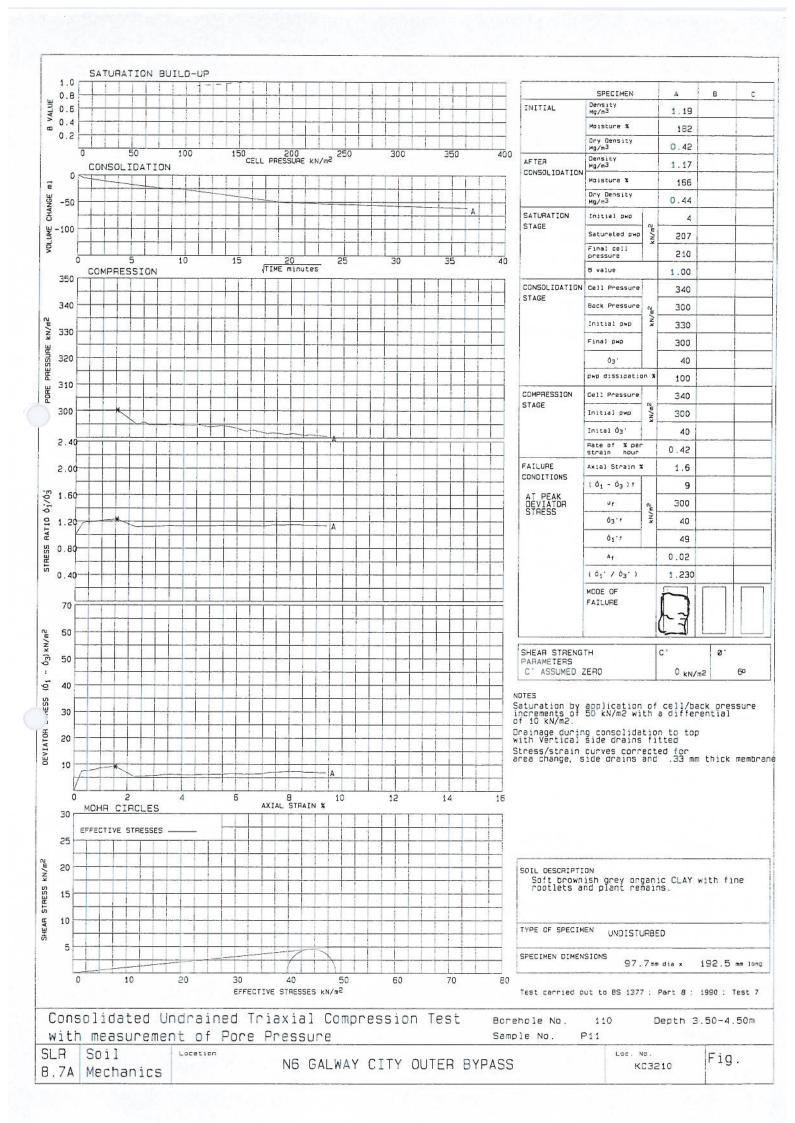
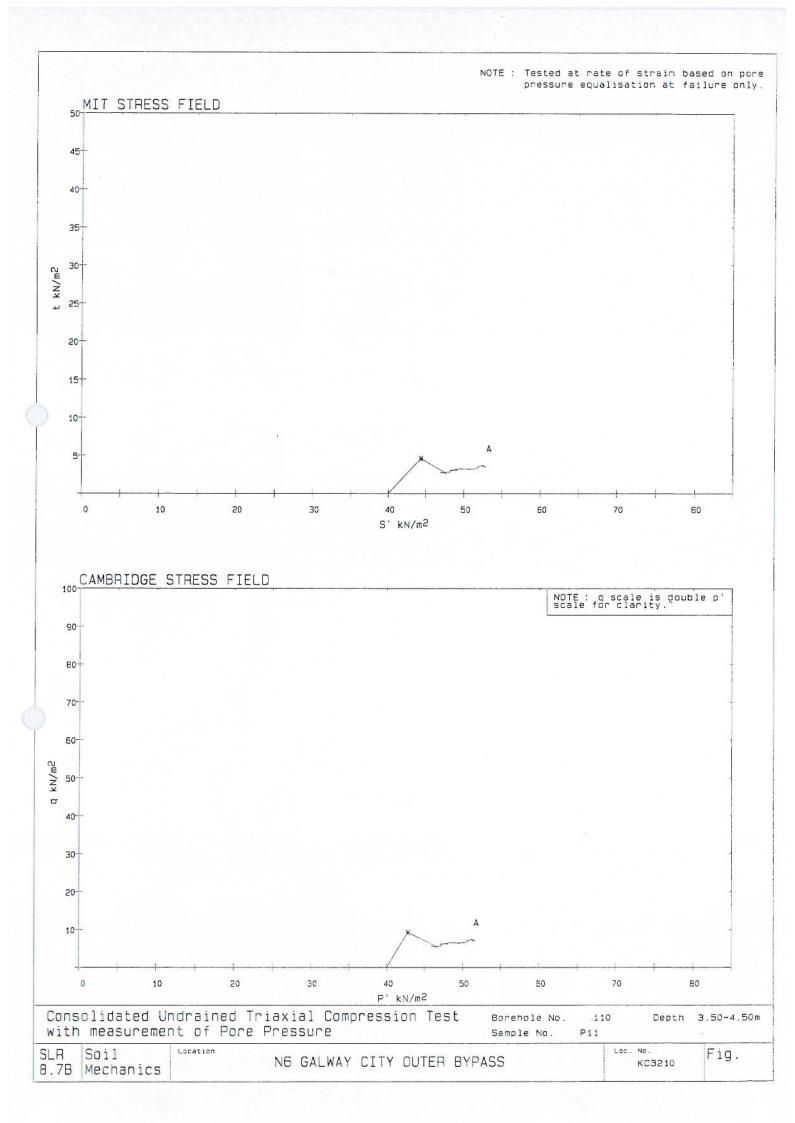
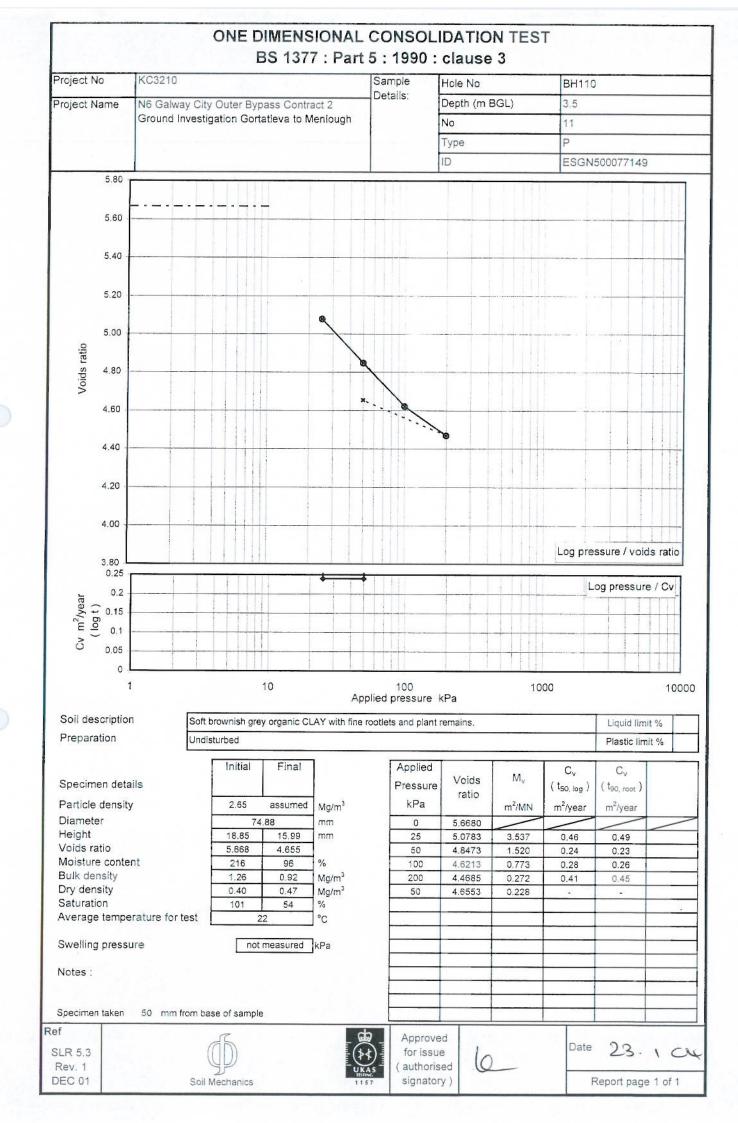
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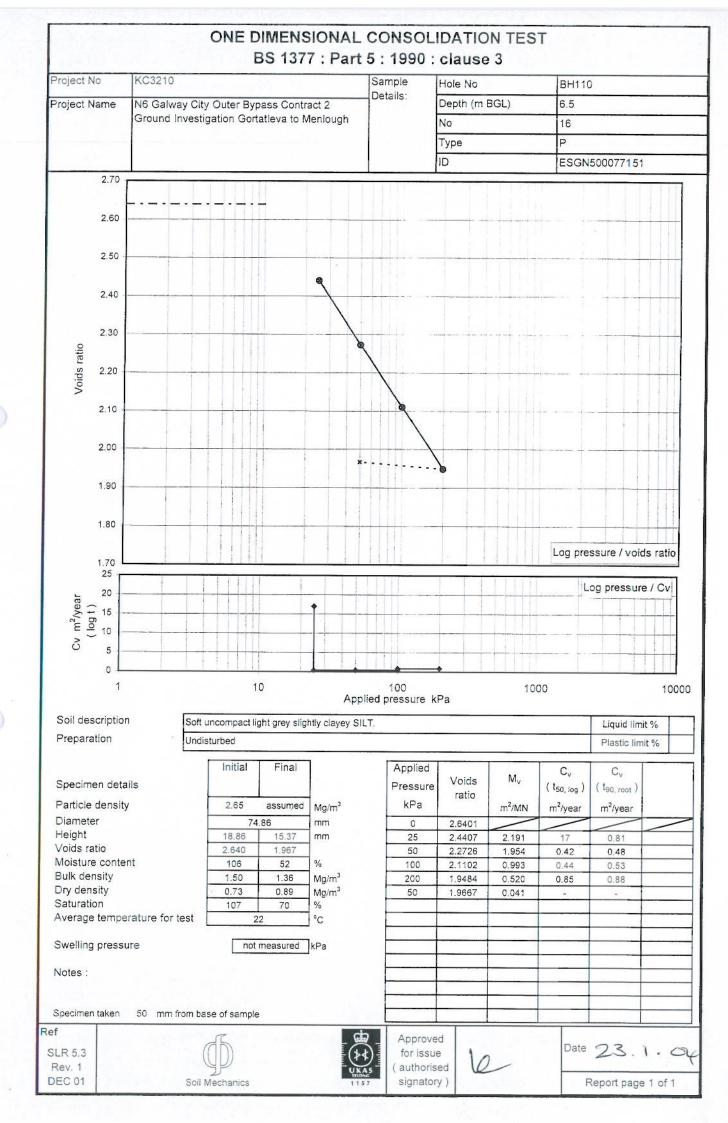
N6 Galway City Outer Bypass Contract 2 Gortatleva to Menlough

September to December 2003









San	ıples			Ear	thwo	ks									
Hole	Depth	Туре	Description	CBR Top	CBR Base	CBR Top w%	CBR Base w%	CBR Surch kg.	η _b Mg/m ³	Comp Type	w% (Opt) < Nat>	γ _d (max) Mg/m	ρ s Mg/m	% ret 20/ 37.5 mm	MCV
TP22	1.50-	В	Slightly sandy very							2.5kg	(9.5)	(2.14)	2.65	14/	
	2.00		gravelly CLAY	8.4	13	10	9.6	13.6	2.27	2.5kg	<10>	2.06		7.0	
				16	20	7.9	8.1	13.6	2.23	2.5kg	8.0	2.06			
				0.7	0.6	10	12	13.6	2.27	2.5kg	11	2.05			
				2.3	2.0	10.0	10	13.6	2.33	2.5kg	10	2.12			
				3.0	3.1	9.6	10.0	13.6	2.34	2.5kg	9.8	2.13			
				0.4	0.3	14	14	13.6	2.46	2.5kg	14	2.17			
	25								2.32	MCV	9.0	2.13		21	10.
									2.34	MCV	7.8	2.17		21	17.
		ĺ	*		1				2.25	MCV	11	2.02		21	5.4
					l				2.29	MCV	9.7	2.08		21	11.8
									2.34	MCV	8.6	2.16		21	11.6
TP23	1.00-	В	Slightly sandy to sandy							2.5kg	(10)	(2.04)	2.65	9.1/	
	1.50		gravelly CLAY	3.3	4.4	11	11	13.6	2.25	2.5kg		2.02		3.9	
				23	21	8.8	10	13.6	2.21	2.5kg	9.6	2.02		3.7	
				28	37	5.6	5.0	13.6	2.02	2.5kg	5.3	1.92			
				0.3	0.2	13	12	13.6	2.21	2.5kg	12	1.97			
				0.1	0.1	15	15	13.6	2.19	2.5kg	15	1.91			
									2.28	MCV	9.9	2.08		13	9.0
									2.32	MCV	9.0	2.13		13	12.4
									2.16	MCV	6.1	2.04		13	13.4
									2.20	MCV	11	1.98		13	10.0
									2.20	MCV	14	1.93		13	1.4
TP96	0.50	В	Slightly sandy gravelly							2 5kg	(9.5)	(2.11)	2 45	10/	
			CLAY	1.2	1.0	13	14	13.6		2.5kg		2.03	2.03	9.4	
				24	28	6.5	6.5	13.6		2.5kg	6.5	2.06		7.4	
				5.2	2.2	8.1	8.1	13.6	and the contract of	2.5kg	8.1	2.09			
				0.3	0.8	12	11	13.6		2.5kg	11	2.06			
				1.9	2.5	9.1	10	13.6		2.5kg	9.6	2.11			
								13.0	2.15	MCV	12	1.93		20	7.8
									2.25	MCV	7.7	2.09		20	14.0
									2.30	MCV	8.1	2.12		20	15.4
				128		i			2.16	MCV	12	1.93		20	2.0
									2.26	MCV	7.6	2.10		20	13.2
					8				2.25	MCV	7.8	2.09		20	12.0
rP113	1.40		Slightly sandy gravelly CLAY	0.3	0.3	8.9	9.4	13.6	2.36	2.5kg		2.16		16	
P125	1.50-	В	Very clayey SAND and							2.5ka	(7.5)	(2.19)	2.65	6.4/	
	1.70		GRAVEL	7.5	13	8.1	9.5	13.6		2.5kg	1	2.15	2.00	3.6	
				45	56	5.4	5.4			2.5kg	2	2.17	-	3.0	
				0.5	0.6	9.6	9.7			2.5kg		2.14			
				0.1	0.2	11	10	50.00	34475337.00	2.5kg	11	2.08			
				21	27	5.6	6.7	6 5 7 5 TO 1	Participation of the Participa	2.5kg	6.1	2.18			
					10011	10000	2.11	,5.0	2.38	MCV	8.1	2.20		10	11.2
	1								2.28	MCV	5.8	2.16		10	12.5
									2.35	MCV	7.8	2.18		10	4.0
									2.39	MCV	6.1	2.25		10	
									2.39	MCV	9.9	2.09		10	13.4
				1			1			INC V	7.7	6.09		10	1.0

