0.59</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.874 m/day y0 = -0.3228 m



Data Set: LW02D RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:35:12</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D RHT2)

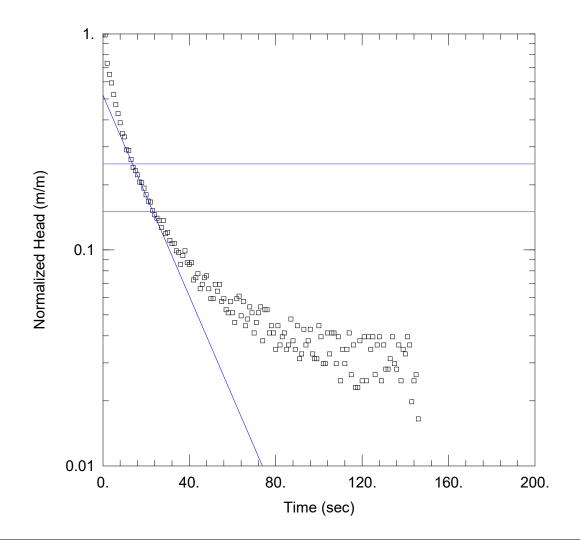
Initial Displacement: -0.59 m Static Water Column Height: 9.18 m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 3.786 m/day Ss = 0.002239 m<sup>-1</sup>



Data Set: LW02D RHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:35:14</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>10.</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (LW02D RHT3)

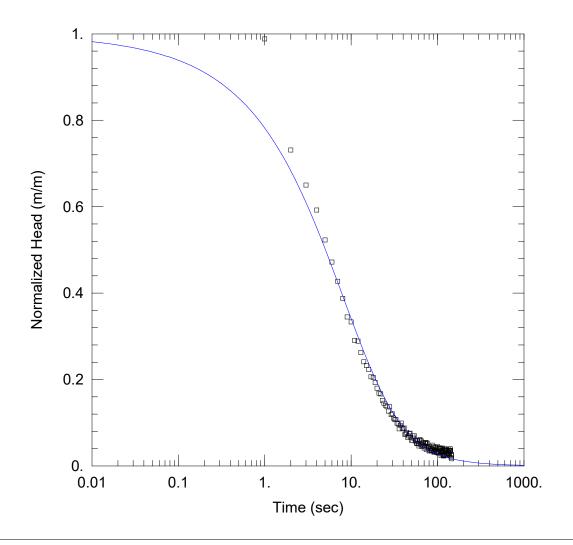
Initial Displacement: <u>-0.606</u> m Static Water Column Height: <u>9.18</u> m

Total Well Penetration Depth: 8.9 m Screen Length: 2. m Casing Radius: 0.025 m Well Radius: 0.064 m

# SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.321 m/day y0 = -0.3157 m



Data Set: LW02D RHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:35:17</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 10. m

### WELL DATA (LW02D RHT3)

Initial Displacement: <u>-0.606</u> m Total Well Penetration Depth: <u>8.9</u> m

Casing Radius: 0.025 m

Static Water Column Height: 9.18 m

Screen Length: 2. m Well Radius: 0.064 m

### **SOLUTION**

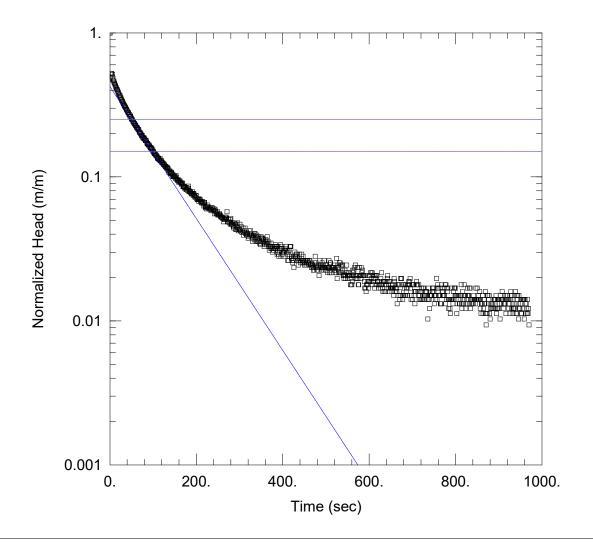
Aquifer Model: Unconfined

Kr = 2.763 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.004169 \text{ m}^{-1}$ 



Data Set: LW02S FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:36:10</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.37 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LW02S FHT1)

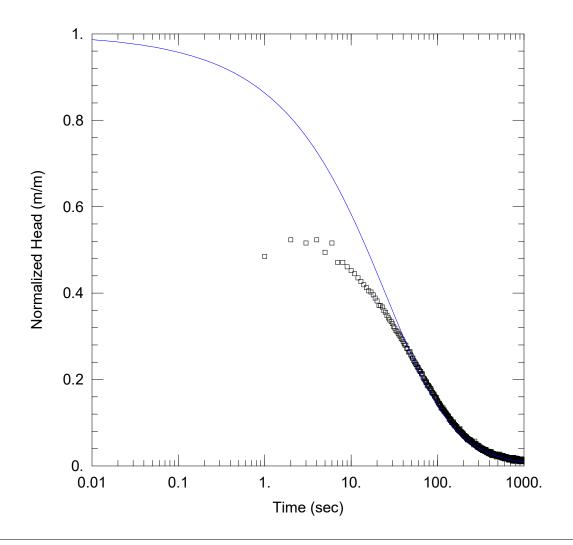
Initial Displacement: <u>1.066</u> m Static Water Column Height: <u>5.07</u> m

Total Well Penetration Depth: 4.57 m Screen Length: 1.2 m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.9687 m/day y0 = 0.452 m



Data Set: LW02S FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:36:13</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.37 m

## WELL DATA (LW02S FHT1)

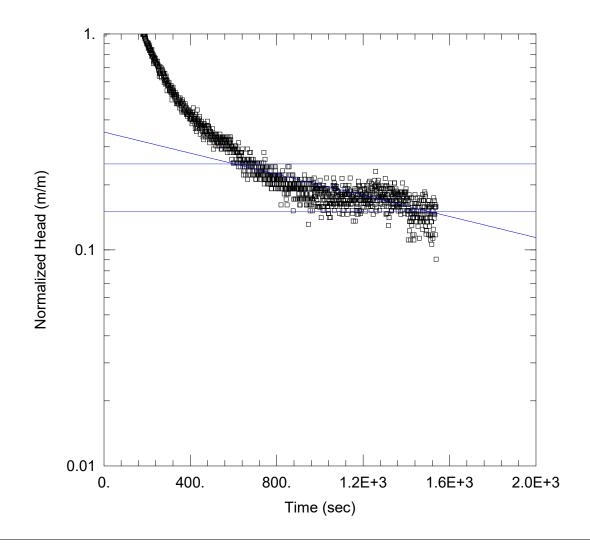
Initial Displacement: <u>1.066</u> m Static Water Column Height: <u>5.07</u> m

Total Well Penetration Depth: 4.57 m Screen Length: 1.2 m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 1.014 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: LW02S RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:36:16</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: 29/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 5.37 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (LW02S RHT1)

Initial Displacement: <u>-0.099</u> m Static Water Column Height: <u>5.07</u> m

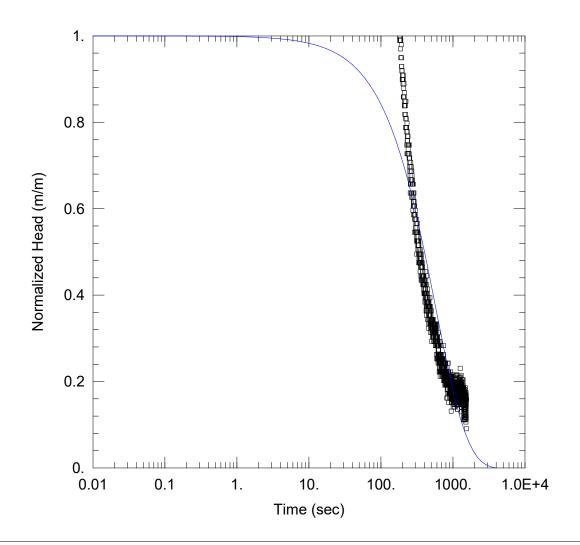
Total Well Penetration Depth: 4.57 m Screen Length: 1.2 m
Casing Radius: 0.025 m Well Radius: 0.064 m

Casing Radius: <u>0.025</u> m Well Radius: <u>0.064</u> m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.05167 m/day y0 = -0.03476 m



Data Set: LW02S RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:36:19</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: LW02S Test Date: <u>29/10/2022</u>

#### **AQUIFER DATA**

Saturated Thickness: 5.37 m

### WELL DATA (LW02S RHT1)

Initial Displacement: -0.099 m Static Water Column Height: 5.07 m

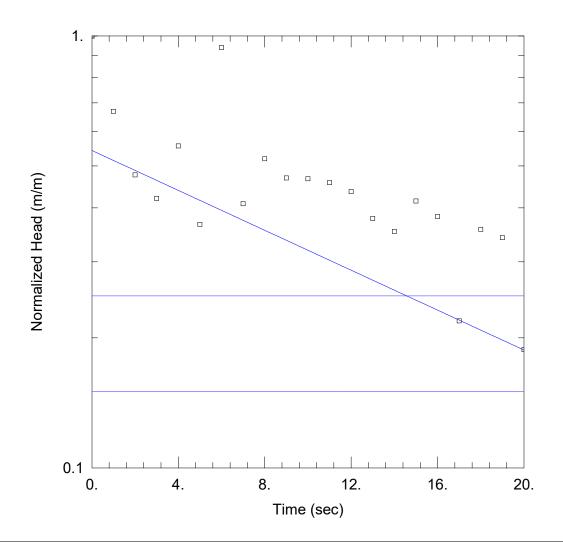
Total Well Penetration Depth: 4.57 m Screen Length: 1.2 m Casing Radius: 0.025 m

Well Radius: 0.064 m

### **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 1.862E-11 \text{ m}^{-1}$ = 0.1495 m/daySs Kr



### MW02B

Data Set: MW02B FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:36:22</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: MW02B Test Date: 26/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 32.8 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW02B FHT1)

Initial Displacement: 0.516 m Static Water Column Height: 32.8 m

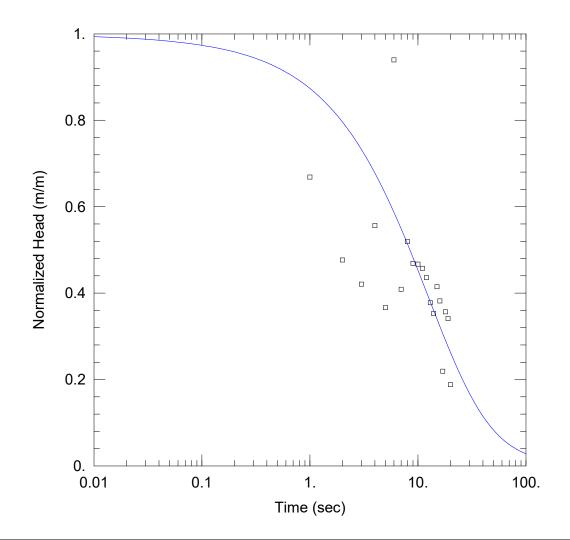
Total Well Penetration Depth: 37.5 m Screen Length: 5. m

Casing Radius: 0.025 m Well Radius: 0.073 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 1.744 m/dayy0 = 0.2802 m



### MW02B

Data Set: MW02B FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:36:25</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: MW02B Test Date: 26/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 32.8 m

### WELL DATA (MW02B FHT1)

Initial Displacement: 0.516 m Static Water Column Height: 32.8 m

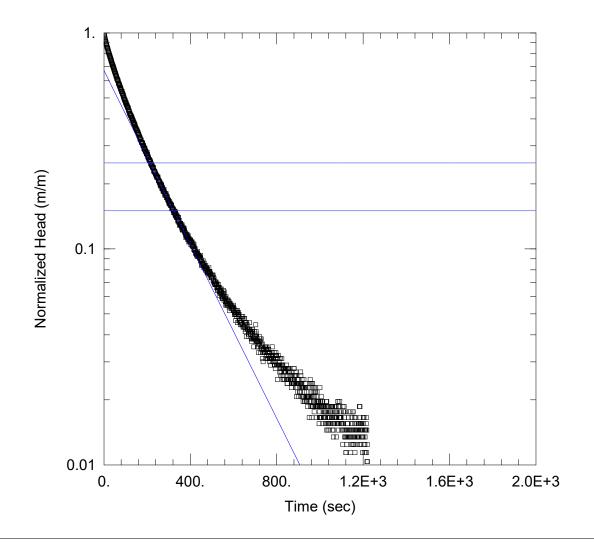
Total Well Penetration Depth: 37.5 m Screen Length: 5. m Casing Radius: 0.025 m

Well Radius: 0.073 m

### **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.0001228 \text{ m}^{-1}$ Ss Kr = 1.408 m/day



Data Set: MW02B RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:36:28</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: MW02B Test Date: 27/10/2022

#### AQUIFER DATA

Saturated Thickness: 32.8 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW02B RHT1)

Initial Displacement: <u>-0.966</u> m

Total Well Penetration Depth: 34.6 m

Static Water Column Height: 32.8 m

Casing Radius: 0.025 m

Screen Length: 5. m

Well Radius: 0.073 m

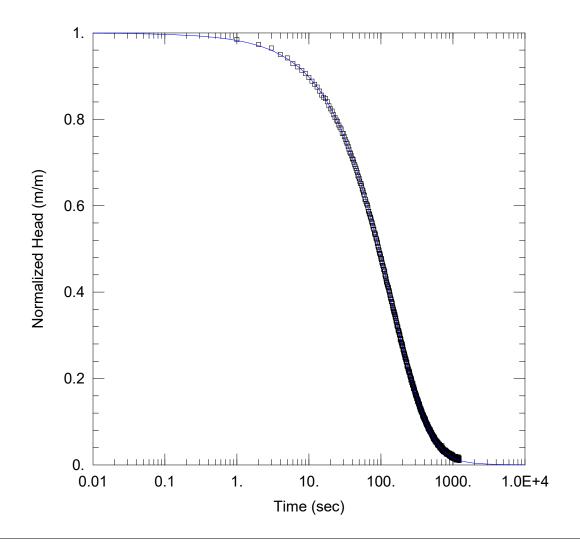
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.152 m/day

y0 = -0.6475 m



Data Set: MW02B RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:36:31</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe Test Well: MW02B Test Date: 27/10/2022

#### **AQUIFER DATA**

Saturated Thickness: 32.8 m

### WELL DATA (MW02B RHT1)

Initial Displacement: -0.966 m Static Water Column Height: 32.8 m

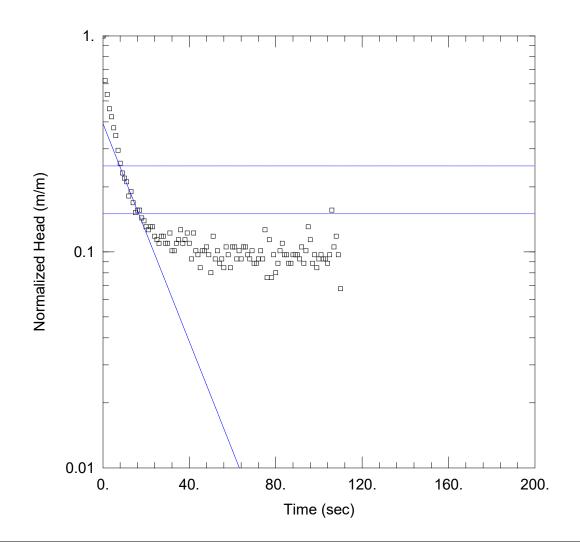
Total Well Penetration Depth: 34.6 m Screen Length: 5. m

