# **Appendix 7.2 Site Investigation Report**

STEPHEN LITTLE & ASSOCIATES AUGUST 2019



Report on a Site Investigation
For
Corkagh Grange Housing
Clondalkin
On behalf of
South Dublin County Council
Report No. 12838

### Contents

1.0	Introduction
2.0	Fieldwork
3.0	Laboratory Testing
4.0	Discussion

# Appendices

- 1 Boring Records
- 2 Rotary Records
- 3 Laboratory Test Results (Geotechnical)
- 4 Laboratory Test Results (Environmental)
- 5 Site Plan

Report on a Site Investigation
For
Corkagh Grange Housing
Clondalkin
On behalf of
South Dublin County Council

Report No. 12838 Date October 2007

#### 1.0 Introduction

It is understood that Corkagh Grange lands in Clondalkin are to be developed for housing purposes.

An investigation of ground conditions was carried out to ascertain foundation requirements for the proposed structures, roads and services.

The programme of the investigation included boreholes and rotary coring.

This report contains the boring and coring records together with the associated geotechnical and environmental laboratory test results. Also included is a discussion of ground conditions in relation to the development.

#### 2.0 Fieldwork

This is a green field site with some minor undulations. While there is a network of drainage ditches over the site area, these were not functioning at the time of the investigation, and much of the site was waterlogged.

#### 2.1 Boreholes

Boreholes were constructed in a total of twenty locations, as shown on the enclosed plans. The descriptions and depths of the various soils encountered are shown on the boring records enclosed in appendix 1. Also shown on these records are the depths at which samples were recovered, the results of in-situ standard penetration tests, and the groundwater conditions observed during the course of boring operations. The enclosed summary sheet contains details of achieved depths, groundwater conditions, and installations.

The boreholes revealed a thin topsoil layer overlying brown sandy gravelly clay which is generally in a firm to stiff, or stiff condition. The boreholes were terminated on obstructions, at depths ranging from 1.5 metres to 3.6 metres.

Of most significance are the instances of water strikes, which are generally in association with the obstructions. In several locations, water ingress was rapid, rising as high as 200mm below present ground level. Standpipes were installed in five locations to permit long-term monitoring of water levels.

#### 2.2 Rotary Coring

Rotary techniques were employed in a total of twenty locations, to ascertain the presence, depth, composition and condition of bedrock.

The records include a detailed description of the bedrock including the rock structure, strength, and degree of weathering. In accordance with BS 5930: 1999, the records include the total core recovery (TCR), solid core recovery (SCR) and the rock quality designation (RQD). Also shown graphically is the fracture spacing.

The records show that the bedrock is grey-black argillaceous Limestone. While the upper 200mm to 300mm appears to be highly weathered, the main body of rock is generally strong and fresh, with some moderate weathering which tends to be localised. Some thinly bedded or laminated zones were noted. In addition, some of the rock core was heavily fractured.

Standpipes were installed in five locations, as indicated on the summary sheet, to facilitate long-term monitoring of water levels.

#### 3.0 Laboratory Testing

#### 3.1 Geotechnical Testing

#### 3.1.1 Particle Size Distributions

The particle size distributions of samples of the sub-soils were determined by sieve analysis and, for the finer soils, hydrometer analysis. The results are presented in both graphical and tabular format.

The grading curves indicate that the sub-soils are well-graded although the fines content varies from less than 30% to nearly 90%.

### 3.1.2 Index Properties

The results of plastic and liquid limit tests classify the fine soils as clays of low to medium plasticity. Only the upper organic soil in BH17 exhibited high plasticity characteristics.

#### 3.1.3 Chemical Analysis

The test specimens show very low concentrations of soluble sulphates and slightly alkaline pH values. No special precautions will, therefore, be required to protect good quality foundation concrete from sulphate attack.

#### 3.2 Environmental

A suite of environmental testing was performed by Alcontrol Laboratories (Dublin) to determine the presence and concentrations of contaminants in the sub-soils. In the absence of any local standards, the results have been compared with the Dutch guidelines which are frequently adopted. The table quotes 'Target Values' and 'Intervention Values'. Where the measured results are below the target values the site can be regarded as uncontaminated. Where concentrations exceed the 'Intervention Values' remedial measures will be required. None of the results approach intervention levels

It should be emphasised that the services of environmental specialists should be sought as to the significance of the results in relation to the proposed works.

#### 4.0 Discussion

The investigation revealed a thin mantle of glacial till, composed of gravelly sandy clay which is generally in a firm to stiff condition, becoming stiff to very stiff in places. This material overlies the argillaceous Limestone bedrock. However, in some areas the till is heavily weathered and in a soft condition.

The depth to the weathered rock horizon varies from 1.8 metres to 3.6 metres. While the main body of rock is strong and fresh, it is laminated or thinly bedded. As a result, some of the rock core was non-intact.

The site is badly drained and water ingress was noted, generally in association with the rock horizon. In several locations, water ingress was rapid, rising to within a metre of the surface. Since the relatively short duration of boring and coring operations does not permit an accurate measurement of the standing water level, standpipes were installed in several boreholes and core-holes to permit long-term monitoring.

From the aspect of structural foundations the glacial till will provide a stable, and relatively incompressible founding medium. The firm to stiff soils will readily support foundation pressures of the order of 150 kN/m2. This can be increased to 200 kN/m2 in the stiff material. Heavier loads can be supported by the bedrock. While the bearing capacity of thinly bedded Limestone should be assessed visually, it would be reasonable to assume an allowable bearing pressure of the order of 1000 kN/m2.

Because there are some areas where soft upper soils directly overlie the bedrock (BH9, BH17), it is possible that some structures may be founded partially on clay and partially on rock. For this reason, it would be advisable to reinforce foundation concrete to minimise the effects of any differential settlement.

The prime consideration on this site will be control of groundwater, particularly from the aspect of roads, and excavations for services. Restoration of the existing land drainage system should be a priority, to ensure the stability of access roads.

BH No.	Depth achieved	Water struck (mbgl)	Rose to	Rate of ingress	Standpipe Depth (m)
BH1	2.40	2.20	0.40	Rapid	
BH2	2.70	2.70	2.30	slow	2.70
BH3	2.60	2.60	0.20	Rapid	
BH4	2.10	1.90	0.30	Rapid	2.10
BH5	1.60	1.40	0.20	Rapid	
BH6	2.40	2.40	2.40	seepage	
BH7	2.60	2.00	1.50	seepage	
BH8	1.60	none	1.20		
BH9	2.00	2.00	2.00	seepage	
BH10	2.30	2.30	0.80	Rapid	2.30
BH11	2.10	2.10	0.30	Rapid	2.10
BH12	2.60	1.50	0.40	Rapid	
BH13	2.10	2.00	1.60	moderate	
BH14	2.10	2.00	1.80	seepage	
BH15	1.60	1.50	0.70	moderate	
BH16	3.60	3.50	1.80	Rapid	
BH17	2.10	2.00	1.00	Rapid	2.10
BH18	3.10	3.00	2.00	Rapid	
BH19	1.60	1.30	1.00	moderate	
BH20	1.50	none			

RC No.	Depth to	Depth to	Terminal	Standpipe
	weathered rock	structured	Depth	Depth
	(presumed)	Rock		
	(m)	(m)	(m)	(m)
RC01	3.60	3.80	5.80	
RC02	2.70	2.80	5.40	
RC03	2.90	3.00	6.00	
RC04	2.30	2.50	5.10	
RC05	3.40	3.70	6.30	
RC06	3.50	3.70	6.30	6.30
RC07	2.20	2.40	5.20	5.20
RC08	3.30	4.20	6.60	
RC09	2.70	2.80	5.90	
RC10	2.60	2.80	5.80	5.80
RC11	1.90	2.10	5.10	
RC12	2.80	2.90	5.90	
RC13	2.60	2.80	5.80	5.80
RC14	3.20	3.40	5.90	
RC15	2.40	2.60	5.20	
RC16	2.00	2.20	5.20	5.20
RC17	1.80	2.00	5.00	
RC18	1.80	2.10	5.10	



IGSL
ED

IGSL											12838	
CONTRACT	Corka	agh Grang	e Housing Sit						BOF	REHOLE NO	D. BH1 Sheet 1 of 1	
CO-ORDINA	ATES(_)				D LEVEL (m	•	.m) 2	200		E STARTE		
					OLE DIAME OLE DEPTH		,	2.40		E COMPLI		
CLIENT ENGINEER		ddie Conro	ounty Council v		DEPTH (m)			2.40		RED BY OCESSED E	M. Connolly Taras	
			,	- OAOIIIO		,			Samples		laras	
Depth (m)		Desc	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
TOPSO Firm br	OIL own sandy	gravelly (	CLAY				0.30	AB 0261	В	0.50	N = 16 (2, 2, 5, 3, 4, 4)	
2 Obstru	ction. Poss	sible ROCI	Κ				2.20	AB 0262	В	1.50	N = 62/225 mm (6, 9, 12, 25, 25)	
	ction. Poss Borehole a		Λ				2.40				(1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1	
4												
5												
6												
7												
8												
9												
HARD STR	ΔΤΔ BOR	ING/CHIS	FLLING		WATE	R STRII	KE DET	L L				
		Time C	omments		Water	Cas	sing S	Sealed	Rise	Time	Comments	
2.2	· /	(h) 0.5			Strike 2.20	De 2.:	pth 20	At	<u>To</u> 0.40	(min)	Rapid	
NSTALLAT					GROUN Date		ER DET Hole Depth	AILS Casing Depth	Depth t Water	O Commo	ents	
Date	Tip Depth	RZ Top	RZ Base	Type								
REMARKS							LB - Bulk Di	Bulk Disturbed		P-l	Jndisturbed 100mm Diameter Samp Jndisturbed Piston Sample	ole



IGSL	/		<u> </u>								12838	
CONTRAC	CT Corka	agh Grang	e Housing S						BOF SHE	REHOLE NO	D. BH2 Sheet 1 of 1	
CO-ORDIN	NATES(_)				ND LEVEL (r					E STARTE		
					OLE DIAME		,	200	DAT	TE COMPLE	<b>TED</b> 09/08/2007	
CLIENT			ounty Coun	O.,	IOLE DEPTI			2.90	l l	RED BY	M. Connolly	
ENGINEER	R Mr. E	ddie Conro	У	CASIN	G DEPTH (m	1)	1	2.90		OCESSED B	SY Taras ⊤	1
Ê						⊊	Ê	_	Samples	5	-	l e
) E		Desc	cription		pue	atio	Depth (m)	nbe	nple e	£	Field Test Results	idbi
Depth (m)					Legend	Elevation	Dep	Ref. Number	Sample Type	Depth (m)	rtodato	Standpipe
0 TOPS	SOIL				7118. 7118. 7							W
Firm	o stiff brown	nish grey s	sandy grave	lly CLAY	<u> </u>		0.20					
								AB 0254	В	0.50	N = 19 (5, 4, 4, 5, 3, 7)	
.					<u> </u>						(-, -, -, -, -, -, -, -, -, -, -, -, -, -	
.												
					<u> </u>			AB 0255	В	1.50		ŀĒ
2			A)/		<u> </u>		0.00	4			N = 29 (7, 5, 9, 6, 6, 8)	
Stiff g	rey sandy g	jravelly CL	ΑY		<u></u>		2.20				(1, 0, 0, 0, 0, 0)	::E
Ohstr	uction. Poss	sible ROC	K				2.70	AB 0256	В	2.70		:E
	of Borehole							, 0200	5	2.70		
4												
5												
6												
7												
8												
9												
	RATA BOR		ELLING				KE DET		Diac	Time		
rom (m)	To (m)	Time (h)	omments		Water Strike		ising : epth	Sealed At	Rise To	Time (min)	Comments	
2.7	2.9	0.5			2.70		.70		2.30		Slow	
					GROUI	NDWAT	ER DET	AILS		1		
NSTALL4	TION DET	AILS			Date		Hole	Casing	Depth t Water	Comme	ents	
Date		RZ Top	RZ Base	Туре			Depth	Depth	vvaler			
09/08/200		1.00	2.90	50mm SP								
DEMARK	<u> </u>						0-					
REMARKS	•						D - Small	le Legend Disturbed (tub)		U-L	Indisturbed 100mm Diameter Sar	mple
							B - Bulk D LB - Large Env - Env	Bulk Disturbed	ıle (Jar + Vial + T	P - U	Indisturbed Piston Sample	
							, LIIV	Jinar Oarlij				

( E )
IGSL

IGSL BH LOG 12838.GPJ IGSL.GDT 10/8/07

### GEOTECHNICAL BORING RECORD

0	GSL	-/		OL.	SESTESTIMO/AL BOTAITO NESSAN										12838	
СО	NTRAC	CT Corka	gh Grang	ge Housing	Site							BOR SHE	EHOLE N	О.	BH3 Sheet 1 of 1	
СО	-ORDII	NATES(_)				GROUND LEVEL (m)  BOREHOLE DIAMETER (mm) 200  DATE START  DATE COMPL							08/08/2007 08/08/2007			
	ENT GINEEF		Dublin C	ounty Cour			LE DEPT DEPTH (n				.80 .80		ED BY CESSED	ву	M. Connolly Taras	
					•					_		Samples				
Depth (m)			Des	cription			Legend	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)		ield Test Results	Standpipe Details
. 0	TOPS Stiff b	SOIL prown sandy	gravelly (	CLAY					0.	.20	AB 0250	В	0.50	(4,	N = 32 6, 6, 12, 9, 5)	
- 2	Ohstr	ruction. Poss	ible ROC	:K			0 0		2.	.60	AB 0251	В	1.50	(7, 9	N = 36 9, 7, 11, 8, 10)	
3	End o	of Borehole a	at 2.80 m													
. 4																
6																
7																
8																
9																
		Ta (m)	Timo				WATE Wate		Casing		Sealed	Rise	Time	C	nonto	
	m (m)	10 (m)	(h) 0.5	omments			Strike 2.60	e [	<u>Depth</u> 2.60		At	To 0.20	(min)	Comn	pid	
							GROU	NDWA	ATER I	DETA	AILS					
INS	TALLA	ATION DETA	AILS				Dat		Hole	е	Casing	Depth to Water	Comm	nents		
	Date			RZ Base	Туре				Dept	ın	Depth	vvaler				
REI	MARK	S							I LB	<ul> <li>Large I</li> </ul>	e Legend isturbed (tub) sturbed Bulk Disturbed	le (Jar + Vial + Tu		Undisturber Undisturber	d 100mm Diameter Sampl d Piston Sample	le
									En	v - ⊂11VIC	инненка Батр	ıc (⊍ai ⊤ viäl + IU	iv)			