Form 6/2

Laboratory -

Compaction, CBR & Project MCV Summary

N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough Sheet Galway County Council

Contract KC3210



Sam	ples			Eart	thwor	ks									
Hole	Depth	Туре	Description	CBR Top	CBR Base	CBR Top w%	CBR Base w%	CBR Surch kg.	γ _b Mg/m	Comp Type	w% (Opt) <nat></nat>	γ _d (max) Mg/m	ρ s Mg/m³	% ret 20/ 37.5 mm	MC
TP128	0.20-	В	Slightly sandy gravelly CLAY	14 16 13 2.4 1.9	18 23 14 1.7 1.7	8.5 6.7 12 16 16	8.5 7.1 12 16 16	13.6 13.6 13.6 13.6 13.6	1.90 1.86 2.07 2.11 2.13 2.14	2.5kg	(14) <8.5> 6.9 12 16 16 8.1	(1.88) 1.75 1.74 1.85 1.82 1.84 1.98		9.9/ 7.6	89.
									2.10 2.05 2.10 1.99	MCV MCV MCV	11 15 14 7.3	1.89 1.78 1.83 1.85		18 18 18 18	12. 8.8 10. 18.
TP134	0.50-	В	Clayey sandy GRAVEL	0.6 3.9 6.1 14	0.5 4.9 12 14 12	26 21 19 19 19	26 21 19 19 16	13.6 13.6 13.6 13.6 13.6	1.90 2.00 1.95 1.97 1.79 2.17 1.95 1.99 2.01	2.5kg 2.5kg 2.5kg 2.5kg 2.5kg 2.5kg MCV MCV MCV		(1.67) 1.51 1.65 1.64 1.65 1.54 1.95 1.60 1.67	2.65	12/ 58 69 69 69 69	5.1 10.2 11.6 13.8
P142	1.00-	В	Slightly sandy very gravelly SILT	0.8 9.9 16 34 17	0.6 7.2 24 34 14	18 13 9.7 6.1 12	18 13 9.7 7.3 10	13.6 13.6 13.6 13.6	2.10 2.15 2.06 1.98 1.98 2.11 2.17 2.16 2.10	2.5kg 2.5kg 2.5kg 2.5kg 2.5kg 2.5kg MCV MCV MCV	<18>	(1.91) 1.77 1.90 1.88 1.86 1.78 1.86 1.97 1.94	2.65	11/ 37 48 48 48 48	11.2 15.2 11.4 7.8

Compaction, CBR & Project MCV Summary Laboratory -

N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough Sheet Galway County Council

Form 6/2 Contract KC3210



Exploration Associates

	BH/TP	Depth	w%	Direct Shear Top (kpa)	Remoulded Shear Top (kpa)	Direct Shear Bottom (kpa)	Remoulded Shear Bottom (kpa)
	TP11	0.10-0.40	19	6	4	8	2
	TP11	0.10-0.40	17	12	6	14	7
	TP11	0.10-0.40	14	36	18	34	12
	TP11	0.10-0.40	9.5	NP	NP	41	16
	TP11	0.10-0.40	8.4	NP	NP	NP	NP
	TP15	0.70-0.80	9.7	116	46	140	8
	TP15	0.70-0.80	7.8	240	8	290	12
	TP15	0.70-0.80	11	12	4	40	16
	TP15	0.70-0.80	13	4	0	4	0
	TP15	0.70-0.80	7.5	210	28	224	32
	TP20	1.50-2.00	11	38	2	30	4
	TP20	1.50-2.00	9.1	236	44	156	32
	TP20	1.50-2.00	13	4	0	4	0
	TP20	1.50-2.00	13	0	0	0	0
	TP22	1.50-2.00	10	140	30	250	36
	TP22	1.50-2.00	8	96	12	184	16
	TP22	1.50-2.00	11	28	4	20	4
	TP22	1.50-2.00	10	340	32	200	16
	TP22	1.50-2.00	9.8	196	28	144	32
	TP23	1.00-1.50	11	62	14	76	12
	TP23	1.00-1.50	9.6	170	90	168	38
	TP23	1.00-1.50	5.3	216	16	224	60
	TP23	1.00-1.50	12	24	4	20	4
	TP23	1.00-1.50	15	4	0	4	0
	TP96 TP96 TP96 TP96 TP96	0.50 0.50 0.50 0.50 0.50	13 6.5 8.1 11 9.6	22 NP 70 23 40	12 NP 16 7 16	34 NP 98 17 42	20 NP 26 5
-	TP128	0.20-0.30	8.5	NP	NP	NP	NP
	TP128	0.20-0.30	6.9	NP	NP	NP	NP
	TP128	0.20-0.30	12	NP	NP	NP	NP
	TP128	0.20-0.30	16	44	15	42	14
	TP128	0.20-0.30	16	72	30	70	30
T T	P142 P142 P142 P142 P142	1.00-1.40 1.00-1.40 1.00-1.40 1.00-1.40 1.00-1.40	18 13 9.7 6.7 11	44 58 NP NP NP	12 20 NP NP NP	54 110 NP NP NP	10 24 NP NP NP

NP = No Penetration with hand vane

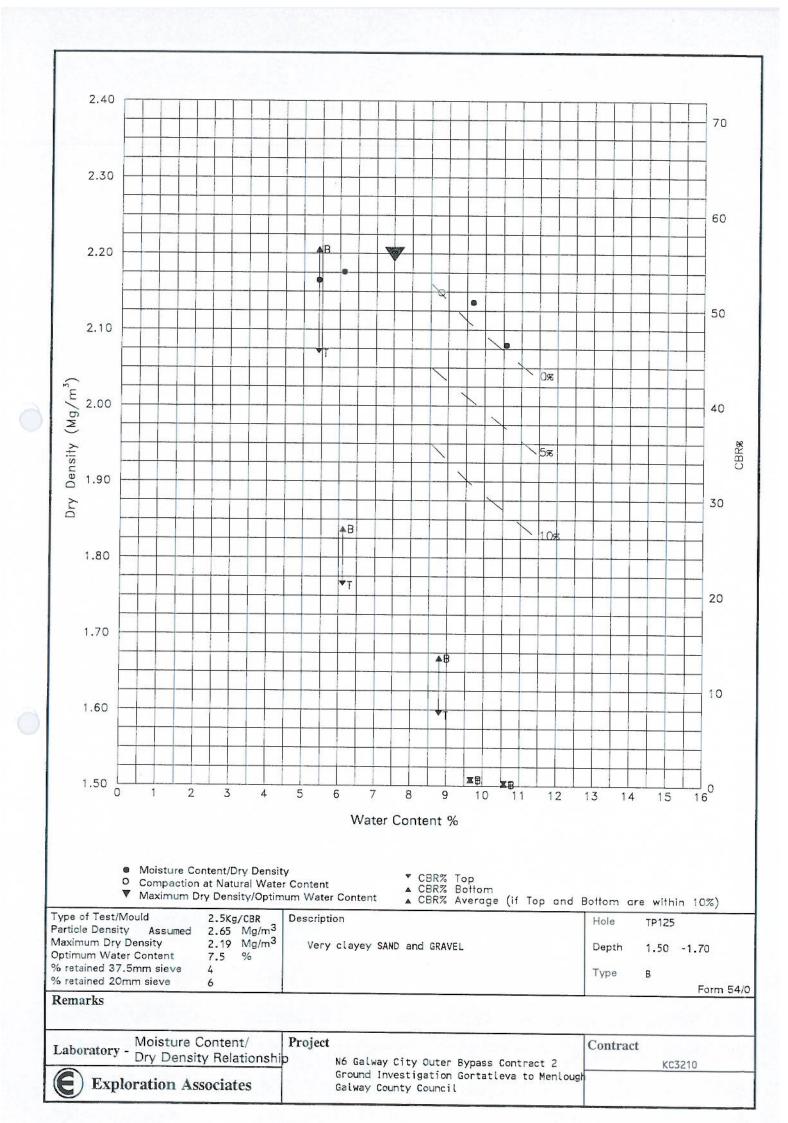
Hand Vanes In CBR Moulds

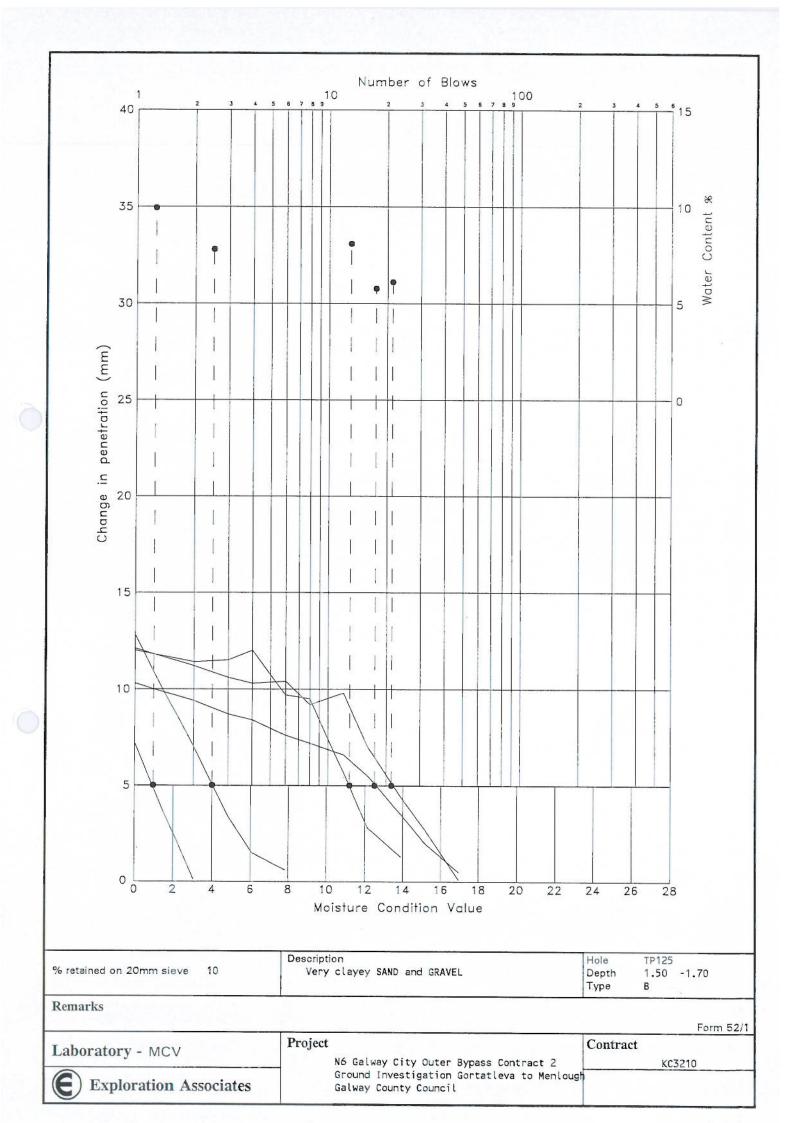
Project: N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menalough