Casing Radius: 0.025 m Well Radius: 0.073 m

### **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 3.049E-5 m^{-1}$ Ss = 0.2608 m/dayKr



Data Set: MW02Q FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:37:26</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW02Q FHT1)

Initial Displacement: 0.237 m Static Water Column Height: 1.58 m

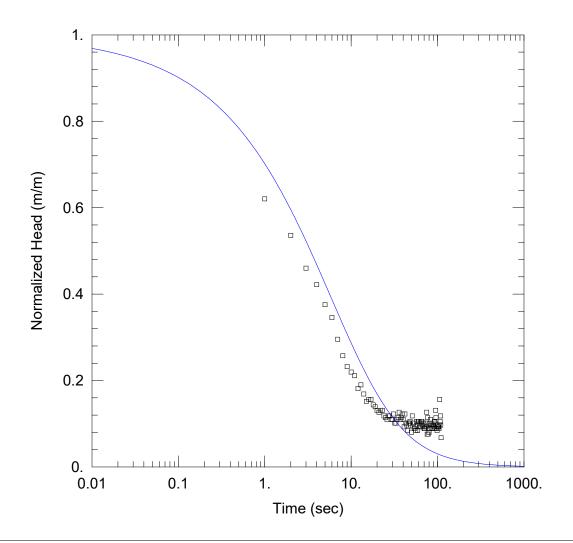
Total Well Penetration Depth: 1.45 m Screen Length: 1. m

Casing Radius: 0.025 m Well Radius: 0.089 m

### SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 5.602 m/dayy0 = 0.09316 m



Data Set: MW02Q FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:37:29</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m

### WELL DATA (MW02Q FHT1)

Initial Displacement: <u>0.237</u> m

Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Static Water Column Height: 1.58 m

Screen Length: 1. m Well Radius: 0.089 m

### SOLUTION

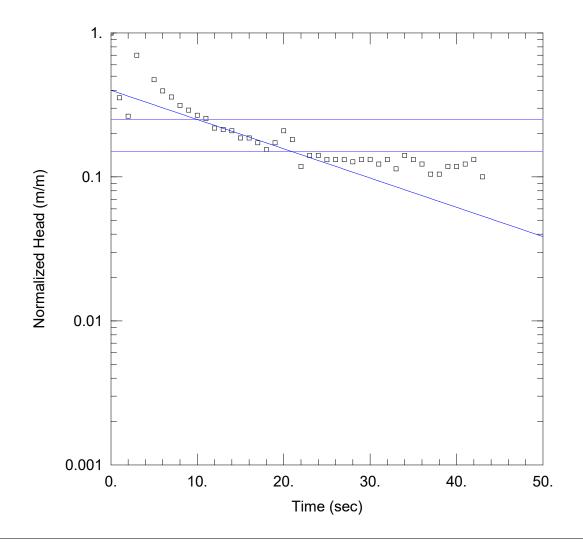
Aquifer Model: Unconfined

Kr = 4.317 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.01862 \text{ m}^{-1}$ 



Data Set: MW02Q FHT2 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:37:31</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW02Q FHT2)

Initial Displacement: 0.22 m Static Water Column Height: 1.58 m

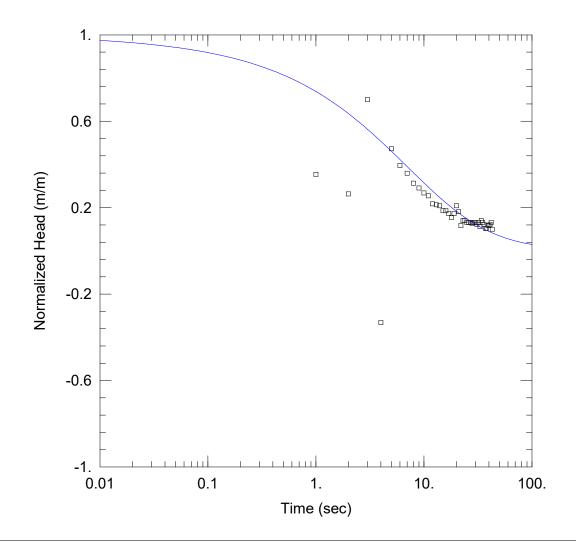
Total Well Penetration Depth: 1.45 m Screen Length: 1. m Casing Radius: 0.025 m

Well Radius: 0.089 m

### SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.512 m/dayy0 = 0.0879 m



Data Set: MW02Q FHT2 - KGS.aqt

Date: 08/26/22 Time: <u>15:37:34</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m

### WELL DATA (MW02Q FHT2)

Initial Displacement: 0.22 m

Static Water Column Height: 1.58 m Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Screen Length: 1. m Well Radius: 0.089 m

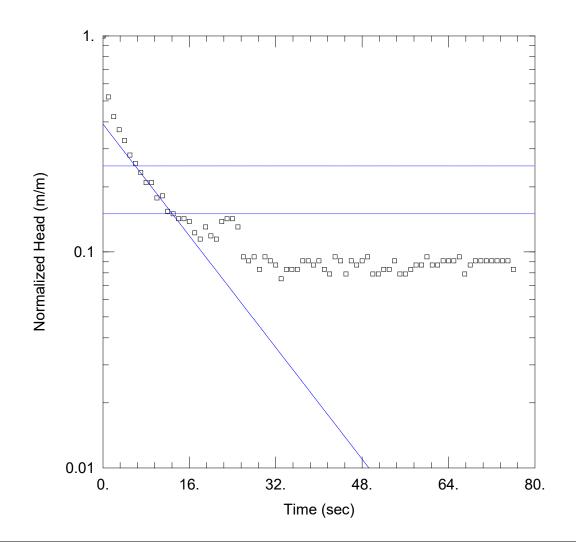
SOLUTION

Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 4.425 m/day

 $= 0.01175 \text{ m}^{-1}$ Ss



Data Set: MW02Q FHT3 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:37:36</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW02Q FHT3)

Initial Displacement: 0.253 m Static Water Column Height: 1.58 m

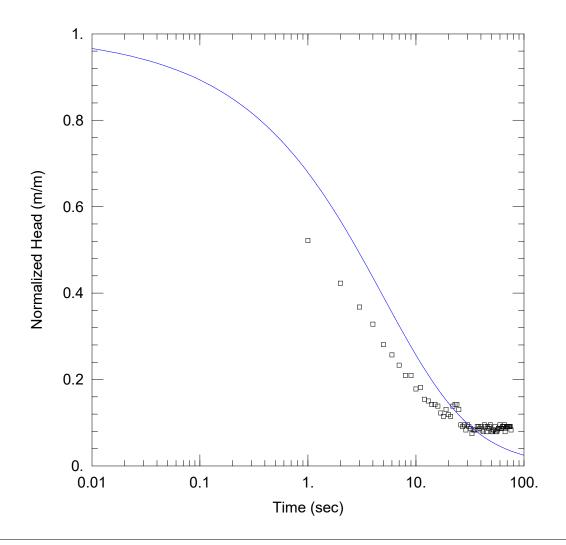
Total Well Penetration Depth: 1.45 m Screen Length: 1. m

Casing Radius: 0.025 m Well Radius: 0.089 m

### SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 7.175 m/dayy0 = 0.09884 m



Data Set: MW02Q FHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:37:39</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### AQUIFER DATA

Saturated Thickness: 2.4 m

### WELL DATA (MW02Q FHT3)

Initial Displacement: 0.253 m

Static Water Column Height: 1.58 m

Total Well Penetration Depth: 1.45 m

Screen Length: <u>1.</u> m Well Radius: <u>0.089</u> m

Casing Radius: 0.025 m

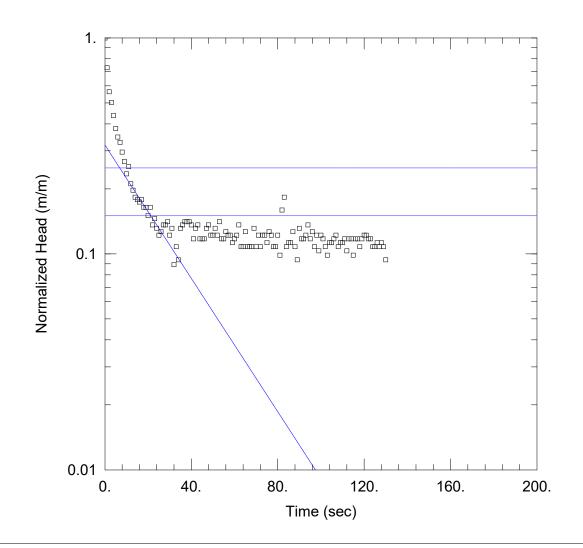
### SOLUTION

Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 5.08 m/day

Ss =  $0.01862 \text{ m}^{-1}$ 



Data Set: MW02Q RHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:38:49</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>2.4</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW02Q RHT2)

Initial Displacement: -0.213 m

Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Static Water Column Height: 1.58 m

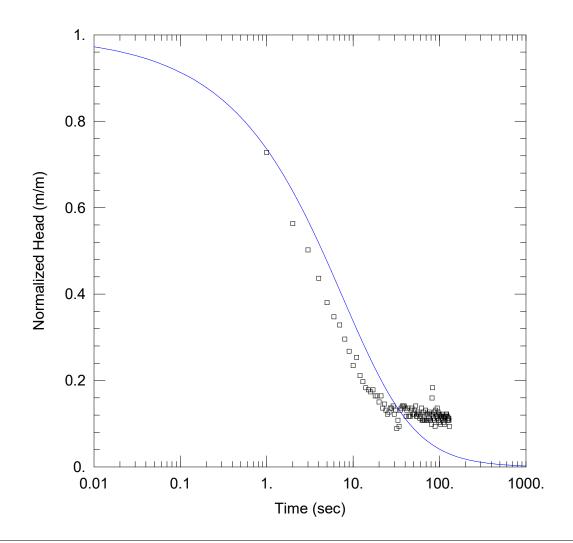
Screen Length: 1. m Well Radius: 0.089 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.426 m/day y0 = -0.068 m



Data Set: MW02Q RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:38:51</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m

### WELL DATA (MW02Q RHT2)

Initial Displacement: <u>-0.213</u> m

Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Static Water Column Height: 1.58 m

Screen Length: 1. m Well Radius: 0.089 m

### SOLUTION

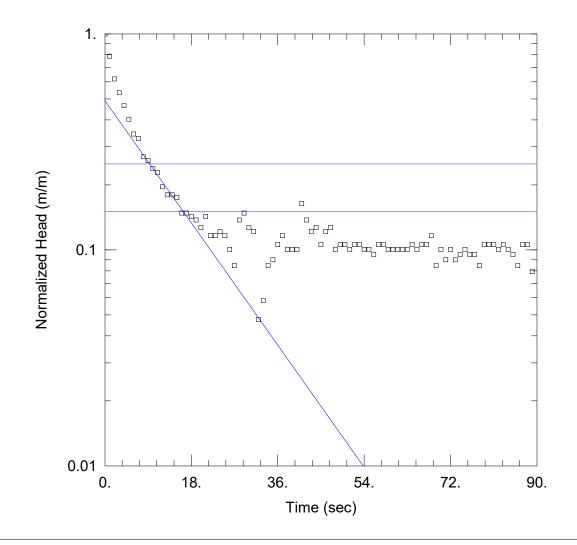
Aquifer Model: Unconfined

Kr = 3.329 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.01862 \text{ m}^{-1}$ 



Data Set: MW02Q RHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:38:54</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>2.4</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW02Q RHT3)

Initial Displacement: -0.189 m

Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Static Water Column Height: 1.58 m

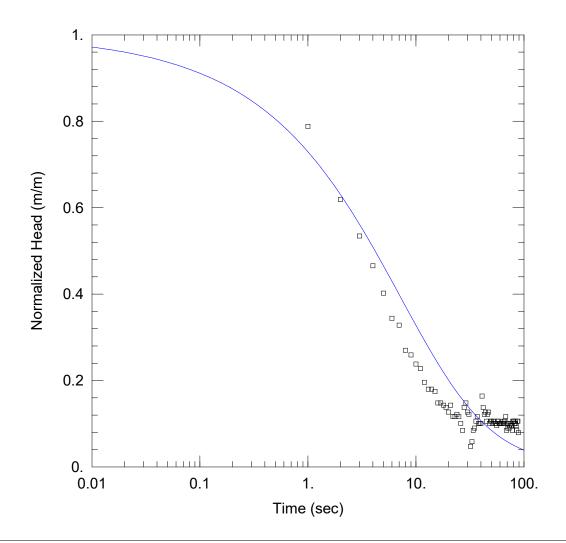
Screen Length: 1. m Well Radius: 0.089 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 6.979 m/day y0 = -0.0928 m



Data Set: MW02Q RHT3 - KGS.aqt

Date: 08/26/22 Time: <u>15:38:56</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 2.4 m

### WELL DATA (MW02Q RHT3)

Initial Displacement: -0.189 m Total Well Penetration Depth: 1.45 m

Casing Radius: 0.025 m

Static Water Column Height: 1.58 m

Screen Length: 1. m Well Radius: 0.089 m

### SOLUTION

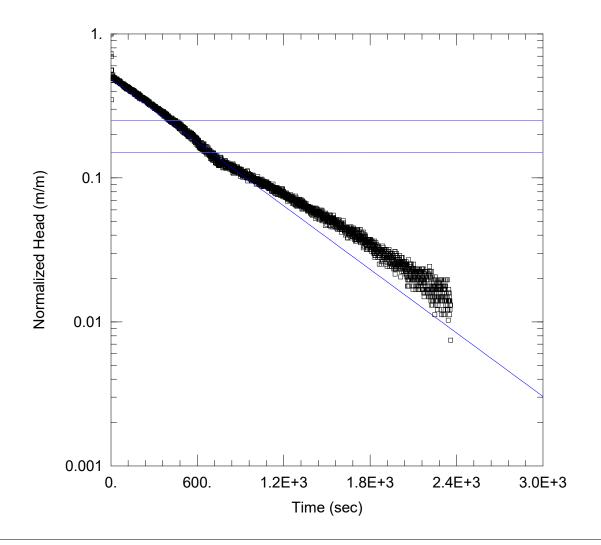
Aquifer Model: Unconfined

= 3.497 m/day Kr

Kz/Kr = 0.1

Solution Method: KGS Model

 $= 0.01862 \text{ m}^{-1}$ Ss



Data Set: MW03B FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:38:59</u>

#### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>16.41</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW03B FHT1)

Initial Displacement: 1.071 m

Total Well Penetration Depth: 16.56 m

Screen Length: 5. m

Static Water Column Height: 16.41 m

Casing Radius: 0.025 m

Well Radius: 0.073 m

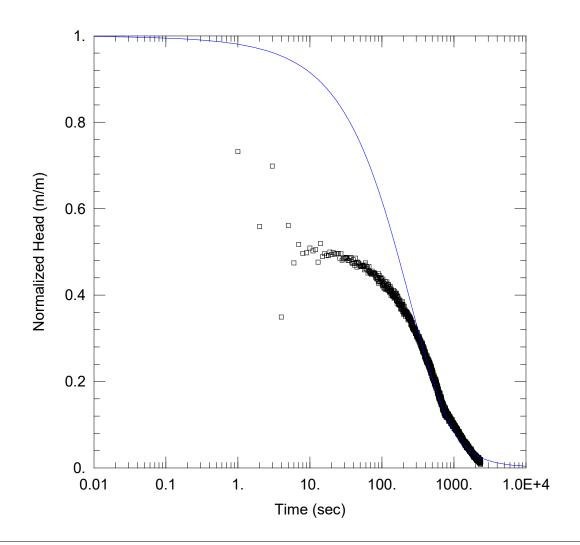
# SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.05552 m/day

y0 = 0.5227 m



Data Set: MW03B FHT1 - KGS.aqt

Date: 08/26/22 Time: 15:39:04

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 16.41 m

# WELL DATA (MW03B FHT1)

Initial Displacement: 1.071 m Static Water Column Height: 16.41 m

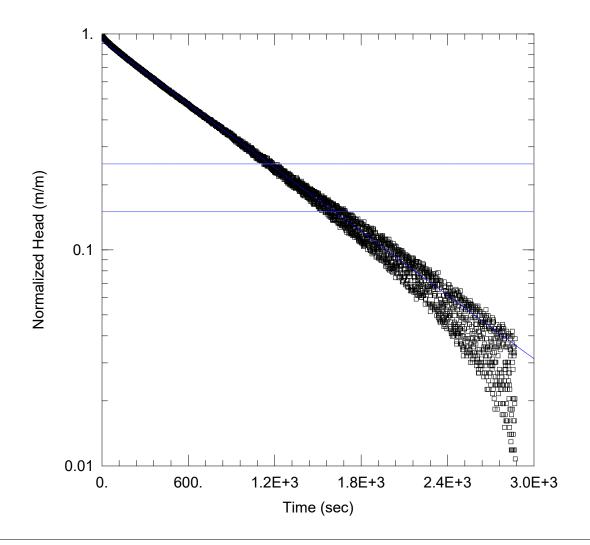
Total Well Penetration Depth: 16.56 m Screen Length: 5. m Well Radius: 0.073 m

