Caus	.00 Cable Percussion 1.20 Rotary Drilling			ch Ltd	Projec 14-645			Project Name:	Greater Du Investigation		nage Scł	neme Gi	round		ole No. 125	
Method:		-				Co-ore			Client:	Irish Water						1 of 2
0.00 4.00 4.00 11.2				n		31726	0.55mE								Scale:	1:50
Plant:	-	,	5			-	7.75mN		Client's Repr	esentative	: Tobin (Consultir	ng Engir	neers	Crew:	CC+SJ
Dando 2000	+Beret	tta T41				Groun 55.75N	d Level: IOD		Dates:	15/01/201	5				Logged E	By: DOM
Depth (m)	TCR	SCR	RQD	FI	Field Reco		Level & D	epth		Str	atum Desc	ription			Legend Water	Dackii
							(0.35)		TOPSOIL						Strikes	
0.35	В						55.40 0).35	Stiff brown slig fine to coarse	ghtly sandy sli . Gravel is sub	ghtly gravel bangular to s	ly slightly s subrounde	silty CLAY d fine to c	. Sand is coarse		
1.20 1.20 1.20	D SPT (S) D				N=19 (2,3/4,4,5	,6)	(1.45)									
1.80 2.00 2.00	B SPT (S) D				N=50 (17 for 90mm/10,11,15	,14)	53.95 1	1.80	Very stiff black fine to coarse	k slightly sand . Gravel is sub	y slightly gra bangular to s	avelly sligf subrounde	ntly silty C d fine to c	LAY. Sand is coarse		
3.00 3.00 3.00 3.50	(S) D D B D D D D D D D D D D D 50 (10,15/5			50 (6,9/50 for 20	00mm)	(2.20)										
4.00 4.00 4.00					50 (10,15/50 for	⁻ 150mm)	51.75 4	ł.00	Very stiff dark with large bou subrounded fi	gray slightly s Ilders. Sand is ne to coarse.	sandy slightl fine to coar Boulders ar	y gravelly se. Grave e subangi	slightly sil I is suban Jar to sub	ty CLAY gular to rounded		
6.20	SPT (S)				50 (10,29/50 for	75mm)	(7.20)									
7.70	SPT (S)				50 (12,13/50 for	[.] 10mm)										
9.20	SPT (S)				80 (8,32/80 for ⁻	150mm)										
										1	ontinued on ne	1			<u>849×05×</u>	<u>`</u>
Remarks SPTs carried	d out u	sing SF	⊃T harr	imer C	:C04.					Core Bar Flush Typ		Water Str Struck (m) 2.80	ikes: Rose to (m) 2.6	Time (min) 20	A	L SS
										Water Added: From (m)	To (m)	Casing: To (m) 4.00	Diame	eter (mm)		
												4.00	200		www.causewa © Causeway	ygeotech.co Geotech Ltd

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645		Project Name:	Greater Du Investigati	ublin Drain on	age Sche	me Gr	ound	Borehol BH12	
Method:		_				Co-ord	ls:	Client:	Irish Wate					Sheet 2	
0.00 4.00 4.00 11.2	0 R	able Pe otary D	ercussio rilling	n		317260		Client's Rep	resentativo	: Tobin C	Consulting	Engin	eers	Scale: 1:	
Plant: Dando 2000	+Rorot	ta T⊿1					7.75mN d Level:				Shouting				C+SJ
	·Deret		1			55.75N		Dates:	15/01/201	5				Logged By	
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level & Depth		Sti	atum Desc	ription			Legend & Water Strikes	Backfill Installs
							44.55 11.20			End of core at 11					
Remarks SPTs carried	l out us	sing SF	┘ ⊃T ham	Imer C	C04.		1	1	Core Bar Flush Tyj Water Added From (m)	be:	Water Strike Struck Ri (m) (n 2.80 2.1 Casing: To (m) 4.00	ose to n) 6	Time (min) 20 ter (mm)	AG www.causewayg © Causeway G	eotech.com eotech Ltd

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645			Project Name:	Greater Du Investigatio		nage Scl	neme G	round		hole N H126	о.
Method:						Co-ord			Client:	Irish Water						et 1 of 2	2
0.00 4.70 4.70 11.7		able Pe otary D	ercussio rilling	n		31808	6.46mE								Scale:	1:50	
Plant:							7.20mN		Client's Rep	resentative	: Tobin	Consulti	ng Engir	neers	Crew:	CC+G	۶T
Dando 2000	+Beret	tta T41	_			51.32N	d Leve 10D	:	Dates:	16/01/2015	5					By: DC	ЭМ
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level 8	Depth		Str	atum Des	cription			Legen Wate Strike	d & Bao er Ins es	ckf tal
0.20	В						(<i>0.20</i>) 51.12 (<i>1.00</i>)	0.20		lightly sandy sli e. Gravel is sub							
1.20 1.20 1.20 1.70	D SPT (S) D B				N=23 (3,3/4,5,7	,7)	50.12	1.20	Very stiff bla fine to coars	ck slightly sand e. Gravel is sub	y slightly gr bangular to	avelly sligi subrounde	ntly silty C d fine to c	LAY. Sand is coarse			
2.00 2.00 2.50 2.50	D SPT (S) D B				N=49 (7,10/10,1	11,13,15)											
3.00 3.00	SPT (S) D				50 (6,9/50 for 1	50mm)	(3.50)										
3.50 3.50 4.00 4.00	B D D SPT				50 (25 for 130m 130mm)	ım/50 for											
4.50	(S) D						46.62	4.70	Very stiff to h Sand is fine coarse	hard black slight to coarse. Grav	tly sandy sl rel is suban	ightly grav gular to su	elly slightl brounded	y silty CLAY. fine to			
5.50	SPT (S)				50 (25 for 20mn 0mm)	n/50 for			coarse								
7.00	SPT (S)				50 (25 for 3mm/ 0mm)	'50 for	(7.00)										
3.50	SPT (S)				50 (25 for 20mn 0mm)	n/50 for											
10.00	SPT (S)				50 (25 for 0mm/ 0mm)	'50 for				Ci	ontinued on ne	ext sheet					
Remarks		I	1	I	1		1		1	Core Barr Flush Typ	rel:	Water Str	ikes: Rose to (m) 7.0	Time (min) 10	A	GS	
										Water Added: From (m)	To (m)	Casing: To (m) 4.70	Diame 200	eter (mm)		-	
															www.cause © Causew	waygeoteck ay Geotech	n.c h L

Caus	sew	ay	Geo	otec	ch Ltd	Projec 14-645	:t no.	Project Name:	Greater Du Investigatio	blin Drair	nage Sch	ieme G	Fround	Borehol BH12	
Method:						Co-ord	ds:	Client:	Irish Water					Sheet 2	
0.00 4.70 4.70 11.7) C 70 F	Cable Pe Rotary D	ercussio Drilling	n			6.46mE	Client's Re	presentative:		Consultir		ineers		:50
Plant: Dando 2000	\+Rere	#19 T41	i				7.20mN Id Level:								C+GT
		110 1				51.32N		Dates:	16/01/2015	·				Logged By	
Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level & Depth		Stra	atum Desc	cription			Legend & Water Strikes	Backfill Installs
11.50 Remarks	SPT (S)				50 (25 for 20mr 225mm)	m/50 for	39.62 11.70		Core Barr	īnā of core at 1	Water Str Struck	Rose to			
									Flush Typ		(m)	(m) 7.0	(min) 10		J
										e.				AG	S
									Water Added: From (m)	To (m)	Casing: To (m)		neter (mm)		
											4.70	200		www.causewayg © Causeway G	jeotech.com Jeotech Ltd