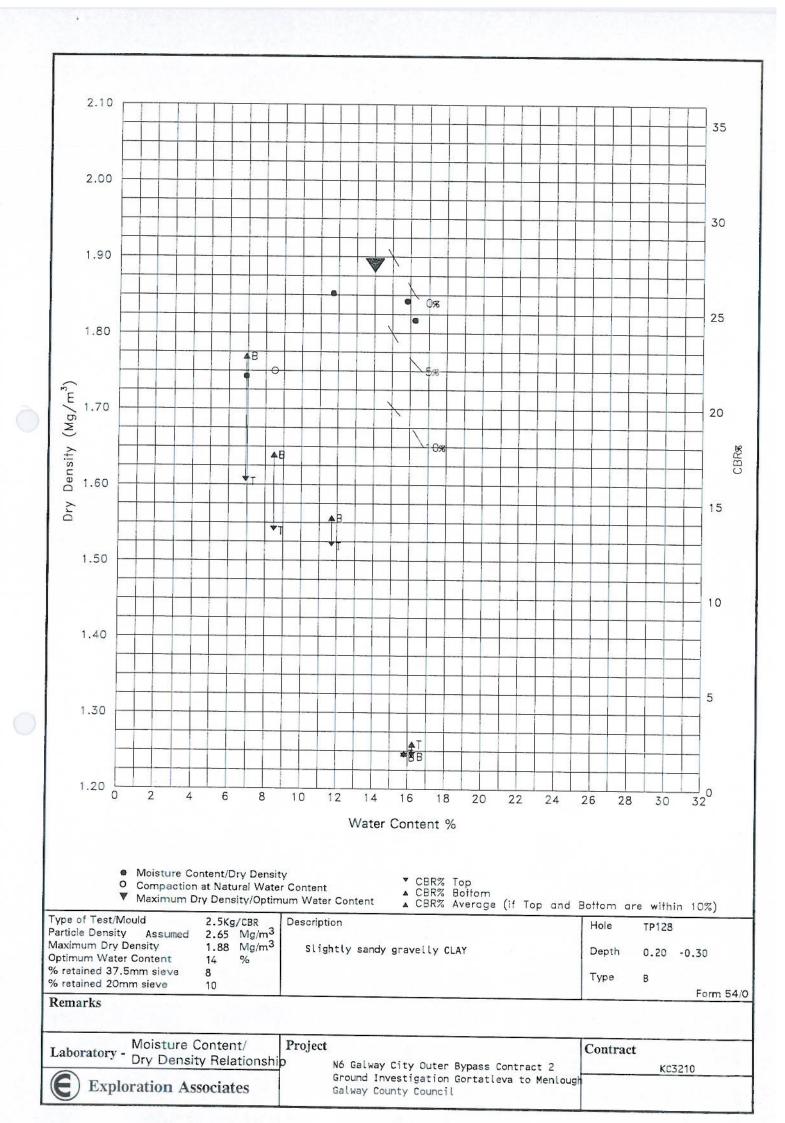
Contract 2

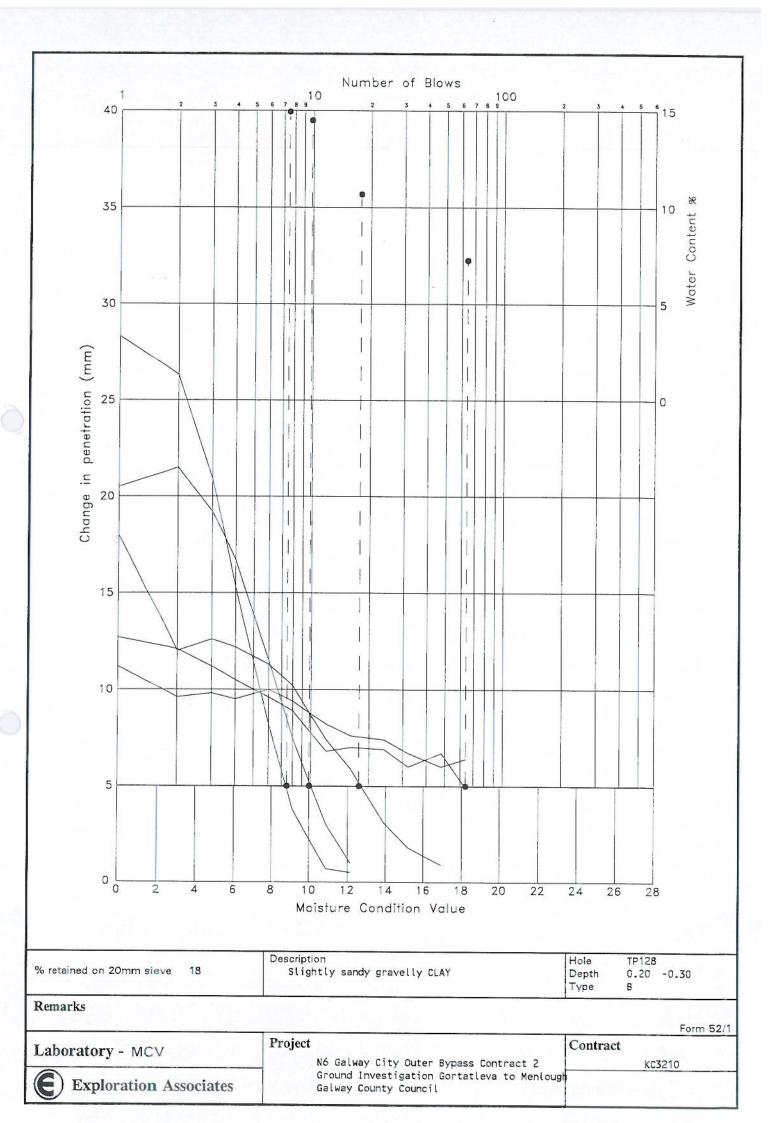
KC3210

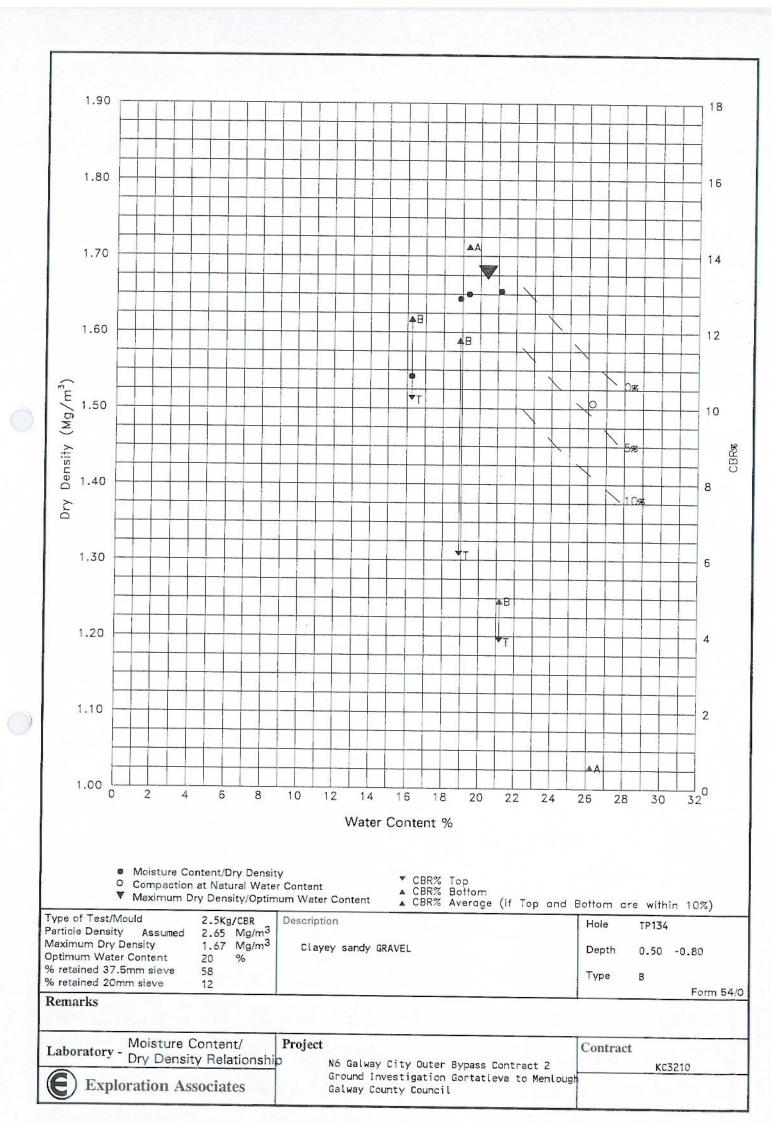


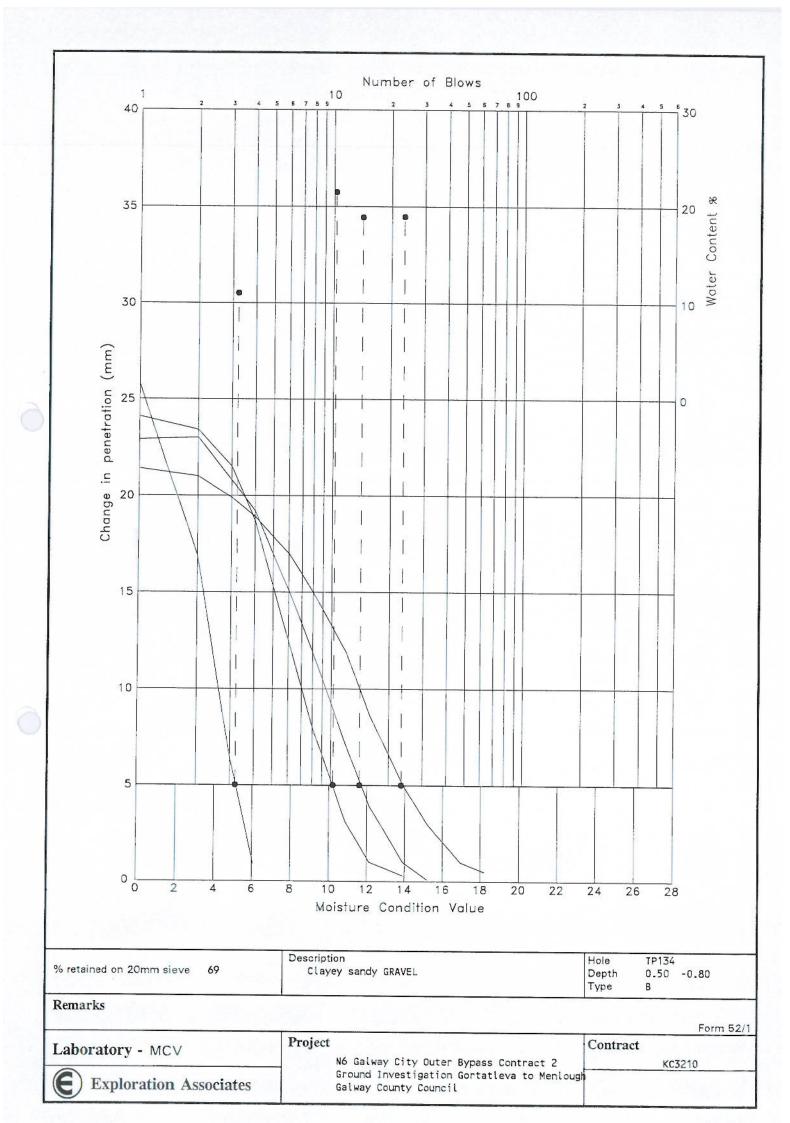


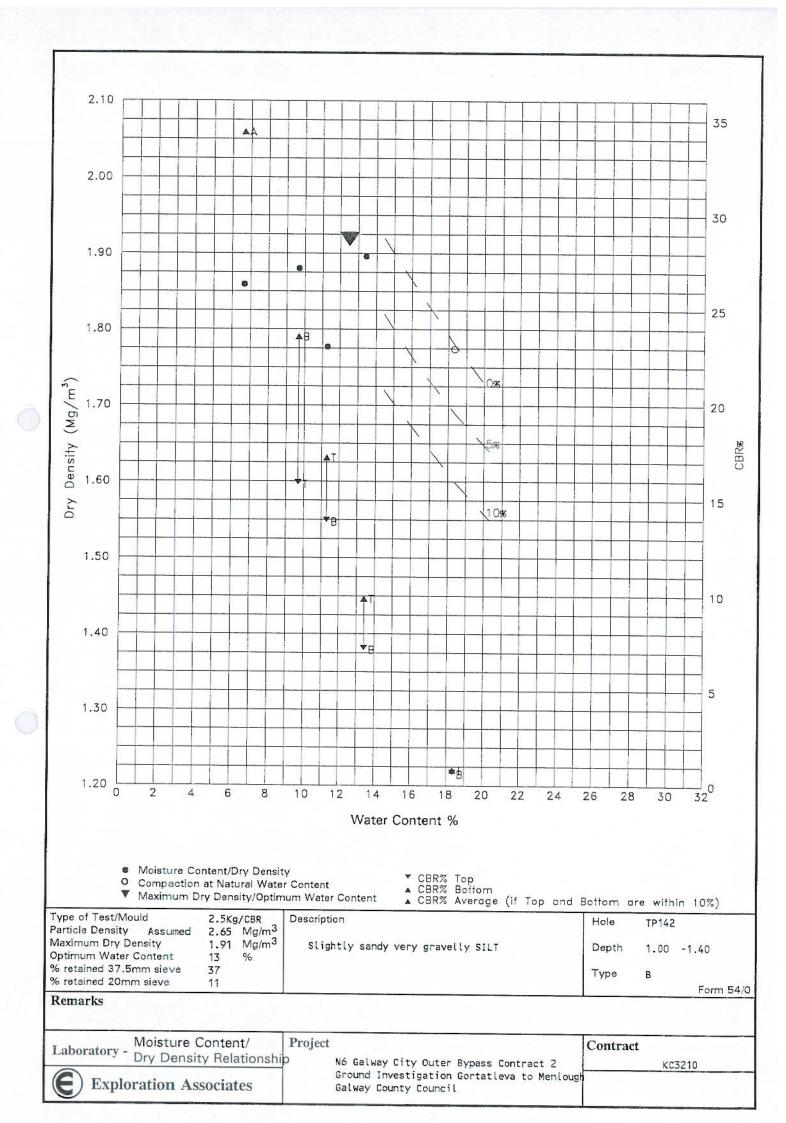


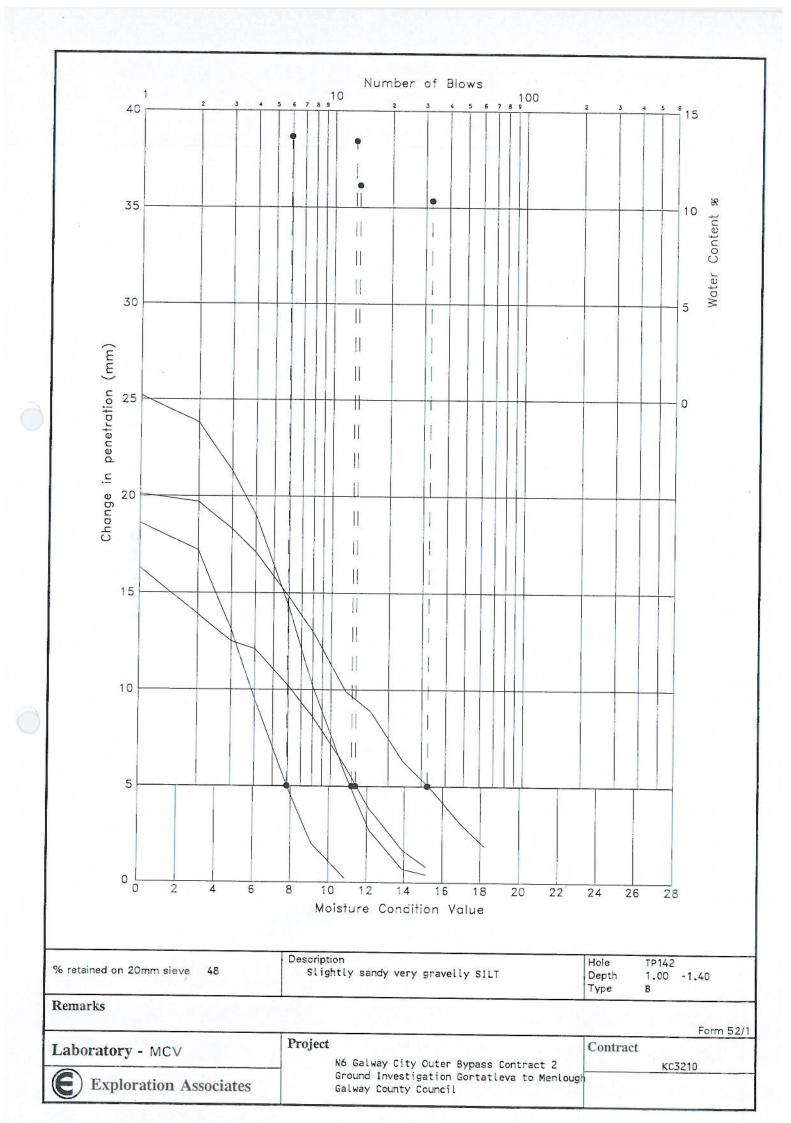


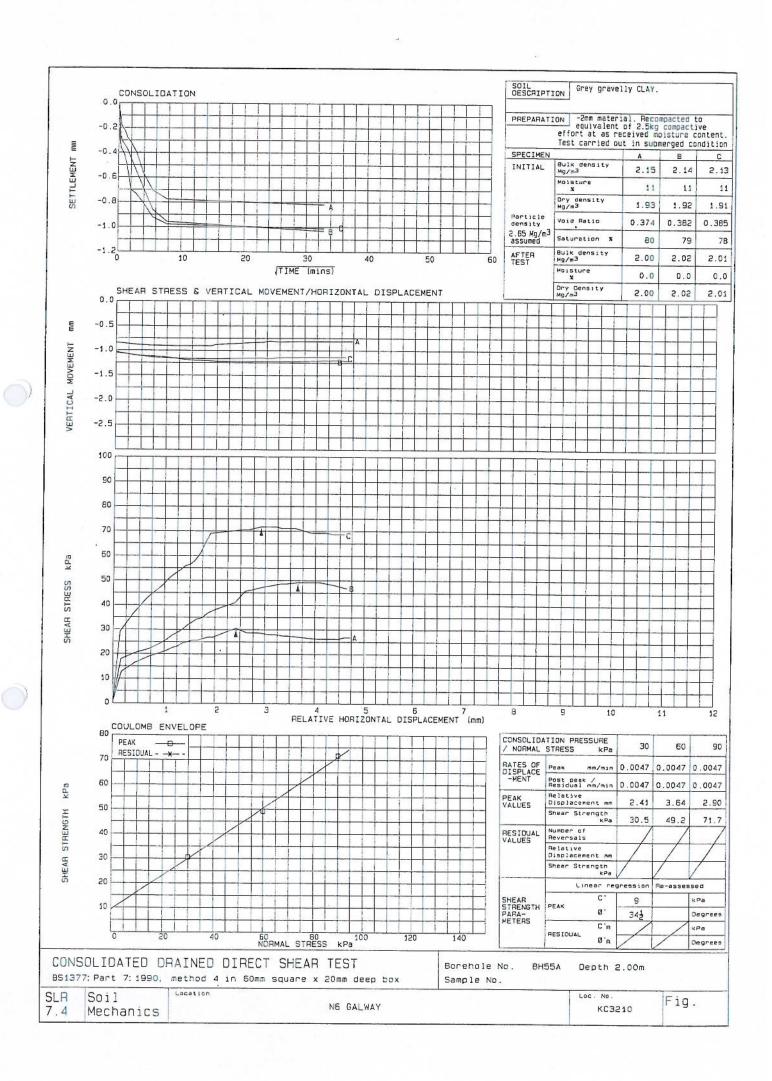


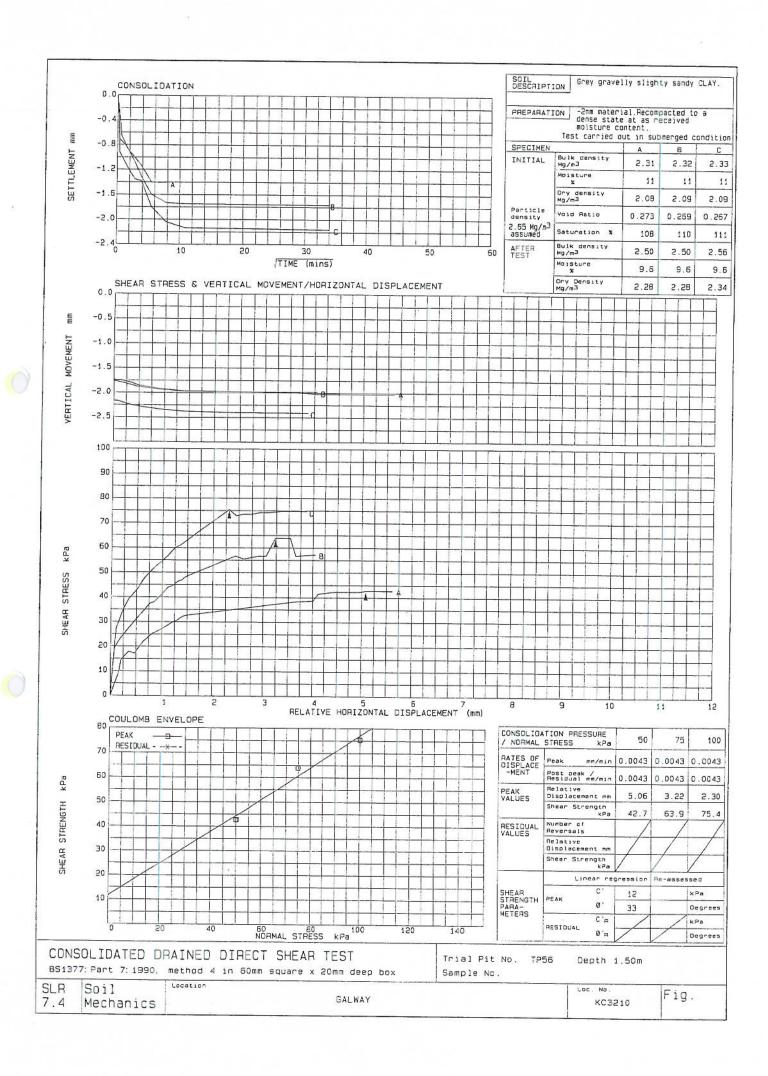












Point Load Test Data
Project: N6 Galway Bypass Contract 2
Project No.: KC3210

do	Bottom	Rock Description	Post	Core/I Imp	Platen Congression						
Donth	- Head)	I lateri Separationi	Ainba	railure Loa	<u>s</u>	Correction	Is50	Remarks
בלב	nebiu		Direction	Diam/Width	D (initial) D (failure	re) Diam		2	Footor	17.4	
(mRGI)	(IDBC)		10,000			,	The second secon	F/De	י מכונטו	LXC	
(JOCE)	(IIIDGIII)		(PL/PU/K)	(mm)	(mm) (mm)	(mm) ((KN)	Mpa	(Do/E010.45	Mna	

Irregular Lump Tests

and freedom		good tracture	good fracture	1		good fracture	Ī	good nacture		good reacture	and fracture		good fracture		good fracture	and fraction
0.1		0.5	18		0.4	10.4	c	0.0	20	0.0	99	2	7.5	4	2.6	r u
4		0.	1.0	1 1	-	1.0	80	0.0	10	2.	-		1.0	00	0.0	-
88	0 0	0	<u></u>	3.8	200	10.3	1.5	7:	6.9	2.5	6.2	1	9./	a r	0.0	20
37		ŧ	_	16.0	0.00	30.0	23	2:1	23.0	0.07	20.0	0,70	Z4.U	16.0	0.5	0 67
65.5	63.3	2.00	60.2	64.6	7	33.	440	,	603	2	9.99	100	20.1	52.6	2	603
45	42	100	38	49	44	Ŧ	22		44		35	30	000	32		42
56	47		45	56	51	5	90		24	-	20	ΔV	2	40	-	25
75	75	7.5	(3)	29	67	5	69	-	69	200	7/	22	3	99	00	200
2	œ	٥	<	œ	ā	1	œ	-	r	ō	7	2		œ		ĸ
Granite	Granite	Granita	Clarific	Granite	Granife		Grey Limestone		Grey Limestone	Grotoomi Lyon	oley Lillestorie	Grev Limestone		Grey Limestone	The state of the s	Gley Lillestone
	,	1		,	1		ı	2	1			,				
8.4	9.45	3.05	20.0	2.92	6.62	00.7	14.90	7 20	02.7	98 0	00:0	3.20	4.70	4.70	440	21.1
RC6A	RC6A	RC7	0700	RC10	RC10	DC47	100	BC28	1020	RC101	1000	RC122	50400	RC120	BC140	2000

Axial Tests

good fracture
4.4
1.3
3.3
22.0
82.1
84
95
63
PD
Grey Limestone
6.10
RC93

Diametric Tests

chattered into concentrated	silancied IIIO several pieces	periettative led stain on tracture	good fracture	along incipient fracture	along incinient fracture	according markets	good fracture	good fracture	good fracture	good tracture	follows calcite vein	good fracture	good nacture	good rracture	along incipient fracture	chinned fracture	confidentiaciale	good fracture	good tracture	good fracture
26	2 1	1.1	5.1	0.2	16	2.2	1 4	5 6	3	4.2	9.0	r r	2 7	7.7	1.7	6.7	2 2	0.0	5.8	7.0
12	100	7.	1.1	1.2	11	11			7	7.1	1.2	12	1 5	7.1	1.2	12	12	4. 6	7.1	1.2
22	1.4		4.4	0.1	1.4	6	4	0. +		4.0	0.5	4.5	17		1.4	5.8	4.5	200	4.0	5.9
12.0	80	0 10	0.62	1.0	5.7	10.0	9	0.00	0.00	0.0	2.9	19.0	00	0.0	0.0	23.0	26.0	0.00	20.0	32.0
74.4	74.4	75.4	1.0.1	81.8	64.0	72.1	67.2	72.9	72.3	6.7	(1.5	65.1	72.0	1:00	14.4	62.9	76.3	77.6	72.0	13.8
58	58	04	60	70	48	61	53	55	54	5 6	79	45	55	3	000	45	61	63	57	20/
75	75	a	8	75	65	29	99	73	76	2 6	0/	74	74	75	6	69	74	7.4	12	++
75	75	75	2 1	(2)	29	29	29	76	76	10	0/	74	74	75	2	69	75	75	75	2
82	Ы	ā	1 6	2	æ.	R	œ	2	2	C	<	~	Ы	۵	2 0	Y	급	Ы	d	1
Grey/pink Dolerite	Pink Granite	Pink Granite	Silver O deilo	PIIIk Granite	Pink Granite	Pink Granite	Pink Granite	Grey Limestone	Grey Limestone	Grout important	Oley Lilliestolle	Grey Limestone	Grey Limestone	Grey Limestone	Company of the compan	Grey Limestone	Grey Limestone	Grey Limestone	Grev I imestone	مروع حسامين
		,			-	1	,		1			1				1	1	.1		
2.33	4.74	3.80	0.43	6.43	4.90	5.15	7.45	14.25	16.68	10.60	00.0	13.20	13.20	17.03	30.0	0.93	5.35	5.40	7.20	