Casing Radius: 0.025 m

# SOLUTION

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.0001862 \text{ m}^{-1}$ = 0.0632 m/daySs Kr



Data Set: MW03B RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:39:07</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: <u>16.41</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW03B RHT1)

Initial Displacement: -0.928 m

-<u>0.926</u> III

Static Water Column Height: 16.41 m

Total Well Penetration Depth: <u>16.56</u> m Casing Radius: <u>0.025</u> m

Screen Length: <u>5.</u> m Well Radius: <u>0.073</u> m

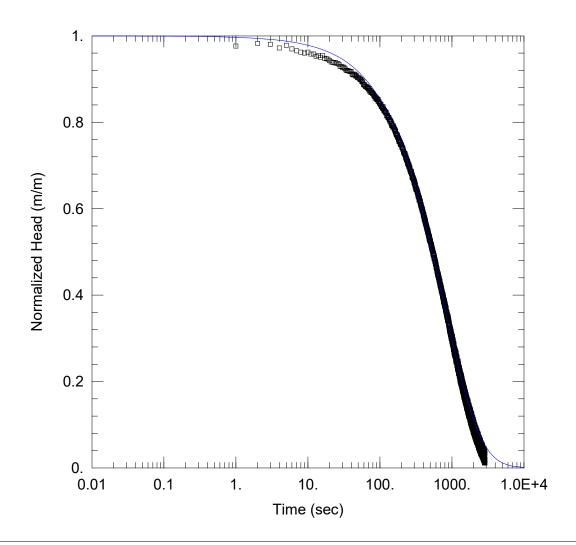
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03709 m/day

y0 = -0.8657 m



Data Set: MW03B RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:39:11</u>

#### PROJECT INFORMATION

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### AQUIFER DATA

Saturated Thickness: 16.41 m

### WELL DATA (MW03B RHT1)

Initial Displacement: -0.928 m

Total Well Penetration Depth: 16.56 m

Casing Radius: 0.025 m

Static Water Column Height: 16.41 m

Screen Length: <u>5.</u> m Well Radius: <u>0.073</u> m

### **SOLUTION**

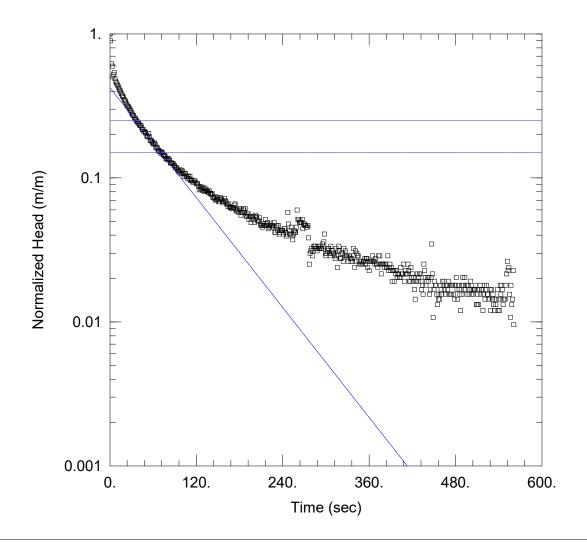
Aquifer Model: Unconfined

Kr = 0.03497 m/day

 $Kz/Kr = \frac{0.00 \cdot 10}{0.1}$ 

Solution Method: KGS Model

Ss =  $2.46E-6 \text{ m}^{-1}$ 



Data Set: MW03Q FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:41:40</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>5.86</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW03Q FHT1)

Initial Displacement: 0.835 m

Total Well Penetration Depth: 5.42 m

m

Static Water Column Height: 5.86 m

Screen Length: 3.5 m Well Radius: 0.089 m

Casing Radius: 0.025 m

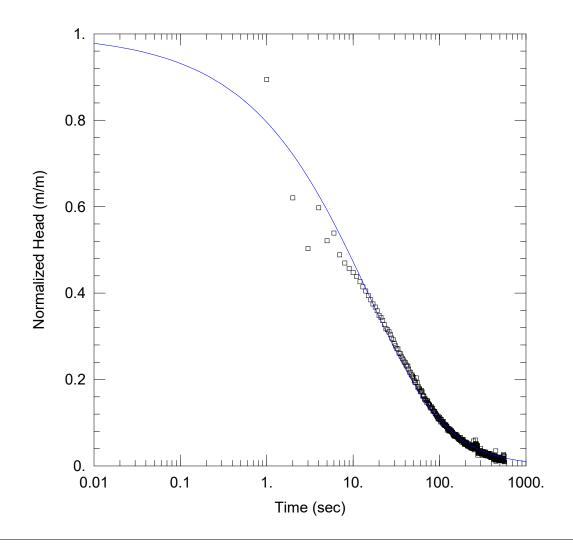
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.5451 m/day

y0 = 0.3537 m



Data Set: MW03Q FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:41:43</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 5.86 m

# WELL DATA (MW03Q FHT1)

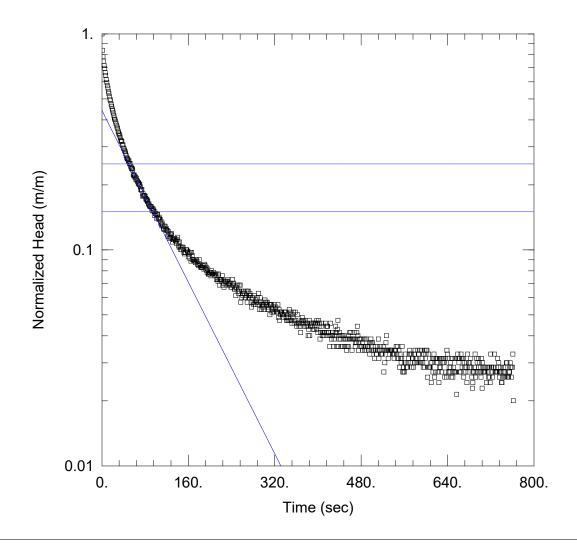
Initial Displacement: <u>0.835</u> m Static Water Column Height: <u>5.86</u> m

Total Well Penetration Depth: 5.42 m Screen Length: 3.5 m Casing Radius: 0.025 m Well Radius: 0.089 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 0.3707 m/day Ss = 0.008844 m<sup>-1</sup>



Data Set: MW03Q RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:41:46</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 5.86 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW03Q RHT1)

Initial Displacement: -0.699 m

Total Well Penetration Depth: 5.42 m

Casing Radius: 0.025 m

Static Water Column Height: 5.86 m

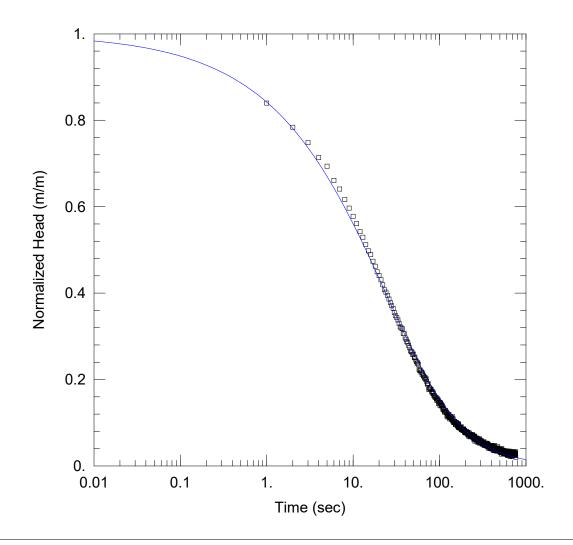
Screen Length: 3.5 m Well Radius: 0.089 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.4255 m/dayy0 = -0.3092 m



Data Set: MW03Q RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:41:50</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 5.86 m

### WELL DATA (MW03Q RHT1)

Initial Displacement: -0.699 m

Total Well Penetration Depth: 5.42 m

Static Water Column Height: 5.86 m

Screen Length: 3.5 m Well Radius: 0.089 m

Casing Radius: 0.025 m

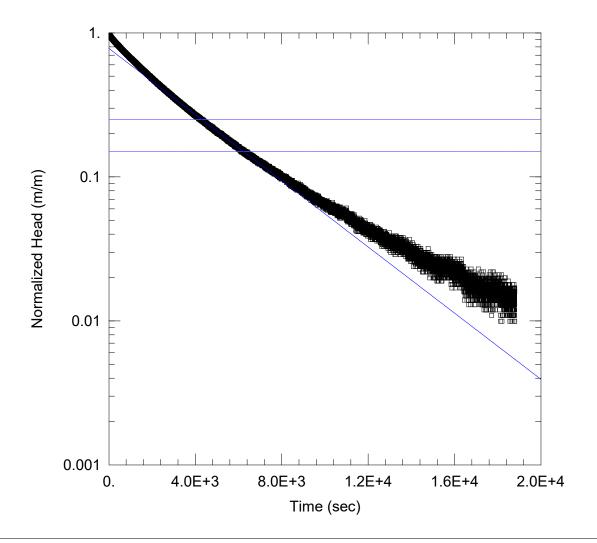
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: KGS Model

 $= 0.2635 \, \text{m/day}$ Kr

 $= 0.006865 \text{ m}^{-1}$ Ss



Data Set: MW04B RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:41:57</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 21.3 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW04B RHT1)

Initial Displacement: -1.005 m
Total Well Penetration Depth: 21. m

Casing Radius: 0.025 m

Static Water Column Height: 21.3 m

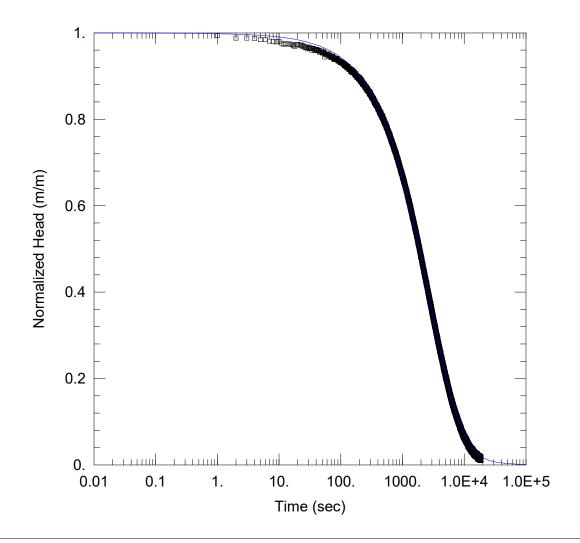
Screen Length: <u>5.</u> m Well Radius: <u>0.073</u> m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.007683 m/day y0 = -0.7842 m



Data Set: MW04B RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:42:07</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 21.3 m

### WELL DATA (MW04B RHT1)

Initial Displacement: <u>-1.005</u> m
Total Well Penetration Depth: <u>21.</u> m

Casing Radius: 0.025 m

Static Water Column Height: 21.3 m

Screen Length: <u>5.</u> m Well Radius: <u>0.073</u> m

### **SOLUTION**

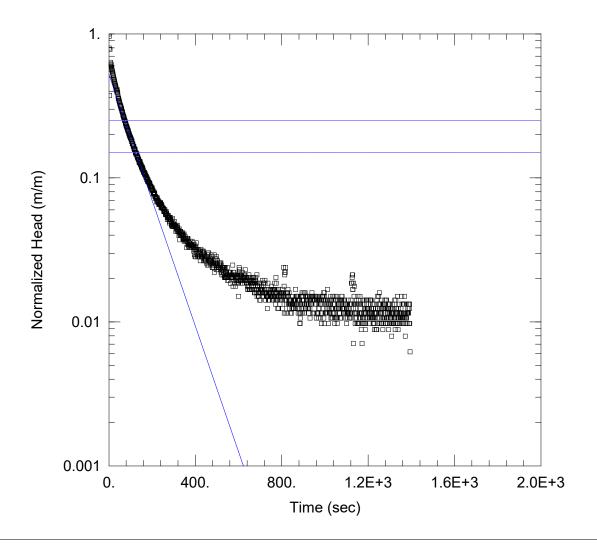
Aquifer Model: Unconfined

Kr = 0.007921 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $1.049E-5 \text{ m}^{-1}$ 



Data Set: MW04Q FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:43:10</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 8.37 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW04Q FHT1)

Initial Displacement: 1.13 m

Static Water Column Height: 8.81 m

Total Well Penetration Depth: 8.37 m

Screen Length: 1.8 m Well Radius: 0.089 m

Casing Radius: 0.025 m

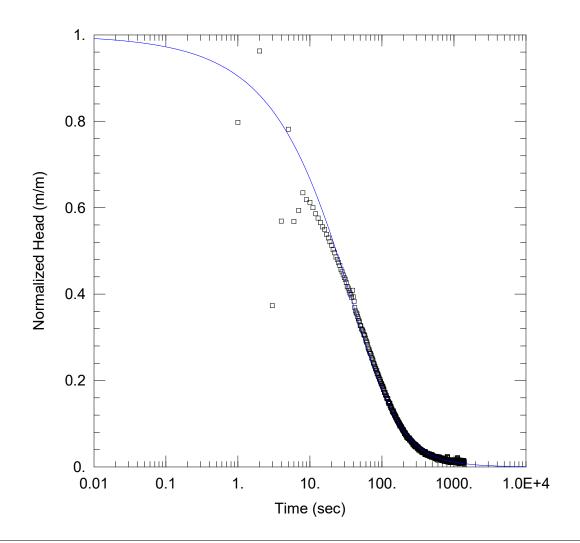
# **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.7313 m/day

y0 = 0.5902 m



Data Set: MW04Q FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:43:13</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 8.37 m

### WELL DATA (MW04Q FHT1)

Initial Displacement: 1.13 m

Total Well Penetration Depth: 8.37 m

Casing Radius: 0.025 m

Static Water Column Height: 8.81 m

Screen Length: 1.8 m Well Radius: 0.089 m

### **SOLUTION**

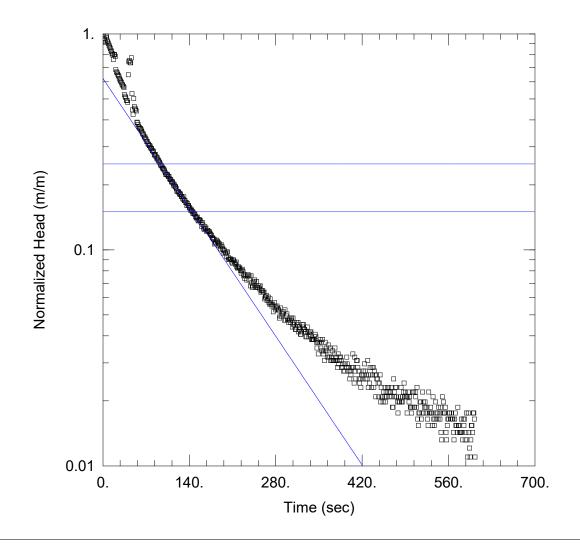
Aquifer Model: Unconfined

= 0.6447 m/dayKr

Kz/Kr = 0.1

Solution Method: KGS Model

 $= 0.002702 \text{ m}^{-1}$ Ss



Data Set: MW04Q RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:43:16</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 8.37 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW04Q RHT1)