Caus	sew	ay (Geo	otec	h Ltd	Projec 14-645			Project Name:	Greater Du Investigatio		nage Sch	eme Gr	ound		ole No. 127
Method:		able De		-		Co-oro			Client:	Irish Water					Sheet	1 of 1
0.00 4.50 4.50 9.50		lotary D	ercussio rilling	n			2.95mE 1.77mN		Client's Rep	presentative	: Tobin (Consultin	g Engin	eers		1:50
Plant: Dando 2000	+Bere	tta T41				Groun	d Level:	:	Dates:	14/01/201	5					CC+SJ
						49.17N									Logged E	
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level &	Depth	TOPSOIL	Str	atum Desc	ription			Water Strikes	Inetalle
0.30 - 1.20	В						<i>(0.30)</i> 48.87	0.30	Stiff to very	stiff brown grey Sand is fine to se.						
1.20 1.20	1.20 SPT (S) D		1.20		N=31 (4,6/6,7,9	,9)	(1.50)									
1.80 - 2.00 2.00 2.00 2.50 - 3.00	B 2.45 SPT (S) D B		2.45		N=49 (6,8/10,11	,13,15)	47.37	1.80	Very stiff bla is fine to coa	ack slightly sand arse. Gravel is s	y slightly gra ubangular to	avelly sligh o subround	tly silty Cl led fine to	AY. Sand coarse.		
3.00 3.00	D SPT (S)				50 (9,15/50 for ⁻	150mm)	(2.70)									
4.00 4.00	4.00 D SPT (S)		4.00		50 (11,14/50 for	150mm)		4.50	Dark grey si boulder. Sau to coarse.	lightly sandy slig nd is fine to coar	htly gravelly se. Gravel i	∕ slightly si s subangu	ty CLAY v lar to subi	with large rounded fine		
6.00	SPT (S)				86 (11,34/86 for	150mm)										
7.50	SPT (S)				50 (25 for 60mm 10mm)	n/50 for	(5.00)									
9.50	SPT (S)				50 (7,35/50 for 7	75mm)	39.67	9.50			End of core at §	9.50 m				
Remarks		1	1	1	1		1		1	Core Bar	el:	Water Stri		Time		
SPTs carried	d out u	sing SF	PT ham	imer C	C04.					Flush Typ		Struck (m)	Rose to (m)	Time (min)		J
															A	GS
										Water Added: From (m)	To (m)	Casing: To (m) 4.50	Diame 200	ter (mm)	www.causewa © Causeway	aygeotech.com ' Geotech Ltd

Caus	sew	ay	Geo	oted	ch Ltd	Projec 14-645			Project Name:	Greater Du Investigatio	ublin Drain on	age Sche	me Gro	ound		ole No. 128
Method:						Co-or			Client:	Irish Water						t 1 of 1
0.00 3.60 3.60 8.00		able Pe otary D	ercussio rilling	n		31881	4.73mE								Scale:	1:50
Plant:		-					4.11mN		Client's Rep	resentative	: Tobin C	Consulting	Engine	eers	Crew:	CC+SJ
Dando 2000	+Beret	tta T41				Groun 45.95N	nd Leve MOD	1:	Dates:	06/01/2015	5				Logged I	-
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level 8	Depth		Str	atum Desc	ription			Legend Water Strikes	& Backfil
0.00 - 0.30	В						(0.30)		TOPSOIL						Stike	
0.30 - 1.10	В						45.65 (0.80)	0.30	SILT with oc	ight brown sligh casional cobble prounded to sub	s and bould	ers. Sand is	y slightly fine to c	r clayey oarse.		
1.10 - 2.00 1.20 1.20	B D U						44.85	1.10	Very stiff bla cobbles and coarse.	ck slightly sand boulders. Grav	y gravelly sli el is subrour	ghtly silty Cl ided to suba	.AY with ngular fi	occasional ine to	45-90 45-90 45-90	
2.00 2.00	SPT (S) D				N=41 (4,8/10,10),11,10)	(2.50)								<u> </u>	
2.50 - 3.00	В															
3.00	U														902-90 4 <u>0</u> -90 20-90	*
3.50 3.50	D SPT (S)				50 (25 for 25mn 50mm)	n/50 for	42.35	3.60	Very stiff to f CLAY. Sand to coarse	hard dark grey s is fine to coarse	slightly sandy e. Gravel is s	/ slightly gra subangular to	velly slig o subrou	htly silty Inded fine		
5.00	SPT (S)				50 (9,26/50 for 7	75mm)	(4.40)									
6.50	SPT (S)				50 (7,32/50 for 7	75mm)										
8.00	SPT (S)				50 (6,28/50 for 7	75mm)	37.95	8.00		,	End of core at 8					
Remarks										Core Bar	rel:	Water Strike	s:			
SPT's carrie	d out u	ising S	PT Hai	mmer	CC04					Flush Typ		Struck R/ (m) (n) 3.60 3.1	n)	Time (min) 20	A	L) GS
										Water Added: From (m)	To (m)	Casing: To (m) 3.60	Diamet 200	er (mm)	www.causew	aygeotech.con y Geotech Ltd

Caus	sew	'ay	Geo	otec	ch Ltd	Projec 14-645			Project Name:	Greater Du Investigatio		nage Scher	ne Ground	d	Boreho BH ²	
Method:						Co-or			Client:	Irish Water					Sheet	
0.00 4.00 4.00 7.60		able Pe lotary D	ercussio)rilling	n		32078	4.92mE								Scale:	1:50
Plant:		.,2	3				5.26mN		Client's Rep	resentative:	Tobin (Consulting	Engineers	6	Crew:	MMc+GT
Dando 2000)+Bere	tta T41				Groun 28.54N	id Level MOD	:	Dates:	22/01/2015	5				Logged B	y:
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level &	Depth		Stra	atum Desc	ription			Legend & Water Strikes	Backfi Install
							(0.40)		TOPSOIL - L	ight brown sligh	ntly sandy cl	lay with rootle	ets			
0.50 - 1.00 0.50 - 1.00	D B						28.14	0.40	Firm brown r CLAY. Grave	nottled grey slig I is subrounded	htly sandy s to angular	slightly grave fine to coarse	ly slightly sil of sandstor	lty ne		
1.20 1.20 - 1.65 1.20 - 1.65	SPT (S) B D				N=14 (3,3/4,3,3	,4)	(<i>1.10</i>) 27.04	1.50	Stiff grey mo	ttled brown sligl	ntlv gravellv	slightly silty	CLAY. Grave	el is		
2.00 2.00 - 2.45	SPT (S)				N=21 (5,4/5,6,5	,5)	(1.00)		subrounded	to angular fine t	o coarse of	sandstone				
2.00 - 2.45	B D						26.04	2.50	Stiff dark gre fine to coars	y slightly sandy e. Gravel is sub	slightly gra angular to r	velly slightly s ounded fine t	silty CLAY. S o coarse.	Sand is		
3.00 3.00 - 3.45 3.00 - 3.45	SPT (S) D B				N=25 (6,5/6,6,7	,6)	(1.50)									
4.00 4.00 - 4.45 4.00 - 4.50	SPT (S) B D				N=30 (7,6/7,8,8	,7)	24.54	4.00	Very stiff dar Sand is fine	k grey slightly s to coarse. Grav	andy slightl el is subang	y gravelly slig gular to round	htly silty CL ed fine to cc	AY. barse.		
5.00 5.00 - 5.45 5.00 - 5.45	SPT (S) B D				N=30 (7,7/6,7,8	,9)										
							(3.60)									•
7.00	SPT (S)				50 (25 for 2mm/ 3mm)	'50 for										x
							20.94	7.60		Ē	nd of core at a	7.60 m			<u>20272</u>	
Remarks										Core Barr	el:		se to Time			
										Flush Typ	e:	(m) (m 7.00 7.0		<u>ון</u>	AC	L S
										Water Added: From (m)	To (m)	Casing: To (m) 7.60	Diameter (m 150	ım)	MARK COURT	vaeotash
															www.causeway © Causeway	Geotech Ltd