KC3	RC5	RC6A	BCGA	0000	MC10	RC10	RC10	RC13	RC13	RC14A		RC 14A	RC16A	RC16A	DC 17		RC35	RC38	RC38	

Point Load Test Data
Project: N6 Galway Bypass Contract 2
Project No.: KC3210

Domorka	CHIMINS		_	
Icsn	000	EYE		Mina
Correction		Factor		(Da/50)0.45
<u>a</u>		D/Do ²	בורים	Mpa
Failure Loa			2000000	(KS)
Equiv		Diam		(mm)
Platen Separation	The state of the s	Width D (initial) D (failure)		(mm) (mm)
Core/Lump	-	Jiam/		(mm)
Test	i	Direction	ימימטי ומי	(FUFUK)
Rock Description				
Bottom	71500	nebtu	(100m)	(IIIDGIII)
Top	O o o th	ındən	(IDDW)	(IIIDOIL)
Borehole				

Diametric Tests

																	Ire				Ire	Ire	Ire	I.e		Ire	Ire	Ire	Ire	le le	re			re	ej.		(e	9
good fracture	good frooture	good Hacture	good reacture	good tracture	good fracture	good fracture	good tracture	good fracture	good fracture	good fracture	good fracture	chipped fractur	good fracture	good fracture	good fracture	chipped fracture	chipped fracture	chipped fracture	chipped fracture	good fracture	chipped fracture	chipped fracture	chipped fracture	chipped fracture	chipped fracture	chipped fracture	good fracture	good fracture	chipped fracture	chipped fracture	good fracture	chipped fracture	chinned fracture					
6.4	1-5	4.0	5.6	0 00	2.0	1 4	7 0	0.0	0.0	4.6	5.3	0.0	6.5	5.3	4.9	7.9	4.9	5.0	7.7	4.0	3.7	5.7	4.4	6.0	3.0	5.1	4.2	5.9	5.6	6.9	5.1	6.0	4.3	7.4	4.4	4.8	5.7	80
1.2	1.2	12	1.2	1.2	1.5	10.	4. 6.	7.7	7:1	1.2	7.1	7.	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.1
5.4	4.3	3.4	4.7	3.2	43	46	7	- 0	0.0	3.8	4.4	0.0	5.5	4.4	4.0	6.5	4.1	4.2	6.5	3.4	3.1	4.7	3.7	5.0	2.5	4.3	3.5	4.8	4.7	5.7	4.2	5.4	3.9	6.8	4.0	4.3	4.7	7.2
28.0	28.0	20.0	28.0	19.0	23.0	27.0	34.0	0.00	20.0	24.0	24.0	22.0	33.0	78.0	25.0	40.0	24.0	25.0	34.0	20.0	19.0	28.0	21.0	27.2	17.3	26.0	23.0	35.0	30.0	29.0	25.0	24.0	18.0	21.0	13.5	16.0	23.0	26.0
71.8	81.2	76.9	76.9	76.9	73.1	76.9	78.2	77.8	7 .0	7.9.3	75.4	1.5.	0.7.0	19.4	/8./	78.2	76.8	6.97	72.5	77.0	78.3	6.92	75.7	73.4	82.9	78.2	81.2	85.6	80.3	71.1	76.9	9.99	67.9	55.7	58.3	6.09	8.69	60.1
54	69	62	62	62	56	62	64	63	3 6	60	20	50	200	00	64	64	61	62	55	63	65	62	90	58	72	64	69	72	67.5	53	62	52	54	40	43	47	51	45
(3	74	7.1	72	74	75	73	74	75	27.	17	1 2	77	775	10	9/	(2)	76	74	74	74	74	75	75	73	75	75	75	80	75	75	75	63	63	61	62	62	75	63
(2)	75	75	75	75	75	75	75	75	76	75	75	7. 7.	75	13	0/1	6/2	9/	75	75	74	74	75	75	73	75	75	75	80	75	75	75	67	29	61	62	62	75	63
Y.	PL	PL	Ы	PL	Ы	PL	Ы	ā	io	- L		Īā	7 0	7 .	7 2	7	<u></u>	7	긥	Ъ	긥	긥	Ы	æ	긥	œ	~	긥	Ч	Ы	Ъ	긥	Ы	Ы	R	Ы	æ	œ
Grey Limestone	Grev Limestone	Grev I imestone	Grey I imestone	Grey Limestone	Grev Limestone	Gray I impetiona	Gray Limostono	y Limestone	Orey Limestonie	orey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey limestone	Grey limestone	Grey limestone	Grey limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone						
5	Š.	- Gre	ğ	- Gre	- G	- Gre	Gre	- Gre			Ü	3.5							Gre	e Gre	Gre	Gre	S.e	Gre	Gre			-	-	Gre	Ge	-	Gre	Gre	Gre	Gre	Gre	
	2	2	0			0	2						-		-	-	+	'	5		4	2	. 2	2	4	'	'	1	-	-		ı	1	-	-	1	-	-
3.50	7.95	2.75	3.80	2.62	5.30	2.80	3.5	3.55	6.9	7.65	5.45	7.05	11.20	13.25	42.67	12.0	15.75	15.20	16.3	15.85	20.6	19.3	23.22	10.65	12.24	2.95	4.70	8.25	11.0	2.70	4.07	2.30	4.22	4.70	6.80	8.30	12.00	3.90
TC42	RC42	RC45	RC45	RC49	RC49	RC52	RC52	RC57	RC57	RC60	RC63	RC63	RC67	PC67	07.70	0700	0/04	RC72	HC/2	KC82	RC82	RC84	HC84	RC84D	RC84D	RC87	RC87	KC8/A	RC87A	RC88	RC88	RC89	RC89	RC89	RC91	RC91	RC91A	RC93