Initial Displacement: <u>-0.91</u> m Static Water Column Height: <u>8.81</u> m

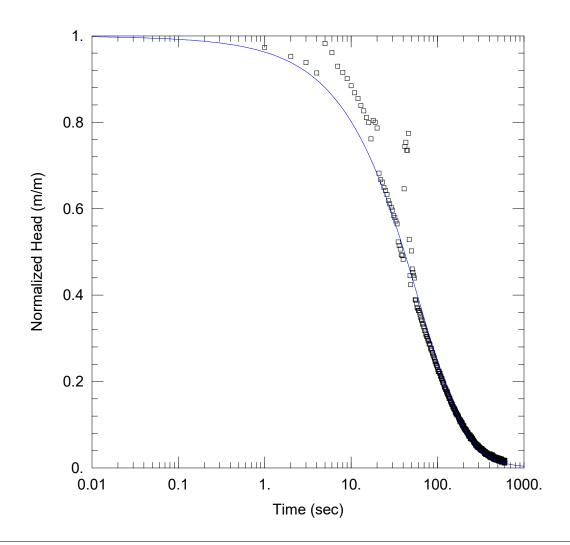
Total Well Penetration Depth: 8.37 m Screen Length: 1.8 m

Casing Radius: <u>0.025</u> m Well Radius: <u>0.089</u> m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.7141 m/day y0 = -0.566 m



Data Set: MW04Q RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:43:18</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 8.37 m

### WELL DATA (MW04Q RHT1)

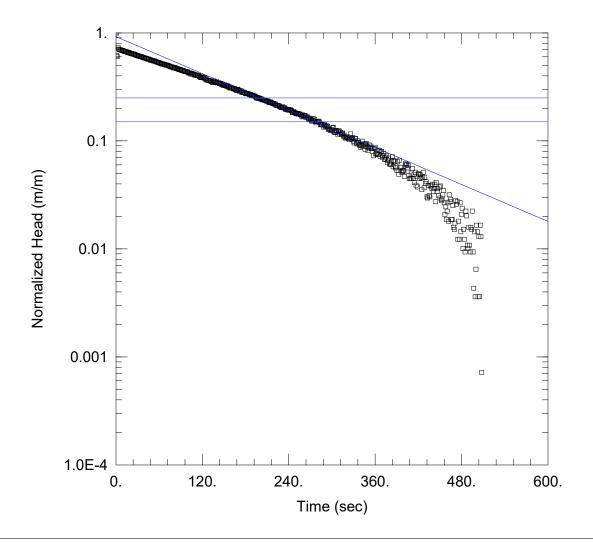
Initial Displacement: <u>-0.91</u> m Static Water Column Height: <u>8.81</u> m

Total Well Penetration Depth: 8.37 m Screen Length: 1.8 m Casing Radius: 0.025 m Well Radius: 0.089 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 0.7763 m/day Ss = 0.0001088 m<sup>-1</sup>



Data Set: MW05B FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:43:21</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 21.95 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW05B FHT1)

Initial Displacement: <u>1.387</u> m Static Water Column Height: <u>21.95</u> m

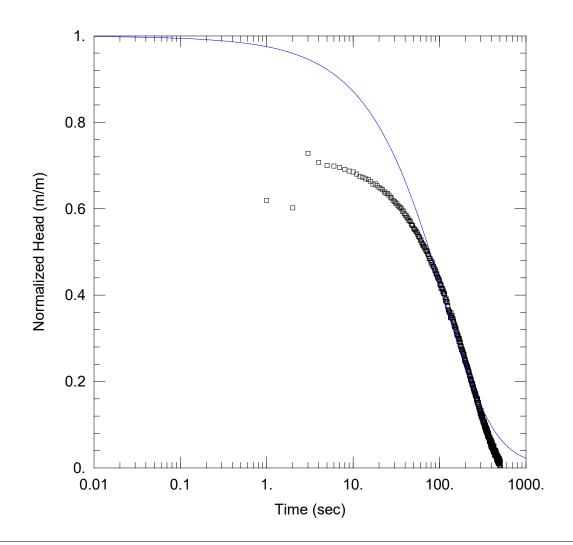
Total Well Penetration Depth: 23.05 m Screen Length: 9. m

Casing Radius: 0.025 m Well Radius: 0.073 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.1312 m/day y0 = 1.281 m



Data Set: MW05B FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:43:24</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### AQUIFER DATA

Saturated Thickness: 21.95 m

# WELL DATA (MW05B FHT1)

Initial Displacement: <u>1.387</u> m Static Water Column Height: <u>21.95</u> m

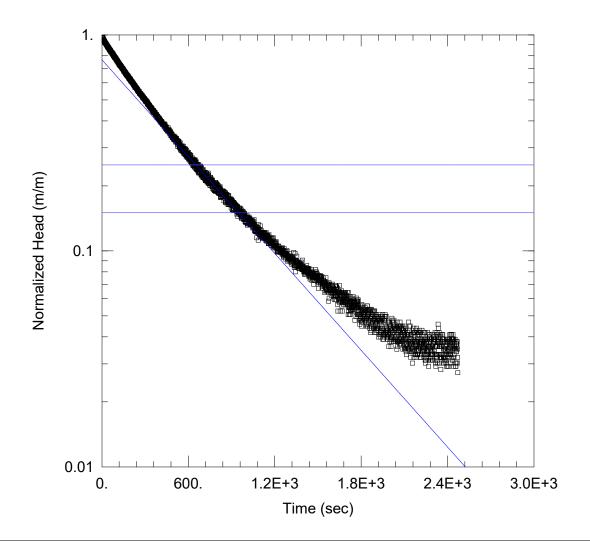
Total Well Penetration Depth: 23.05 m Screen Length: 9. m

Casing Radius: <u>0.025</u> m Well Radius: <u>0.073</u> m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 0.1061 m/day Ss = 4.282E-5 m<sup>-1</sup>



Data Set: MW05B RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:43:27</u>

#### **PROJECT INFORMATION**

Company: <u>CDM Smith</u> Client: <u>Bord na Móna</u> Project: <u>263228</u> Location: <u>Timahoe</u>

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 21.95 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW05B RHT1)

Initial Displacement: -1.026 m

Total Well Penetration Depth: 23.05 m

Static Water Column Height: 21.95 m

Casing Radius: 0.025 m

Screen Length: 9. m Well Radius: 0.073 m

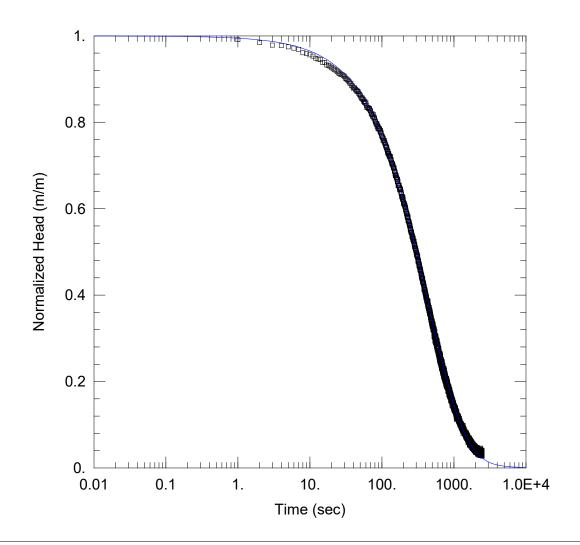
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03437 m/day y0 = -0.7

y0 = -0.7874 m



Data Set: MW05B RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:43:30</u>

### PROJECT INFORMATION

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 21.95 m

### WELL DATA (MW05B RHT1)

Initial Displacement: -1.026 m

Total Well Penetration Depth: 23.05 m

Casing Radius: 0.025 m

Static Water Column Height: 21.95 m

Screen Length: 9. m Well Radius: 0.073 m

### **SOLUTION**

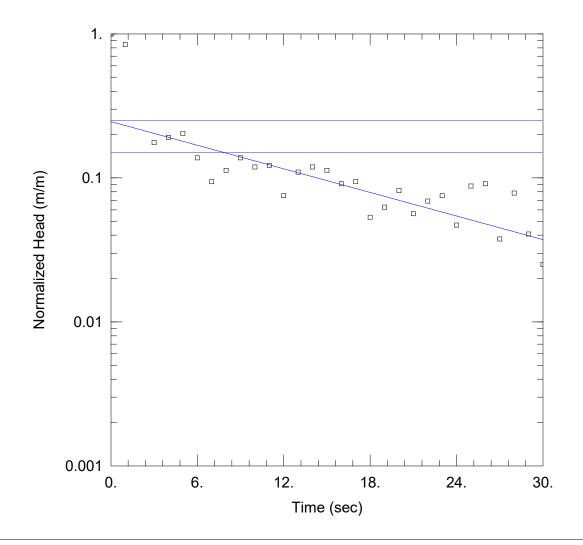
Aquifer Model: Unconfined

Kr = 0.04062 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $1.724E-6 \text{ m}^{-1}$ 



Data Set: MW05Q FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:44:42</u>

#### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>6.705</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW05Q FHT1)

Initial Displacement: 0.319 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

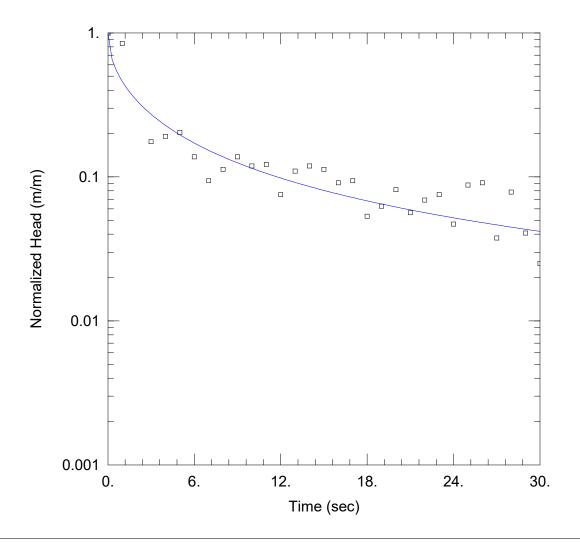
Screen Length: 2.9 m Well Radius: 0.089 m

### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.121 m/day y0 = 0.07846 m



Data Set: MW05Q FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:44:44</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.705 m

# WELL DATA (MW05Q FHT1)

Initial Displacement: <u>0.319</u> m Static Water Column Height: <u>7.575</u> m

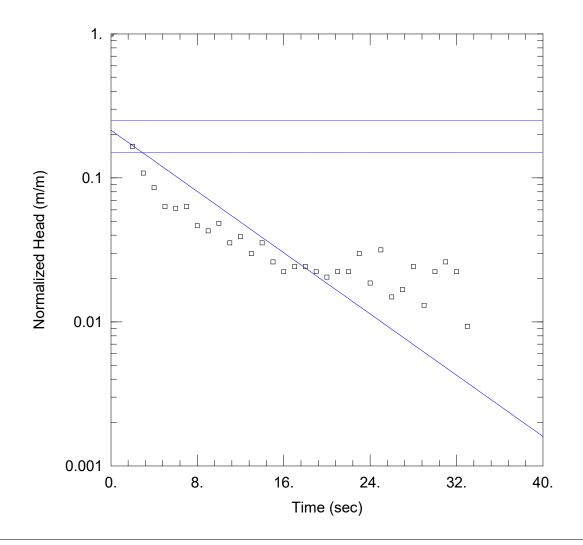
Total Well Penetration Depth: 6.705 m Screen Length: 2.9 m

Casing Radius: 0.025 m Well Radius: 0.089 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 3.672 m/day Ss = 0.01647 m<sup>-1</sup>



Data Set: MW05Q FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:44:47</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: <u>6.705</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW05Q FHT2)

Initial Displacement: <u>0.537</u> m Static Water Column Height: <u>7.575</u> m

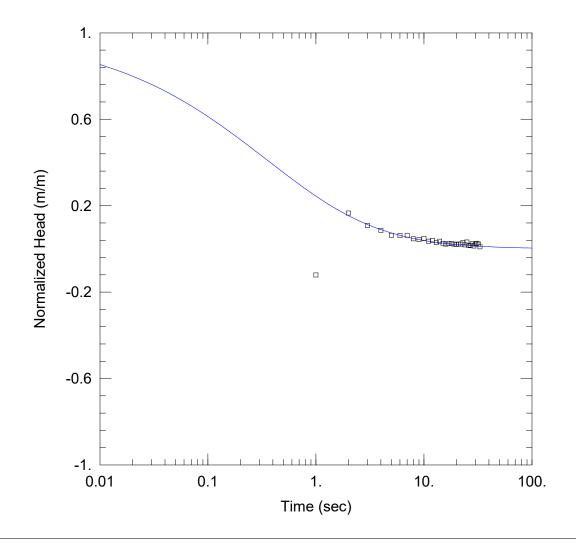
Total Well Penetration Depth: 6.705 m Screen Length: 2.9 m

Casing Radius: 0.025 m Well Radius: 0.089 m

### **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 6.074 m/day y0 = 0.1152 m



Data Set: MW05Q FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:44:50</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.705 m

### WELL DATA (MW05Q FHT2)

Initial Displacement: 0.537 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

Screen Length: 2.9 m Well Radius: 0.089 m

### **SOLUTION**

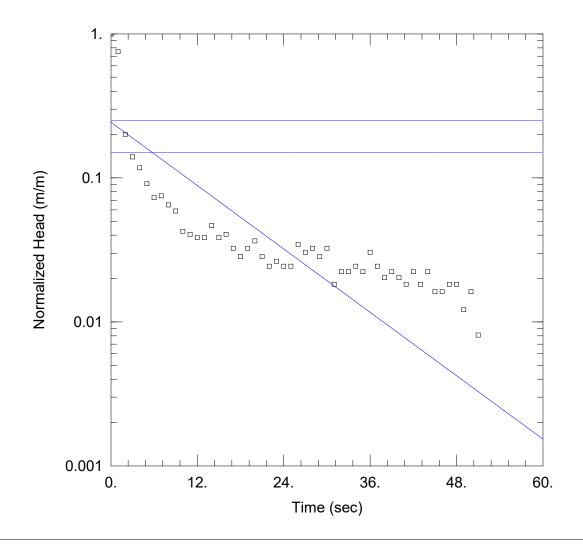
Aquifer Model: Unconfined

Kr = 11.23 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: MW05Q FHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:44:52</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: <u>6.705</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

### WELL DATA (MW05Q FHT3)

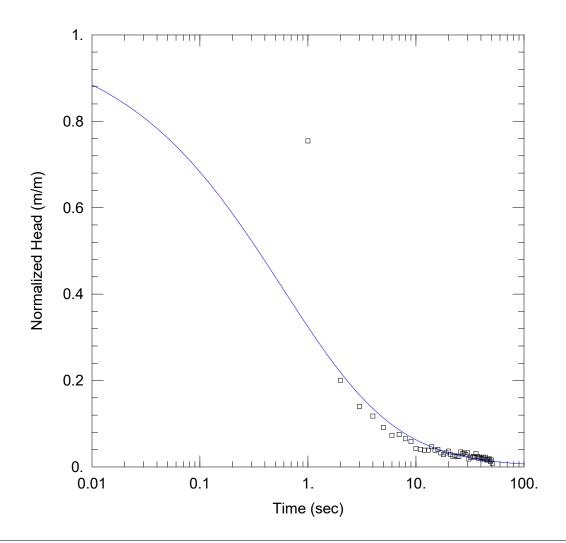
Initial Displacement: <u>0.493</u> m Static Water Column Height: <u>7.575</u> m