Caus	sew	/ay	Geo	otec	ch Ltd	Projec 14-645			Project Name:	Greater Du Investigatio		nage Sche	eme Gro	ound		nole No. H131
Method:						Co-ore	ds:		Client:	Irish Water						et 1 of 1
0.00 3.00 3.00 5.60 5.60 7.60	R R	Cable Percus Rotary Drillin Rotary Corin	ssion 1g 1g				01.16mE		Client's Re	presentative:	Tobin (Consulting	n Engina	eers	Scale:	1:50
Plant: Dando 2000	0+Bere	etta T4′	1)1.77mN nd Leve		Dates:	21/01/2015					Crew:	MMc+GT
	, <u></u>			T	T	22.70N			Dates.	21/01/2015					Legend	By: +MFG
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level 8	Depth		Stra	atum Desc	cription			Water Strikes	r Installs
0.50 - 1.00 0.50 - 1.00	DB						(<i>0.10</i>) (<i>226</i>) 22.40	0.10 0.30	Stiff brown	tled grey slightly cl mottled grey sligh parse. Gravel is su	ntly sandy g	gravelly sligh	ntly silty C	CLAY. Sand		
1.20 1.20 - 1.65 1.20 - 1.65	SPT (S) D B				N=17 (4,4/3,4,5		(1.90)									
2.00 2.00 - 2.45 2.00 - 2.45 2.50 - 3.00 2.50 - 3.00	SPT (S) B D B D				N=19 (4,5/6,5,4	.,4)	20.50 (<i>0.80)</i>	2.20		y stiff dark grey slig d is fine to coarse						
3.00	SPT (S)				50 (25 for 30mn 20mm)	n/50 for	19.70	3.00	Stiff dark g	rey CLAY with free	quent bould	Jers.				
5.00	SPT				50 (25 for 5mm)	n/50 for	(2.60)									
5.60 - 6.60	(S)	 	 		5mm)		17.10	5.60	Medium sti ARGILLAC	rong, thinly lamina CEOUS LIMESTOI	ated to very NE.	, thinly bedd	ed, dark (grey		
6.60 - 7.60	90	84	84	- 4			(2.00)			eathered. s, close to mediun open, occasional o						
	90	85	76													
							15.10	7.60		E	nd of core at i	7.60 m				<u>**1-1 -</u>
Remarks										Core Barro +Impreg Flush Typ		(m) (Time (min) 10	 Б	
										Water Added:	To (m)	Casing: To (m) 5.50	Diamet 150	ter (mm)	www.causew © Causewa	Kaygeotech.com ay Geotech Ltd

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645			Project Name:	Greater Du Investigatio		nage Sch	eme Gr	ound		ole No. I132
Method:						Co-orc			Client:	Irish Water						t 1 of 1
0.00 4.50 4.50 7.60) R) R	lotary D lotary C	rilling oring			321296	6.46mE								Scale:	1:50
Plant:							9.15mN		Client's Re	presentative	Tobin (Consultin	g Engin	eers	Crew:	GT
Beretta T41						Groun 22.49N	d Level: 10D		Dates:	11/02/2015	i				Logged I	By: MFG
Depth (m)	TCR	SCR	RQD	FI	Field Reco	1	Level &	Depth		Str	atum Desc	ription			Legend Water	Installe
							(0.20)		TOPSOIL						Strikes	s instans
4.50 - 5.50 5.50 - 6.50 6.50 - 7.60	95 75 77	91 48 27	49	NI 5 20 5 15 20 12 20			(1.80) 20.49 (2.50)	0.20 2.00 4.50	Brown mark Grey slightl occasional subangular LIMESTON throughout. Partially we brownish gr DS1: Beddi often open DS2: Joints light browni	y slightly sandy s cobbles and bou to subrounded, f ong thinly lamina E with fine to coa athered: Slightly ey staining on so ng, thinly lamina at very close or co , medium space sh grey staining. e vein at 4.95m,	Iders. Sanc ine to coars ted dark gra arse sand s closer fract ome joints. ted 40 to 50 close spacir d, 70 to 90°	t is fine to o e. ey to black ized pyrite ure spacing °, smooth, ig, unstaine , planar, sm rough, ope	CARBON crystals so g and pato typically o ed. nooth, ope	ACEOUS cattered chy closed to en, patchy		
Remarks					L					Core Barr	el:	Water Stri	kes: Rose to	Time		
										T2101 Flush Typ	e:		(m)	(min)	Δ	
										Water Added:		Casing:				au
											To (m)	To (m) 4.50	Diamet 151	ter (mm)	4	
															www.causew © Causewa	aygeotech.com y Geotech Ltd