Point Load Test Data Project: N6 Galway Bypass Contract 2 Project No.: KC3210

Remarks Is x F Мра (De/50)^{0.45} Correction Factor ls P/De² Mpa Failure Loa (kN) Equiv Diam (mm) Test Core/Lump Platen Separation
Direction Diam/Width D (initial) D (failure) Rock Description Bottom Depth (mBGL) Top Depth (mBGL) Borehole

Diametric Tests

chipped fracture	good fracture	chipped fracture	good fracture	chipped fracture	chipped fracture	good fracture	good fracture	good fracture	chipped fracture	good fracture	chipped fracture	good fracture	good fracture	chipped fracture	good fracture	good fracture	chipped fracture	chipped fracture	chipped fracture	chipped fracture
7.9	6.5	6.9	5.6	5.5	8.6	4.5	6.8	7.6	7.4	5.5	7.2	3.9	4.3	4.3	2.7	4.0	7.3	3.9	7.2	1.5
1:1	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1:1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
7.2	5.9	6.2	5.0	4.9	7.3	4.0	0.9	6.8	9.9	5.0	6.3	3.4	3.7	3.8	2.3	3.5	6.5	3.4	6.4	1.3
21.0	26.0	24.0	22.5	21.0	28.0	18.0	27.0	29.0	27.0	23.0	24.0	17.0	18.0	18.0	12.0	18.0	22.5	12.5	23.5	7.0
53.9	66.2	62.4	6.99	65.2	62.0	8.99	8.99	65.1	63.8	68.1	61.5	6.07	9.69	69.1	72.1	71.5	58.8	60.3	8.09	72.7
38	53	47	55	53	42	54	54	52	50	56	45	58	56	99	09	59	40	42	44	61
09	62	65	64	63	72	64	64	64	64	64	99	89	89	29	89	89	65	65	99	89
9	65	65	64	63	72	65	65	64	64	65	99	68	68	29	68	68	68	68	99	68
Ъ	PL	PL	PL	PL	æ	Ы	PL	PL	PL	PL	PL	PL	PL	æ	PL	PL	Ы	PL	PL	PL
Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone	Grey Limestone
,		1	1		1	1	-	,			1	1			r		1	-		1
3.70	9.40	2.43	3.34	6.20	8.15	9.72	3.00	2.23	3.22	7.55	1.85	3.10	3.90	3.70	2.35	6.50	6.72	2.50	3.00	3.60
RC97	RC97	RC99	RC99	RC99	RC101	RC106	RC115	RC118	RC118	RC122	RC124	RC126	RC126	RC127	RC135	RC135	RC135	RC138	RC138	RC140

Sam	ple De	tails		Test	Data						
Hole	Depth	Description	Length Dia. mm	Test Date	W %	γ _b Mg/m³	Strain at Failure	Test Time secs	Stress Poiss. Ratio	UCS Value MPa	NOTES (Failure Mode, Orientation etc.)
RC6A	5.80- 6.17		169.9 75.6	16/12/03	0.3 Nat	2.62		197		25.3	Axial Cleavage
RC10	7.75- 8.65		121.5 67.4	09/02/04	0.5 Nat	2.64		294		49.4	Axial Cleavage
RC14A	11.7- 12.04		159.0 75.5	30/01/04	0.3 Nat	2.70		393		46.3	Axial Cleavage
RC17	9.33- 9.62		153.0 67.3	02/02/04	0.2 Nat	2.92		638		90.1	Axial cleavage
RC28	10.3-		174.5 63.3	13/12/03	0.3 Nat	2.70		602		93.1	Axial Cleavage
RC35	5.88- 6.15		150.7 75.1	05/02/04	0.2 Nat	2.70		777		81.6	Axial Cleavage
RC42	5.28- 5.55		144.1 75.3	06/02/03	0.1 Nat	2.71		921		97.2	Axial Cleavage
RC45	4.00- 4.50		154.7 74.3	05/02/04	0.2 Nat	2.72		959		96.1	Axial Cleavage
RC49	4.05- 4.37		172.7 75.5	05/02/04	0.1 Nat	2.69		755		88.5	Axial Cleavage
RC52	3.75- 4.15		150.1 75.5	06/02/04	0.1 Nat	2.70		818		91.9	Axial Cleavage
RC57	4.25- 4.60		171.2 75.3	05/02/04	0.2 Nat	2.70		931		94.0	Axial Cleavage
RC60	6.25- 6.70		181.1 74.8	05/02/04	0.1 Nat	2.71		568		62.7	Axial Cleavage
RC63	8.35- 8.75		157.0 75.2	05/02/04	0.1 Nat	2.70		739		75.7	Axial Cleavage
RC67	13.8- 14.10		169.3 75.4	05/02/04	0.2 Nat	2.70		584		61.1	Axial Cleavag

Tests performed and reported in accordance with ISRM (1981).

Applied stress Rate 0.5 to 1 MPa/sec.

All testing performed along core axis unless otherwise stated in the notes.

Moisture condition (w%) - A-air dry, S-saturated, N-natural moisture content

Laboratory - Uniaxial Compression Test Summary

Project N6 Galway City Outer By-Pass Contract 2

KC3210

Sheet

Sam	ple De	tails		Test	Data							
Hole	Depth	Description	Length Dia. mm	Test Date	W %	$\gamma_{ m b}$ Mg/m ³	Strain at Failure	Test Time secs	At 50 % Secant Mod. E MN/m ²	Stress Poiss. Ratio	UCS Value MPa	NOTES (Failure Mode, Orientation etc.)
RC70	11.0- 11.31		170.9 74.9	05/02/04	0.1 Nat	2.71		1040			102.3	Axial Cleavage
RC72	15.8- 16.25		173.1 74.7	05/02/04	0.1 Nat	2.74		874		*	86.4	Axial Cleavage
RC87	4.89- 5.09		176.1 75.4	24/12/03	0.3 Nat	2.70		619			92.0	Axial Cleavage
RC87A	7.82- 8.14		171.1 75.5	24/12/03	0.2 Nat	2.72		608			89.6	Axial Cleavage
883	2.77- 3.02		170.3 75.4	24/12/03	0.2 Nat	2.71		682			100.9	Axial Cleavage
RC89	3.48- 3.70		132.9 63.0	06/02/04	0.1 Nat	2.70		611			91.9	Axial Cleavage
RC89	3.71- 4.00		155.0 63.0	06/02/04	0.1 Nat	2.70		679			93.8	Axial Cleavage
RC91	3.23- 3.46		146.0 63.0	06/02/04	0.1 Nat	2.69		177			85.5	Axial Cleavage
RC93	2.50- 2.75		139.0 62.8	02/02/04	0.1 Nat	2.73		270			37.7	Axial cleavage
RC106	13.0- 13.63		164.3 63.2	16/12/03	0.3 Nat	2.71		302			67.1	Axial Cleavage
RC115	2.50- 2.88		115.0 63.2	16/12/03	0.2 Nat	2.73		607			95.2	Axial Cleavage
RC118	1.15- 1.34		139.7 63.1	02/02/04	0.1 Nat	2.73		287			49.3	Axial cleavage
RC122	3.85- 4.30		182.2 67.4	13/12/03	0.2 Nat	2.72		529			99.9	Axial Cleavage
RC124	6.70- 7.09		169.3 67.2	16/12/03	0.1 Nat	2.70		480			90.1	Axial Cleavage

GEOTECH

Tests performed and reported in accordance with ISRM (1981).

Applied stress Rate 0.5 to 1 MPa/sec.

All testing performed along core axis unless otherwise stated in the notes.

Moisture condition (w%) - A-air dry, S-saturated, N-natural moisture content

Form 44/2

Laboratory - Uniaxial Compression Test Summary

Project

N6 Galway City Outer By-Pass Contract 2

Contract

KC3210

Sheet

Sample Details				Test	Data		,							
	1 - 11 - 1		Length	_		~	Strain	Test	At 50% Stress		- UCS	NOTES		
Hole	Depth	Description	Dia. mm	Test Date	W %	γ _b Mg/m³	at	Time secs	Secant Mod. E MN/m ²	Poiss. Ratio	Value MPa	(Failure Mode, Orientation etc.)		
RC126	3.40- 3.84		181.1 67.2	13/12/03	0.4 Nat	2.62		207			41.2	Axial Cleavage		
RC135	4.15- 4.65		180.0 67.1	13/12/03	0.6 Nat	2.69		566			78.9	Axial Cleavage		
RC138	3.70- 3.92		176.5 67.3	13/12/03	0.1 Nat	2.69		525			77.7	Axial Cleavage		
RC140	2.15-2.35		106.1 67.4	13/12/03	0.1 Nat	2.70		608			70.9	Axial Cleavage		
										5.4				
												±y		

Tests performed and reported in accordance with ISRM (1981).

Applied stress Rate 0.5 to 1 MPa/sec.

All testing performed along core axis unless otherwise stated in the notes.

Moisture condition (w%) - A-air dry, S-saturated, N-natural moisture content

Form 44/2 Uniaxial Compression Project Contract Laboratory - Test Summary N6 Galway City Outer By-Pass Contract 2 KC3210 Sheet GEOTECH

Samples			Cla	ssific	ation			Stre	ength		Other Tests		
Hole	Depth	Type	Description	<425 ^I P	Prep W _L	w _P	Water	γ _b Mg/m	Test	σ ₃ kPa	C kPa		
RC6A	5.80 - 6.17	cs										Porosity: 1.40% Dry Density: 2.62kg/m3	
RC6A/7	0.00	COMB										Water Sol. Chl = <0.01% SO3 (2:1) = 0.04g/l Passing 2mm = 100%	
RC124	6.70 - 7.09	cs										Porosity: 0.49% Dry Density: 2.71kg/m3	
RC 122/124	0.00	COMB			ä							Water Sol. Chl = <0.01% SO3 (2:1) = 0.01g/l Passing 2mm = 100%	
				*									
												-	
							3						

Project

N6 Galway City Outer By-Pass Contract 2

Laboratory - Results Summary

GEOTECH

Form 10/2

KC3210

Contract

Sheet

Determination of Aggregate Properties



Hole Number	Sulphate Content g/l	Chloride Content %	Sound- ness	10% Fines kN	Water Absorp- tion %	Slake Dura- bility	PSV	VAA
RC6A and RC7	0.04	0.00	98	180	1.0	99.6	53	2.6
RC122 and 124	0.01	0.00	100	170	0.3	99.4	38	15
RC10 7.75 – 8.65	0.09	0.00	-	240	-	98.8	52	-

Notes: 14 -10mm size used for soundness and 10% fines.

Slake durability except RC10, PSV and AAV tested by Celtest Ltd, Bangor, Gwynedd, LL57 4DA. U.K.

Notes:	Project	N6 Galway City Outer Bypass, Contract 2	Table
	Project No.	KC3210	20000000
	Carried out for		
	Manager Services and Services a		Sheet 1 of 1

Results of ICP Analysis



Hole Number & Depth	SiO₂ mg/kg	Al₂O₃ mg/kg	CaO mg/kg	MgO mg/kg	Na₂O mg/kg	MnO mg/kg	Fe ₂ O ₃
RC006A 5.80 - 6.17	789	7140	24343	398	419	310	16299
RC124 6.7-7.09	445	263	628151	4957	191	43	289

Oxide quantities proportioned from elemental quantities appended.

						4					CL	S I	0.04by	פופוטא	
											e Analysis	e Analysis		EFS/040101	-
											Soils Sample Analysis		Date Printed	Report Number	Table Number
STATE OF THE PARTY	2	2	2 Silicon	369	208									40	744
E VENE	-	. 2	Sodium	311	142									00000	ypas
- GAMOO	3	2	2 Magnesium	2140	2990									ift, D	
E STATE OF	-	. 2	⊇ Calcium	17400	449000	ľ					chanics			Calway City Bynase #2	way
III DOGO	+	ves	Manganese	240	33						Soil Mechanics	Mr J Booth		3	9
III DECOIL	+-	ves	lron	11400	202						e E				
mg/kg	4	1		3780	139						Client Name	Contact			
Mother Codes	· special college	UKAS Accredited :	Cifent Sample Description	RC006A 5.8-6.17	RC124 6.7-7.09						TES Bretby	PO Box 100, Bretty Business Park,	Burbon-on-Trent, Staffordshire, DE15 0XD	Tel +44 (0) 1283 554400	Fax +44 (0) 1283 554422
			TES ID Number	CD 100000	0400582							. 6	Bur	je.	a.