		_
(	£	
(I	6	SL/
		_

IGSL			0_0								12838	
CONTRACT	Corka	agh Grang	e Housing Site						BOR SHE	EHOLE NO	D. BH3A Sheet 1 of 1	
CO-ORDINA	ATES(_)				D LEVEL (m	-	, ,	00		E STARTE		
					DLE DIAMET		,	00	DAT	E COMPLE	TED 09/08/2007	
CLIENT			ounty Council	1	DLE DEPTH			.60		ED BY	M. Connolly	
ENGINEER	Mr. Ed	ddie Conro	у	CASING	DEPTH (m)		1	.60		CESSED B	Y Taras	
<u>ਵ</u> ਿ						_	Ē		Samples	i	-	l e
Depth (m)		Desc	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	£	Field Test	Standpipe
)epi					ege	leva	)epi	lum	ype Jype	Depth (m)	Results	tan
	NII				7 % 7 % · 3	Ш		L 2	0 F			l w
1 . 0. 00	וב own sand	y gravelly (	CLAY		<u> </u>	ŀ	0.20	1				
	•	, ,						AB 0259	В	0.50	N = 18	
					<u> </u>				_		(4, 3, 6, 3, 5, 4)	
1												
Obstruc	ction Poss	sible ROCI	<u></u>			-	1.40	AB 0260	В	1.40		
	Borehole a		-				1.60	7 0200		1.70		
2											N = 37/100 mm	
											(12, 25)	
3												
5												
6												
7												
8												
9												
HARD STR	ATA POP	NING/CUIE	ELLING		WATER	ייםדפ פ	KE DETA	\II S				1
	1 -	Time			WATER	Cas		Realed Sealed	Rise	Time	Commonts	
` '	0 (111)	(h)	omments		Strike	De	pth	At	То	(min)	Comments	
1.4	1.6	0.5			1.40	1.4	40		0.20		Rapid	
					GROUN							
NSTALLAT	ION DETA	AILS			Date		Hole Depth	Casing Depth	Depth to Water	Comme	ents	
Date	Tip Depth	RZ Top	RZ Base	Туре			- Spui	Dopui	1.2.3			
REMARKS							Sample	a I enend				
~							B - Bulk Dis	e Legend Disturbed (tub) Sturbed		ñ-ñ	Indisturbed 100mm Diameter Samp	ple
							LB - Large	Bulk Disturbed	le (Jar + Vial + Tu		ndisturbed Piston Sample	
							ı ⊨nv - Envir	urmentai Samp	ne (Jar + Vial + Tu	(טו		



REPORT NUMBER

GSL	/										12838	
NTRAC	T Cork	agh Grang	je Housing	Site								
-ORDIN	IATES(_)				,	•	<b>m</b> ) 2	200	DATE	STARTE	<b>D</b> 09/08/2007	
ENT GINEER									PROC		M. Connolly Taras	
							_		Samples			a)
		Des	cription		Legend	Elevation	Depth (m	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
		ey sandy (	gravelly CL/	AY	0 0	_	0.30	AB 0257	В	0.50	N = 17 (2, 3, 3, 6, 4, 4)	
Obstru End o	uction. Pos f Borehole	sible ROC at 2.10 m	K		-0		1.90 2.10	AB 0258	В	1.50	N = 44/100 mm (19, 25)	
RD ST			SELLING								•	•
n (m)	To (m)		omments								Comments	
.9	2.1	0.5			1.90				0.30		Rapid	
TALLA	TION DET	AILS			<b>GROUN</b> Date		Hole	Casing	Depth to Water	Comme	ents	
Date				Туре				20001		1		
		1.00	2.10	50mm SP			B - Bulk D	isturbed		ñ-r	Jndisturbed 100mm Diameter Samp Indisturbed Piston Sample	ole
	ORDIN ENT GINEER  Obstru End o	ORDINATES(_)  ENT South SINEER Mr. E  TOPSOIL  Firm brownish gr  Obstruction. Pos End of Borehole  RD STRATA BOR  n (m) To (m)  9 2.1  TALLATION DET.  Date Tip Deptt	ORDINATES(_)  ENT South Dublin Commendation of Bineer Mr. Eddie Control  TOPSOIL  Firm brownish grey sandy of End of Borehole at 2.10 m  TALLATION DETAILS  Date Tip Depth RZ Top  D8/2007 2.10 1.00	ORDINATES(_)  ENT South Dublin County Courting Mr. Eddie Conroy  Description  TOPSOIL  Firm brownish grey sandy gravelly CL.  Obstruction. Possible ROCK End of Borehole at 2.10 m  COMMENT OF TIME (h) Comments  9 2.1 0.5  TALLATION DETAILS  Date Tip Depth RZ Top RZ Base D8/2007 2.10 1.00 2.10	Corkagh Grange Housing Site	ORDINATES(_)  ORDINATES(_)  ENT South Dublin County Council SINEER Mr. Eddie Conroy  Description  Description  Description  Obstruction. Possible ROCK End of Borehole at 2:10 m  CONSTRUCTION POSSIBLE ROCK End of Borehole at 2:10 m  END STRATA BORING/CHISELLING WATER (h) To (m) To (	ARD STRATA BORING/CHISELLING  IN TO (m)  TO (m	ARAKS  GROUND LEVEL (m) BORCHOLE DIAMETER (mm) 2 BORCHOLE DEPTH (m) 2 BORCHOLE DEPTH (m) 2 BORCHOLE DEPTH (m) 2 GROUND LEVEL (m) BORCHOLE DEPTH (m) 2 GROUND LEVEL (m) BORCHOLE DEPTH (m) 2 GROUND LEVEL (m) BORCHOLE DEPTH (m) 2 GASING DEPTH (m	SOURD   Corkagh Grange Housing Site	NTRACT Corkagh Grange Housing Site SORE ORDINATES(_)  GROUND LEVEL (m) BOREHOLE DIAMETER (mm) 20 DATE BOREHOLE DEPTH (m) 2.10 BOREHOLE DEPTH (m) 2.10 PROC ASING DEPTH (m) 2.10 PROC BOREHOLE DEPTH (m) 2.	ARANKS    SOREHOLE IN SHEET   DATE STARKE DETAILS   DOREHOLE IN SHEET   DATE STARKE DETAILS   DATE OF THE NEW SHEET   DA	ARKS    Corksigh Grange Housing Site   Corksigh Grange Housing Site   Corp.   Corp.



108	3L/			0_0								12838	
CONTR	RACT	Corka	agh Grang	e Housing Si						BOR	REHOLE NO	D. BH6 Sheet 1 of 1	
CO-OR	DINAT	ES( _ )			- 1	D LEVEL (I	•	0	200		E STARTE		
					<del></del>	OLE DIAME		,	200 2.60		E COMPLI		
CLIEN <sup>1</sup> ENGINI			ı Dublin C ddie Conro	ounty Counci		OLE DEPTI DEPTH (m			2.60		RED BY CESSED E	M. Connolly Taras	
	LLIX	IVIII. EC	adic Corno	, y	CASING	DEF III (II	''			Samples		Taras	
Depth (m)			Desc	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
	OPSOIL		ın sandy g	ravelly CLAY				0.30	AB 0252	В	0.50	N = 19 (6, 6, 4, 6, 5, 4)	
2									AB 0253	В	1.50	N = 60 (8, 6, 10, 14, 19,	
			sible ROC at 2.60 m	K				2.40				17)	
3													
4													
5													
6													
7													
8													
9													
HARD	STRA		ING/CHIS	ELLING				KE DET					
rom (n	1	(111)	(n)	omments		Water Strike	De	pth	Sealed At	Rise To	Time (min)	Comments	
2.4	2.	6	0.5			2.40	2.	40		2.40		Seepage	
NSTAI	LLATIO	N DETA	AILS			<b>GROU</b> I		ER DET	Casing	Depth to	O Comme	ents	
Dat				RZ Base	Туре			Depth	Depth	vvaler			
REMAR	RKS							LB - Bulk Di	Bulk Disturbed		P-l	Undisturbed 100mm Diameter Samp Undisturbed Piston Sample	ple

REPORT NUMBER

12838

BOREHOLE NO. CONTRACT Corkagh Grange Housing Site **BH7** SHEET Sheet 1 of 1 **GROUND LEVEL (m)** CO-ORDINATES(\_) DATE STARTED 18/07/2007 **BOREHOLE DIAMETER (mm)** 200 DATE COMPLETED 18/07/2007 **BOREHOLE DEPTH (m)** 2.60 CLIENT South Dublin County Council **BORED BY** B.McDonnell CASING DEPTH (m) **ENGINEER** Mr. Eddie Conroy 2.60 PROCESSED BY Sukhanov Samples Standpipe Details Depth (m) Depth (m) Elevation Ref. Number Sample Type Legend Field Test Description Depth (m) Results - 0 31 TOPSOIL 0.10 Firm brown sandy CLAY/SILT N = 14 1.00 Firm to stiff grey sandy gravelly CLAY 374 В 1.00 (2, 2, 3, 3, 4, 4)N = 282 375 В 2.00 (4, 4, 6, 6, 7, 9)OBSTRUCTION 2.50 End of Borehole at 2.60 m 2.60 3 5 6 8 9 HARD STRATA BORING/CHISELLING WATER STRIKE DETAILS Time Water Casing Sealed Rise Time From (m) To (m) Comments Comments Strike Depth То (min) (h) 2.00 2.50 GPJ IGSL.GDT 10/8/07 2.5 2.6 2.00 2.00 Seepage Seepage 2.50 **GROUNDWATER DETAILS** Casing Depth to Water Hole **INSTALLATION DETAILS** Date Comments Depth Depth Date Tip Depth RZ Top RZ Base Type 18-07-07 1.50 End of boring 2.60 0.00 BH LOG **REMARKS** Sample Legend D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample GSL

10	SL		GEOTE	CHNICA	L BORIN	G R	ECC	ORD				REPORT NUMBER	
CON	TRACT	Corkagh (	Grange Housing Site							BOREHO	DLE NO		
CO-C	ORDINAT	ES(_)			D LEVEL (m) OLE DIAMETE	:R (mr	m)	200	D	HEET  ATE ST			
CLIE ENGI	NT INEER	South Dul	blin County Council Conroy		OLE DEPTH (n DEPTH (m)	n)		1.60 1.60		BORED I		B.McDonnell  Sukhanov	
				7 07 1010		_			Samp	oles			e e
Depth (m)			Description		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	;	Depth (m)	Field Test Results	Standpipe
0	TOPSOIL Firm brow	and sub-so n sandy SIL	oil _T/CLAY		<u> </u>		0.20						
		-					0.00						
1	Stiff grey	sandy CLAY	with occasional gravel				0.80	373	В		1.00	N = 22 (3, 4, 5, 5, 6, 6)	
	OBSTRU		00.44		<u> </u>		1.50	]					
2	End of BC	orehole at 1.	60 m				1.60						
3													
4													
5													
6													
7													
8													
9													
HAF		Time	CHISELLING		WATER S Water	Casi		TAILS Sealed	Rise	Т:	ime		
rom	` '	(h)	Comments		Strike	Dep	oth	At	To		nin)	Comments	
1.5	5   1.	6   1.50	'									No water strike	
					GROUND					41- /			
		N DETAILS			Date		Hole epth	Casing Depth		alei	Comme	ents	
D	ate Ti	p Depth RZ	Z Top RZ Base	Туре	17-07-07	1	1.60	0.00	1.2	20   I	End of	boring	
REM	ARKS						Samp	ole Legend					

IGSL

Sample Legend
D - Small Disturbed (tub)
B - Buik Disturbed
Le - Large Buik Disturbed
Env - Environmental Sample (Jar + Vial + Tub)

U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample

(3)
162L

REPORT NUMBER

100	BSL	/										12838		
CON	ITRAC <sup>*</sup>	<b>T</b> Cork	agh Granç	ge Housing S	Site					BORI	EHOLE NO	D. BH9 Sheet 1 of 1		
CO-C	ORDIN	ATES(_)				ID LEVEL (m) OLE DIAMET		<b>m</b> ) 2	200	DATE	E STARTE E COMPLI	<b>D</b> 09/08/2007		
CLIE	NT INEER		h Dublin C	county Coun	•	OLE DEPTH (m)	(m)		2.00	PRO	ED BY CESSED E	J. O'Hara <b>3Y</b> Taras		
Œ							L C	(E)		Samples		Field Test	je je	
Depth (m)			Des	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Results	Standpipe	
0	TOPS Soft br	OIL Own CLAY	7			711/4: 1/1/1/1		0.20						
1									5151	В	1.00	N = 6 (1, 1, 1, 1, 2, 2)		
2	Obstru End of	ction. Pos Borehole	sible ROC at 2.00 m	K				1.80 2.00	5152	В	2.00			
3 4 5 6 7 8 8														
HAF	RD STE	RATA BOI	RING/CHIS	SELLING		WATER	STRIE	KE DETA	AILS					
rom	(m)	Го (m)	Time (h)	omments		Water Strike	Cas		Sealed At	Rise To	Time (min)	Comments		
1.8	8	2	1.5			2.00	2.0			2.00	\·-···/	Seepage		
						GROUNI								
		TION DET		D7.D:	<b>T</b>	Date		Hole Depth	Casing Depth	Depth to Water				
	Date	i ip Depti	n KZ Iop	RZ Base	Туре	09-08-0	7   2	2.00	0.00	2.00	End of	boring		
REM	IARKS							LB - Bulk Di	<b>Bulk Disturbed</b>		U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample			



IGSL.GDT 10/8/07

BH LOG

GSL

#### **GEOTECHNICAL BORING RECORD**

REPORT NUMBER

12838

BOREHOLE NO. CONTRACT Corkagh Grange Housing Site **BH10** SHEET Sheet 1 of 1 **GROUND LEVEL (m)** CO-ORDINATES(\_) DATE STARTED 09/08/2007 **BOREHOLE DIAMETER (mm)** 200 DATE COMPLETED 09/08/2007 **BOREHOLE DEPTH (m)** 2.50 CLIENT South Dublin County Council **BORED BY** J. O'Hara **ENGINEER** Mr. Eddie Conroy **CASING DEPTH (m)** 2.50 PROCESSED BY Taras Samples Standpipe Details Depth (m) Depth (m) Elevation Ref. Number Sample Type Legend Field Test Description Depth (m) Results - 0 TOPSOIL 0.20 Very soft brownish grey SILT/CLAY N = 45148 В 1.00 (1, 1, 0, 0, 1, 3)1.40 Firm brown sandy CLAY 2 N = 15 В 5149 2.00 (1, 1, 1, 3, 3, 8)Obstruction, Possible ROCK 2.30 End of Borehole at 2.50 m 5150 2 50 В 3 5 6 8 9 HARD STRATA BORING/CHISELLING **WATER STRIKE DETAILS** Time Water Casing Sealed Rise Time From (m) To (m) Comments Comments Strike Depth То (min) (h) 2.3 2.5 2.30 0.80 Rapid 15 2 30 30 **GROUNDWATER DETAILS** Casing Depth to Water Hole **INSTALLATION DETAILS** Date Comments Depth Depth Tip Depth RZ Top RZ Base Date Туре 09-08-07 0.60 End of boring 2.50 0.00 09/08/2007 50mm SP 2.50 2.50 **REMARKS** Strong water pressure (possible artesian spring). Sample Legend D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample



00	BSL	<b>'</b>			• · <b>-</b> • · · · · · · ·							12838	
COI	NTRAC	Γ Corka	agh Grang	e Housing S	Site					BORE	EHOLE NO	D. <b>BH11</b> Sheet 1 of 1	
co-	-ORDIN	ATES(_)			GROUN	D LEVEL (	m)				STARTE		
		-(_/			BOREH	OLE DIAM	ETER (n	nm) 2	200		COMPLE		
CLI	ENT	South	n Dublin C	ounty Coun	cil BOREH	OLE DEPT	H (m)	2	2.20	BORE	ED BY	M. Connolly	
	SINEER		ddie Conro			DEPTH (n	n)	2	2.20		CESSED E	-	
					1					Samples			
Depth (m)			Des	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe Details
. 1	TOPSO Firm gr	OIL eyish brov	vn sandy ς	gravelly CLA	AY			0.20	AB 0248	В	0.50	N = 18 (3, 6, 5, 4, 4, 5)	
2 -	End of	Borehole	at 2.20 m			- · · · · · · ·		2.10	AB 0249	В	1.50	N = 70/225 mm (4, 14, 20, 25, 25)	
- 4 - 5 - 6 - 7 - 8													
<u>-</u> ΗΔ	RD STE	RATA BOF	RING/CHIS	SFLLING		WATE	R STRI	KE DET	All S				
			Time			Wate	r Ca	sing S	Sealed	Rise	Time	Comments	
		0 (111)	(h)	omments		Strike	e De	epth	At	To	(min)		
2	.1	2.2	0.5			2.10	2.	.10		0.30		Rapid	
								ER DET	AILS Casing	Denth to			
		TION DET		TD7.5	<del>-</del>	Dat		Depth	Depth	Depth to Water	Comme	ents	
	Date 08/2007	Tip Depth 2.20	1.00	RZ Base 2.20	Type 50mm SP								
REM	MARKS		1			1	I	D - Small I B - Bulk Di	Legend Disturbed (tub) isturbed Bulk Disturbed ronmental Samp	ole (Jar + Vial + Tub		Jndisturbed 100mm Diameter Sam Jndisturbed Piston Sample	iple

(F)	
IGSL	
CONTRACT	

REPORT NUMBER

12838

BOREHOLE NO. Corkagh Grange Housing Site **BH12** SHEET Sheet 1 of 1 **GROUND LEVEL (m)** CO-ORDINATES(\_) DATE STARTED 18/07/2007 **BOREHOLE DIAMETER (mm)** 200 DATE COMPLETED 18/07/2007 **BOREHOLE DEPTH (m)** 2.60 CLIENT South Dublin County Council **BORED BY** B.McDonnell CASING DEPTH (m) **ENGINEER** Mr. Eddie Conroy 2.60 PROCESSED BY Sukhanov Samples Standpipe Details Depth (m) Depth (m) Elevation Ref. Number Sample Type Legend Field Test Description Depth (m) Results 11/2. 1/1/2. - 0 TOPSOIL 0.20 Firm brown sandy CLAY with occasional gravel ō N = 181.00 Stiff to very stiff sandy gravelly CLAY 376 R 1.10 (3, 3, 4, 4, 5, 5)N = 48/225 mm 2 377 В 2.10 (6, 8, 10, 11, 17, 10) OBSTRUCTION 2.50 End of Borehole at 2.60 m 2.60 3 5 6 8 9 HARD STRATA BORING/CHISELLING WATER STRIKE DETAILS Time Water Casing Sealed Rise Time From (m) To (m) Comments Comments (h) Strike Depth То (min) GPJ IGSL.GDT 10/8/07 2.2 2.60 0.40 Rapid 2 1.50 1 50 5 **GROUNDWATER DETAILS** Casing Depth to Water Hole **INSTALLATION DETAILS** Date Comments Depth Depth Date Tip Depth RZ Top RZ Base Type 18-07-07 0.40 End of boring 2.60 0.00 BH LOG **REMARKS** Sample Legend D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample GSL

	١
IGSL	
CONTRACT	ſ

REPORT NUMBER

TRAC	<b>r</b> Corl	kagh Gran	ge Housing S	iite						EHOLE NO		
ORDIN	ATES(_	)					<b>m</b> ) 2	200	DATI	E STARTE	<b>:D</b> 16/07/2007	
NT NEER				···		(m)			PRO		B.McDonnell Sukhanov	ı
		Des	scription		Legend	Elevation	Depth (m)	Ref. Number	Samples Type	Depth (m)	Field Test Results	Standpipe Defails
					711/2 -711/2 - 7,							
Firm b	rown san	dy SILT/C	LAY				0.25					
Stiff gr	ey sandy	gravelly C	LAY				0.80	369	В	1.00	N = 26 (3, 6, 6, 6, 8, 6)	
		e at 2.10 m	1			\	2.00	J			N = 50/0 mm (25, 25)	
RD STE	RATA BO	RING/CHI	SELLING		WATER	STRIK	KE DET	AILS				
		Time			Water	Cas	sing S	Sealed	Rise	Time	Comments	
	2.1	2			2.00			AL	1.60	5	Moderate	
					GROUNE							
ALLA <sup>T</sup>			RZ Base	Type	Date 16-07-07		Depth	Casing Depth 0.00	Depth to Water 1.60	_		
ARKS							Sampl D - Small I B - Bulk Di	e Legend Disturbed (tub)		U-I	Jndisturbed 100mm Diameter Samo	ble
	TOPSOFIRM bits Stiff growth of the stiff growt	NT SOUNER Mr.  TOPSOIL Firm brown sand Stiff grey sandy  Obstruction End of Borehold  (m) To (m) 2.1  ALLATION DE ate Tip Dep	TOPSOIL Firm brown sandy SILT/Ci Stiff grey sandy gravelly Ci Obstruction End of Borehole at 2.10 m  ALLATION DETAILS  ate Tip Depth RZ Top	NT MEER Mr. Eddie Conroy  Description  TOPSOIL Firm brown sandy SILT/CLAY  Stiff grey sandy gravelly CLAY  Obstruction End of Borehole at 2.10 m  ALLATION DETAILS  ate Tip Depth RZ Top RZ Base	NT South Dublin County Council BOREH NEER Mr. Eddie Conroy  Description  TOPSOIL Firm brown sandy SILT/CLAY  Stiff grey sandy gravelly CLAY  Obstruction End of Borehole at 2.10 m  RD STRATA BORING/CHISELLING (m) To (m) Time (h) Comments 2.1 2  ALLATION DETAILS ate Tip Depth RZ Top RZ Base Type	BOREHOLE DIAMET  NT South Dublin County Council  NEER Mr. Eddie Conroy  Description  Description  TOPSOIL Firm brown sandy SILT/CLAY  Stiff grey sandy gravelly CLAY  Obstruction End of Borehole at 2.10 m  Storm To (m) To (m) Time (h) Comments  Late Tip Depth RZ Top RZ Base Type 16-07-0'  MALLATION DETAILS  ate Tip Depth RZ Top RZ Base Type 16-07-0'	NT South Dublin County Council NEER Mr. Eddie Conroy  Description  Des	BOREHOLE DIAMETER (mm) 2 BOREHOLE DEPTH (m) 2 Description	BOREHOLE DIAMETER (mm) 200  NT South Dublin County Council Mr. Eddie Conroy  Description  Descri	ARKS    GROUND LEVEL (m)   BOREHOLE DIAMETER (mm)   201   DATI   DATI   BOREHOLE DEPTH (m)   2.10   DATI   DATI   BOREHOLE DEPTH (m)   2.10   DATI   DATI	BOREHOLE DIAMETER (mm) 200 DATE COMPUT  NT South Dublin County Council NEER Mr. Eddie Conroy  Description  De	OROUND LEVEL (m)   SOUTH DUBLIN COUNTY COUNCIL   RORCHOLE DIAMETER (mm)   2-10   DATE COMPLETED   16/07/2007   DATE COMPLETED   16/07/2007   BORED BY   B.McConnell   Rose   Ro

(El)	
IGSL	
CONTRACT	[

IGSL.GDT 10/8/07

BH LOG

GSL

### **GEOTECHNICAL BORING RECORD**

REPORT NUMBER

12838

BOREHOLE NO. Corkagh Grange Housing Site **BH14** SHEET Sheet 1 of 1 **GROUND LEVEL (m)** CO-ORDINATES(\_) DATE STARTED 17/07/2007 **BOREHOLE DIAMETER (mm)** 200 DATE COMPLETED 17/07/2007 **BOREHOLE DEPTH (m)** 2.10 CLIENT South Dublin County Council **BORED BY** B.McDonnell CASING DEPTH (m) **ENGINEER** Mr. Eddie Conroy 2.00 PROCESSED BY Sukhanov Samples Standpipe Details Depth (m) Depth (m) Elevation Ref. Number Sample Type Legend Field Test Description Depth (m) Results 11/2 11/2 - 0 TOPSOIL 0.15 Brown sandy CLAY/SILT with occasional gravel N = 261.00 Stiff brown grey sandy gravelly CLAY 372 R 1.10 (3, 3, 6, 6, 7, 7)N = 50/20 mm (25, 25) 2.00 OBSTRUCTION End of Borehole at 2.10 m 2.10 3 5 6 8 9 HARD STRATA BORING/CHISELLING WATER STRIKE DETAILS Time Water Casing Sealed Rise Time From (m) To (m) Comments Comments Strike Depth (min) (h) 2 2.1 1.75 1.50 2.00 1.50 2.00 Seepage Slow 1.80 5 **GROUNDWATER DETAILS** Casing Depth to Water Hole **INSTALLATION DETAILS** Date Comments Depth Depth Date Tip Depth RZ Top RZ Base Type 17-07-07 1.80 End of boring 2.00 0.00 **REMARKS** Sample Legend D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub) U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample



REPORT NUMBER

/IG	381	-/											12838	
CON	TRAC	CT Co	rkagh (	Grange	e Housing Site	e					BOR SHEI	EHOLE N	IO. BH15 Sheet 1 of 1	
co-c	ORDI	NATES(_	)				D LEVEL (m) OLE DIAMETI		ım) 2	200	DATI	E START E COMPL	<b>ED</b> 17/07/2007	
CLIE ENGI	NT INEEF			blin Co Conroy	ounty Council		OLE DEPTH ( DEPTH (m)	m)		1.60 1.60	PRO	ED BY CESSED	B.McDonnell BY Sukhanov	
Depth (m)				Desc	ription		Legend	Elevation	Depth (m)	Ref. Number	Samples Type	Depth (m)	Field Test Results	Standpipe
0	TOPS Firm	SOIL and brown sar	sub-so ndy CL	oil .AY/SII	T		\$\frac{1}{2}\cdot \cdot		0.20		321			0)
1	Stiff g	rey sandy	/ CLAY	Y with s	some gravel				0.90	370	В	1.00	N = 26 (4, 6, 6, 6, 7, 7)	
2	OBS <sup>-</sup> End o	TRUCTIO of Borehol	N e at 1.	60 m					1.50 1.60	371	В	1.60		
3														
•														
·														
9														
- IAF	RD ST	RATA BO	ORING	J/CHISI	ELLING		WATER	STRII	KE DET	AILS				
om	(m)	To (m)	Time (h)	e Co	mments		Water Strike	Cas De		Sealed At	Rise To	Time (min)	Comments	
1.5	5	1.6	1.50	)			1.30 1.50	1.3 1.3			1.10	5	Seepage Moderate	
							GROUND			AILS Casing	Donth t			
	ALLA ate	Tip Dep			RZ Base	Туре	Date 17-07-07		Hole Depth 1.60	Depth 0.00	Depth to Water Comments  0.70 End of boring			
REM	ARK	 S							LB - Bulk D	Bulk Disturbed	ole (Jar + Vial + Tu	Ρ.	- Undisturbed 100mm Diameter Samp - Undisturbed Piston Sample	le



CONTRACT	Corkagh G	range Housing Site							HOLE N	2	
CO-ORDINA	TES(_)			D LEVEL (m) OLE DIAMET		m) 2	200		START COMPL		
CLIENT	South Dubl	lin County Council		OLE DEPTH (			3.60		ED BY	B.McDonnell	
ENGINEER	Mr. Eddie C			DEPTH (m)		;	3.60		ESSED		
_		•						Samples			
Depth (m)	ı	Description		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
	L and sub-soil			<u>717</u> 7177	ш			071			0,
	wn sandy CLA	Υ			f	0.20	<b> </b>				
				<u> </u>						N = 04	
1 Stiff arev	rish hrown san	dy gravelly CLAY wit	th occasional	<u> </u>	-	1.20	378	В	1.00	N = 24 (2, 2, 3, 3, 8, 10)	
cobbles	ion brown ball	ay graveriy OLAT WII	an occasional			20					
2							379	В	2.00	N = 28	
										(4, 4, 6, 6, 8, 8)	
3							000	_	0.00	N = 25	
~				0.0			380	В	3.00	(3, 4, 6, 6, 6, 7)	
OBSTRI	JCTION				ŀ	3.50	<del> </del>				
End of B	orehole at 3.60	0 m	/		ſ	3.60	1				
4											
5											
6											
7											
8											
9											
						<b>,_</b>					
	Time			WATER Water	STRIP Cas		AILS Sealed	Rise	Time		
	(m) (h)	Comments		Strike	De	oth	At	To	(min)	Comments	
3.5	3.6 2.00			2.50 3.50	2.t 3.t			2.50	5	Seepage Rapid	
				3.50	3.	טע		2.30	ວ	Γαρία	
				GROUND							
NSTALLATI	ON DETAILS			Date		Hole Depth	Casing Depth	Depth to Water	Comn	nents	
Date	Γip Depth RZ	Top RZ Base	Туре	19-07-07		3.60	0.00	1.80		f boring	
1								1			
REMARKS						Samo	le Legend Disturbed (tub)				