Caus	sew	ay	Geo	otec	ch Ltd	Projec 14-645			Project Name:	Greater Du Investigati		nage Sche	eme Ground		Boreho BH ⁻	
Method:						Co-ore			Client:	Irish Wate					Sheet	
0.00 5.50 5.50 7.60		able Pe lotary D	ercussio Prilling	n		321944	4.99mE				. Tabia (s	cale:	1:50
Plant:		u - - · ·					3.04mN I d Leve		Client's Rep			Jonsulting	g ⊏ngineers	c	rew:	MMc+G
Dando 2000)+Bere	tta 141			1	18.76N		•	Dates:	23/01/201	5				ogged B	-
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level 8	Depth		Sti	ratum Deso	cription			egend & Water Strikes	Back Insta
0.50 - 1.00 0.50 - 1.00 1.20 1.20 - 1.65 1.20 - 1.65	D B SPT (S) B				N=19 (4,5/5,4,5	,5)	(<i>0.40</i>) 18.36 (<i>0.20</i>) 18.16	0.40 0.60	Brown clayey Stiff to very s	rown slightly s v silty fine to m tiff brown sligh o coarse. Grav	edium SANI tly sandy sli	D ghtly gravell	ets y slightly silty CL gular fine to coars	AY.	Najvi vljavlavjavlavjavlavi Vlavlavlavlavlavlavi Polodavlavlavlavlavlavi Polodavlavlavlavlavlav	
2.00 2.00 - 2.35 2.00 - 2.45	D 2.00 SPT (S) B D		2.00		N=19 (5,5/4,5,5	,5)	(2.70)								N N N N N N N N N N N N N N N N N N N	
3.00 3.00 - 3.45 3.00 - 3.45	SPT (S) 3.00 B D		3.00		N=31 (9,8/7,8,9	,7)	15.46	3.30	Very stiff blac	k slightly sand a. Gravel is sut	ly slightly gra prounded to	avelly slightl angular fine	y silty CLAY. San to coarse	nd is		, , , , , , , , , , , , , , , , , , ,
4.00 4.00 - 4.45 4.00 - 4.45	SPT (S) 4.00 B D		4.00		N=31 (7,8/7,9,7	,8)										* * * * * * * * * * * * * * * * * * * *
5.00 5.00 - 5.45 5.00 - 5.45 5.50	SPT (S) 5.00 B D 5.50 SPT (S)		5.00 5.50		N=37 (9,10/8,10 50 (25 for 81mn 125mm)		(3.70)								에 지하지 않는 것 같아. 지하지 않는 것 같아. 데 거 지하는 것 같아. 것 같아. 것 같아. 것 같아. 데 거 데 거 더 거 더 것 같아. 것 같아. 것 같아. 데 거 데 거 나 거 나 가 다 가 아니 가 아니 가 나 가 나 가 나 가 나 가 나 가 나 가 나 가 나 가 나 가	
6.50	SPT (S)				50 (25 for 50mn 40mm)	n/50 for	11.76	7.00								×
							(0.60)	7.00	Coarse GRA	VEL (possible	boulder)			•••		•••
							11.16	7.60			End of core at	7.60 m		• • • • •		
Remarks									·	Core Bar Flush Typ	pe:	(m) (7.00 7	es: Rose to Time m) (min) .0 10		A	L GS
										Water Added From (m) 0.00	To (m) 5.50	Casing: To (m) 5.50	Diameter (mm) 200	wv	w.causewa	ygeotech.c
														wv	ww.causewa Causeway	ygeote Geote

Cau	seway	Ge	otec		Projec 14-645			Project Name:	Greater D Investigati		nage Sche	me Gro	ound	Borehol BH1	
Method:					Co-orc			Client:	Irish Wate					Sheet 1	
0.00 7.5	50 Cable P	'ercuss	ion			7.05mE		Client's Rep	recontative	• Tobin	Consulting	Fngine	Pare	Scale: 1:	1:50
Plant: Dando 3000						7.46mN		-			-	Eligina		Crew: C	00
	J 	Casin	Motor		11.63N			Dates:	08/01/201	5 - 09/01/	2015			Logged By	
Depth (m)	Sample / Test	Casing t Depth (m)	g Water Depth (m)	Field Reco	ords	Level &	k Depth	h	St	ratum Des	cription			Legend & Water Strikes	Backfill Installs
						(0.30)	2.20	TOPSOIL							
0.30 - 1.20	B					11.33 (1.50)	0.30		brown slightly s to coarse. Gra					$\begin{array}{c} & \begin{array}{c} & & & \\ & & & \\ & & \\ & & \\ & & \\ \end{array} \\ & & \\ & & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ \end{array} \\ & & \\ & \\ \end{array} \\ & & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ & \\ & \\ \end{array} \\ & \\ & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ & \\ & \\ & \\ \end{array} \\ & \\ & \\ & \\ \end{array} \\ & \begin{array}{c} & & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ & \\ $	
1.20	Ū													$\frac{1}{2} \frac{1}{2} \frac{1}$	
1.80 - 2.50 2.00 2.00	B SPT(S) D			N=50 (6,9/50 for 240mm)	r	9.83	1.80	CLAY with o	rk grey to black occasional cobb to subrounded,	les. Sand is	s fine to coars	avelly sliq se. Grav	ghtly silty el is		
3.00 3.00	SPT(S) D			50 (8,13/50 for 2	200mm)	(2.70)									
3.50 - 4.00	В														
4.00 4.00	D 130mm)	50 (25 for 140m 130mm)	ım/50 for												
4.50 - 6.00	В					7.13	4.50	CLAY with o	rk greyish brow occasional cobb	les and rare	boulders. S	Sand is fin	lightly silty ne to		
5.00 5.00	SPT(S) D			N=50 (7,9/50 for 235mm)	r				avel is angular t						
						(3.00)									
6.50 6.50	SPT(S) D			N=50 (9,11/12,1	2,13,13)										¥
						4.13	7.50		Ē	nd of borehole	at 7.50 m				
Remarks									Chiselling: From To	Time	Water Strike Struck R		Time		
SPT's carrie Refusal me	ed out using S et on possible I	SPT Ha large b	mmer (oulder	CC04					From Io (m) (m) 0.00 1.30 7.20 7.80	(hh:mm) 01:00	(m) (r	m)	1 ime (min) 20	AG	I S
									Water Added From (m)		Casing: To (m) 7.50	Diamete 200	er (mm)	www.causewayg © Causeway G	geotech.com

Ouu	seway	Geo	otec	h Ltd	Projec 14-645			Project Name:	Greater Dub Investigation		ige Schei	ne Gro	ouna	BOTEIR	ole No. 135
Method:					Co-or			Client:	Irish Water					Sheet	
0.00 8.4	0 Cable P		32240	8.09mE								Scale:	1:50		
Plant:						8.13mN		Client's Rep	resentative:	Tobin Co	onsulting	Engine	ers	Crew:	MMc
Dando 2000)				Groun 11.18N	Id Leve	l:	Dates:	27/01/2015					Logged B	By: MMc
Depth (m)	Sample / Test		Water Depth	Field Reco	1	Level 8	Depth		Stra	tum Descr	iption			Legend & Water	
		(m)	(m)			(0.30)		TOPSOIL						Strikes	
0.50 - 1.00 0.50 - 1.00	D B					10.88	0.30	CLAY. Sand	tiff brown mottle is fine to coarse. various lithologie	Gravel is su	ly sandy sli Ibangular to	ghtly gra subrou	velly silty nded fine		
1.20 1.20 - 1.65 1.20 - 1.65	SPT(S) D B			N=20 (3,3/4,5,6	,5)	(2.40)									
2.00 2.00 - 2.45 2.00 - 2.45	SPT(S) D B			N=36 (3,5/7,10,	10,9)										
3.00 3.00 - 3.45 3.00 - 3.45	0 - 3.45 D 0 - 3.45 B 0 - 3.45 B 0 - 4.45 B			N=33 (4,5/6,8,1)	0,9)	8.48	2.70	Sand is fine	k grey slightly sa to coarse. Grave rious lithologies.	ndy slightly I is subangu	gravelly slig lar to subro	htly silty unded fi	r CLAY. ne to		
4.00 4.00 - 4.45 4.00 - 4.45				N=36 (6,8/7,9,1	0,10)	(2.00)									
5.00 5.00 - 5.45 5.00 - 5.45	SPT(S) B D			N=43 (8,9/10,11	,10,12)	(3.80)									
6.50 6.50 - 6.95 6.50 - 6.95	SPT(S) D B			N=50 (7,9/50 fo 275mm)	r	4.68	6.50	is fine to coa	wn slightly sandy rse. Gravel is su ogies, gravelly b	bangular to	velly slightl subrounded	y silty CL I fine to o	AY. Sand coarse of		*
						<i>(0.90)</i> 3.78	7.40		wn slightly sandy rse. Gravel is su						
8.00 8.00 - 8.40 8.00 - 8.40	SPT(C) B D			50 (9,10/50 for 1	160mm)	<i>(1.00)</i> 2.78	8.40			of borehole at a					*,°++ *
									Liù						
Remarks									(m) (m)	Time (hh:mm)	(m) (m	ose to 1)	Time (min)		
									Water Added:		7.40 6.9 Casing: To (m)	Diamete	20 er (mm)	A	GS
											3.40	200	······	www.causewa	waaatach con