Total Well Penetration Depth: 6.705 m Screen Length: 2.9 m Casing Radius: 0.025 m Well Radius: 0.089 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 4.191 m/day y0 = 0.1203 m



Data Set: MW05Q FHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:44:55</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.705 m

### WELL DATA (MW05Q FHT3)

Initial Displacement: 0.493 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

Screen Length: 2.9 m Well Radius: 0.089 m

### **SOLUTION**

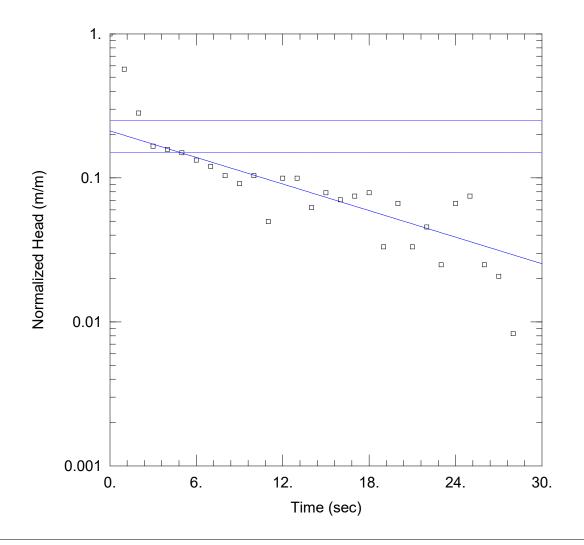
Aquifer Model: Unconfined

Kr = 6.708 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: MW05Q RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:45:24</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

#### **AQUIFER DATA**

Saturated Thickness: 6.705 m Anisotropy Ratio (Kz/Kr): 0.1

### WELL DATA (MW05Q RHT1)

Initial Displacement: -0.241 m

Static Water Column Height: 7.575 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m Well Radius: 0.089 m

Casing Radius: 0.025 m

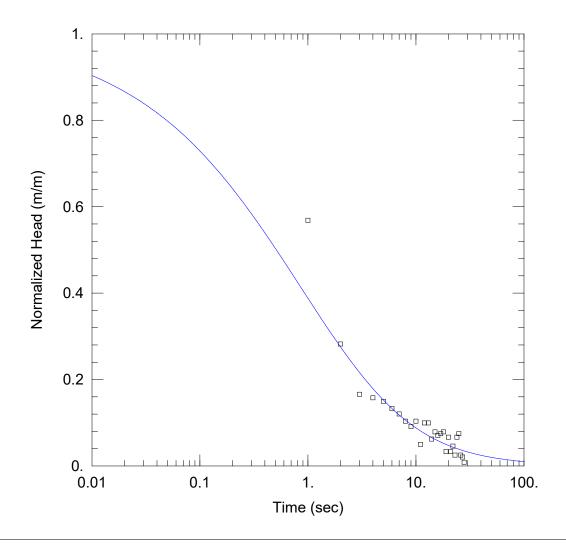
### **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.513 m/day

y0 = -0.0511 m



Data Set: MW05Q RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:45:26</u>

#### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

#### **AQUIFER DATA**

Saturated Thickness: 6.705 m

### WELL DATA (MW05Q RHT1)

Initial Displacement: -0.241 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

Screen Length: 2.9 m Well Radius: 0.089 m

### **SOLUTION**

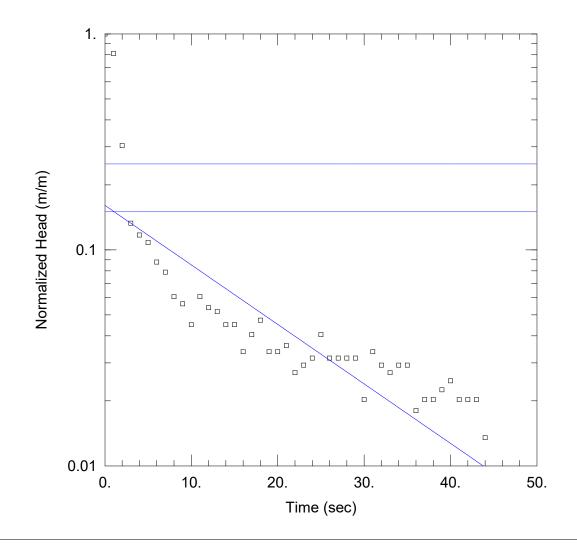
Aquifer Model: Unconfined

Kr = 4.56 m/day

Kz/Kr = 0.1

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: MW05Q RHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:45:28</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>6.705</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

## WELL DATA (MW05Q RHT2)

Initial Displacement: -0.444 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

Screen Length: 2.9 m Well Radius: 0.089 m

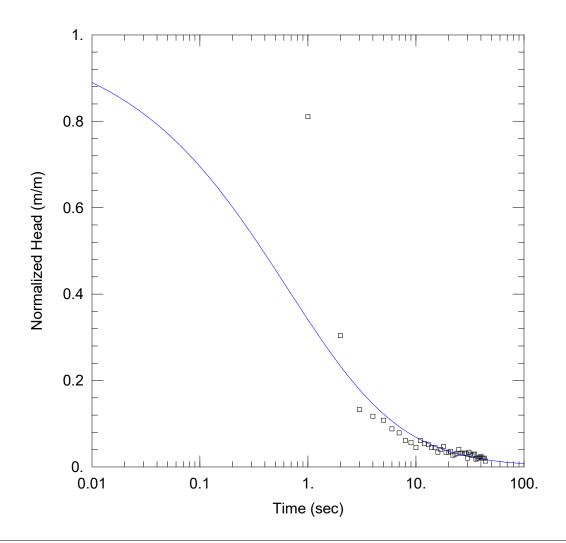
## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 3.147 m/day

y0 = -0.07136 m



Data Set: MW05Q RHT2 - KGS.aqt

Date: 08/26/22 Time: <u>15:45:31</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 6.705 m

## WELL DATA (MW05Q RHT2)

Initial Displacement: -0.444 m

Total Well Penetration Depth: 6.705 m

Screen Length: 2.9 m

Static Water Column Height: 7.575 m

Casing Radius: 0.025 m

Well Radius: 0.089 m

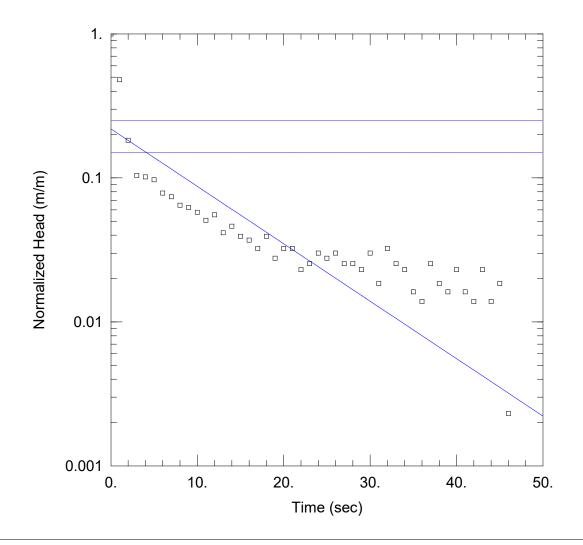
## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: KGS Model

= 6.062 m/dayKr

 $= 0.02247 \text{ m}^{-1}$ Ss



Data Set: MW05Q RHT3 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:45:33</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>6.705</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

## WELL DATA (MW05Q RHT3)

Initial Displacement: -0.433 m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

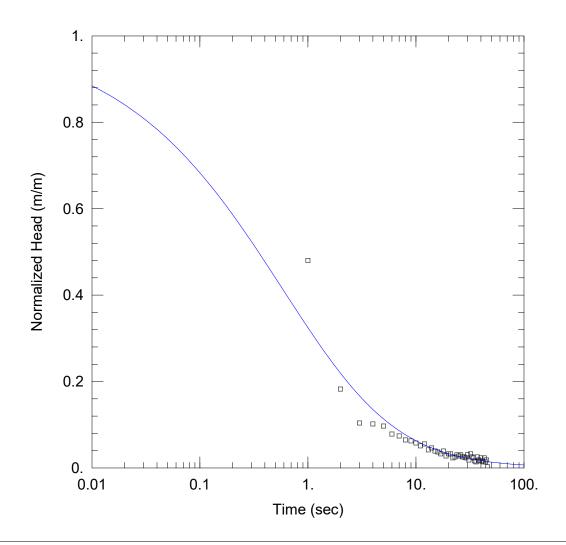
Screen Length: 2.9 m Well Radius: 0.089 m

## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 4.556 m/day y0 = -0.09477 m



Data Set: MW05Q RHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:45:36</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u>
Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 6.705 m

## WELL DATA (MW05Q RHT3)

Initial Displacement: <u>-0.433</u> m

Total Well Penetration Depth: 6.705 m

Casing Radius: 0.025 m

Static Water Column Height: 7.575 m

Screen Length: 2.9 m Well Radius: 0.089 m

## **SOLUTION**

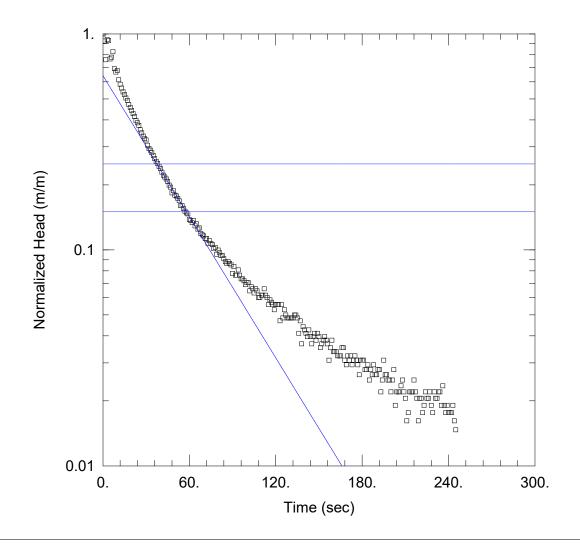
Aquifer Model: Unconfined

Kr = 6.693 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $0.02247 \text{ m}^{-1}$ 



Data Set: MW06B FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:52:52</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 21.23 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (MW06B FHT1)

Initial Displacement: <u>0.681</u> m Static Water Column Height: <u>21.23</u> m

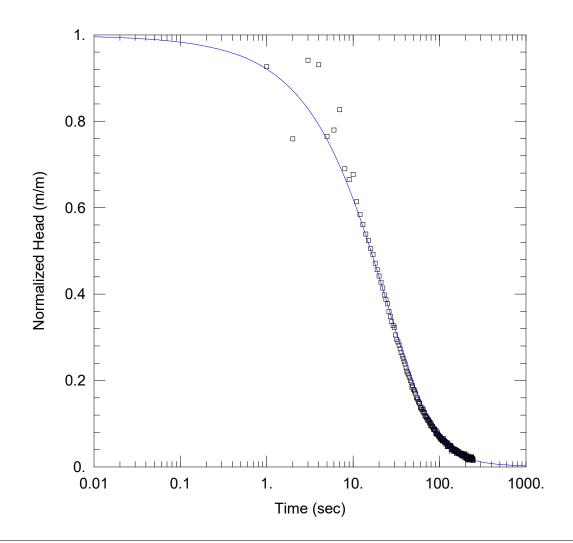
Total Well Penetration Depth: 20.37 m Screen Length: 4. m

Casing Radius: <u>0.025</u> m Well Radius: <u>0.073</u> m

## **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.8725 m/day y0 = 0.4369 m



Data Set: MW06B FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:52:55</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 21.23 m

## WELL DATA (MW06B FHT1)

Initial Displacement: 0.681 m Static Water Column Height: 21.23 m

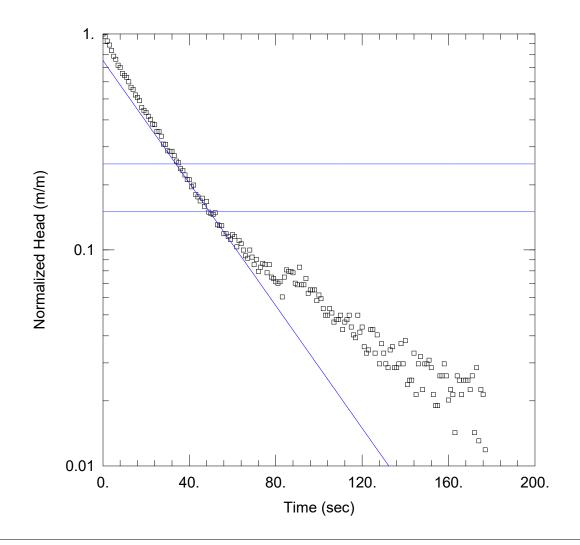
Total Well Penetration Depth: 20.37 m Screen Length: 4. m Casing Radius: 0.025 m

Well Radius: 0.073 m

## **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.0001207 \text{ m}^{-1}$ = 0.8359 m/daySs Kr



Data Set: MW06B RHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:52:58</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u>
Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 21.23 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (MW06B RHT1)

Initial Displacement: <u>-0.842</u> m

Total Well Penetration Depth: 20.37 m

Casing Radius: 0.025 m

Static Water Column Height: 21.23 m

Screen Length: 4. m Well Radius: 0.073 m

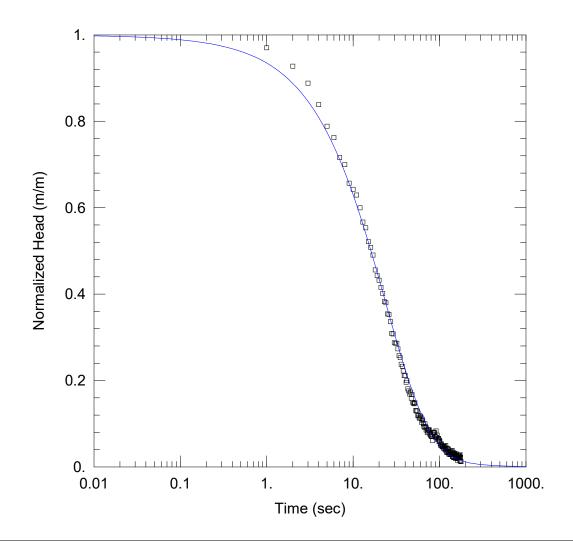
## SOLUTION

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 1.137 m/day

y0 = -0.6344 m



Data Set: MW06B RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:53:01</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 21.23 m

## WELL DATA (MW06B RHT1)

Initial Displacement: -0.842 m

Total Well Penetration Depth: 20.37 m

Casing Radius: 0.025 m

Static Water Column Height: 21.23 m

Screen Length: 4. m Well Radius: 0.073 m

## **SOLUTION**

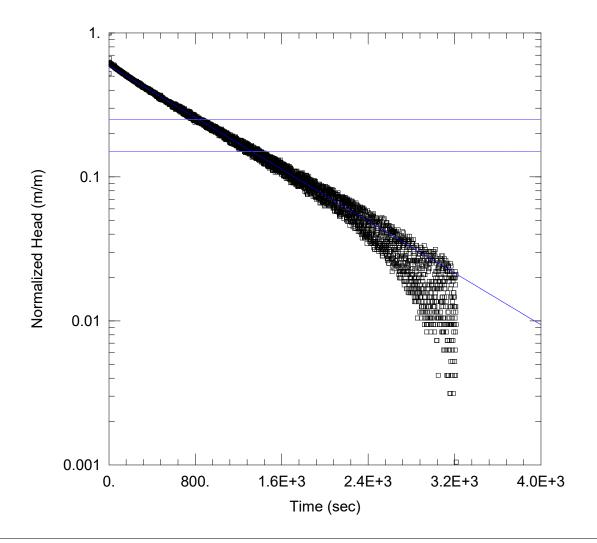
Aquifer Model: Unconfined

Kr = 1.088 m/day

 $Kz/Kr = \overline{0.1}$ 

Solution Method: KGS Model

Ss =  $1.869E-5 \text{ m}^{-1}$ 



Data Set: MW07B FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:53:04</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>13.93</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