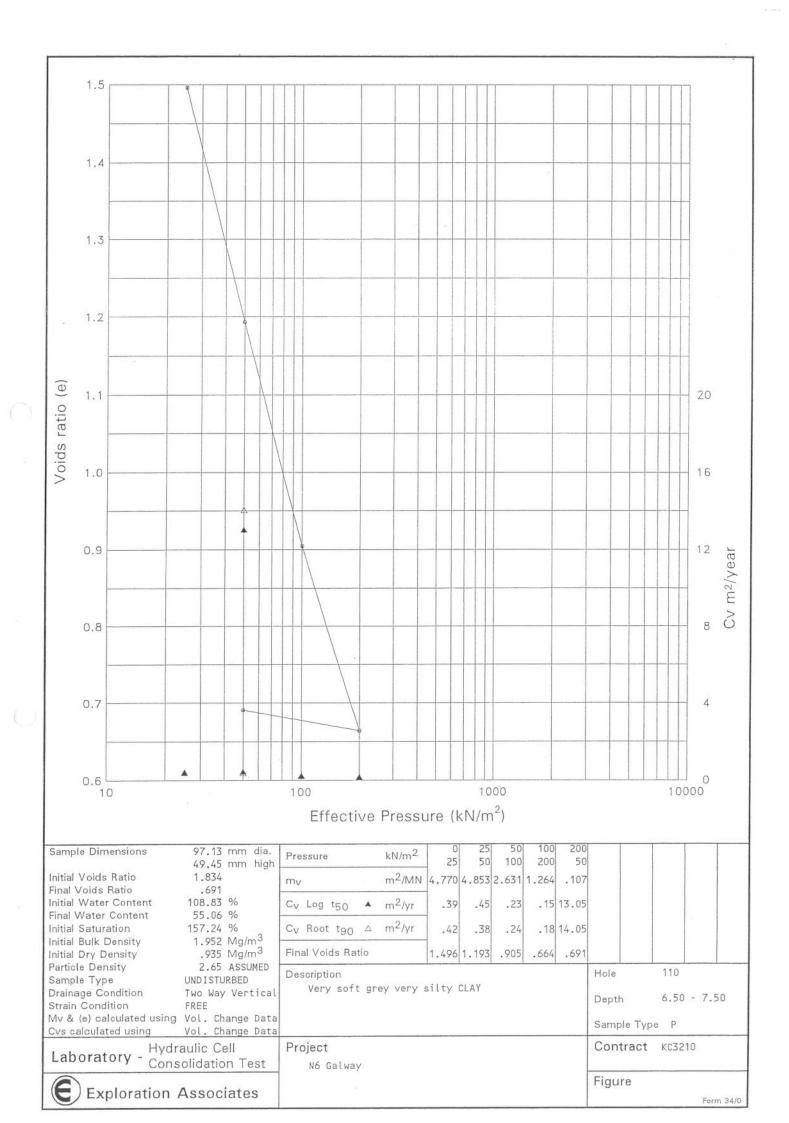
		Wate Cont	r ent	Dens	ity		Cons	olidation			
Туре	Description	Initial	Final			Dry	Pren	Test	P'o		2/year
1300	Description	%	%	Mg/m ³	Mg/m ³	Mg/m ³	гтер.	Drainage	kN/m ²	t ₅₀	t90
P	Very soft grey very silty	102	55	1.91	2.17	.95	NAT	One Way	25	3 - 10	2.72
	CLAY						3000				1.18
											.86
											.69
									1 1		
									50	3.11	4.00
P	Soft grey brown CLAY with	200	122	1.20	1.26	.40	NAT	Two Way	25	2 00	1.91
	ocasional rootlets				11.20	. 10	THE STATE OF THE S				1.16
	Control of the State of the Sta				1						1.48
									21201015		
									20	- 20	.31
Р	Very soft grey very silty	100	55	1 95	2 50	03	TAIA	Tuo Usy	25	70	.42
	CLAY	107		1.75	2.50	.,,	MAI		1 555		.38
											.24
											.18
									50	15.05	14.05
		P Very soft grey very silty CLAY P Soft grey brown CLAY with ocasional rootlets P Very soft grey very silty	Type Description Initial % P Very soft grey very silty 102 CLAY P Soft grey brown CLAY with ocasional rootlets P Very soft grey very silty 109	Type Description Initial Final % P Very soft grey very silty 102 55 CLAY P Soft grey brown CLAY with coasional rootlets P Very soft grey very silty 109 55	Type Description P Very soft grey very silty 102 55 1.91 P Soft grey brown CLAY with coasional rootlets P Very soft grey very silty 109 55 1.95	Type Description Initial Final Initial Final Mg/m³ Mg/m³ CLAY 102 55 1.91 2.17 P Very soft grey very silty 102 55 1.91 2.17 P Soft grey brown CLAY with cocasional rootlets 200 122 1.20 1.26	Type Description Initial Final Initial Final Final Dry Mg/m³	Type Description Initial Final Initial Final Dry Mg/m3	Type Description Initial Final Initial Final Dry Mg/m³ Mg/m³	Type Description Initial Final Initial Final Dry Mg/m³ Mg/m³	Type Description Initial Final Initial Final Dry Prep. Test P'o Cv m Mg/m³ M

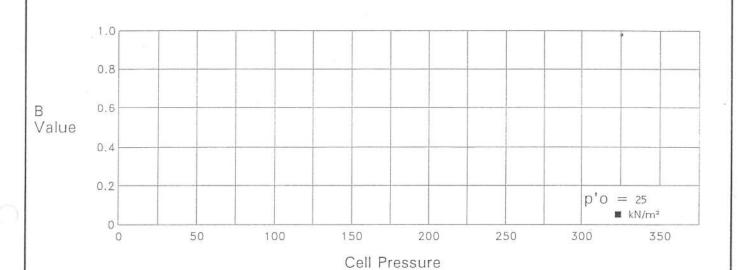
Volume Change used to calculate Cv and Mv values

Form 18/2

Laboratory - Hydraulic Cell Consolidation Test

Project N6 Galway Contract KC3210





Diameter :

97.13 mm

Specific Gravity :

2.65 ASSUMED

Sample

Length

Area

Information

49.45 mm

Initial Voids Ratio :

1.834

: 7409.632 mm²

Initial B Value :

.98

Volume

366.406 cm³

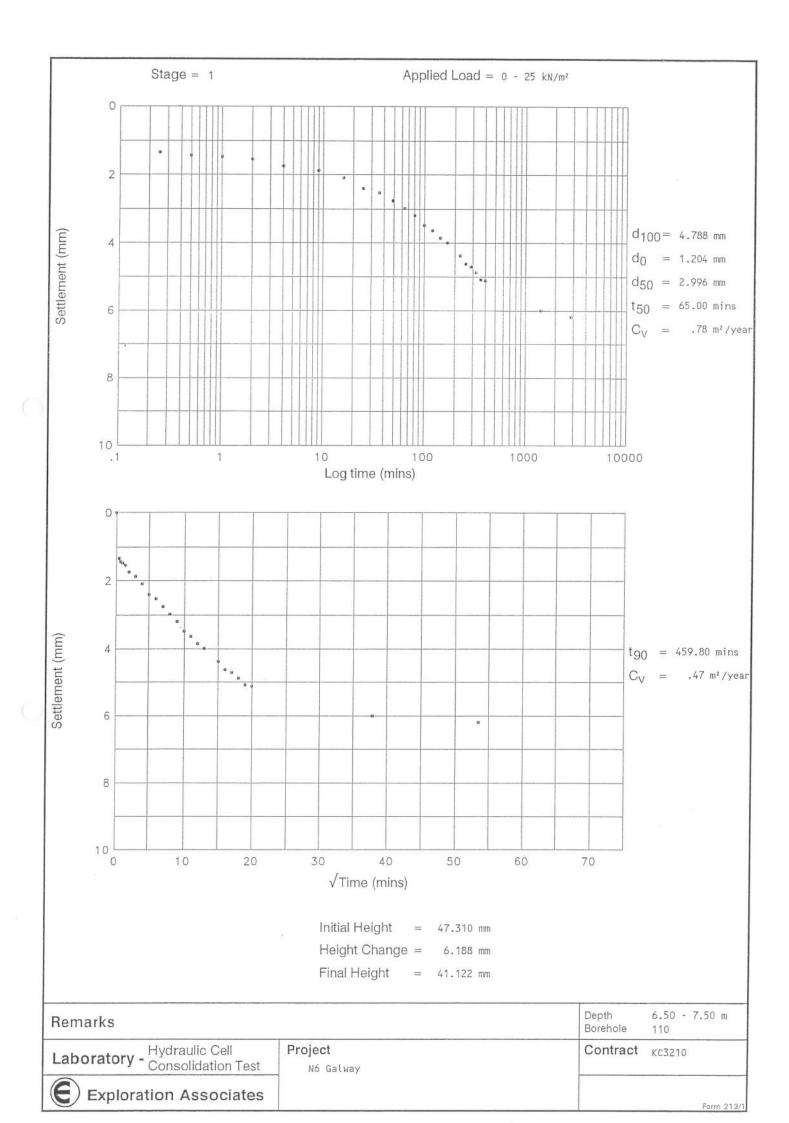
Final B Value : .98

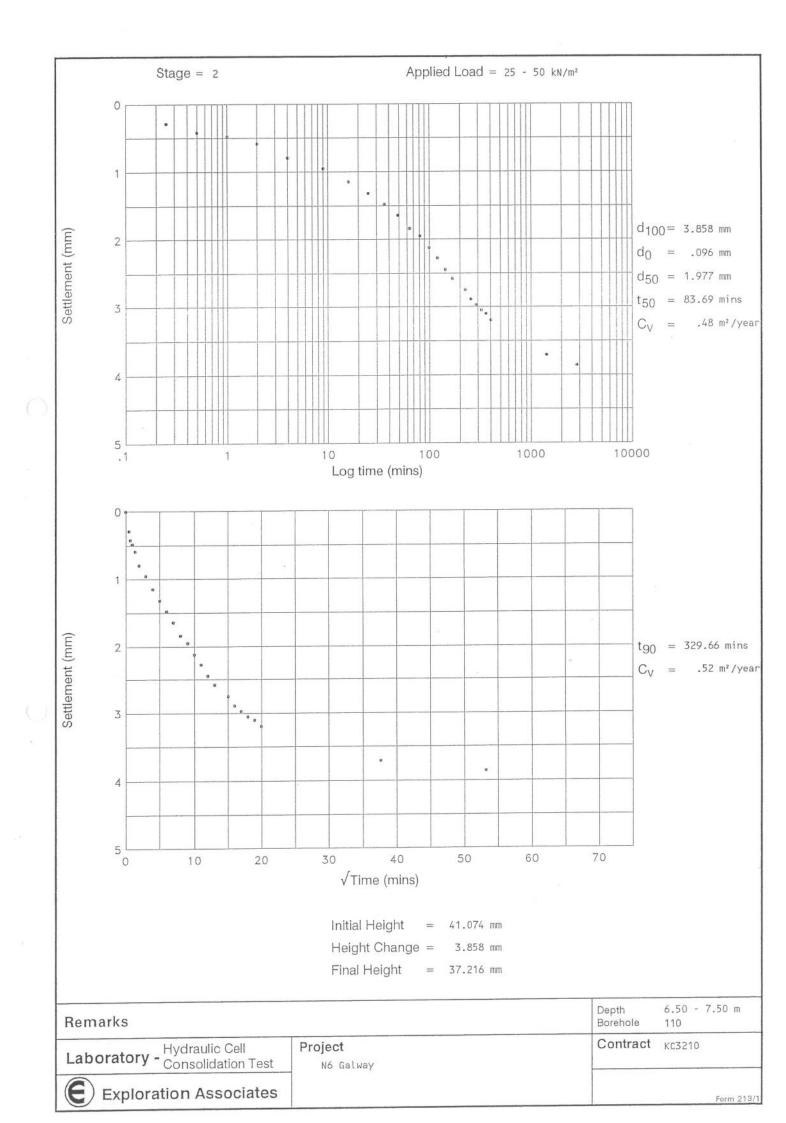
Saturation B Value/Cell Press	sure	Borehole Depth	110 6.50 - 7.50 m
Remarks			
Laboratory - Hydraulic Cell Consolidation Test	Project	Contract	KC3210