Caus	sew	ay	Geo	otec	ch Ltd	Projec 14-645			Project Name:	Greater D Investigati	ublin Dra on	inage Sc	heme	Gro	ound	Bore	hole H13) .
Method:						Co-ore			Client:	Irish Wate	r					Shee	et 1	of 2	2
0.00 7.60 7.60 10.9		ymmet	ercussio rix	n			8.15mE 0.65mN		Client's Re	presentative	: Tobin	Consulti	ng Er	ngine	ers	Scale:	1:5		
Plant: Dando 2000)+Bere	tta T41				Groun	d Leve		Dates:	27/01/201			-	-		Crew:	MN		
						8.68M										Logged Legend	d &	Bac	
Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level 8	Depth		St soft to firm brov	ratum Des	-	tlate			Wate Strike	91	Inst	
							(0.50)				in buildy of	ay warroo					117/11		
0.50 - 1.00 0.50 - 1.00	D B						8.18	0.50		slightly sandy sl					fine to		XIX-IIV		
																	N INTER	88	8
1.20 1.20 - 1.65 1.20 - 1.65	SPT (S) B				N=23 (5,6/5,7,6	,5)											XIX XIX	S	
1.20 - 1.05	D																avixa's	Ĭ	
2.00 2.00 - 2.45	SPT (S)				N=24 (5,7/6,5,6	,7)	(3.20)												
2.00 - 2.45	D B																1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	Ĭ	
																	NW-ND		
3.00 3.00 - 3.45	SPT (S)				N=29 (6,7/8,7,7	,7)											নসামন	ÿ	
3.00 - 3.45	B D																<pre>vbx4x1</pre>		
							4.98	3.70		rk grey slightly onal cobbles. Sa							x4.4.XC	ÿ	
4.00 4.00 - 4.45 4.00 - 4.45						0,13)				fine to coarse			Siaver	10 001	ungular to		<u> </u>		
4.00 - 4.45							(1.30)										XIMIX:	ÿ	
																	<u> হয়:</u> মান		
5.00 5.00 - 5.45 5.00 - 5.45	SPT (S) D				N=48 (7,8/10,14	1,12,12)	3.68	5.00	occasional	rk grey slightly cobbles. Sand i	s fine to coa	arse. Grave					26[8424]	S	
	В								subrounded	I fine to coarse	of various li	thologies.					X1X161		
																	XIXIX	S	
																	Xu×1Au	Ĭ	
6.50 6.50	D B				N=46 (9,10/11,1	2,12,11)											lx:l%lx	S	
6.50	SPT (S)																10010010	Ĭ	
7.40	ODT				50 (10 11/50 for	105mm)											1X:12		
7.40 7.40 - 7.80 7.40 - 7.80	SPT (C) B				50 (10,11/50 for	125mm)	(5.90)										distration		
	D																el Xuixue		
																	urs Ixri		
																	<u> </u>		
9.00	SPT (S)				50 (25 for 0mm/ 0mm)	'50 for			Coarse GRA	VEL (possibly	a broken u	o boulder)					t K I S I X		•
	(0)				(initi)												<u>কি</u> মিশ্ৰেক		
																		· · · ·	
																	XilXil&	• • •	· ·
Remarks										Core Bar	continued on r	water St	rikes:						
												Struck (m) 9.50	Rose (m) 9.50		Time (min) 10				
Refusal met	t on po	ssible l	large bo	oulder	at 7.6m					Flush Ty	pe:					A	G	S	
										Water Added From (m)	To (m)	Casing: To (m)			er (mm)				
												7.60	20			www.cause © Causew	wayge ay Ger	otech otech	i.com Ltd

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645		Project Name:	Greater Du Investigatio	ublin Drain on	age Sche	me G	round	Borehol BH13	
Method:						Co-ord	ls:	Client:	Irish Water	r				Sheet 2	
0.00 7.60 7.60 10.9	90 S	ymmetr	ercussio ix	n			3.15mE 0.65mN	Client's R	epresentative	: Tobin C	Consulting	Engir	neers		50
Plant: Dando 2000)+Beret	ta T41				Groun	d Level:	Dates:	27/01/201	5				Crew: M Logged By	
						8.68M0								Logged By Legend & Water	
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level & Depth		Str	atum Desc	ription			Water Strikes	Installs
							-2.22 10.90		E	End of core at 10	0.90 m				
									0	rol .	Meter Of "				
Remarks									Core Bar	rei:	(m) (r	ose to n)	Time (min)		
Refusal met	on pos	ssible l	arge bo	oulder a	at 7.6m				Flush Typ	oe:	9.50 9.	50	10	AG	S
									Water Added		Casing:	Dire		ne	-
									From (m)	To (m)	To (m) 7.60	200	eter (mm)	www.causewayg © Causeway G	eotech.com eotech Ltd

Caus	seway	Geo	otec	h Ltd	Projec 14-64			Project Name:	Greater Dub Investigation	olin Drainage So า	cheme Ground	Boreho BH	
Method:					Co-or			Client:	Irish Water			Sheet	
0.00 7.5	0 Cable P	ercuss	ion		32317	3.16mE						Scale:	1:50
Plant:						3.17mN		Client's Rep	resentative:	Tobin Consult	ing Engineers	Crew:	СС
Dando3000					Groun 4.22M	nd Leve	ı: 	Dates:	10/12/2014			Logged E	
Depth (m)	Sample / Test		Depth	Field Rec	ords	Level 8	Depth		Stra	tum Description		Legend & Water	& Backfi Install
0.00 - 0.90	В	(m)	(m)			(0.90)					asional cobbles and llar to subrounded, fine	Strikes	×
0.90 - 1.50 1.00 1.00	B D SPT(C)	1.00	0.7	N=16 (3,3/4,3,4	,5)	3.32	0.90	Medium der fine to coars	se grey slightly s e GRAVEL with c	ilty slightly sandy s ccasional cobbles.	ubangular to rounded Sand is fine to coarse.		
2.00 2.00	SPT(C) D	2.00	1.2	N=12 (2,3/3,3,3	,3)	(2.70)							
	В												
3.00 3.00	SPT(C) D	3.00	2.6	N=17 (1,1/2,3,5	,7)								
3.60 - 4.00 4.00	υ					0.62	3.60	CLAY with o	ccasional cobble		y gravelly slightly silty nd is fine to coarse.		
4.50	D												**************************************
5.00 5.00	D SPT(S)	5.00	4.8	50 (8,12/50 for :	200mm)								
	В					(3.90)							
6.00	SPT(S) D B	6.00		50 (3,11/50 for ⁻	150mm)								
	SPT(S) D	7.00		50 (25 for 75mr 125mm)	n/50 for								
						-3.28	7.50		Ēnd	of borehole at 7.50 m -			
Remarks	<u>.</u>	1	1	1				<u> </u>	(m) (m)	Time (hh:mm)Water S Struck (m)00:300.90	trikes: Rose to Time (m) (min) 0.50 20	A	
										Casing: o (m) To (m) .60 7.50	Diameter (mm)	www.causewa © Causeway	ygeotech.co