REPORT NUMBER

100	GSL	/										12838	
СО	NTRAC	T Cork	agh Grang	je Housing	Site					BOR	EHOLE N	O. BH17 Sheet 1 of 1	
СО	-ORDIN	ATES(_)				D LEVEL (m	•	<b>m</b> ) 2	200	DATI	E STARTE E COMPL	<b>ED</b> 08/08/2007	
	ENT GINEER		h Dublin C	ounty Cour	BOREH	OLE DEPTH DEPTH (m)	(m)	2	2.10 2.10	BOR	ED BY CESSED I	J. O'Hara	
				-	'					Samples			
Depth (m)			Des	cription		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
0	TOPS	OIL rown peaty	CLAV			<u> </u>		0.20					
1		ish grey Si					_	1.10	5143	В	1.00	N = 7 (1, 1, 0, 1, 2, 4)	
2	Obstru	uction. Pos	sible ROC	K		× × ×	<u>-</u>	2.00	5144	В	2.00		
	End o	Borehole	at 2.10 m					2.10	5145	В	2.10		
3													
5													
6													
7													
8													
9													
HΑ	RD ST	RATA BOF	RING/CHIS	SELLING		WATER	R STRIK	KE DET	AILS				
ror	m (m)	To (m)	Time (h)	omments		Water Strike	Cas		Sealed At	Rise To	Time (min)	Comments	
	2	2.1	1.5			2.00	2.0			1.00	30	Rapid	
INS	TALLA	TION DET	AILS			<b>GROUN</b> Date		ER DETA Hole Depth	AILS Casing Depth	Depth to Water	Comm	ents	
	Date	Tip Depth	n RZ Top	RZ Base	Туре			σμιι	Deptii	vvaler			
	08/2007 MARKS		1.00	2.10	50mm SP			Sampl	e Legend Disturbed (tub)				
								LB - Bulk Di	sturbed Bulk Disturbed	le (Jar + Vial + Tul	P-	Undisturbed 100mm Diameter Sam Undisturbed Piston Sample	ple

IGSL

# **GEOTECHNICAL BORING RECORD**

REPORT NUMBER

СО	NTRA	CT Co	orkagh Gra	ange Housing Site						BORI SHEE	EHOLE N	IO. BH18 Sheet 1 of 1	
СО	-ORDI	NATES(_	_)			ID LEVEL (m) OLE DIAMETE	ER (m	ım) 2	200	DATE	START COMPL	<b>ED</b> 19/07/2007	
	IENT GINEE		outh Dubling Eddie Co	n County Council		OLE DEPTH (I	m)		3.10 3.10		ED BY	B.McDonnell  BY Sukhanov	
	SINCE	ix IVII	. Luuie CC	лпоу	CASING	DEPTH (m)			. 10	Samples	CESSED	DI SUMIBILOV	
Depth (m)			C	Description		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe
						<u> 7.7. 7.7.7.7</u> 7	Ш		ďΖ	ώ É,	٥٥		Ş
0	Firm	SOIL and brown sa	sub-soil ndy CLA	//SILT		<u> </u>	-	0.20	1				
			-										
			<u> </u>			<u> </u>		4.55				N = 38	
1	Stiff	grey sand	y CLAY w	vith some gravel		<u> </u>		1.00	382	В	1.10	(4, 6, 8, 8, 10, 12)	
									_			N - 15	
2	Firm	to stiff sa	ndy grave	elly CLAY		- <u>·</u>		2.00	383	В	2.00	N = 15 (2, 3, 3, 4, 4, 4)	
									]			N = 00/57	
3	Obst	ruction. P	ossible ro	ck.				3.00	4			N = 60/57 mm (35, 25)	
		J. 2010110	.5 at 0.10					5.10					
4													
5													
6													
7													
8													
9													
-													
μ,	/ DD 6.	TDATA P	ODING	HISELLING		WATER	ייםדפ	(E DET	All S				
	m (m)	To (m)	Time	Comments		Water	Cas	sing	Sealed	Rise	Time	Comments	
	1.6	1.8	(h) 1	Comments		Strike 3.00	De 3	pth 00	At	To 2.00	(min) 5	Rapid	
	3	3.1	2.00			3.00	3.1			2.00	J	ιταρια	
						GROUND	WAT	ER DET	AILS				
INS	TALL	ATION DI	ETAILS			Date		Hole Depth	Casing Depth	Depth to Water	Comn	nents	
	Date	Tip De	pth RZ T	op RZ Base	Туре	19-07-07		3.10	0.00	2.00		f boring	
RE	MARK	S						Samp	le Legend Disturbed (tub) isturbed	1			
								III Small	usiumea (tub)			- Undisturbed 100mm Diameter Sampl	lo.

	GSL	GEOTE	CHNICA	L BOR	ING F	RECOI	RD			REPORT NUMBER	
CC	ONTRACT	Corkagh Grange Housing Site						ВС	OREHOLE NO	). BH19	
CC	O-ORDINAT	ES( )	GROUN	D LEVEL (	(m)				IEET ATE STARTE	Sheet 1 of 1 13/07/2007	
		-(=)	BOREH	OLE DIAM	ETER (m	nm) 2	00	DA	ATE COMPLE		
	IENT GINEER	South Dublin County Council Mr. Eddie Conroy		OLE DEPT DEPTH (r			.60 .60	l l	ORED BY ROCESSED E	B.McDonnell SY Sukhanov	
=		•	!					Sampl			(I)
Depth (m)		Description		Legend	Elevation	Depth (m)	Ref. Number	Sample Type	Depth (m)	Field Test Results	Standpipe Details
- 1 - 2 - 3 - 4 - 5	OBSTRU	rn sandy CLAY with some gravel and	I cobbles			0.15 1.50 1.60	368	В	1.00	N = 29 (4, 6, 6, 10, 7, 6)	

	HARD S	TRATA B	ORING/C	HISELLING	WATER	STRII	KE DET	AILS				
	From (m)	To (m)	Time (h)	Comments	Water Strike		sing S	Sealed At	Rise To	Time (min)	Comments	
5	1.5	1.6	1		1.30	1.	30		1.00	5	Moderate	
į												
2					GROUN							
							11-1-	0:		<b>I</b>		

BH LOG 12838.GPJ IGSL.GDT 10/8/07 Casing Depth 0.00 Depth to Water Hole **INSTALLATION DETAILS** Date Comments Depth Date | Tip Depth | RZ Top | RZ Base Type 19-07-07 1.00 End of boring 1.60

REMARKS

IGSLI

Sample Legend
D - Small Disturbed (tub)
B - Buik Disturbed
LB - Large Buik Disturbed
Env - Environmental Sample (Jar + Vial + Tub)

U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample

1	A.									REPORT NUMBER	
0	GSL	GEOTE	CHNICA	L BORII	NG R	ECO	RD			12838	
со	NTRACT	Corkagh Grange Housing Site						BORE	HOLE NO	D. BH20 Sheet 1 of 1	
со	-ORDINAT	ES(_)		D LEVEL (m		m) :	200	DATE	STARTE	<b>D</b> 09/08/2007	
ı	ENT GINEER	South Dublin County Council Mr. Eddie Conroy		OLE DEPTH DEPTH (m)			1.50 1.50	BORE	D BY ESSED B	J. O'Hara Y Taras	
Depth (m)		Description		Legend	Elevation	Depth (m)	Ref. Number	Samples Lype	Depth (m)	Field Test Results	Standpipe Details
- 0	TOPSOIL	- brown CLAY		<u> </u>	ш.	0.20		WF			<u>о</u> п
-	very sun	JOWN CEAT				0.20	5146	В	1.00	N = 43 (1, 1, 5, 7, 11, 20)	
-		on. Possible ROCK prehole at 1.50 m			<u>-</u> N	1.40	5147	В	1.50	(1, 1, 3, 7, 11, 20)	
- - 2 -											
3											
4											
- 4											
5											
-											
6											
7											
- 8											
9											
-											
ш,	DD STDA	TA PODING/CHISELLING		WATER	O STDIL	CE DET	.VII 6				
	n (m) To	TA BORING/CHISELLING (m) Time Comments		Water	Cas	sing	Sealed	Rise	Time	Comments	
	.4 1	(11)		Strike	De	pth	At	То	(min)	No water strike	
				GROUN	DWAT	FR DET	ΓΔII S				
INS	TALLATIC	DN DETAILS		Date		Hole	Casing	Depth to Water	Comme	ents	
		-				Depth	Depth	vvaler	1		

IGSL BH LOG 12838.GPJ IGSL.GDT 10/8/07 REMARKS

Date | Tip Depth | RZ Top | RZ Base

Type

Sample Legend
D - Small Disturbed (tub)
B - Buik Disturbed
LB - Large Buik Disturbed
Env - Environmental Sample (Jar + Vial + Tub)

U - Undisturbed 100mm Diameter Sample P - Undisturbed Piston Sample





REPORT NUMBER

1	S S																	12	000
co	NTR	ACT	С	orca	gh Grange	e Housing	Site									OLE N	o	RC	
СО	-ORE	DINA	TES(	)				G	ROUND L	EVEL (m)					EET TE S	TARTE	D		t 1 of 1 7/2007
								_		METER (mm	)		76	DA	TE C	OMPLI	ETED	20/07	7/2007
	ENT GINE	ER	S	outh	Dublin Co	ounty Cou	ncil		NCLINATIO LUSH	ON			-90 Air/Mist		ILLEI GGEI			Miller IGSL	nnium
Oownhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Dis	continuiti	es		Elevation	Standpipe Details	SPT (N Value)
1	1.40	25	17	13					Strong g	grey limeston s. Observed b boulders, nd clay.		1.40							
3	3.00				-				HOLE D	TRIX OPEN ORILLING: ed by driller a of gravelly cla	s	3.60 3.80	Discontin	nuities ar	e smo	ooth			
5	4.30	100		79	Ŀ	ı			boulders SYMME HOLE D Observe angular returns of		S		to planar to undulo moderate Dips are sub-70°- (3.8m-4.15.2m-5.3	and loca ose. Ape ely open sub-45° 90° fract 0m, 4.0n	ally rou ertures to ope to loc ures n-4.3r	ugh s are en. eally m,			
7	5.80								to mediu grey (arg locally g LIMEST cherty). slightly t (4.0m-4. Local ca (4.92m-	um bedded, ogillaceous) to gillaceous) to grey, fine grain ONE (slightly Fresh to loc to moderately 3m) weather allcite veins 5.2m).	lark ned y ally red.	5.80							
-																			
										Date	Н	ole	Casing	Depth Wate	to	Comme	ents		
<u> </u>											De	epth	Depth	vvale	a				
INS	TAL Date		ION DETAILS Tip Depth RZ Top RZ Base			Туре													



REPORT NUMBER

10	(C) (C)																		
СС	NTR	ACT	С	orca	gh Grange	e Housing	Site									IOLE N	<u> </u>	RC	
CC	-Opr	)IN A	TES(	١				G	ROUND L	.EVEL (m)				_	HEET	STARTE	:D		et 1 of 1 7/2007
		JII 17-1		_'						METER (mm	)		76			COMPLE			7/2007
	IENT GINE		S	outh	Dublin Co	ounty Cour	ncil		ICLINATIO	ON			-90 Air/Mist			ED BY ED BY		Mille	nnium
													HITIVIISC		000.				
Downhole Depth (m)	Core Run Depth (r	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m 0 <sup>25</sup>	cing m) <sup>0</sup> 500	Legend	Non-intact zones (shaded)	Strata	description		Depth (m)	Disc	continu	iities		Elevation	Standpipe Details	SPT (N Value)
CSL RC NEWLOG 10M PER PG 12838RC:GPJ 103L:GPJ 340.07	2.80 4.00	100	52	52					SYMME HOLE D Observe returns of with occ boulders  SYMME HOLE D Observe angular returns of Moderat weak, th laminate grey-bla smeared grained Moderat to media grey-bla to locally (cherty-openions) (cherty-openi	TRIX OPEN RILLING: ad by driller a gravel size of limestone. ely weak to inily bedded ad, dark ck, clay d (dry), fine LIMESTONE ely to highly ed. o locally tely strong, th im bedded, c ck (argillaced o grey 4,64m-5,4m tite veins), fil LIMESTONE	s say	2.70 (2.80) 4.00	Discontir smooth a Apertures open to c iron oxide Dips are sub-90° t (4.26m-4 4.64m-4.	and und s are mopen we e staine sub-35 fracture 1.52m,	dulose nodera ith loc ed sur s° to lo	itely ally faces.			
RE RE	MAR		1	<u> </u>	1					INSTALLA	TION	REM	ARKS						
1 C	ore b	OX.																	
R PG										GROUNDV	VATE	R DE	ΓAILS						
JM PE.										Date	Н	ole	Casing	Dept Wa	th to	Comme	ents		
06 10											L De	epth	Depth	vva	ILCI				
INS			ON E																
2	Date	1	Tip D	epth	RZ Top	RZ Base		Туре											
1891																			



REPORT NUMBER

IGSL				12030
CONTRACT Corcagh Grange Ho	lousing Site		DRILLHOLE N	O RC03
	CDOLIND	EVEL (m)	SHEET	Sheet 1 of 1
CO-ORDINATES(_)	GROUND L		76 DATE STARTI	
CLIENT South Dublin Count ENGINEER		ON	-90 DRILLED BY Air/Mist LOGGED BY	Millennium IGSL
	E G G G G G G G G G G G G G G G G G G G	ETRIX OPEN DRILLING: ed by driller as of gravelly clay.  ETRIX OPEN DRILLING: ed by driller as gravel size of limestone e variably red bedrock). tely strong to tely weak and strong, thin to aminated g. Dark grey to di locally grey, ined rone (cherty to	Air/Mist LOGGED BY  Discontinuities	
REMARKS		INSTALLATION REM	  ARKS	
1 Core box. Move and set up 3hrs.				
N PG		GROUNDWATER DE	TAILS	
N PER		Date Hole	Casing Depth to Comm	uents
0G 10M		Date Depth	Depth Water Comm	ICHIO
INSTALLATION DETAILS  Date Tip Depth RZ Top RZ	Z Base Type			