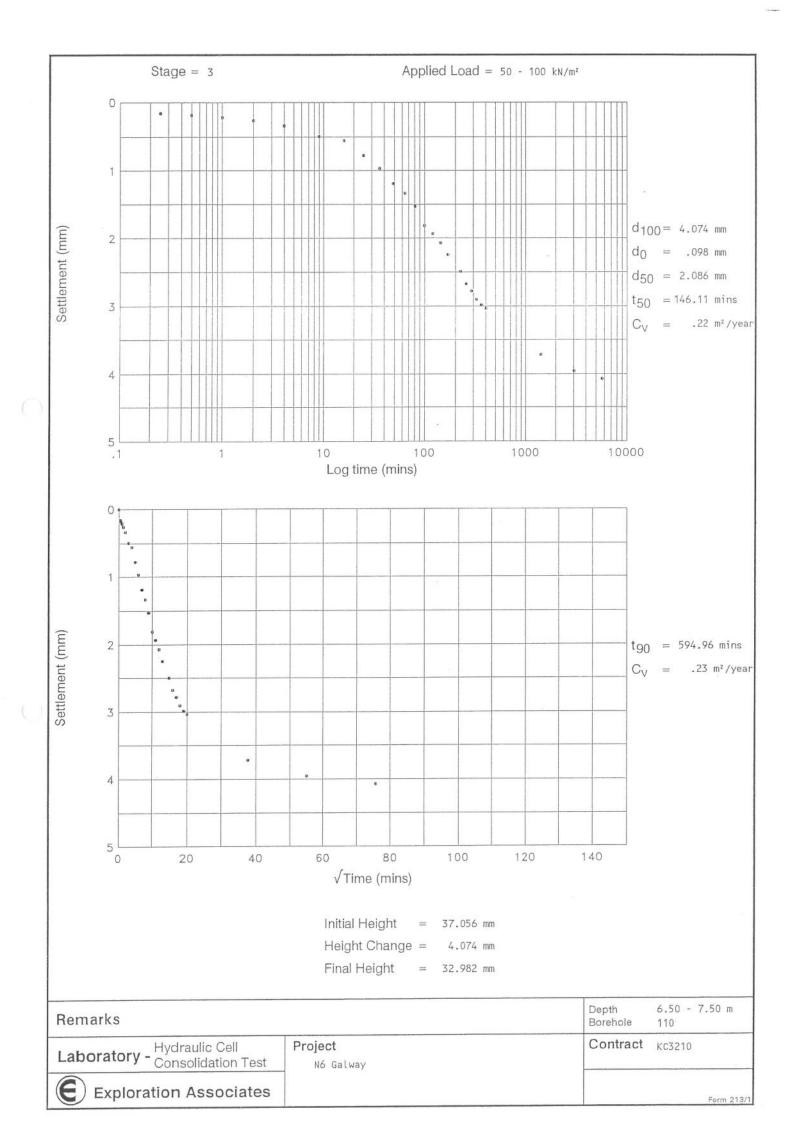
Exploration Associates

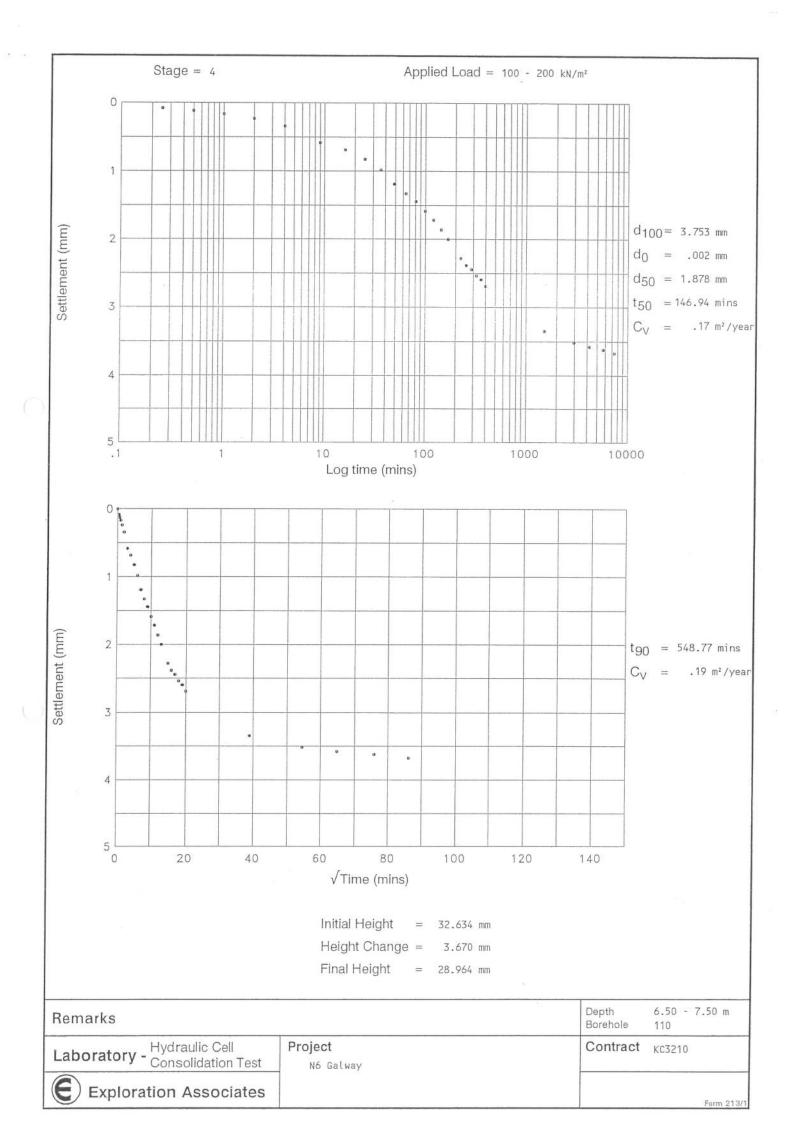
N6 Galway

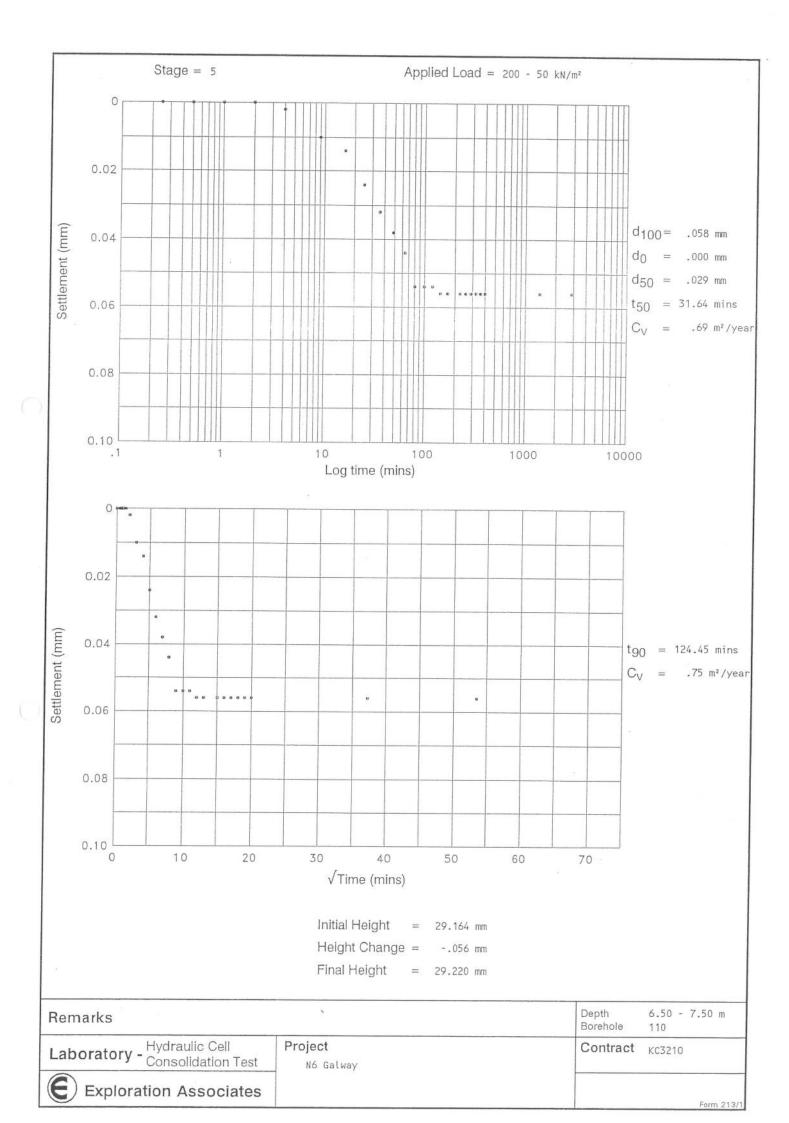
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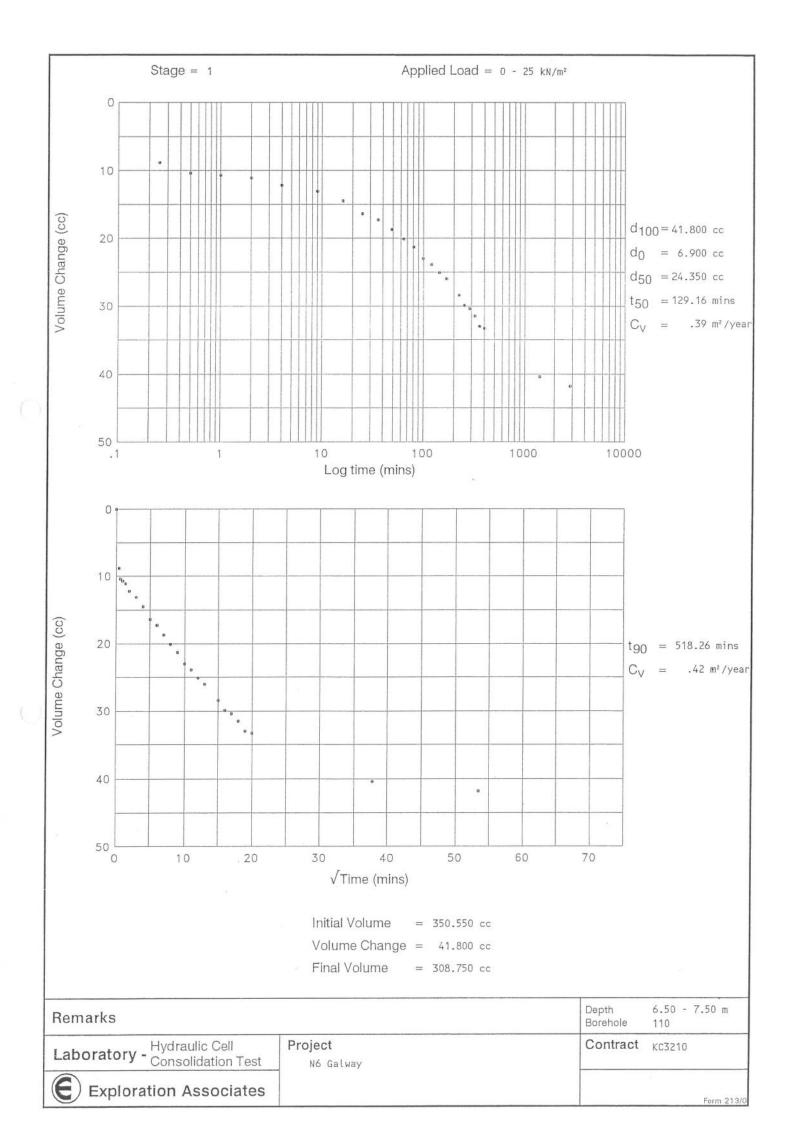