Caus	sew	ay	Geo	otec	ch Ltd	Projec 14-64		Project Name:	Greater D Investigati		ainage Scl	heme G	round		ole No. 139
Method:						Co-or		Client:	Irish Wate	r				Sheet	1 of 8
0.00 14. 14.50 78.4		able Pe lotary C	ercussio Coring	n		32382	4.04mE							Scale:	1:50
Plant:							3.70mN	Client's I	Representative	: Tobir	n Consultii	ng Engir	neers	Crew:	MMcC
Dando 2000)+Bere	tta T41				Groun 9.07M	nd Level: OD	Dates:	04/02/201	5 - 12/02	2/2015			Logged E	
Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level & Dept	h	St	ratum De	scription			Legend Water Strikes	Dackilli
							(0.40)	TOPSO	IL						
0.50 - 1.00 0.50 - 1.00	D B						8.67 0.40	fine to c	wn slightly sandy sl oarse. Gravel is sul lithologies.						
1.20 1.20 - 1.65 1.20 - 1.65	SPT (S) B D				N=19 (5,6/5,5,4	,5)	(2.30)								
2.00 2.00 - 2.45 2.00 - 2.45	SPT (S) D				N=26 (7,6/7,7,6	,6)									
	В						6.37 2.70	Very stif	f black slightly sanc nal cobbles. Sand is	ly slightly	gravelly slig	htly silty C	LAY with		
3.00 3.00 - 3.45 3.00 - 3.45	0 - 3.45 (S) 0 - 3.45 D B 0 - 3.45 N=36 N=36					1,10,11)			ded fine to coarse.				guia to	의 (19년 년 - 19년 - 19년 19년 - 19년	
4.00 4.00 - 4.45 4.00 - 4.45					N=36 (7,8/8,10,	9,9)									
5.00 5.00 - 5.45 5.00 - 5.45	SPT (S) B D				N=41 (8,9/9,10,	12,10)	(4.80)							(1998년) 2년 19년 19년 19년 19년 19년 19년 19년 19년 19년 19	
6.00 - 6.45	в														
6.50 6.50	D SPT (S)				N=37 (7,9/10,8,	9,10)								8	
8.00 8.00 - 8.45 8.00 - 8.45	SPT (S) D B				N=25 (6,7/6,7,6	,6)	1.57 7.50	occasio	k grey slightly sand nal cobbles. Sand i ded fine to coarse.	y slightly g s fine to co	gravelly sligh barse. Grave	itly silty Cl I is suban	AY with gular to		
Pomorko									Core Bar	continued on	next sheet Water Str	rikes:			
Remarks												Rose to (m)	Time (min)		-
									Flush Ty	pe:				A	ŝS
									Water Added From (m)	: To (m)	Casing: To (m) 74.50	Diame 200	eter (mm)		
														© Causeway	ygeotech.com Geotech Ltd

Cau	sew	ay	Geo	otec	ch Ltd	Projec 14-645		Project Name:	Greater D Investigati		nage Sch	neme Gr	ound	Borehol BH13	
Method:						Co-ord		Client:	Irish Wate					Sheet 2	
0.00 14.5 14.50 78.4		Cable Pe Rotary C	ercussio Coring	n		323824	24.04mE							Scale: 1:	:50
Plant:							3.70mN	Client's Re	epresentative	: Iobin	Consultir	ng Engin	eers		1McC
Dando 2000	+Bere	tta T41				Groun 9.07M	nd Level:	Dates:	04/02/201	5 - 12/02/	2015			Logged By	
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level & Depth	1	St	ratum Des	cription			Legend & Water Strikes	Backfill Installs
							(7.00)								
14.50 - 15.60 15.60 - 16.90	100	0	0	NA			-5.43 14.50 (1.50)	boulders. S coarse. Co	n clayey very gra Sand is fine to co obbles are subar 4.90m: Limestor	barse. Grave	el is angula				
15.60 - 16.90	100	0	0	NI			-6.93 16.00	Distinctly w fracture sp	weak to weak gr weathered to des bacing and freque in light brown sar	structured: gr ently recover	reatly weak red as orde	kened, mud	ch closer		
	100	22	0	20			(4.10)								
18.40 - 19.90	100	4	0	NI											
19.90 - 21.40							-11.03 20.10	Weak to m patches	nedium strong, lo	ocally very we		vith light br	/own		
Remarks									Core Bar Flush Ty Water Addeo From (m)	pe:	Water Str Struck (m) Casing: To (m) 74.50	Rose to (m)	Time (min) ter (mm)	www.causewayg © Causeway G	Seotech.com

Caus	Causeway Geotech Lto				h Ltd	Projec 14-645		Project Name:	Greater Dul Investigatio		nage So	chem	ie Gro	bund	Boreh BH	nole H139	
Method: 0.00 14.8			ercussio			Co-ord	ds:	Client:	Irish Water						Shee	et 3 d	of 8
14.50 78.4 Plant:		Rotary C		n 			4.04mE 3.70mN	Client's Re	epresentative:	Tobin	Consuli	ting E	Engine	eers	Scale: Crew:	1:5 MM	50 McC
Dando 2000)+Bere	tta T41	1				d Level:	Dates:	04/02/2015	j - 12/02/	2015				Logged		
Depth (m)	TCR	SCR	RQD	FI	Field Reco	1	Level & Depth	1	Stra	atum Des	cription				Legend Water	l& r	Backfil
							<u> </u>	LIMESTON							Strike		
	100	76	40	5				closer fract	weathered, occasion ture spacing. Yello	onally parti owish light	ally destr brown ox	ructure kidatior	ed: wea	ikened, ng			
	100							penetrating DS1: Joints	g in. ts, close to medium	n spaced,	subhorizo	ontal to	n 50°, r	blanar to		1	
21.40 - 22.90								irregular, sr	smooth to rough, op idy clay, oxidation s	pen, typica	ally filled v	with 1	to 10m				
								DS2: Joints rough, ope	ts, medium spaced en, typically filled w	J, 70° to ve with 1 to 10	ertical, une Imm soft	dulatin light b	ıg, smo rown s	ooth to andy clay.			
	100	37	9	15										uny ,		1	
			Ĩ														
							(4.50)										
22.90 - 24.40			<u> </u>														
				10													
	100	60	9														
																1	
				NI				24.0m to 24	4.6m: Very weak,	partially de	estructur	ed.					
24.40 - 25.80		$\left - \right $	$\left \right $				-15.53 24.60										
							-15.55 24.00		trong, grey LIMES	TONE.							
	100	67	33					Partially we DS1: Joints	ts, medium spaced	d. horizont;	al to 40°,	planar	r. smoc	th to			
								rough, oper	en, occasionally cle t sandy clay.	ean, typica	lly filled v	with 10	to 20r	nm light		1	
25.80 - 27.40								DS2: Joint	ts, medium to wide , smooth to rough,	ly spaced,	, 70° to si n light bro	ubverti wn cla	ical, pla	anar to			
20.00 - 21.40								unauterio,	, dinoota to	ope.,	1 ng	///// 2	(y				
	100	90	30														
				8													
27.40 - 28.90							(6.05)									1	
	100	80	26														
																1	
28.90 - 30.40																	
	100	90	73													1	
				5													
30.40 - 31.90									Cc	ontinued on ne	ext sheet						
Remarks	<u> </u>	<u> </u>			<u> </u>		<u> </u>	1	Core Barro		Water S						
									Shireh Turn		Struck (m)	Ros (m)		Time (min)			
									Flush Typ	e:					Α	Gť	3
									Water Added: From (m)	To (m)	Casing: To (m)		Diamete	er (mm)	1		
											74.50		200		www.causew © Causewa	/aygeo ay Geo	otech.cor otech Ltd