## WELL DATA (MW07B FHT1)

Initial Displacement: <u>0.956</u> m Static Water Column Height: <u>14.33</u> m

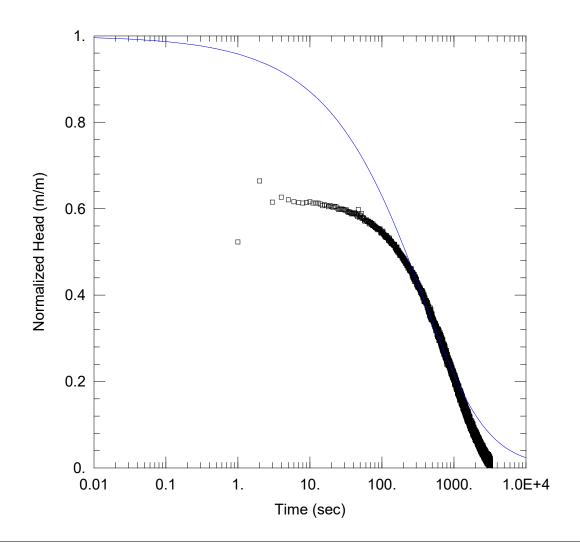
Total Well Penetration Depth: 13.83 m Screen Length: 4. m

Casing Radius: 0.025 m Well Radius: 0.073 m

## **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.03603 m/day y0 = 0.5651 m



Data Set: MW07B FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:53:09</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 13.93 m

## WELL DATA (MW07B FHT1)

Initial Displacement: 0.956 m Static Water Column Height: 14.33 m

Total Well Penetration Depth: 13.83 m Screen Length: 4. m Well Radius: 0.073 m

Casing Radius: 0.025 m

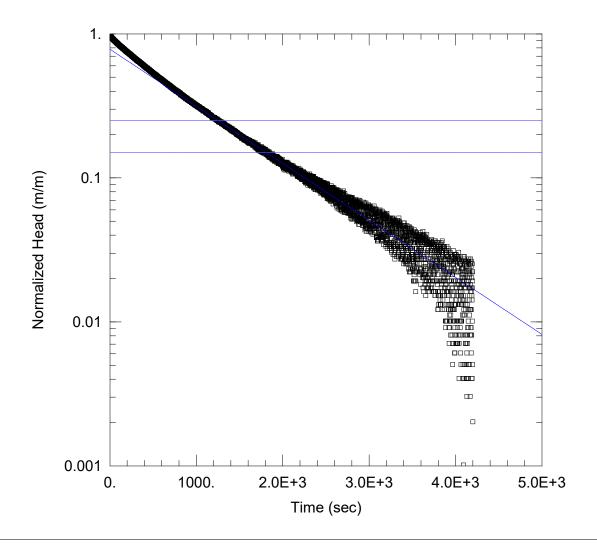
## **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.008844 \text{ m}^{-1}$ = 0.01521 m/day Ss

Kz/Kr = 0.1

Kr



Data Set: MW07B RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:53:14</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 13.93 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (MW07B RHT1)

Initial Displacement: -0.987 m

Total Well Penetration Depth: 13.83 m

Static Water Column Height: 14.33 m

Screen Length: 4. m

Casing Radius: 0.025 m

Well Radius: 0.073 m

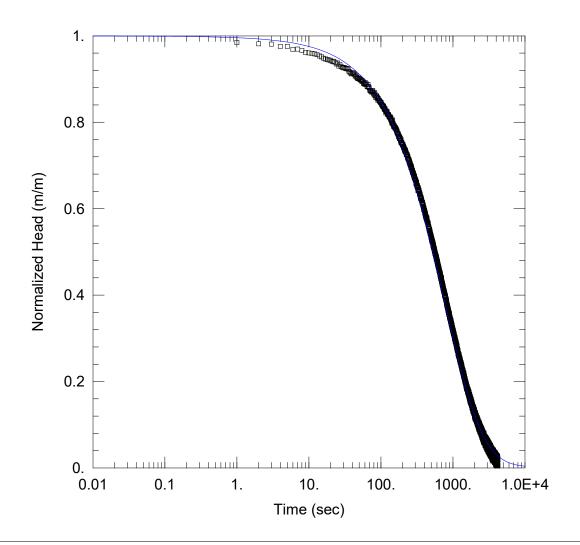
## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 0.03173 m/day

y0 = -0.7721 m



Data Set: MW07B RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:53:19</u>

## PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 13.93 m

## WELL DATA (MW07B RHT1)

Initial Displacement: -0.987 m

Total Well Penetration Depth: 13.83 m

Casing Radius: 0.025 m

Static Water Column Height: 14.33 m

Screen Length: 4. m Well Radius: 0.073 m

## **SOLUTION**

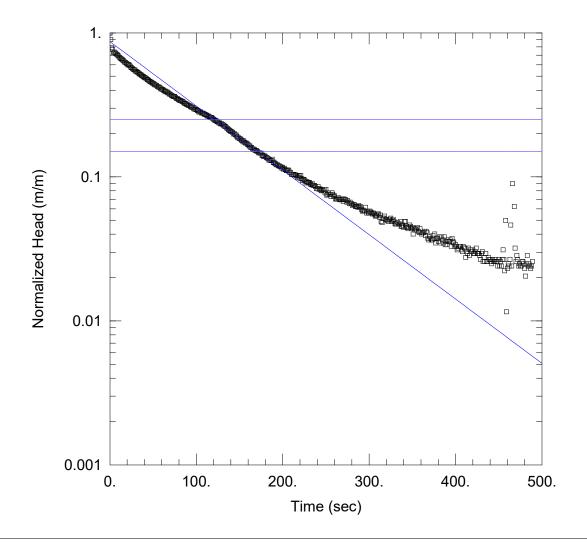
Aquifer Model: Unconfined

= 0.03634 m/day

Kr

Solution Method: KGS Model

 $= 1.004E-5 \text{ m}^{-1}$ Ss



Data Set: RW03S FHT1 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:54:18</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 8.44 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW03S FHT1)

Initial Displacement: 1.123 m

Total Well Penetration Depth: 7.82 m

Casing Radius: 0.025 m

Static Water Column Height: 8.44 m

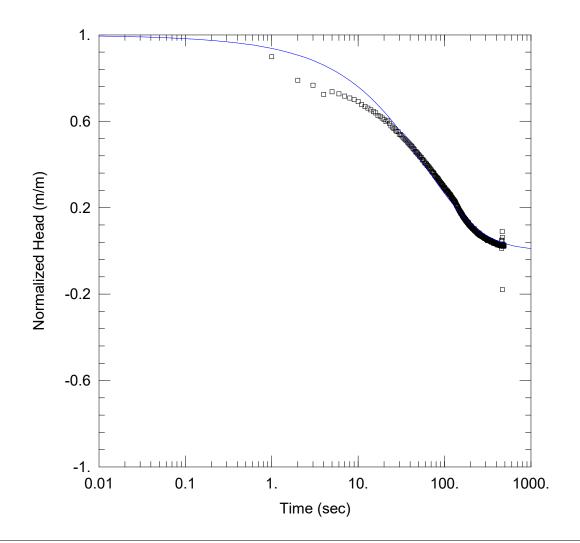
Screen Length: 1. m Well Radius: 0.064 m

## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 1.084 m/day y0 = 0.9778 m



Data Set: RW03S FHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:54:21</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 8.44 m

## WELL DATA (RW03S FHT1)

Initial Displacement: 1.123 m Static Water Column Height: 8.44 m

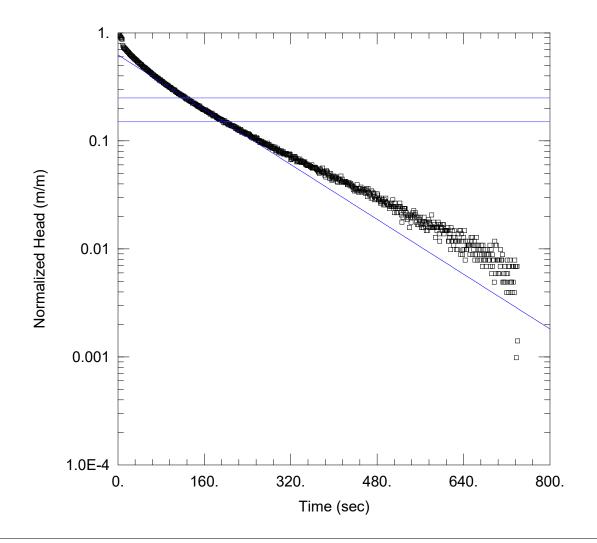
Total Well Penetration Depth: 7.82 m Screen Length: 1. m

Casing Radius: 0.025 m Well Radius: 0.064 m

## **SOLUTION**

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.004842 \text{ m}^{-1}$ = 0.8368 m/daySs Kr



Data Set: RW03S RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:54:25</u>

## PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 8.44 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW03S RHT1)

Initial Displacement: -1.017 m Static Water Column Height: 8.44 m

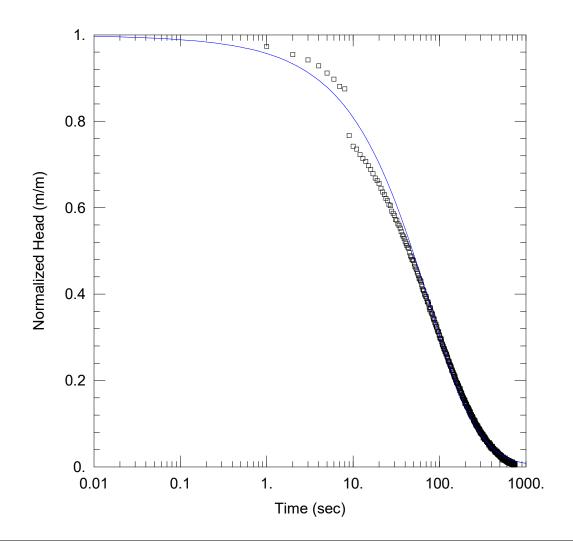
Total Well Penetration Depth: 7.82 m Screen Length: 1. m

Casing Radius: 0.025 m Well Radius: 0.064 m

## **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 0.7694 m/dayy0 = -0.6367 m



Data Set: RW03S RHT1 - KGS.aqt

Date: 08/26/22 Time: <u>15:54:28</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 8.44 m

## WELL DATA (RW03S RHT1)

Initial Displacement: -1.017 m Static Water Column Height: 8.44 m

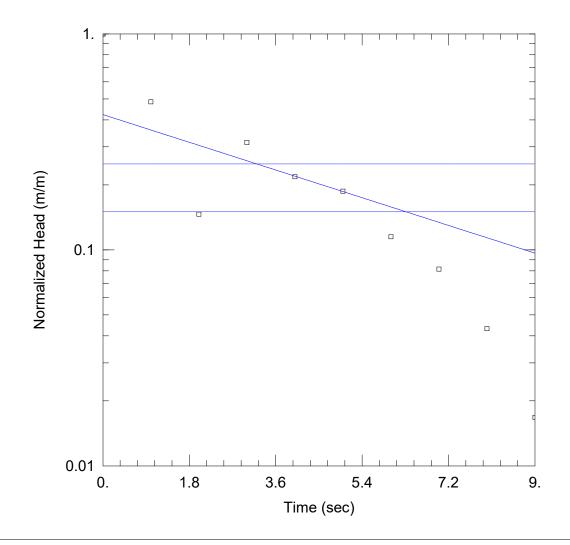
Total Well Penetration Depth: 7.82 m Screen Length: 1. m Casing Radius: 0.025 m

Well Radius: 0.064 m

**SOLUTION** 

Solution Method: KGS Model Aquifer Model: Unconfined

 $= 0.001641 \text{ m}^{-1}$ = 0.8612 m/daySs Kr



Data Set: RW09B FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:54:31</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 8.53 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW09B FHT1)

Initial Displacement: 0.417 m

Total Well Penetration Depth: 8.72 m

Static Water Column Height: 8.53 m

Screen Length: 2. m

Casing Radius: 0.025 m

Well Radius: 0.064 m

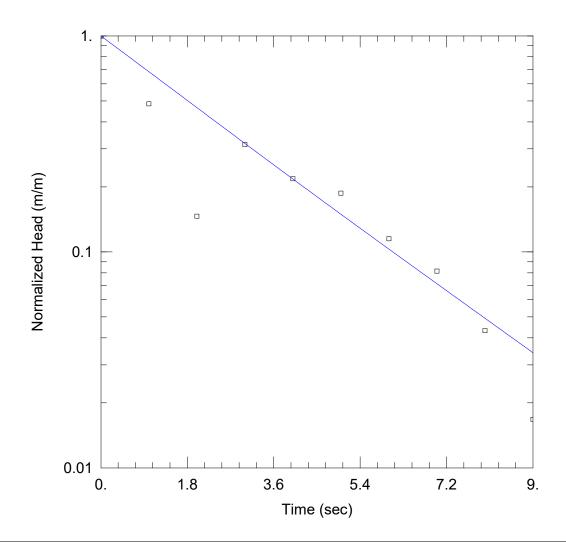
## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: Hvorslev

K = 11.71 m/day

y0 = 0.1764 m



Data Set: RW09B FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:54:34</u>

## **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 8.53 m

## WELL DATA (RW09B FHT1)

Initial Displacement: 0.417 m

0.417 m Static Water Column Height: 8.53 m

Total Well Penetration Depth: 8.72 m

Screen Length: 2. m Well Radius: 0.064 m

Casing Radius: 0.025 m

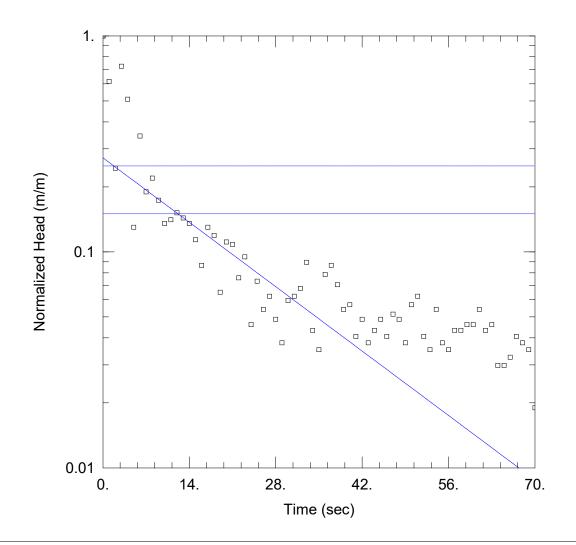
## **SOLUTION**

Aquifer Model: Unconfined

Solution Method: KGS Model

Kr = 28.34 m/day

Ss = 1.973E-11 m<sup>-1</sup>



Data Set: RW10S FHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:54:59</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW10S FHT1)

Initial Displacement: 0.369 m Static Water Column Height: 3.14 m

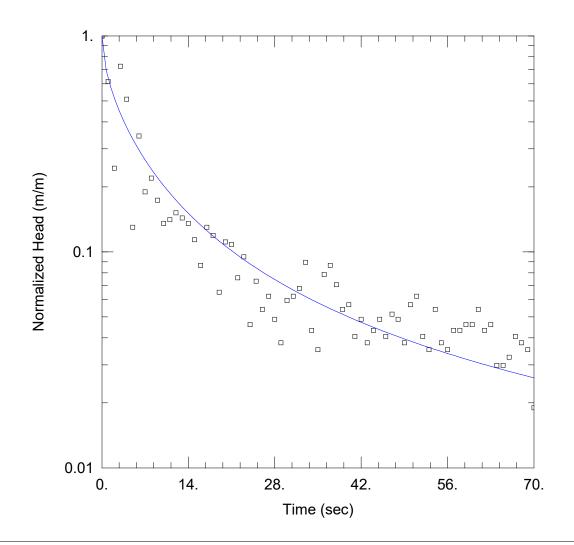
Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 3.802 m/dayy0 = 0.1006 m