REPORT NUMBER

1	68																12	030
СО	NTR	ACT	C	orca	gh Grange	e Housing	Site								LLHOLE	NO	RC	
	OPI	NIAI A	TES(					G	ROUND L	.EVEL (m)				SHI	EET FE START	ren		et 1 of 1 7/2007
CO	-OKL	JINA	IES(	_,						METER (mm	)		76		TE COMP			7/2007
	ENT SINE		S	outh	Dublin Co	ounty Cou	ncil		NCLINATIO	ON			-90 Air/Mist		LLED BY GGED BY		Mille IGSL	nnium
O Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Dis	continuiti	es	Elevation	Standpipe Details	SPT (N Value)
1									HOLE D	TRIX OPEN ORILLING: d by driller a of gravelly cla	s	2.30						
3	2.50	100	0	0					HOLE D Observe	TRIX OPEN PRILLING: ed by driller a gravel size	s	2.50	Discontir to planar undulose	and loca . Apertu	lly res are			
4		100 22 10			Moderat locally s locally m dark gre (argillace	of limestone.  ely strong to  trong, thin to  nedium bedd  y-black  eous) to loca  ghtly cherty -	ed,		open with stained s (2.5m-3.5 sub-20°5 sub-70°- (4.06m-4	surfaces 5m). Dip with local 90° fracti	s are ly							
	4.50	100	56	40					3.52m-3 4.5m-4.	3.67m, 7m), fine								
- 5 - 6 - 7 - 8	5.00								Slightly to moderate Locally of 4.06m-4 fracture.	LIMESTONE to locally ely weathere calcite veined .0m veretical Corehole at 5	ed. I	5.10						
RE	MAR	KS								INSTALLA	TION	REM	ARKS					
	ore b												<del>_</del>					
										GROUNDV	VATE	R DE	TAILS					
										Date	Н	ole	Casing	Depth Wate	to Comi	ments		
											D6	epth	Depth	vvale				
	TAL Date		ON E		RZ Top	RZ Base		Туре	!									
						<u> </u>							1	L				



REPORT NUMBER

TO SE															
CONTRACT	Corca	agh Grange	e Housing	Site								HOLE NO	0	RCC	
CO-ORDINA	ATES(_)						.EVEL (m) METER (mm	)	-	76		STARTE		21/07	et 1 of 1 7/2007 7/2007
CLIENT ENGINEER	South	Dublin Co	ounty Cou	ncil		ICLINATIO	ON			-90 Air/Mist		ED BY ED BY		Miller IGSL	nnium
Core Run Depth (m) T.C.R.%	S.C.R.% R.Q.D.%	Frac Spa (m 0 25	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
1 3 3.70 100 100 6 6 6.30 FEMARKS 1 Core box.						SYMME HOLE D Observe returns of SYMME HOLE D Observe returns of Strong ( moderat and lam medium grey-bla to locally cherty, le bands-4 fine grai LIMEST Slightly t moderat	bedded, darl ck (argillaced grey (slightl ocal pryite .65m-4.8m), ned ONE. Fresh	s syel.  s yel.  to d.	2.70 3.40 3.70	to planar and undu are open oxide sta (3.7m-4.6 sub-45° v	uities are si and locally lose. Aperi with local ir ined surface 6m). Dips a with locally 90° fracture 5m).	rough ures on es ire			
REMARKS 1 Core box.	1 1	1					INSTALLA	TION	REM	ARKS				i	
- <del></del>															
1							GROUNDV		R DE1	Casing	Denth to				
							Date		pth	Depth	Depth to Water	Comme	ents		
Date		AILS RZ Top	RZ Base		Туре										



IGSL RC NEWLOG 10M PER PG 12838RC.GPJ IGSL.GDT 3/10/07

# **GEOTECHNICAL CORE LOG RECORD**

1621	5														120	338
CONTRA	СТ	Co	orcaç	h Grange Housing	Site							DRILL	HOLE N	0	RC0	16
												SHEE	Γ		Shee	t 1 of 1
CO-ORDI	NAT	ES(	_)				ROUND L	EVEL (m) /IETER (mm)	)	7	76		STARTE COMPLI			7/2007 7/2007
CLIENT ENGINEE	R	So	outh I	Dublin County Cou	ncil		NCLINATIO LUSH	ON			90 Air/Mist	<b>I</b>	ED BY ED BY		Miller IGSL	
(m) Downhole Depth (m) Core Run Depth (m) 4 4.70		%:X:O:S	%'.O'.O'.W	Fracture Spacing (mm)  0 250 500		Non-intact zones (shaded)	SYMME HOLE D Observe returns of  SYMME HOLE D Observe returns of Strong to s	d to medium dark grey-bla eous) to loca ghtly .7m-4.6m, 7m, local pry fine grained ONE. Fresh	s syel.	(m) the Debth (m) 3.50 3.70 6.30	Discontinto planar undulose moderate and local clay/grav 4.7m-4.9 sub-45° v	continuities  continuities are si and locally . Apertures ly open to c ly tight with el (4.28m-4 8m). Dips a with locally 90° fracture .91m,	mooth are pen local 32m, are	Elevation	Standpipe Details Standpipe Details	SPT (N Value)
6.30  7  8  8  REMARK  1 Core bo  INSTALL  Date  21-07-07	ATIC		pth	ILS  RZ Top RZ Base  1.00 6.30		Type mm §	Local cn veined (i End of C (m)	ely weathere ystalline calc 3.77m-3.91n Corehole at 6	tite 1). 3	R DET		Depth to Water	Comme	ents		



REPORT NUMBER

ONT	RACT	- c	Corcaç	gh Grange Housin	g Site					DRILLI	HOLE NO	)	RC0 Shee	1 <b>7</b> t 1 of 1
0-01	RDINA	ATES(	_)				ROUND LEVEL (m) ORE DIAMETER (mm)		76	DATE S	STARTE COMPLE		20/07	7/2007
LIEN	T EER	S	outh	Dublin County Co	uncil		ICLINATION LUSH		-90 Air/Mist	DRILLE			Miller IGSL	
Core Run Denth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm)	Legend	Non-intact zones (shaded)	Strata description	Depth (m)	Discont	inuities		Elevation	Standpipe Details	SPT (N Value)
2.4 2.4 4.0 5.2	100	35	28 0				SYMMETRIX OPEN HOLE DRILLING: Observed by driller as returns of gravelly clay.  SYMMETRIX OPEN HOLE DRILLING: Observed by driller as angular gravel size returns of limestone. Strong to moderately strong, thin to medium bedded, dark grey-black (argillaceous) to locally grey (slightly cherty, local pyrite band-4.9m), fine grained LIMESTONE. Fresh to slightly to locally moderately weathered. Local crystalline calcite veined (3.7m-3.8m). End of Corehole at 5.2 (m)	5 20	Discontinuitie to planar and and undulose are moderate open and loc are sub-50°.	locally researched. Apertu	ough ures to			
	RKS box.						INSTALLATIO	ON REM	I IARKS					
	/.						202111		TA!! C					
							GROUNDWA	IER DE	TAILS					
							Date	Hole	Casing D	epth to	Comme	ents		
Core	LLAT	ION I	DETA	ILS			Date	Hole Depth	Casing Do Depth	epth to Vater	Comme	ents		



REPORT NUMBER

n.e	19) 	ソ																000
CON	TR/	ACT	С	orca	gh Grange	e Housing	Site								HOLE N	0	RC	
									י מיזוטם	EVEL (***)				SHEE				et 1 of 1
0-0	ORE	INA	TES(	_)				- 1		.EVEL (m) METER (mm	١.	,	84		STARTE			7/2007 7/2007
					D.1		.,	_	ORE DIAI ICLINATIO		,		-90	-		CIED		
LIE	NT INEI	FR	S	outh	Dublin Co	ounty Cou	ncil		LUSH	JΝ			-90 Air/Mist		ED BY		IGSL IGSL	
												ĺ	All/IVIIGC	1000	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		IOOL	
Downhole Depth (m)	h (m)							Non-intact zones (shaded)									sils	
Dep	Depth (				Frac			es (sł									Deta	(en)
ole	] un	%	%	%	Space (mi			st zon	Strata	description		(m)	Dis	continuities		on	ejbe	I ∨a
M	Core Run	T.C.R.%	S.C.R.%	R.Q.D.%	250	n	Legend	r-inta				Depth (m)				Elevation	Standpipe Details	SPT (N Value)
	ၓ	).  -	S.	ď	0 250		Le	Ñ				De				Ek	St	SF
)										TRIX OPEN RILLING:								
									Observe	d by driller a	S							
									gravelly	of brown san clay.	uy							
							F		CVA AN AF	TDIV OPEN		3.30						
							H		HOLE D	TRIX OPEN RILLING:								
									angular	d by driller a gravel size	S	4.00						
4	.20						Ħ		returns o	of limestone e variably	/	4.20		nuities are s				
		100	0	0			H		\weather	ed bedrock).	/		to locally	rough, plar ndulose. Ap	nar to pertures			
4	.90						H		locally m	ely strong to noderately we	eak,		are open	to locally ely open wit				
		100	11	0			H		bedding	cally mediur Dark grey t	n :o		common	ly slightly cl	ay			
									black, fir	ne grained ONE (cherty			Dips are	(dry) surfactsub-45° an	d			
5	5.80						H		argillace	ous to				sub-vertica (4.2m-5.7r				
		100	94	78					to slightl	dstone). Fre y and very	sn	0.00		(	,.			
6	6.60									noderately ed. Non-inta	ict /	6.60						
									\4.2m-5.		/							
									(m)	orenole at 0	.0							
_  EM	ARI	KS		<u> </u>						INSTALLA	TION	L I REM	ARKS					<u> </u>
			Move	and	set up 3h	rs.												
										GROUNDV				T _				
										Date		ole epth	Casing Depth	Depth to Water	Comm	ents		
			ON D			D7 D		T										
	)ate	+	Hp D	epth	RZ Top	RZ Base		Type										



REPORT NUMBER

(In a se																
CONTRACT	Г Со	rcagh	n Grange I	Housing	Site								HOLE NO	5	RCC	
CO-ORDINA	ATES(_	.)						EVEL (m) /IETER (mm	)	-	76		STARTE		01/09	et 1 of 1 9/2007 9/2007
CLIENT ENGINEER	So	uth D	ublin Cou	inty Cour	ncil		ICLINATIO	ON			-90 Air/Mist	DRILL LOGG	ED BY ED BY		Miller IGSL	nnium
Core Run Depth (m)	S.C.R.%	R.Q.D.%	Fractu Spacir (mm)	ng ) 500	Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
2 2.80 100 100 100 100 100 100 100 100 100 1		29					SYMME HOLE D Observe angular returns o (possible weather Strong t strong, t laminate Dark gre grained (cherty t calc-mu to slighti moderat	TRIX OPEN RILLING: d by driller a of gravelly cla  TRIX OPEN RILLING: d by driller a gravel size of limestone e variably ed bedrock). o moderately hin to locally d bedding. yet to grey, fin LIMESTONE o argillaceou dstone). Fre y and locally ely weathere corehole at 5	s say.	2.70 2.80 5.90	to planar undulose open to ti gravel inf (loss of re 4.3m-4.9		are al clay ones veen Dips			
REMARKS 1 Core box.  INSTALLAT  Date								INSTALLA	TION	REM	ARKS					
								GROUNDV		R DET	Casing	Depth to				
								Date	De		Depth	Water	Comme	ents		
INSTALLAT Date	TION DE			RZ Base		Туре										



# **GEOTECHNICAL CORE LOG RECORD**

REPORT NUMBER

ha	<b>3</b> 8															120	330
COI	NTR/	ACT	C	orca	gh Grange Housir	g Site							DRILL SHEE	HOLE N	0	RC1	<b>0</b> t 1 of 1
со-	ORE	OINA	ΓES(	_)				ROUND L	EVEL (m) METER (mm	)	8	30	DATE	STARTE		01/09	n/2007 n/2007
CLII			So	outh	Dublin County Co	uncil	IN	NCLINATIO LUSH	•	,		-90 Air/Mist	DRILL	ED BY ED BY		Miller	nnium
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing (mm) 0 <sup>250</sup> 500	Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
	2.80 4.30	100	13	9				SYMME HOLE D Observe returns of  SYMME HOLE D Observe angular e returns of (possible weathere Moderat strong an moderat locally m locally la bedding. grey to b grained l (cherty to calc-muc at bed of to mode weathere fresh.	Grey to dai olack, fine LIMESTONE LIMESTONE on argillaceou distone). Pyrontacts. Sligrately ed and locally corehole at 5	s ay.  n to the state of the st	2.60 2.80	and unduplanar. A to locally Dips are irregular fracturing sub-90° t (4.72m-4		lly e open open. h			
REN			!						INSTALLA	TION	REM	ARKS				ı	
1 Co	ore b	OX															
									GROUNDV	VATE	R DE	ΓAILS					
									Date		ole epth	Casing Depth	Depth to Water	Comm	ents		
ING.	ΤΔΙΙ	LATIO	ם אכ	FT^	II S												
[	<u>Date</u> 09-0	1		epth	RZ Top RZ Bas 2.80 5.80		Type mm S										



### **GEOTECHNICAL CORE LOG RECORD**

10	68																12	838
СО	NTR	ACT	C	orca	gh Grange	e Housing	Site							DRILL	HOLE N	5	RC1	1
									NDOLIND I	<b>EVEL</b> ()				SHEET				t 1 of 1
СО	-ORE	OINA.	TES(	_)					ROUND L	.EVEL (m) METER (mm	)	8	30		STARTE COMPLI			9/2007 9/2007
	ENT		S	outh	Dublin Co	ounty Cour	ncil		NCLINATIO	ON			-90 Air/Mist	DRILL LOGG			Miller	nnium
												,	unnine				1002	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m)	cing m)	Legend	Non-intact zones (shaded)	Strata	description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
- 1							0 -		HOLE D Observe	TRIX OPEN PRILLING: PRIDE AND A STREET A STREET AND A STREET AND A STREET AND A STREET AND A STREET A STREET AND A STREET A STREET AND A STREET AND A STREET A STREET AND A STREET A STREET	s ay.	1.90						
3	2.10	100	27	17	ļ				HOLE D Observe angular g returns c (possible weathere Moderate moderate	TRIX OPEN PRILLING: and by driller as gravel size of limestone e variably ed bedrock). ely strong to ely weak and	S	2.10	and unduare open moderate clay sme (2.64m-2 sub-20-4 sub-90° f	ely open with aring .71m). Dips 5° with loca ractures	ures local s are			
- 4	5.10	100	27	23	È				locally m locally la bedding. black an (2.71m-2 locally w	Dark grey to locally grey 2.82m) and white 4.79m-4.87n	o /	5.10	(3.68m-4 4.98m-5.	.04m, 1m).				
7									argillace calc-mud Slightly t locally m weathere	ONE (cherty ous to dstone). to fresh to noderately								
RE	VIAR	KS			<u> </u>					INSTALLA	TION	REM	ARKS					
1 C	ore b	ОХ																
										GROUNDV	/ATE	ם חבי	ΓΔΙΙ 9					
												ole	Casing	Depth to	C			
										Date		epth	Depth	Depth to Water	Comme	ents		
INS	TAL	LATI	ON D	ETA	ILS													
	Date					RZ Base		Туре										