Weithod: 14.50 Cable Percession Status (2.000) Status (2.000)	Caus	sew	'ay	Geo	otec	h Ltd	Projec 14-645		Project Name:	Greater Du Investigatio		age Sch	ieme Gr	ound	Boreh BH	iole 1139	
14.00 7.8.0 Rolery Corrus Source Corrus	Method:		-						Client:	Irish Water							
Partici Depth (m) TCR SCR ROD FI Field Records Level # Depth Dates: 0.4/02/2015 - 12/02/2015 Cogend by: Down Hype Depth (m) TCR SCR ROD FI Field Records Level # Depth Stratum Description Using a s					'n				Client's Bon	recontative	Tabin (Conquitin	a Engin	0.010	Scale:	1:50)
Jacobi Calculation Toget Private Joget Private Jog	Plant:								Chefft S Kep	resentative.		Jonsullin		eers			
Depth ITCR SCR ROB FI Field Records Level A Depth Straum Description Wear Particle 100 87 97 100 87 97 100 100 100 97 97 100	Dando 2000)+Bere	tta 141			1			Dates:	04/02/2015	- 12/02/2	2015				ву:	DOM +MFG
100 87 57 N1 100 87 57 N1 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 75 43 8 1100 91 66 72 1100 91 66 72 1100 91 72 15 1100 20 12 N1 1120 N1 123 30.0 1120 N1 120 121 120	Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level & Depth	1	Stra	atum Desc	ription			Water		
Ino. B Ino. B Ino. B Ino. B Ino. B B Ino. B								-21.58 30.65		ng, grey to dark	grey LIMES	STONE wit	th soft cla	y joint			
11.80 - 33.40					NI					thered: oxidatio	n staining p	enetrating	in from s	ome joints.			
11.80 - 33.40		100	87	57												•	
31.30 - 33.30 100 75 43 8 31.40 - 34.40 100 65 17 15 34.40 - 34.40 100 65 17 15 34.40 - 34.40 100 65 17 15 36.40 - 37.40 100 91 86 100 100 91 86 100 100 100 100 91 86 100 100 100 100 100 91 86 100 100 100 100 100 100 91 100 100 12 100 12 100 100 20 12 N 12.20 12.20 12.20 12.20 110 100 12 N 12.20 12.20 12.20 12.20 12.40 100 12 N 12.20 12.20 12.20 12.20 12.40 100 12 12 12.20 12.20 12.20 12.20 14.40 100 12 12 12.20 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>orangey or y</td> <td>ellowish light bro</td> <td>own clay.</td> <td></td> <td></td> <td></td> <td></td> <td>•</td> <td></td>									orangey or y	ellowish light bro	own clay.					•	
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39.40 - 40.90 20 12 NI -29.13 38.20 Extremely weak to weak, grey LIMESTONE. 39.40 - 40.90 -30.33 39.40 Extremely weak light grey fine grained SANDSTONE interbedded with extremely weak yellowish light grey SILTSTONE. -30.33 39.40																	
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100 20 12 NI (1.20) Distinctly weathered to destructured: greatly weakened, much closer fracture spacing and largely recovered as ordered lithorelics in yellowish grey clay matrix. 39.40 - 40.90 -30.33 39.40 Extremely weak light grey fine grained SANDSTONE interbedded with extremely weak yellowish light grey SILTSTONE.								-29.13 38.20	Extremely w	eak to weak are							
39.40 - 40.90 NI (1.20) yellowish grey člay matrix. -30.33 39.40 Extremely weak light grey fine grained SANDSTONE interbedded with extremely weak yellowish light grey SILTSTONE. Destructured: greatly weakened, mottled oxidation staining throughout.									Distinctly we	athered to destr	uctured: gre	eatly weak					
Extremely weak light grey fine grained SANDS FORE interbedded with extremely weak yellowish light grey SILTSTONE.		100	20	12	NI			(1.20)			recovered a	as ordered	lithorelics	in			
Extremely weak light grey fine grained SANDS FORE interbedded with extremely weak yellowish light grey SILTSTONE.																	
extremely weak yellowish light grey SILTSTONE. Image: Comparison of the second sec	39.40 - 40.90							-30.33 39.40					NE interb	edded with			
Largely recovered as firm to stiff sandy clay.									extremely we	eak yellowish lig	ht grey SIL	ISTONE.					
		80	0	0									rstaining	inrougnout.			
· · · · · ·																	
Continued on next sheet												1	kos.			J	
Remarks Core Barrel: water strikes: Struck Rose to Time (m) (min)	Remarks										6 1.	Struck	Rose to			_	
Flush Type:										Flush Typ	e:				Δ	2	
Water Added: Casing:										Water Added:		Casing:					▲
From (m) To (m) Diameter (mm) 74.50 200 © Causeway Geotech Ltd										From (m)	To (m)			ter (mm)	www.causew	aygeot	tech.com

Caus	sew	'ay	Geo	otec	h Ltd	Projec 14-645		Project Name:	Greater Du Investigatio		age Scł	neme Gi	ound	Borehol BH1	
Method:						Co-ord		Client:	Irish Water					Sheet 5	
0.00 14.5 14.50 78.4		Cable Pe Rotary C	ercussio oring	n		323824	4.04mE							Scale: 1	:50
Plant:							3.70mN	Client's Re	presentative		onsultir	ig Engir	eers	Crew: N	/McC
Dando 2000)+Bere	tta T41				9.07M	d Level: OD	Dates:	04/02/2018	5 - 12/02/2	015			Logged By	∕: ^{DOM} +MFG
Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level & Depth		Str	atum Desc	ription			Legend & Water Strikes	Backfill Installs
40.90 - 42.40															
	94	0	0											· · · · · · ·	
				NI			(3.75)								
42.40 - 43.90														· · · · · · ·	
42.40 - 43.90															
														· · · · · · ·	
	100	0	0				-34.08 43.15	Extremely	weak light grey n	ottled vellov		ONE			
				NI			(0.70)		ed: greatly weake	-			aining		
							(0.70)		. Recovered as s		,		5		
43.90 - 45.40							-34.78 43.85		weak to very wea sand-sized clea						
									frequency from 4						
									eathered to dest taining, largely re				ottled		
	100	13	0	NI			(1.75)							· · · · · · ·	
45.40 - 46.90														· · · · · · ·	
							-36.53 45.60	Weak to me	edium strong gre	y and yellow	LIMEST	ONE.			
								Distinctly w	veathered slightly	weakened,	mottled o		aining,		
	88	67	67	2			(1.00)	gravel-size	d vugs created b	y dissolution					
							-37.53 46.60		weak, light grey t arse sand-sized	1			NE, with	* * * * * *	
46.90 - 48.40				NI			(0.50) -38.03 47.10	Destructure	ed: greatly weak				, recovered		
							00.00 41.10	As clayey s	and. to weak grey LIM NE horizons.	ESTONE w	ith extrem	ely weak			
	94	38	13						veathered to dest	ructured: ar	eatly wea	kened mi	ich closer		
				10				fracture spa	acing, locally rec matrix. Occasion	overed as or	dered lith	orelics in l	ight brown,		
48.40 - 49.90				-											
							(4.95)								
	93	31	0				(
49.90 - 51.40				NI					9.90m: Extreme f the type of mat						
45.50 - 51.40									51.40m: AZCL						
	63	10	0												
											1 - 1 1				
Remarks									Core Bar	ontinued on nex	tt sheet Water Str	ikes:			
											Struck (m)	Rose to (m)	Time (min)		
									Flush Typ	e:				AC	S
									Water Added:		Casing:				
									From (m)	To (m)	To (m) 74.50	Diame 200	ter (mm)	_	
														www.causewayg © Causeway G	geolech.com Geotech Ltd