Data Set: RW10S FHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:55:02</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u>
Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>5.61</u> m

## WELL DATA (RW10S FHT1)

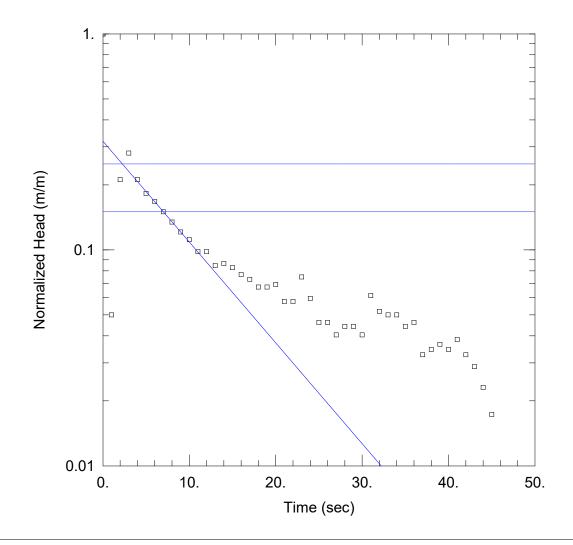
Initial Displacement: <u>0.369</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 5.121 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: RW10S FHT2 - Hvorslev.aqt

Date: <u>08/26/22</u> Time: <u>15:55:05</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: <u>5.61</u> m Anisotropy Ratio (Kz/Kr): <u>0.1</u>

## WELL DATA (RW10S FHT2)

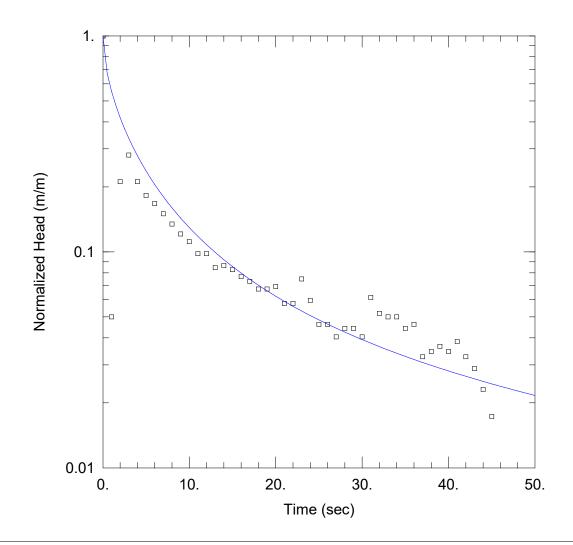
Initial Displacement: <u>0.52</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

## SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 8.33 m/day y0 = 0.1657 m



Data Set: RW10S FHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:55:08</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m

## WELL DATA (RW10S FHT2)

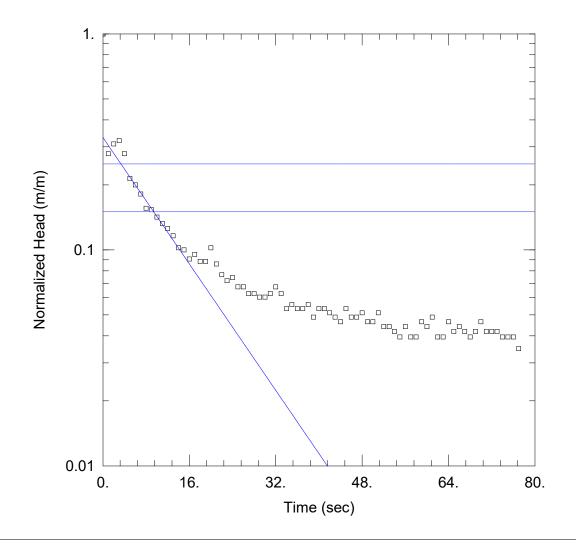
Initial Displacement: <u>0.52</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 8.418 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: RW10S FHT3 - Hvorslev.aqt

Date: 08/26/22 Time: 15:55:12

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW10S FHT3)

Initial Displacement: 0.43 m Static Water Column Height: 3.14 m

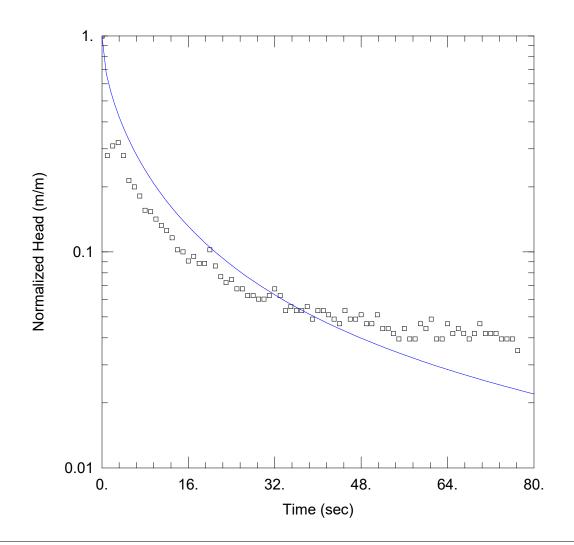
Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 6.528 m/dayy0 = 0.1426 m



Data Set: RW10S FHT3 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:55:15</u>

### **PROJECT INFORMATION**

Company: <u>CDM Smith</u>
Client: <u>Bord na Móna</u>
Project: <u>263228</u>
Location: <u>Timahoe</u>

Test Well: Test Date: -

### **AQUIFER DATA**

Saturated Thickness: <u>5.61</u> m

## WELL DATA (RW10S FHT3)

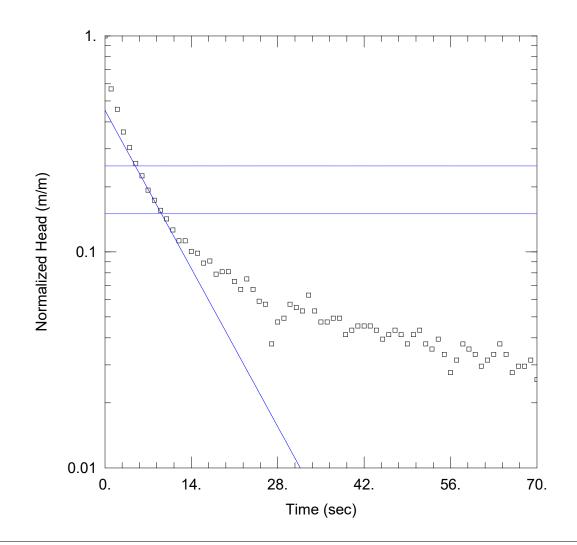
Initial Displacement: <u>0.43</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 5.191 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: RW10S RHT1 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:55:39</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW10S RHT1)

Initial Displacement: -0.507 m Static Water Column Height: 3.14 m

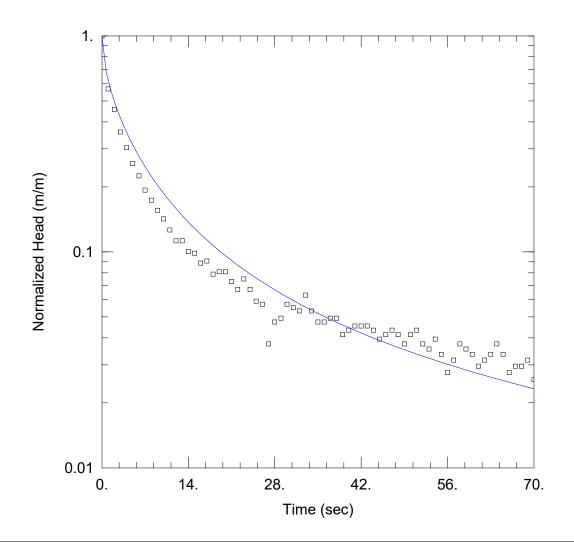
Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## **SOLUTION**

Aquifer Model: Unconfined Solution Method: Hvorslev

 $K = 9.337 \, \text{m/day}$ y0 = -0.2297 m



Data Set: RW10S RHT1 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:55:42</u>

### **PROJECT INFORMATION**

Company: CDM Smith
Client: Bord na Móna
Project: 263228
Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 5.61 m

## WELL DATA (RW10S RHT1)

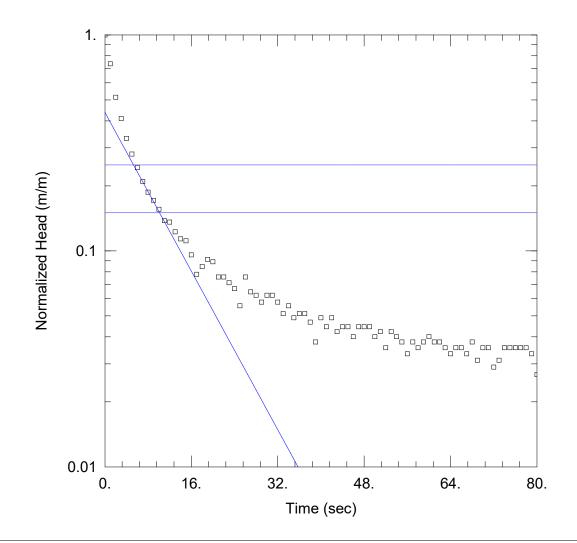
Initial Displacement: <u>-0.507</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

**SOLUTION** 

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 5.655 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: RW10S RHT2 - Hvorslev.aqt

Date: 08/26/22 Time: <u>15:55:45</u>

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW10S RHT2)

Initial Displacement: -0.449 m Static Water Column Height: 3.14 m

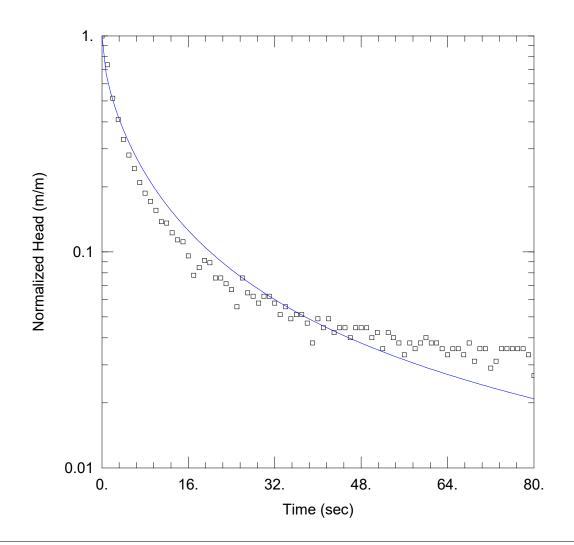
Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 8.192 m/dayy0 = -0.1967 m



Data Set: RW10S RHT2 - KGS.aqt

Date: <u>08/26/22</u> Time: <u>15:55:49</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: <u>-</u> Test Date: <u>-</u>

### **AQUIFER DATA**

Saturated Thickness: 5.61 m

## WELL DATA (RW10S RHT2)

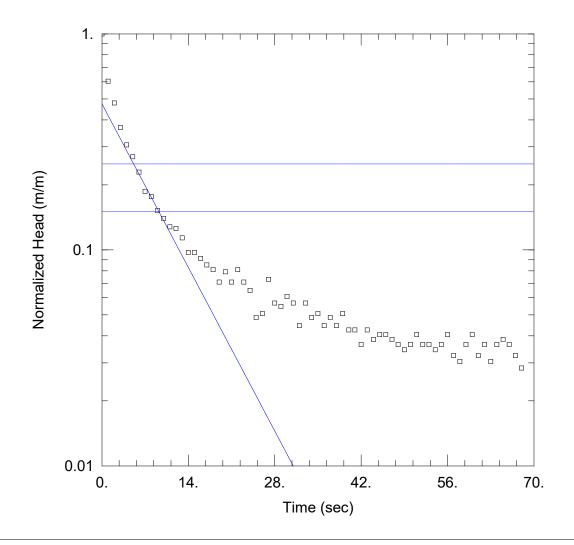
Initial Displacement: <u>-0.449</u> m Static Water Column Height: <u>3.14</u> m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m Casing Radius: 0.025 m Well Radius: 0.064 m

SOLUTION

Aquifer Model: Unconfined Solution Method: KGS Model

Kr = 5.43 m/day Ss = 0.01862 m<sup>-1</sup>



Data Set: RW10S RHT3 - Hvorslev.aqt

Date: 08/26/22 Time: 15:55:52

### PROJECT INFORMATION

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m Anisotropy Ratio (Kz/Kr): 0.1

## WELL DATA (RW10S RHT3)

Initial Displacement: -0.493 m Static Water Column Height: 3.14 m

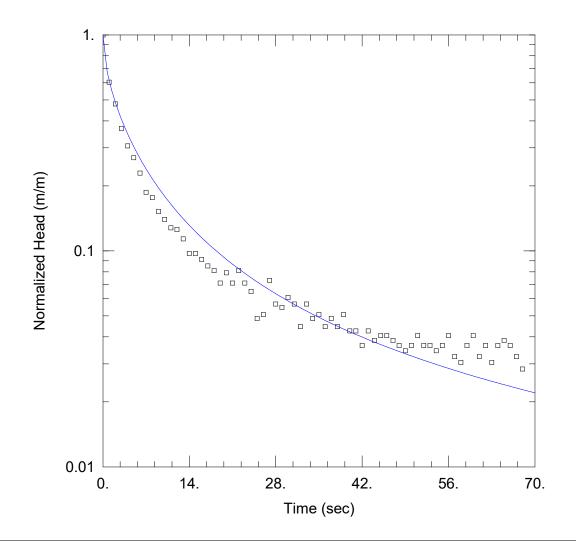
Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## SOLUTION

Aquifer Model: Unconfined Solution Method: Hvorslev

K = 9.653 m/dayy0 = -0.2341 m



Data Set: RW10S RHT3 - KGS.aqt

Date: 08/26/22 Time: <u>15:55:58</u>

### **PROJECT INFORMATION**

Company: CDM Smith Client: Bord na Móna Project: 263228 Location: Timahoe

Test Well: -Test Date: -

### **AQUIFER DATA**

Saturated Thickness: 5.61 m

## WELL DATA (RW10S RHT3)

Initial Displacement: -0.493 m Static Water Column Height: 3.14 m

Total Well Penetration Depth: 3.11 m Screen Length: 1.5 m

Casing Radius: 0.025 m Well Radius: 0.064 m

## SOLUTION

Solution Method: KGS Model Aquifer Model: Unconfined

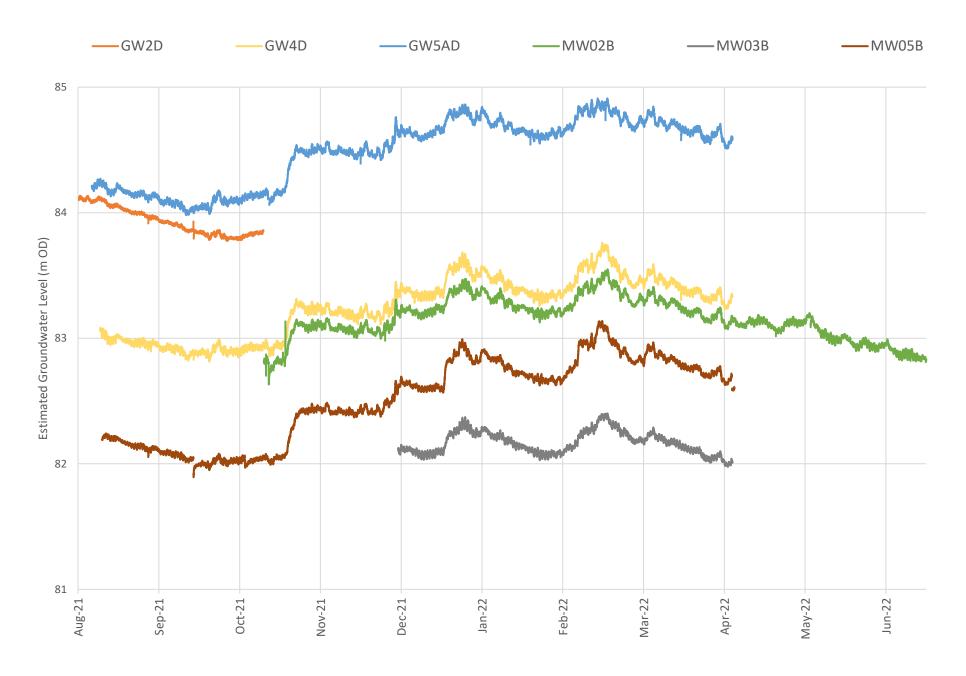
 $= 0.01862 \text{ m}^{-1}$ = 5.927 m/day Ss Kr