REPORT NUMBER

1	GS																120	030
СО	NTR	ACT	С	orca	gh Grange	e Housing	Site							DRILL	HOLE N	0	RC1	1 <b>2</b> t 1 of 1
СО	-ORI	DINA	TES(	_)						EVEL (m) METER (mm	١.		80	DATE	STARTE		01/09	9/2007 9/2007
	IENT GINE		S	outh	Dublin Co	ounty Cou	ncil	IN	NCLINATION LUSH		· <b>'</b>		-90 Air/Mist	DRILL	ED BY			nnium
O Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m 0 25	cing m) <sup>0</sup> 500	o  Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
2									HOLE D Observe returns o	ORILLING: ad by driller a of gravelly cl	s ay.	2.80 (2.90)						
4	<ul><li>2.90</li><li>4.40</li></ul>	100	97	68		ľ			HOLE D Observed angular returns of (possible weather Strong to strong, t	ETRIX OPEN DRILLING: ed by driller a gravel size of limestone e variably ed bedrock). o moderately thin to mediu	s , m	(2.90)	and plana Apertures	nuities are s ar to undulo s are open ely open. D	ose. to			
5	5.90	100	48	36	E				grey, fin LIMEST argillace slightly v	Dark grey e grained ONE (cherty eous). Fresh weathered.	to to	5.90						
7 									(m)									
RE	MAR	KS								INSTALLA	TION	REM	ARKS					
1 C	ore b																	
										GROUND	VATE	R DE	TAILS					
										Date		ole epth	Casing Depth	Depth to Water	Comm	ents		
INS	STAL Date		ON D			RZ Base		Туре										



REPORT NUMBER

(IRSF)															12	000
CONTRACT	C	orcaç	gh Grange	e Housing	Site								LHOLE N	0	RC1	
CO-ORDINA	ATES(	_)						.EVEL (m) METER (mm	)		30		ET E STARTI E COMPL		31/08	8/2007 8/2007
CLIENT ENGINEER	So	outh	Dublin Co	ounty Cou	ncil		ICLINATIO	ON			-90 Air/Mist		LED BY GED BY		Miller IGSL	nnium
Core Run Depth (m) T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (mr <sub>0</sub> 250	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Dise	continuitie	s	Elevation	Standpipe Details	SPT (N Value)
2 2.80 100 4 4.30 100 5 5.80 6		42					SYMME HOLE D Observe angular returns of (possible weather Strong to weak, th bedding laminate grey to b grained (cherty to calc mu to slightl moderat	TRIX OPEN RILLING: d by driller a of gravelly cla  TRIX OPEN RILLING: d by driller a gravel size of limestone e variably ed bedrock). o moderately in to mediun , locally d. Grey to c olack, fine LIMESTONE o argillaceou colack, fine colack, fine LIMESTONE o argillaceou colack, fine LIMESTONE o argillaceou colack, fine LIMESTONE o argillaceou colack, fine colack	s say.	2.60 2.80	smooth a undulose tight to o		to es are en. Dips			
REMARKS  1 Core box								INSTALLA	TION	REM	ARKS			•		
								ODOLULE:	./A T-	D D ===	TAIL 0					
								GROUNDY		R DET	Casing	Depth to	0 Comm	anto		
								Date		pth	Depth	Water	Comm	ents		
NSTALLAT																
REMARKS						Type nm S										
31-08-07 5.80 2.80 5.80 50							SP									



### **GEOTECHNICAL CORE LOG RECORD**

1	68																12	838
CO	NTR	ACT	С	orcaç	gh Grange	e Housing	Site							DRIL	HOLE N	0	RC1	4
									NDOLIND I	<b>EVEL</b> ()				SHEE				t 1 of 1
CC	-ORI	OINA	res(	_)					ROUND L	.EVEL (M) METER (mm	)	7	76		STARTE COMPLI			7/2007 7/2007
CL	IENT		S	outh	Dublin Co	ounty Cour	ncil	_	NCLINATIO		,	-	90	-	ED BY			nnium
EN	GINE	ER			<u> </u>			F	LUSH			/	Air/Mist		SED BY		IGSL	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (mi	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
3	3.40 4.70 5.90		49	45					SYMME HOLE D Observe returns of SYMME HOLE D Observe returns of SYMME HOLE D Observe angular of returns of Strong to strong, ti bedded, (argillace grey (slig fine grain LIMEST to locally and loca weathere	TRIX OPEN RILLING: d by driller a gravel size of limestone. o moderately hin to mediu dark grey-bla eous) to loca ghtly cherty), ned ONE. Slight moderately ully freshly ed. Corehole at 5	s s s s s s s s s s s s s s s s s s s	2.70 3.20 3.40	to planar locally rot are open moderate sub-45°-3	ly open. D	e and ures			
	MAR ore b									INSTALLA	TION	REM	ARKS					
1 (	ole n	UA.																
										GROUNDV	VATE	R DET	TAILS					
										Date		ole epth	Casing Depth	Depth to Water	Comm	ents		
			<b></b> -															
INS	Date	LATI(				RZ Base	-	Туре										
			, -,					,,,,,										



																	12	838
C	ONTR	ACT	C	orca	gh Grange	e Housing	Site							DRILL	HOLE N	0	RC1	15
										= ( )				SHEE				et 1 of 1
C	O-ORI	DINA	TES(	_)						.EVEL (m) METER (mm	)		76		STARTE			7/2007 7/2007
CI	JENT		S	outh	Dublin Co	ounty Cou	ncil	_	ICLINATIO		•		-90		ED BY		Mille	nnium
EN	IGINE	ER	1					F	LUSH				Air/Mist	LOGO	ED BY		IGSL	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (m)	cing m)	Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
1									HOLE D Observe returns o	TRIX OPEN PRILLING: ed by driller a of clayey gra	s vel.	<u>2.40</u> 2.60						
- - - 3	3.10	100	62	62	þ				HOLE D Observe angular	RILLING: ed by driller a gravel size	s		to locally to locally	uities are s rough and undulose.	planar			
-	3.60	100	12	0					Moderat locally s	of limestone. tely strong to trong, thin to			moderate common	s are open ely open wit ly slightly ir	h on			
- - 4		100	7	0	L				grey (arg	bedded, dar gillaceous) to rey .0m)(slightly	K )		Clay/gray	m. Ďips ar				
- 5	4.50	100	37	14	E				cherty), LIMEST to locally	fine grained ONE. Slight moderately	ly	5.20	sub-verti	cal fracture 35m, 5.0m				
6	5.20								\weather	ally freshly ed. Corehole at 5	.2							
ISSL RC NEWLOG 10M PER PG 12838RC.GFJ   ISSL.GDT 3/10/07																		
GPJ K										Г								
738KC 1	EMAR Core b									INSTALLA	TION	REM	ARKS					
G 128																		
PER P.										GROUNDV								
10M F										Date	l	ole epth	Casing Depth	Depth to Water	Comm	ents		
MI EWLOG	STAL	LAT	ION E	DETA	AILS													
Date Tip Depth RZ Top RZ Base Type							Туре											



0	68				`				00.		- \-	· ·					128	338
cc	ONTR	ACT	С	orca	gh Grange	e Housing	Site							DRILLI SHEET	HOLE NO	0	RC1	<b>6</b> t 1 of 1
cc	)-ORI	DINA	TES(	_)						.EVEL (m) METER (mm	1)		80		STARTE		30/08	3/2007 3/2007
	IENT		S	outh	Dublin Co	ounty Cou	ncil	IN	ICLINATIO	•			-90 Air/Mist	DRILLI	ED BY		Miller IGSL	nnium
o Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m 0 <sup>25</sup>	cing m) <sup>0</sup> 500		Non-intact zones (shaded)	SYMME HOLE D Observe	description  TRIX OPEN RILLING: d by driller as	s	Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
2	2.20		23	18	<b> </b>				HOLE D Observe angular returns o (possible weather Moderat moderat	TRIX OPEN PRILLING: Ind by driller a gravel size of limestone ed bedrock). ely strong to ely weak and	S	2.00 2.20	smooth a undulose open. Lo Dips are irregular	uities are ro ind planar to . Apertures ical clay sme sub-45° with fractures and ib-90° fractu .56m).	are earing.			
4	5.20	100 22 15							bedding, grey to be grained (cherty to calc much veined (Moderath and local weathers)	trong, thin Grey to day Dlack, fine LIMESTONE O argillaceou day 2.4m-3.2m) ely to slightly tilly freshly ed Corehole at 5	E is to lcite	5.20						
CSL RC NEWLOG 10M PER PG 12838RC GPJ   GSL GDT 3/10/07   CSL GDT	5.20								(m)									
9.38RC.6	MAR Core b				'					INSTALLA	TION	REM	ARKS					
PG 128										one		<b>.</b>	<b>.</b>					
1 PER I										GROUNDY		R DE ole	Casing	Depth to	0			
JG 10N										Date		epth	Depth	Depth to Water	Comme	ents		
IN:	STAL	LATI	ON E	ETA	ILS													
Z C	Date Tip Depth RZ Top RZ Base 30-08-07 5 20 2 00 5 20 50							Туре	·D									
30								mm S	P.									



#### **GEOTECHNICAL CORE LOG RECORD**

1	68				`	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.0111		<b>(L 00)</b>	(L LOO		901					128	838
СО	NTR	ACT	С	orca	gh Grange	Housing	Site							DRILLI SHEET	HOLE N	0	RC1	<b>7</b> t 1 of 1
СО	-ORE	DINA.	TES(	_)						.EVEL (m) METER (mm	)	8	30	DATE	STARTE		30/08	3/2007 3/2007
CL	ENT		S	outh	Dublin Co	ounty Cour	ncil	_	ICLINATIO		,		90	DRILL				nnium
	GINE	ER			1			FI	LUSH			1	Air/Mist	LOGG	ED BY		IGSL	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	8.C.R.%	R.Q.D.%	Frac Spac (mi	cing m)	Legend	Non-intact zones (shaded)	Strata	description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
- 0      1							O		HOLE D Observe returns o	TRIX OPEN PRILLING: ed by driller a of gravelly cla	s ay.	1.80						
3	2.00	100	51	35					HOLE D Observe angular returns o (possible weathere Moderat moderat	TRIX OPEN PRILLING: ad by driller a gravel size of limestone e variably ed bedrock). ely strong to ely weak and	6	2.00	and plana open to k open with oxide stal Local clay between are sub-4	uities are sr ar. Aperture ocally moder ocommonly ined surface y smearing 2.17m-2.5m 15° with irrec	es are rately iron es. n. Dips gular			
- 4 4 	5.00	100	27	11					laminate Grey to o black, fir LIMEST argillace mudstor to slightly freshly w	trong, thin to d bedding. dark grey to ne grained ONE (cherty ous to calc ne). Moderat y and locally veathered.	to ely	5.00	fractures and local (3.0m-3.2	(non-intact) ly sub-90° fr 2m).	zones) racture			
7									End of C	Corehole at 5								
9																		
	MAR ore h		Stand	ling (	21/hre \A	aiting for a	litch to	he ma	nyed	INSTALLA	TION	REM	ARKS					
1 (	ore D	UX.	Jiai 10	miy z	-/21115 - VV	aiting for o	iilon lo	) <u>c</u> 111(	veu.									
										GROUNDV	<b>VATE</b>	R DET						
										Date		ole pth	Casing Depth	Depth to Water	Comm	ents		
INIC	TAL	LAT	ON D	CT A	II 6													
Date   Tip Depth   RZ Top   RZ Base   Tip Depth   RZ Top   RZ								Туре										
															1			



### **GEOTECHNICAL CORE LOG RECORD**

10	68																12	838
СО	NTR	ACT	С	orcaç	gh Grange	e Housing	Site							DRILL	HOLE N	5	RC1	8
									NDOLIND I	<b>EVEL</b> ()				SHEET				t 1 of 1
СО	-ORI	OINA <sup>-</sup>	ΓES(	_)					ROUND L	.EVEL (m) METER (mm	)	8	30		STARTE COMPLI			3/2007 3/2007
	ENT SINE		S	outh	Dublin Co	ounty Cour	ncil		NCLINATIO	ON			.90 Air/Mist	DRILLI LOGG			Miller	nnium
m)	Ê																	
Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spac (mi	cing m)	Legend	Non-intact zones (shaded)	Strata	description		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
- 1							0 -		HOLE D Observe returns o	TRIX OPEN PRILLING: d by driller a f gravelly cla	s ay.	1.80						
3	2.10	100	44	33	E				HOLE D Observe angular of returns of (possible weathere Moderate strong, ti	TRIX OPEN PRILLING: and by driller a gravel size of limestone e variably ed bedrock). ely strong to hin to locally bedding. Gi	S	2.10	and plana Apertures moderate tight. Dip locally im- local sub (3.49m-3		se. locally 0°, vith			
- 4	<ul><li>3.70</li><li>5.10</li></ul>	100	79	56	F				to dark g fine grain LIMEST argillace mudston common contacts slightly a	grey to black, ned ONE (cherty ous to calc ne). Pyrite n at bed s. Fresh to and locally	to /	5.10	4.73m-4.	81m).				
7									\moderate	ely weathere Corehole at 5	d. / .1							
RE	MAR	KS								INSTALLA	TION	REMA	ARKS					
	ore b																	
									-	0001717		D D=						
										GROUNDV		R DET	Casing	Donth to	1_			
										Date	l	epth	Depth	Depth to Water	Comme	ents		
INS	TAL	LATI	ח אס	ΕTΔ	ILS													
	Date					RZ Base		Туре	!									