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645			Project Name:	Greater Du Investigatio	blin Drain m	age Sch	ieme Gi	round	Boreho BH1	
Method:						Co-ord			Client:	Irish Water					Sheet 6	
0.00 14.5 14.50 78.4		able Pe otary C	ercussio oring	n			4.04mE		Client's Ret	presentative:	Tobin C	Consultin	a Enair	eers	Scale: 1	:50
Plant: Dando 2000)+Rere	Ita T41					3.70mN d Leve l						<u> </u>			1McC
						9.07M			Dates:	04/02/2015) - 12/02/2	015			Logged By Legend &	+MFG
Depth (m)	TCR	SCR	RQD	FI	Field Rec	ords	Level &	Depth		Stra	atum Desc	ription			Water Strikes	Backfill
51.40 - 52.90	37	2	0				-42.98	52.05	NO RECOV	ERY						
52.90 - 54.40				NR			(0.85) -43.83	52.90	Week to me	dium atrang loa		ak alaaa t		into grov		
	100	77	57						occasionally Partially to o weakened a DS1: Joints undulating, yellow soft t staining ofte	dium strong, loc r mottled yellow i distinctly weather it some joints wit close to mediur smooth to rough o stiff sandy clay in penetrating in casaionally very of	LIMESTONI red: Closer f th yellow oxi n spaced, 3 , open, fillec v. Red stain up to 50mm	E. racture sp dation sta 0°to 50°, p ∣ with <1 to ing on son ı, with corr	pacing, gr ining pen planar to s o 30mm li ne joints. respondir	eatly etrating in. stepped or ght brown or Yellow g very weak		
54.40 - 55.90	100	40	26	11						widely spaced, bugh, open, to in sandy clay.						
55.90 - 57.40	100	100	95	3			(8.80)									
58.90 - 60.40	100	73	15	14												
	100	53	23													
60.40 - 61.90	100	100	76	5							ontinued on new	t sheet				
Remarks	1	1	1	<u> </u>	I		1		1	Core Barr Flush Typ	el:	Water Stri	Rose to (m)	Time (min) ter (mm)	AG	S
												14.00	200		www.causeway © Causeway C	geotech.com Geotech Ltd

Caus	sew	/ay	Geo	otec	ch Ltd	Projec 14-645		Project Name:	Greater Dub Investigation		lage Sche	e Gro	ound	Boreh BH	10le 1139	
Method: 0.00 14.5		Cable Pe				Co-ord	ds:	Client:	Irish Water					Shee	et 7 c	of 8
14.50 78.4 Plant:		Rotary C					24.04mE 33.70mN	Client's Re	epresentative:	Tobin (Consulting	j Engin	eers	Scale: Crew:	1:50 MM	
Dando 2000)+Bere	tta T41				Groun 9.07M0	nd Level: IOD	Dates:	04/02/2015	- 12/02/2	2015			Logged	By:	DOM +MFG
Depth (m)	TCR	SCR	RQD	FI	Field Rec		Level & Depth	n	Stra	atum Desc	ription			Legend Water Strikes	& •	Backfill Installs
															Í	
				 	-		-52.63 61.70	ivieului i su	trong to strong thinl	ly to thickly	/ laminated (dark grey	y			
61.90 - 63.40								ARGILLAC Mostly unw	CEOUS LIMESTON	JE.					1	
	100	100	100					DS1: Bedd rough, typic	ding, thinly to thickly ically closed to occi nstained. One at 63	casionally op	open at medi	lium to wi	smooth to ide spacing,			
				3				DS2: Calci	tite veins at 72.4-73 closed with up to 30	3.3m, closel	ely spaced, 5	50 to 80°,	, planar and 72.5m with			
22.40 64.00									ndy clay film and bro						1	
63.40 - 64.90																
					1											
	100	100	100												1	
64.90 - 66.40	 		<u> </u>	-												
	100	100	100													
	100	100	100													
66.40 - 67.90			├──	2			(16.70)									
							(10.70)									
	100	100	100													
	102	100	100													
67.90 - 69.40			 	-												
	100	100	100													
					-											
69.40 - 70.90			\vdash	1												
	100	100	100													
				1												
70.90 - 72.40																
									Co	ontinued on nex	ext sheet					
Remarks	L			L	<u> </u>			<u> </u>	Core Barre		Water Strike					
									Flush Type	·~·		Rose to (m)	Time (min)		J	
										<i>.</i>				A	Gť	5
									Water Added: From (m) T	To (m)	Casing: To (m)		ter (mm)			
										_	74.50	200	_	www.causew © Causewa	aygeo ay Gec	stech.com

Caus	sew	ay	Geo	otec	h Ltd	Projec 14-645		Project Name:	Greater Dub Investigation	olin Drair n	nage Sch	neme Gr	ound	Borehol BH13	
Method:						Co-orc		Client:	Irish Water					Sheet 8	
0.00 14.9 14.50 78.4		Cable Pe Rotary C	ercussio Coring	'n			24.04mE		epresentative:	Tobin (Concultir			Scale: 1:	:50
Plant: Dando 2000							3.70mN nd Level:								
Danuo 2000)+Beie				 	9.07M		Dates:	04/02/2015	- 12/02/2	2015			Logged By	
Depth (m)	TCR	SCR	RQD	FI	Field Reco	ords	Level & Depth		Stra	tum Desc	cription			Legend & Water Strikes	Backfill Installs
Depth (m) 72.40 - 73.90 73.90 - 75.40 75.40 - 76.90 76.90 - 78.40	TCR 100 100 100 100 100 100	SCR 100 83 100 95	RQD 100 70 100 92 60	FI	Field Reco	DINGS	Level & Depth	72.4m to 73	3.3m: Calcite veins 3.3m: 50 to 70mm closed to incipien ion, and stiff yellov	s	, subvertic h calcite a n clay.	al, planar, nd quartz	. slightly		Backfill
Remarks									Core Barre	əl:	Water Str	ikes:			
											Struck (m)	Rose to (m)	Time (min)	┤┏┲	a
									Flush Type	Ð:				AG	S
									Water Added: From (m) T	To (m)	Casing: To (m)	Diame	ter (mm)]	
											74.50	200		www.causewayg © Causeway G	jeotech.com