# Appendix F

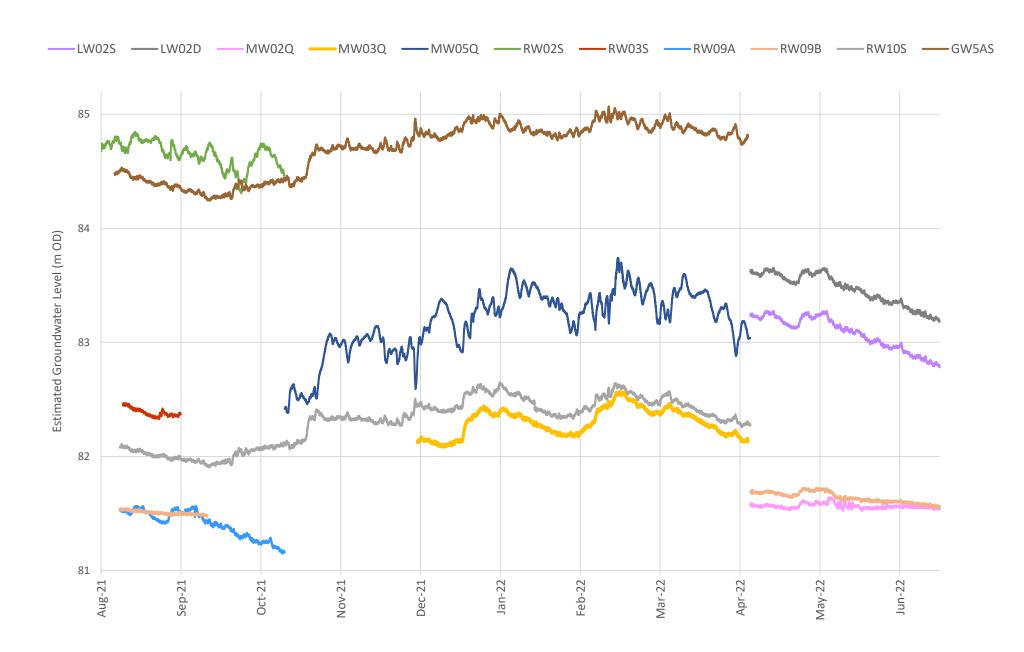
Groundwater Hydrographs (Pressure Transducer Data)



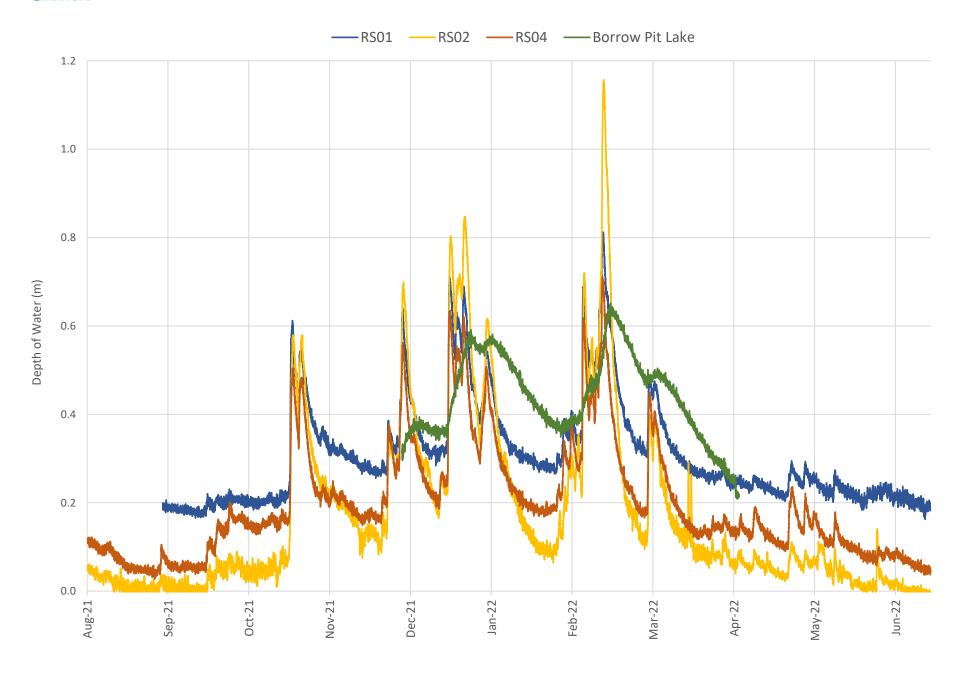








## Surface Water Hydrographs



## Appendix G

Surface Water Hydrographs (Pressure Transducer Data)





	Monitoring Event 1		Monitoring Event 2		Monitoring Event 3		Monitoring Event 4		Monitoring Event 5		Monitoring Event 6		Monitoring Event 7		Monitoring Event 8		Monitoring Event 9		Monitoring Event 10		Monitoring Event 11		Monitoring Event 12	
	Start of Event:	06/09/2021	Start of Event:	22/09/2021	Start of Event:	20/10/2021	Start of Event:	23/11/2021	Start of Event:	03/12/2021	Start of Event:	14/12/2021	Start of Event:	25/01/2022	Start of Event:	22/02/2022	Start of Event:	22/03/2022	Start of Event:	26/04/2022	Start of Event:	10/05/2022	Start of Event:	28/07/2022
	Start of Event.	00/09/2021	Start or Event.	22/09/2021	Start of Event.	20/10/2021	Start or Event.	23/11/2021	Start or Event.	03/12/2021	Start or Event.	14/12/2021	Start of Event.	23/01/2022	Start or Event.	22/02/2022	Start or Event.	22/03/2022	Start or Event.	20/04/2022	Start of Event.	10/03/2022	Start of Event.	28/07/2022
		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level		Water Level
	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *	Depth to Water (m)	(m OD) *
GW1D	2.25	82.31	2.19	82.37	2.14	82.42	` '	82.65	. ,		1.80	82.76	1.90	82.66	1.47	83.09	. ,	82.82		82.66	ns. nm	ns. nm	` '	02.40
GW15	2.25	83.09	2.19	82.37	2.14	83.01	1.91	83.24	ns, nm	ns, nm	1.80		2.02	83.13	1.54		1.74		1.90		ns, nm ns. nm	-,	2.37 nm	82.19
GW15	3.72	83.96	ns. nm	82.97 ns. nm	ns. nm	83.01 ns. nm	1.91 3.28	84.40	ns, nm	ns, nm	1.81 ns. nm	83.34 ns. nm	ns. nm	83.13 ns. nm	ns.nm	83.61	1.76	83.39 ns. nm	1.91 3.33	83.24 84.35	ns, nm	ns, nm	3.68	nm 83.96
GW25	2.60	85.45	,	ns, nm	ns, nm	ns, nm	3.28	84.40	ns, nm 1.97	86.08	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	,		84.86	,	,		
GW2S GW3aD		82.76	ns, nm	ns, nm 82.70	,	,			ns. nm	ns. nm	,	,	,	,	,	,	,	ns, nm	3.19		ns, nm ns. nm	ns, nm	nm	nm 82.65
	2.51		2.57		2.47	82.80	2.21	83.06			2.08	83.19	2.07	83.20	1.82	83.45	2.06	83.21	2.31	82.96		ns, nm	2.62	
GW3S	2.44	82.69	2.51	82.62	2.42	82.71	2.43	82.70	2.12	83.01	2.03	83.10	2.02	83.11	1.77	83.36	2.00	83.13	2.52	82.61	ns, nm	ns, nm	nm	nm
GW4D GW4S	2.15 1.90	82.93 82.47	2.19 1.91	82.89 82.46	2.18 1.88	82.90 82.49	1.89	83.19 82.72	ns, nm	ns, nm 82.76	1.71	83.37 82.88	1.86 1.53	83.22 82.84	1.34	83.74 83.15	1.69	83.39 82.86	1.80	83.28 82.51	ns, nm ns. nm	ns, nm ns. nm	2.09	82.86 nm
									1.61		1.49				1.22		1.51		1.86		,	-,		
GW5aD	2.90	84.08	2.93	84.05	2.86	84.12	2.46	84.52	ns, nm	ns, nm	ns	ns	2.35	84.63	2.11	84.87	2.32	84.66	2.50	84.48	ns, nm	ns, nm	2.87	83.97
GW5aS	2.50	84.36	2.57	84.29	2.50	84.36	2.16	84.70	ns, nm	ns, nm	ns	ns	2.03	84.83	1.84	85.02	1.99	84.87	2.14	84.72	ns, nm	ns, nm	nm	nm
GW6	nm	nm	nm	nm	nm	nm	nm	nm	ns, nm	ns, nm		nm	nm	nm	nm	nm	nm	nm	nm	nm	ns, nm	ns, nm	nm	nm
GW9	2.20	81.15	2.21	81.14	2.13	81.22	1.97	81.38	2.07	81.28	1.82	81.53	1.82	81.53	1.54	81.81	1.83	81.52	1.99	81.36	ns, nm	ns, nm	nm	nm
GW10	2.56	82.01	2.60	81.97	2.44	82.13	2.25	82.32	2.39	82.18	2.11	82.46	2.07	82.50	1.86	82.71	2.05	82.52	2.35	82.22	ns, nm	ns, nm	nm	nm
GW11D	2.00	83.10	ns, nm	ns, nm	ns, nm	ns, nm	1.31	83.79	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.63	83.47
GW11S	1.15	83.83	ns, nm	ns, nm	ns, nm	ns, nm	0.91	84.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
GW12D	0.44	82.92	ns, nm	ns, nm	ns, nm	ns, nm	nm	83.36	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.52	82.84
GW12S	0.67	83.10	ns, nm	ns, nm	ns, nm	ns, nm	0.43	83.34	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
GW13D	2.71	82.05	ns, nm	ns, nm	ns, nm	ns, nm	2.29	82.47	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.63	82.13
GW13S	3.26	81.34	ns, nm	ns, nm	ns, nm	ns, nm	3.32	81.28	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
R8	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.36	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.62	-	1.52		2.00	-
R9	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.85	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.97	-	0.85	-	nm	nm
R10	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.27	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.44	-	0.33	-	nm	nm
R11	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.80	-	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.09	-	3.00	-	3.49	-
MW01B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.83	82.89
MW02B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.20	83.09	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.23	83.06	2.12	83.17	2.41	82.71
MW02P	3.80	81.52	Dry	Dry	3.68	81.64	Dry	Dry	ns, nm	ns, nm	ns	ns	ns	ns	2.61	82.71	3.49	81.83	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW02Q	3.90	81.45	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.67	81.68	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.82	81.53	3.78	81.57	nm	nm
MW03B	2.78	81.87	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.61	82.04	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.68	81.97	2.61	82.04	2.60	81.71
MW03P	2.65	82.19	nm	nm	2.77	82.07	2.55	82.29	ns, nm	ns, nm	2.36	82.48	2.33	82.51	1.90	82.94	2.25	82.59	2.61	82.23	ns, nm	ns, nm	nm	nm
MW03Q	2.92	81.78	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.69	82.01	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.67	82.03	2.63	82.07	nm	nm
MW04B	2.70	82.19	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.63	82.09
MW04P	2.64	82.33	3.13	81.84	2.72	82.25	2.49	82.48	ns, nm	ns, nm	2.31	82.66	2.22	82.75	2.02	82.95	2.16	82.81	2.31	82.66	ns, nm	ns, nm	nm	nm
MW04Q	3.00	82.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW05B	4.04	82.12	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.65	82.10
MW05P	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	ns, nm	ns, nm	ns	ns	ns, nm	ns, nm	2.83	83.53	3.29	83.07	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW05Q	3.98	82.07	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW06B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.46	82.80	0.38	82.88	0.55	82.53
MW06P	ns, nm	ns, nm	ns, nm	ns, nm	0.92	82.32	0.90	82.34	ns, nm	ns, nm	0.97	82.27	0.80	82.44	0.76	82.48	0.81	82.43	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW06Q	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.91	82.34	0.85	82.40	nm	nm
MW07B	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.43	83.57	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.47	83.53	3.37	83.63	3.66	83.13
MW07P	ns, nm	ns, nm	1.57	85.48	1.64	85.41	ns	ns	ns, nm	ns, nm	ns	ns	ns, nm	ns, nm	0.73	86.32	1.03	86.02	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
MW07Q	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.67	84.32	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	3.20	83.79	2.72	84.27	nm	nm
LW01	1.09	82.91	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	0.78	83.22	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.24	82.76	0.83	83.17	nm	nm
LW02D	2.08	83.11	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.48	83.71	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.67	83.52	1.56	83.63	nm	nm
LW02S	1.98	83.18	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
LFBH05	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.82	82.28	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.93	82.17	2.86	82.24	nm	nm
RW02P	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	ns, nm	ns, nm	nm	nm	nm	nm	Dry	Dry	Dry	Dry	dry	Dry	ns, nm	ns, nm	nm	nm
RW02S	2.99	84.55	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.30	85.24	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.58	84.96	2.05	85.49	nm	nm
RW03P	1.04	83.38	1.72	82.70	1.42	83.00	1.32	83.10	ns, nm	ns, nm	1.01	83.41	1.14	83.28	0.74	83.68	1.11	83.31	1.36	83.06	ns, nm	ns, nm	nm	nm
RW03S	2.09	82.37	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.77	82.69	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.02	82.44	1.83	82.63	nm	nm
RW04P	2.13	82.61	2.18	82.56	2.16	82.58	1.86	82.88	ns, nm	ns, nm	1.69	83.05	1.72	83.02	1.46	83.28	1.69	83.05	ns, nm	ns, nm	ns, nm	ns, nm	nm	nm
RW04S	2.37	82.44	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.96	82.85	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.02	82.79	1.95	82.86	nm	nm
RW09A	2.20	81.46	2.20	81.46	2.12	81.54	1.97	81.69	1.88	81.78	1.82	81.84	1.82	81.84	1.54	82.12	1.84	81.82	1.99	81.67	1.95	81.71	nm	nm
RW09B	2.15	81.48	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.01	81.62	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.96	81.67	1.92	81.71	nm	nm
RW10P	2.21	82.06	2.26	82.01	2.07	82.20	1.87	82.40	ns, nm	ns, nm	1.75	82.52	1.77	82.50	1.45	82.82	1.74	82.53	1.91	82.36	ns, nm	ns, nm	nm	nm
RW10S	2.31	81.98	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	1.93	82.36	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	ns, nm	2.04	82.25	1.97	82.32	nm	nm

#### Notor

nm Not measured

ns,nm Not sampled, not measured

- Measured, no survey

\* Water level, reference point from steel headworks