CO	NTR	ACT	С	orca	gh Grange	e Housing	Site							DRILLI	HOLE NO	5	RC1	19
																		et 1 of 1
CO	-ORE	OINA	TES(	_)							)		80					3/2007 3/2007
			S	outh	Dublin Co	ounty Cou	ncil	_ IN	CLINATIO	ON			-90	DRILLI	ED BY		Miller	nnium
	SINE	ER						F	LUSH				Air/Mist	LOGGI	ED BY		IGSL	
	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Spa (m	cing m) <sup>0</sup> 500	Legend	Non-intact zones (shaded)		·		Depth (m)	Disc	continuities		Elevation	Standpipe Details	SPT (N Value)
1 2									HOLE D Observe returns o	RILLING: d by driller a of gravelly cla	s ay.	2.50						
.	2.80 4.30	100	53	21	<b> </b>				HOLE D Observe angular returns o (possible weather Strong to strong to weak, th	PRILLING: and by driller a gravel size of limestone a variably and bedrock). To moderately of moderately of moderately of moderately of moderately of moderately	6	2.80	smooth a undulose tight to op oxide sta Local clay (4.3m-4.4 sub-30-4	nd planar to  Apertures  ben with loca  ned surface  y smearing  lm). Dips al  5° with local	are al iron s.			
- 1	5.80	100	51	41					laminate grey to t grained (cherty t calc mud commor contacts	ed. Grey to dolack, fine LIMESTONE o argillaceoudstone). Pyron at bed s. Fresh to	s to	5.80	(4.49m-4	.61m,				
7	5.80								\moderat	ely weathere Corehole at 5	.8	DEMM	ADVS					
1 C										INSTALLA	IION	KEM	AKKS					
										GROUNDV	VATE	R DE	TAILS					
										Date			Casing Depth	Depth to Water	Comme	ents		
INS	TAL																	
REMARKS 1 Core box  INSTALLATION DETAILS  Date Tip Depth RZ Top RZ Base Ty								Type										
	CO CLI (m) the Downhole Downhole Depth (m) 1 2 3 4 5 6 7 7 8	CO-ORE  CLIENT ENGINE (m) the properties of the	CLIENT ENGINEER  (w) thde Golden on Depth (w)	CO-ORDINATES(  CLIENT S ENGINEER  (W) High and Debth (W) S: 3.3  2.80  100 53  4 4.30  5.80  6 5.80	CO-ORDINATES(_)  CLIENT South ENGINEER  (w) 4400 Upda	CO-ORDINATES(_)  CLIENT South Dublin Company (m)	CO-ORDINATES(_)  CLIENT South Dublin County Countered Fracture Spacing (mm)	CO-ORDINATES(_)  CLIENT	CO-ORDINATES(_)  CLIENT South Dublin County Council ENGINEER  (w) (w) 4de do uny 8 20 250 500 (mm) (mm) (mm) (mm) (mm) (mm) (mm) (m	CO-ORDINATES(_)  CLIENT South Dublin County Council INCLINATIC FLUSH  (E) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1	CO-ORDINATES(_)  CLIENT South Dublin County Council ENGINEER  CLIENT South Dublin County Council ENGINEER  Fracture Spacing (mm) FLUSH  Fracture Spacing (mm) Public S	CO-ORDINATES(_)  CLIENT South Dublin County Council ENGINEER  Fracture Spacing (mm)  Pugget Spacing (mm)  Pugget Spacing (mm)  Strata description  Strata description	CO-ORDINATES(_)  CLIENT South Dublin County Council ENGINEER  Fracture Spacing (mm)  Q SYMMETRIX OPEN HOLE DRILLING: Observed by driller as returns of gravelly clay.  SYMMETRIX OPEN HOLE DRILLING: Observed by driller as angular gravel size returns of limestone (possible variably weathered bedrock). Strong to moderately was, thin to medium bedding and locally laminated. Grey to dark grey to black, fine grained LIMESTONE (cherty to agrillaceous to calc mudstone). Pyrite common at bed contacts. Fresh to slightly and locally moderately weathered. End of Corehole at 5.8 (m)	CO-ORDINATES(_)  CLIENT South Dublin County Council ENGINEER  South Dublin County Council Fracture Spacing (mm)  OR System of the special system of the sp	CO-ORDINATES(_)  GROUND LEVEL (m) CORE DIAMETER (mm) SOUTH Dublin County Council INCLINATION PLUSH Air/Mist LOGGI  Air/Mist LOGGI  Discontinuities  Discontinuities are no smooth and planar to end of the principle of the princip	CO-ORDINATES(_)  GROUND LEVEL (m) CORE DIAMETER (mm)  80  DATE STARTE DATE COMPLI DATE COMPLIANCE DATE COMPLIA	CLIENT South Dublin County Council INCLINATION -90 DATE COMPLETED  CHIENT ENGINEER  Fracture Spacing (mm) Day of the Council Spacing of the Council Space of the Council Spacing of the Council Spacing of the Council Space of the Counc	CO-ORDINATES (_)  GROUND LEVEL (m) CORE DIAMETER (mm) INCLINATION



REPORT NUMBER

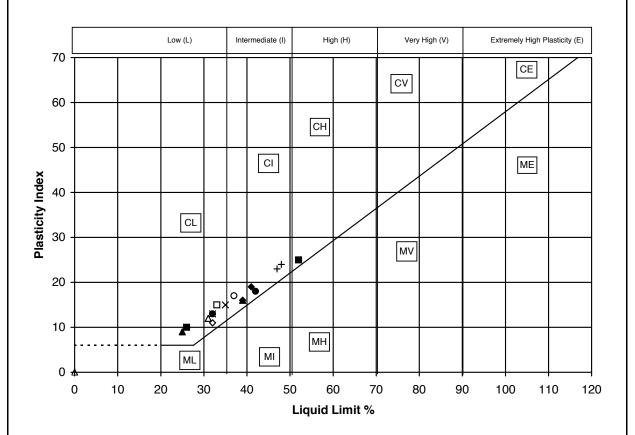
1	S S																	000
со	NTR	ACT	С	orca	gh Grange	e Housing	Site							DRIL SHEE	LHOLE N	0	RC2	20 et 1 of 1
со	-ORE	DINA	TES(	_)				- 1		LEVEL (m) METER (mm) 80			DATE	DATE STARTED DATE COMPLETE		31/08/2007 31/08/2007		
	CLIENT South Dublin County Council ENGINEER							INCLINATION         -90           FLUSH         Air/Mis			-90 Air/Mist	DRILLED B1			Millennium IGSL			
O Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Frac Spa (m	cing m)	-   Legend	Non-intact zones (shaded)		description		Depth (m)	Disc	continuities	s	Elevation	Standpipe Details	SPT (N Value)
1 1 2	0.40								HOLE D Observe returns o	TRIX OPEN RILLING:  d by driller a  f gravelly cla  TRIX OPEN RILLING:	s ay.	2.10 2.40						
3	<ul><li>2.40</li><li>4.00</li></ul>	100	47	34	L	]			Observed angular returns of (possible) weather Strong to strong, the bedding laminated	ed by driller a gravel size of limestone e variably ed bedrock). o moderately hin to mediu and locally ed. Grey to d	m		to locally to undulo open to lo open. Lo (4.01m-4 5.31m-5.	4m). Dips 5° with loc ractures	planar ures are erately nearing are			
5	5.40	100	61	36	-				grained (cherty t calc mud commor contacts	plack, fine LIMESTONE o argillaceou dstone). Pyr n at bed s. Fresh to veathered.	is to	5.40	4.42m-4.					
7									End of C (m)	Corehole at 5	.4							
_	REMARKS 1 Core box									INSTALLA	TION	REM	ARKS					
	oie n	ωx																
										GROUNDV		R DE	<b>TAILS</b> Casing	Denth to				
										Date		pth_	Depth	Depth to Water	Comm	ents		
INS	INSTALLATION DETAILS  Date   Tip Depth   RZ Top   RZ Base   Type																	



						ummary o							
BH/TP	Sample	Depth	Sample	Moisture	BS13 Liquid	377:Part 2:19 Plastic	90, clauses Plasticity		.3 & 5.4 Preparation	Description	1	Classification	
No.	No.	(m)	Туре	Content %	Limit %	Limit %	Index	% %	roparation	Booonplion			
BH 1	262	1.50	D	15.5	25	16	9	57	WS	Dark brown s	CL		
BH 2	255	1.50	D	13.5	26	16	10	54	WS	Dark brown s	lightly sandy slightly gravelly CLAY	CL	
ВН ЗА	251	1.50	D	16.2	32	19	13	68	WS	Dark brown g	rey slightly sandy slightly gravelly CLAY	CL	
BH 4	258	1.50	D	17.8	41	22	19	69	WS	Mottled grey	slightly sandy slightly gravelly CLAY	СІ	
BH 6	253	1.50	D	12.5	32	19	13	37	WS	Grey brown slig	htly sandy gravelly CLAY with many cobbles	CL	
BH 7	374	1.00	D	24.4	47	24	23	48	WS	Dark brown slig	СІ		
BH 9	5151	1.00	D	15.4	31	19	12	88	WS	Dark brown slightly sandy slightly gravelly CLAY		CL	
BH 10	5149	2.00	D	16.7	33	18	15	75	WS	Dark brown s	lightly sandy slightly gravelly CLAY	CL	
BH 11	249	1.50	D	15.8	37	20	17	66	WS	Mottled grey slightly sandy slightly gravelly CLAY with root hairs		СІ	
BH 13	369	1.00	D	18.1	32	21	11	72	WS	Dark brown s	CL		
BH 16	379	2.00	D	21.8	39	23	16	87	WS	Grey slightly	СІ		
BH 17	5143	1.00	D	27.9	52	27	25	97	WS	Mottled brow	СН		
BH 18	382	1.10	D	23.5	42	24	18	62	WS	Dark brown s	lightly sandy slightly gravelly CLAY	СІ	
BH 18	383	2.00	D	26.3	39	23	16	94	WS	Grey brown slig	htly sandy slightly gravelly CLAY with root hairs	СІ	
BH 19	368	1.00	D	19.8	35	20	15	67	WS	Grey slightly	sandy slightly gravelly CLAY	CL	
BH 20	5146	1.00	D	25.3	48	24	24	100	WS	Dark brown s	lightly sandy slightly gravelly CLAY	СІ	
Notes:	NAT - test	ed as rece	eived WS -	Wet sieved (	425μm) N	P - Non Plast	tic						
						CORKAGH	GRANGE H	HOUSING		Contract No. 12838			
	IGSL		Issued By			Date					Page		
					12/09/2007					of			

#### Plasticity Chart - Summary of Liquid & Plastic Limit Tests BS1377:Part 2:1990, clauses 3.2, 4 & 5 Chart in accordance with BS5930:1999, fig.18

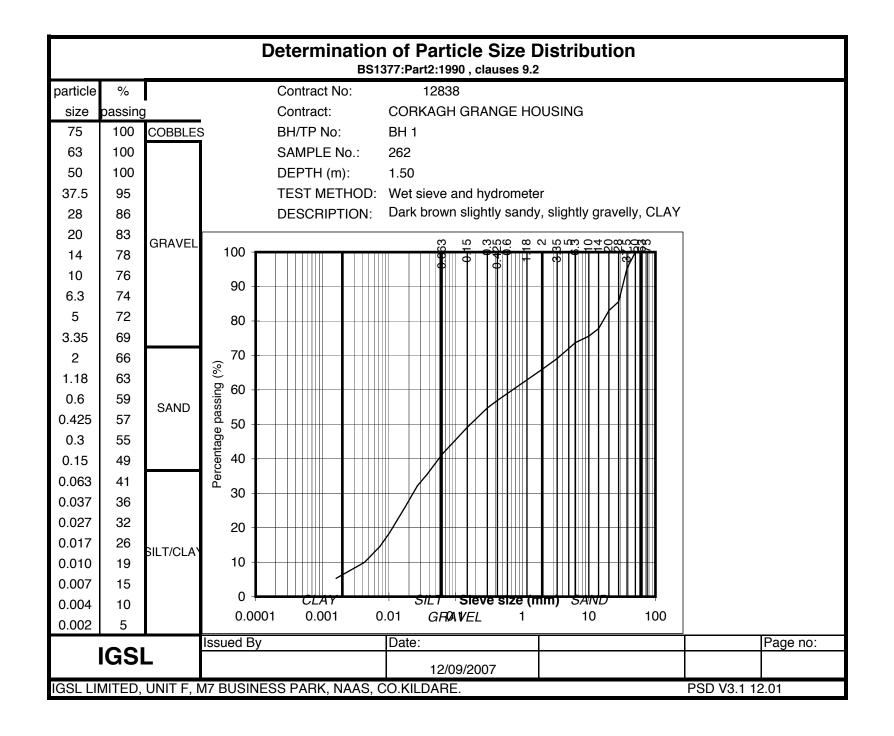
Contract No. 12838 Contract: CORKAGH GRANGE HOUSING

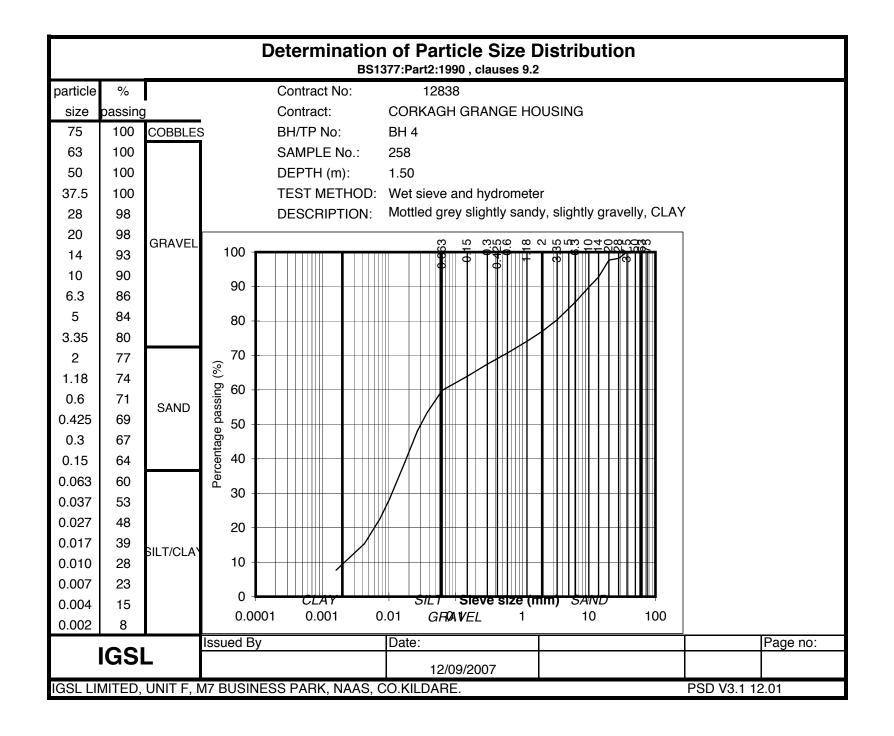


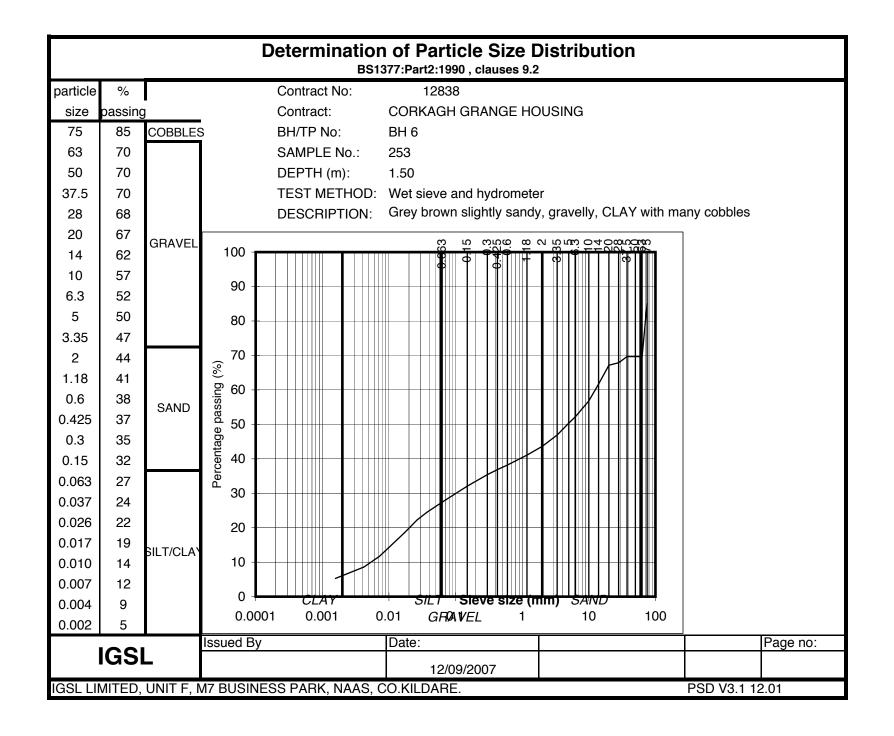
Code	BH/TP	Sample	Depth (m)	MC%	LL%	PL%	PI%	%<425μm	Description
	BH 1	262	1.50	15.5	25	16	9	57	Dark brown slightly sandy slightly gravelly CLAY
	BH 2	255	1.50	13.5	26	16	10	54	Dark brown slightly sandy slightly gravelly CLAY
•	BH 3A	251	1.50	16.2	32	19	13	68	Dark brown grey slightly sandy slightly gravelly CLAY
•	BH 4	258	1.50	17.8	41	22	19	69	Mottled grey slightly sandy slightly gravelly CLAY
×	BH 6	253	1.50	12.5	32	19	13	37	Grey brown slightly sandy gravelly CLAY with many cobbles
+	BH 7	374	1.00	24.4	47	24	23	48	Dark brown slightly sandy gravelly CLAY with root hairs
$\triangle$	BH 9	5151	1.00	15.4	31	19	12	88	Dark brown slightly sandy slightly gravelly CLAY
	BH 10	5149	2.00	16.7	33	18	15	75	Dark brown slightly sandy slightly gravelly CLAY
0	BH 11	249	1.50	15.8	37	20	17	66	Mottled grey slightly sandy slightly gravelly CLAY with root hairs
$\Diamond$	BH 13	369	1.00	18.1	32	21	11	72	Dark brown slightly sandy slightly gravelly CLAY
	BH 16	379	2.00	21.8	39	23	16	87	Grey slightly sandy slightly gravelly CLAY
	BH 17	5143	1.00	27.9	52	27	25	97	Mottled brown slightly sandy slightly gravelly CLAY
•	BH 18	382	1.10	23.5	42	24	18	62	Dark brown slightly sandy slightly gravelly CLAY
•	BH 18	383	2.00	26.3	39	23	16	94	Grey brown slightly sandy slightly gravelly CLAY with root hairs
×	BH 19	368	1.00	19.8	35	20	15	67	Grey slightly sandy slightly gravelly CLAY
+	BH 20	5146	1.00	25.3	48	24	24	100	Dark brown slightly sandy slightly gravelly CLAY
$\triangle$									

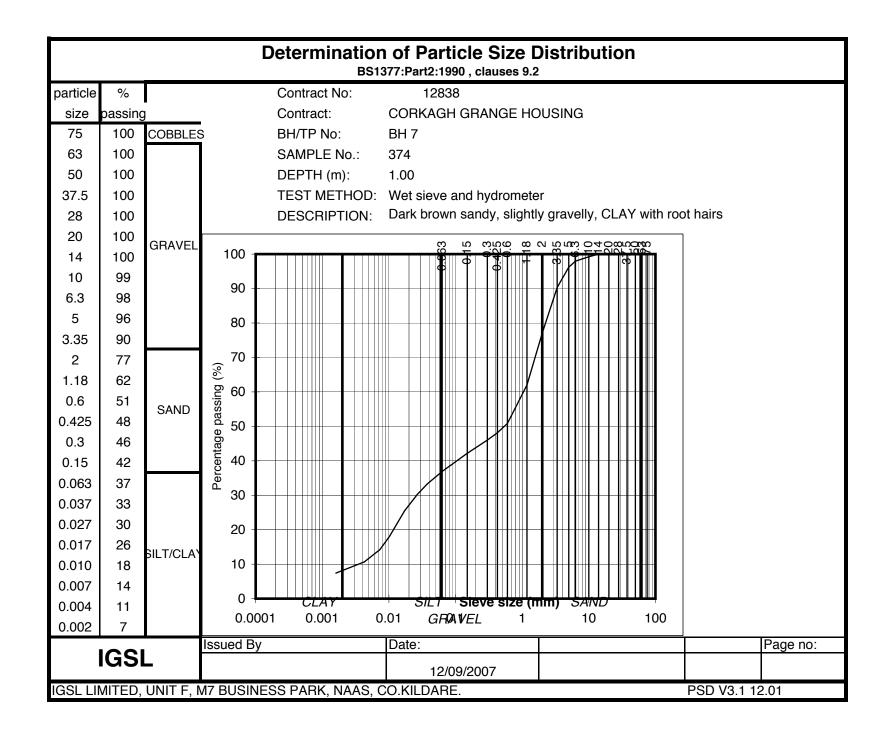
NP denotes specimen is non-plastic.

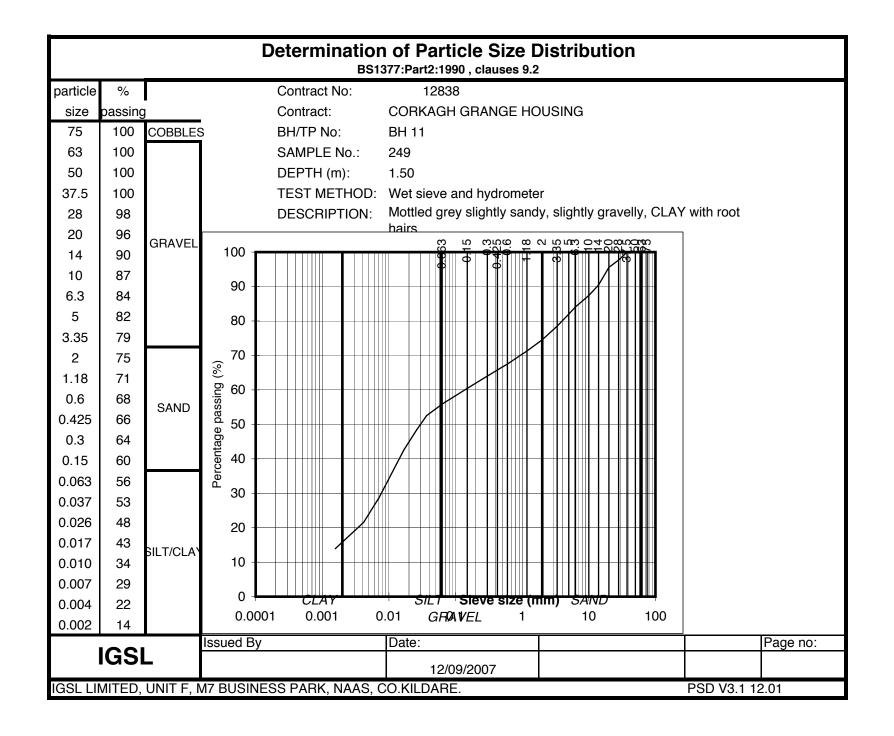
	Issued by	Date	Page
IGSL		12/09/2007	

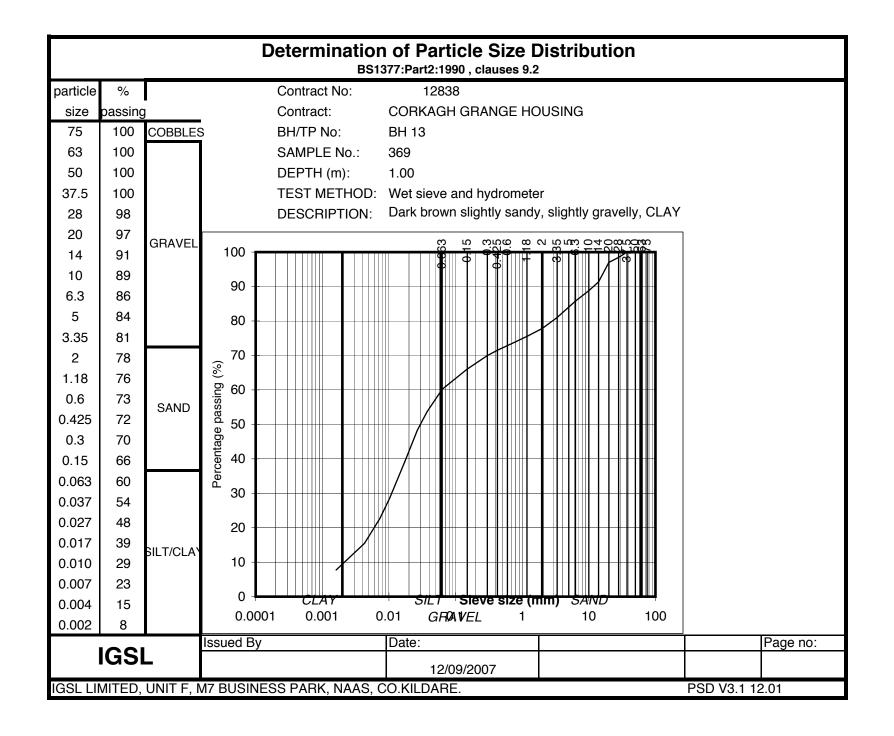


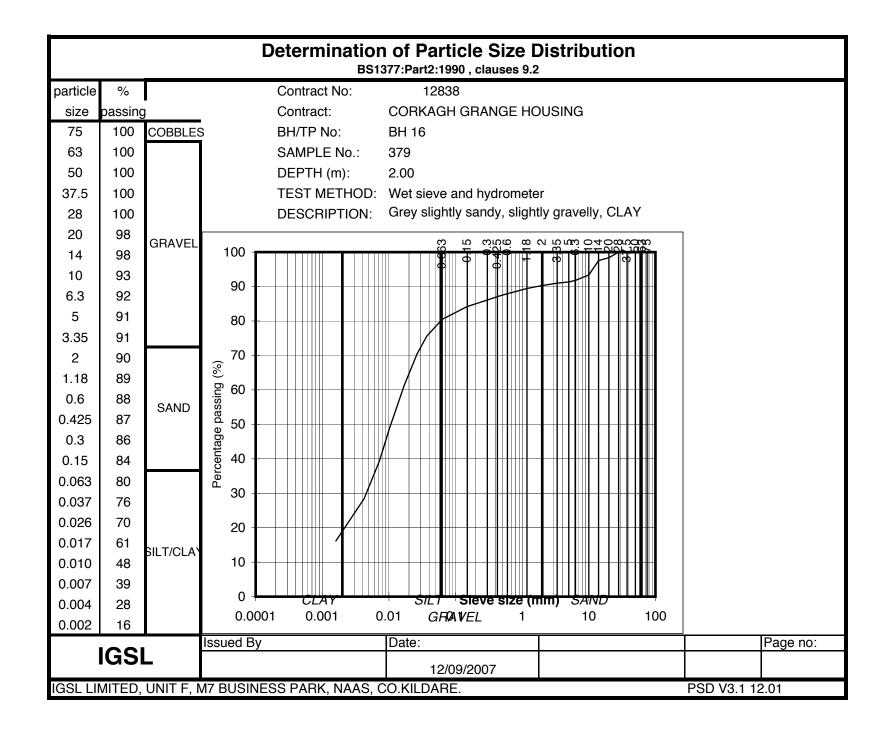


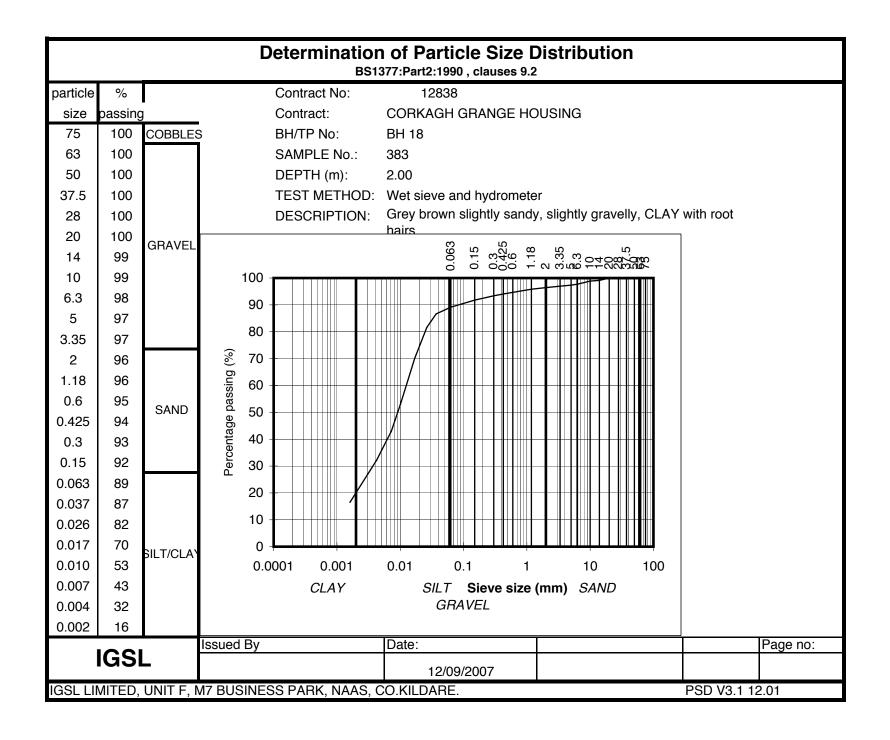














REPORT NO. SULPHATE ANALYSIS											
CONTRACT: CORKAGH GRANGE HOUSING CONTRACT NO											
BH/TP	DEPTH	SAMPLE	SAMPLE	SULPHUR	TRIOXIDE	(so3 X 1.2)	12838 pH				
NO.	(M)	NO.	TYPE	CODE	Passing 2mm	WATER SO3 g/L	TOTAL SOIL so3 %	TOTAL SOIL so 4 %	VALUE		
BH 1	1.50	262	D	S	66		0.01	0.01	8.2		
BH 7	1.00	374	D	S	77		0.01	0.01	8.1		
BH 9	1.00	5151	D	S	73		0.04	0.04	8.3		
BH 13	1.00	369	D	S	78		0.01	0.01	8.2		
BH 17	1.00	5143	D	S	100		0.01	0.01	7.1		
BH 19	1.00	368	D	S	53		0.01	0.01	8.2		
TEST CODE	W = W	/ATER	S = SOIL	A = AQU	EOUS SO	IL EXTRACT(2:1)					