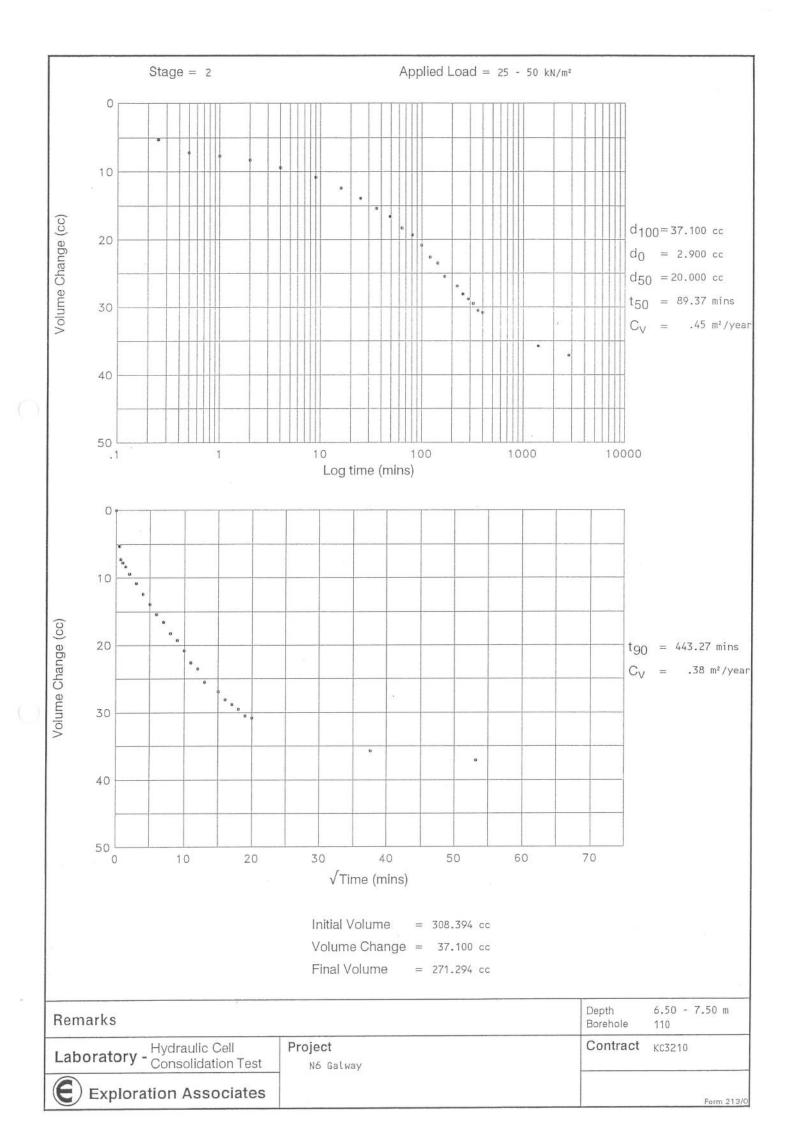


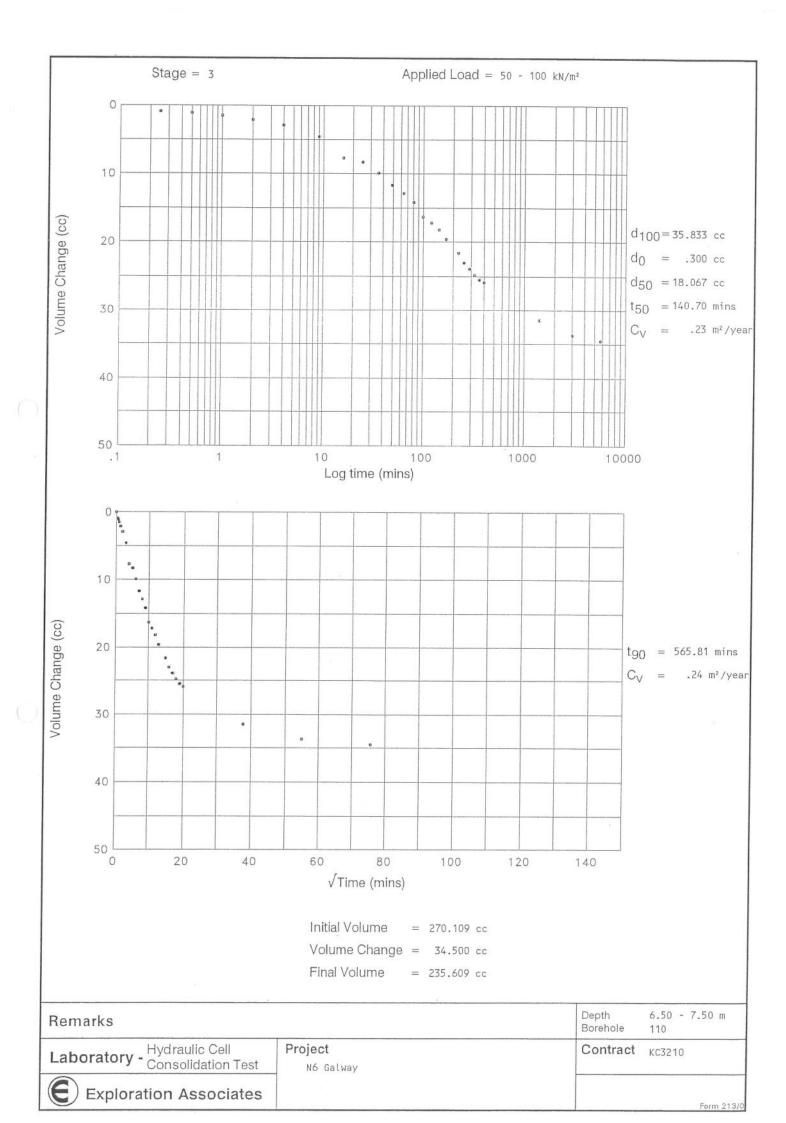


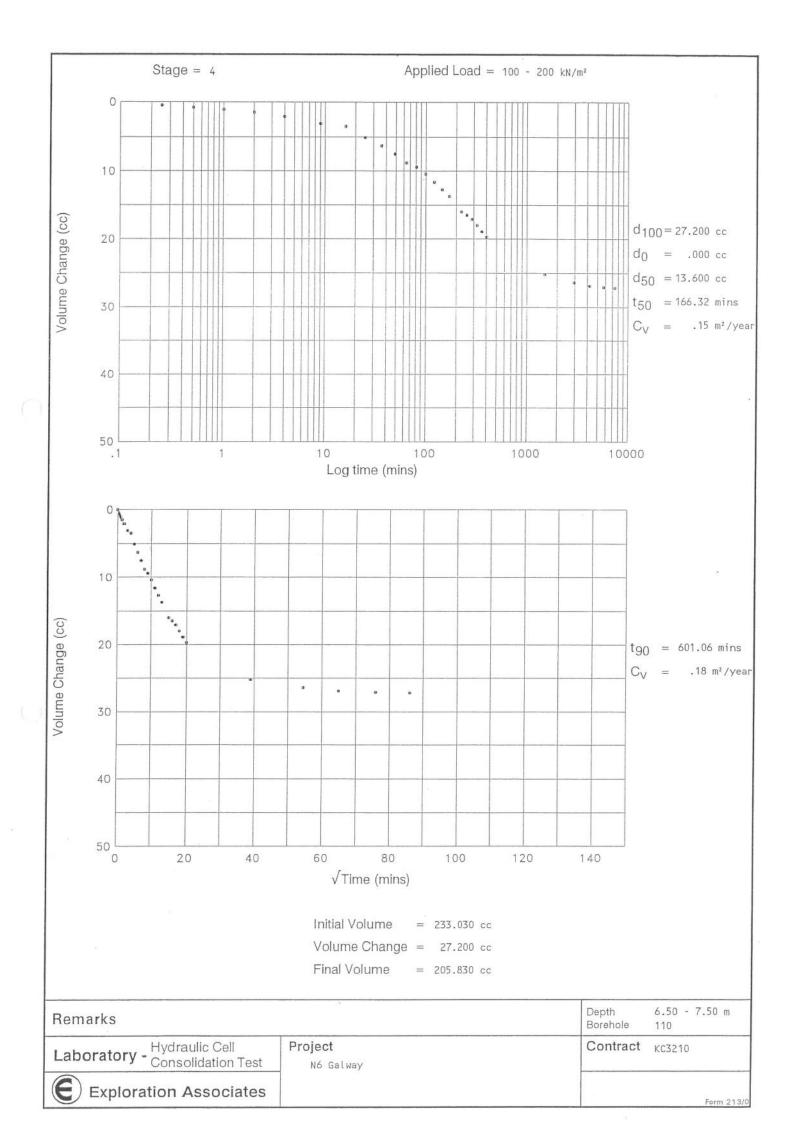


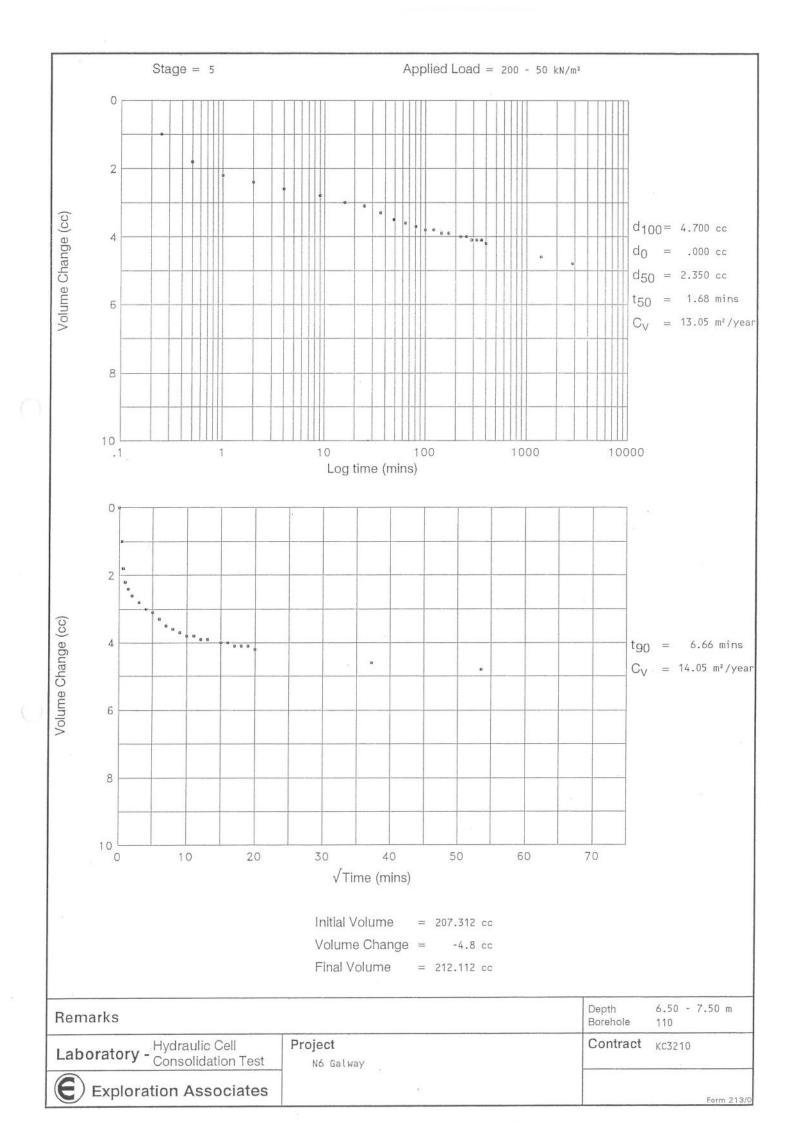


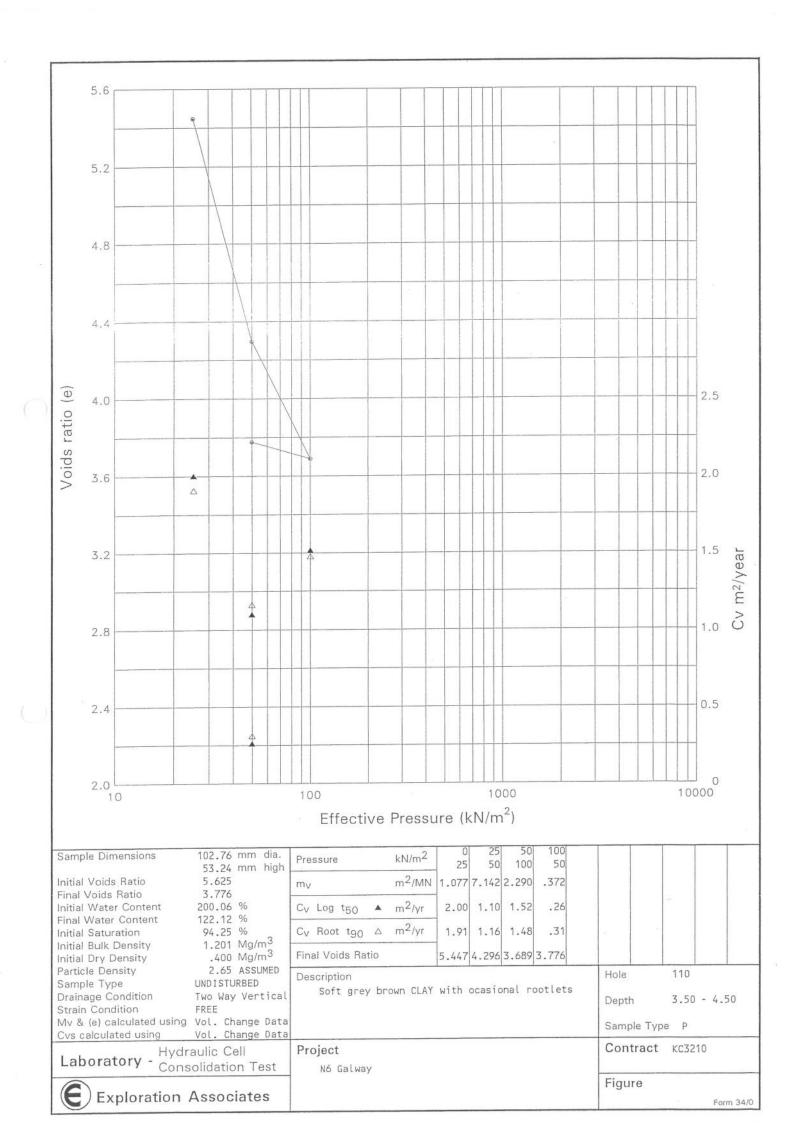


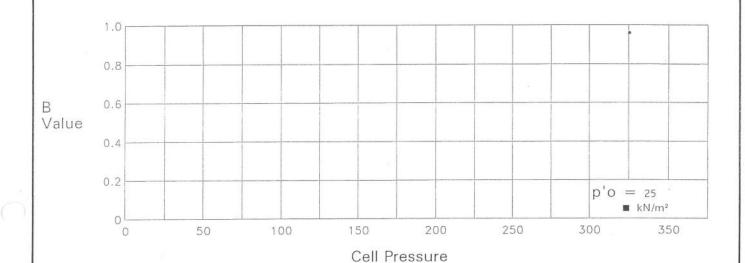












Diameter :

102.76 mm

Specific Gravity

2.65 ASSUMED

Sample

Length

53.24 mm

Initial Voids Ratio:

Information

5.625

Area

8293.504 mm²

Initial B Value

.96

Volume

441.546 cm³

Final B Value

.96

Saturation B Value/Cell Pressure

Borehole Depth

110 3.50 - 4.50 m

Remarks

Laboratory - Hydraulic Cell Consolidation Test

Project

Contract

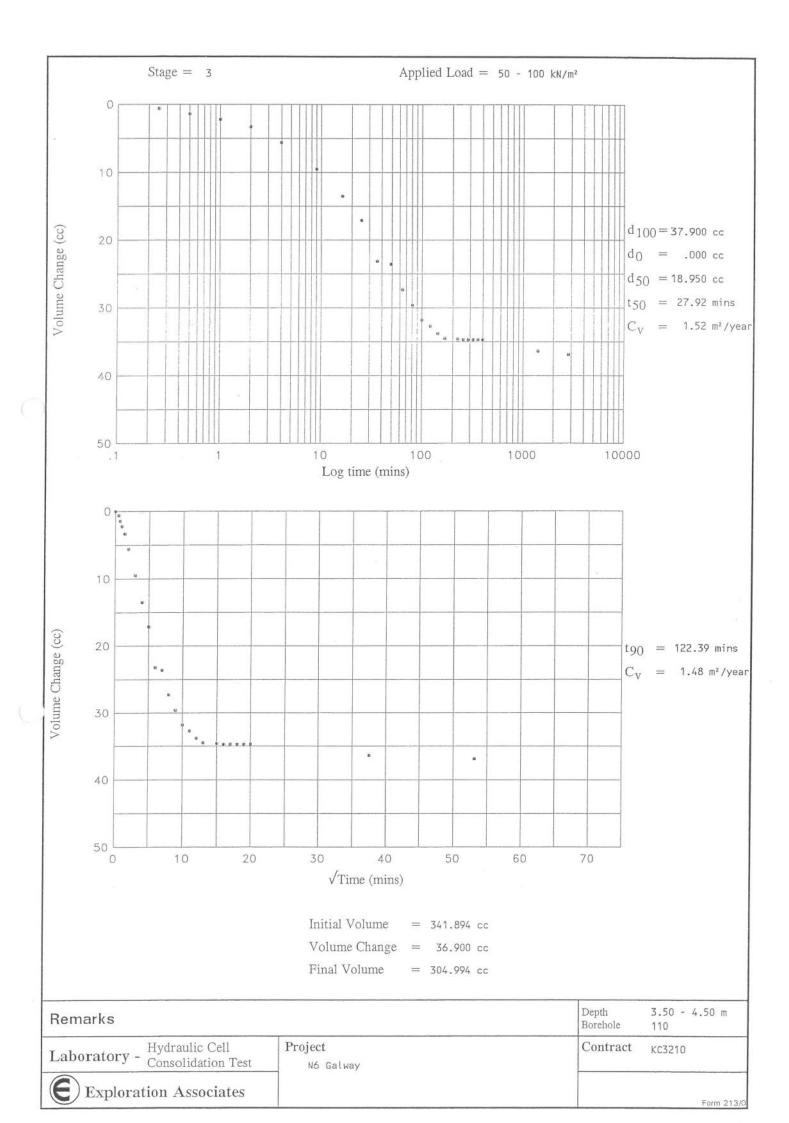
KC3210

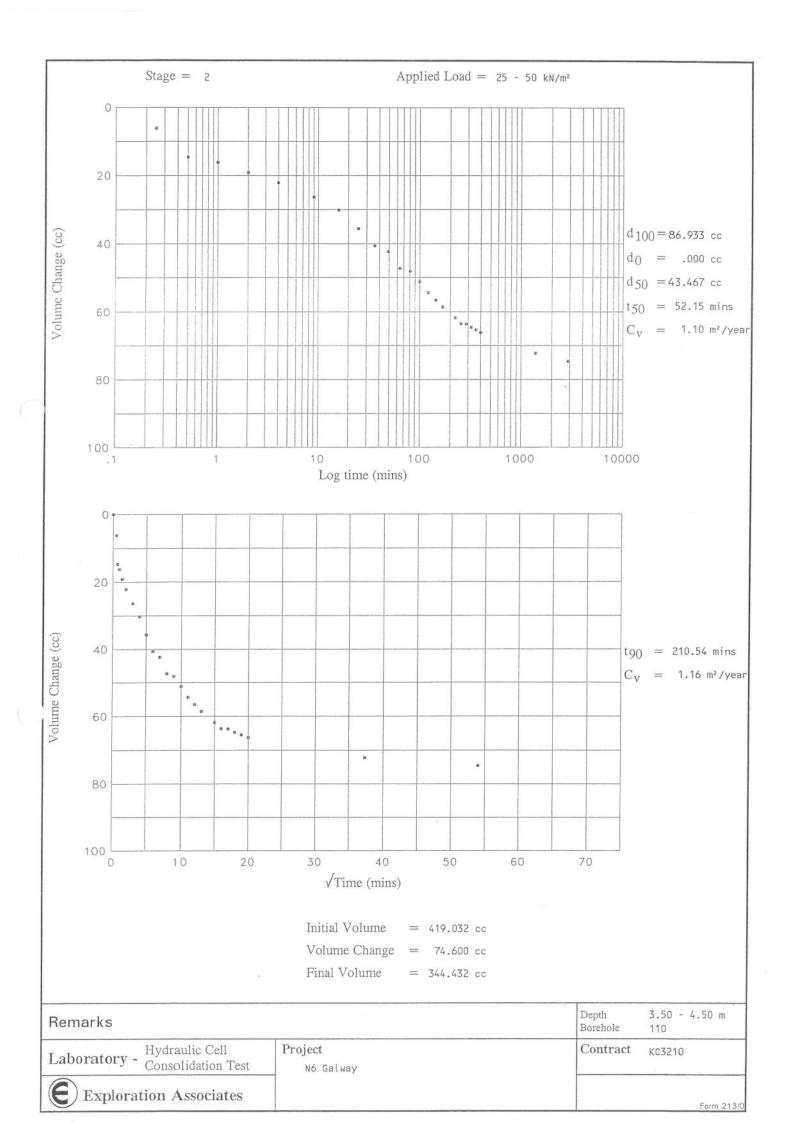
Exploration Associates

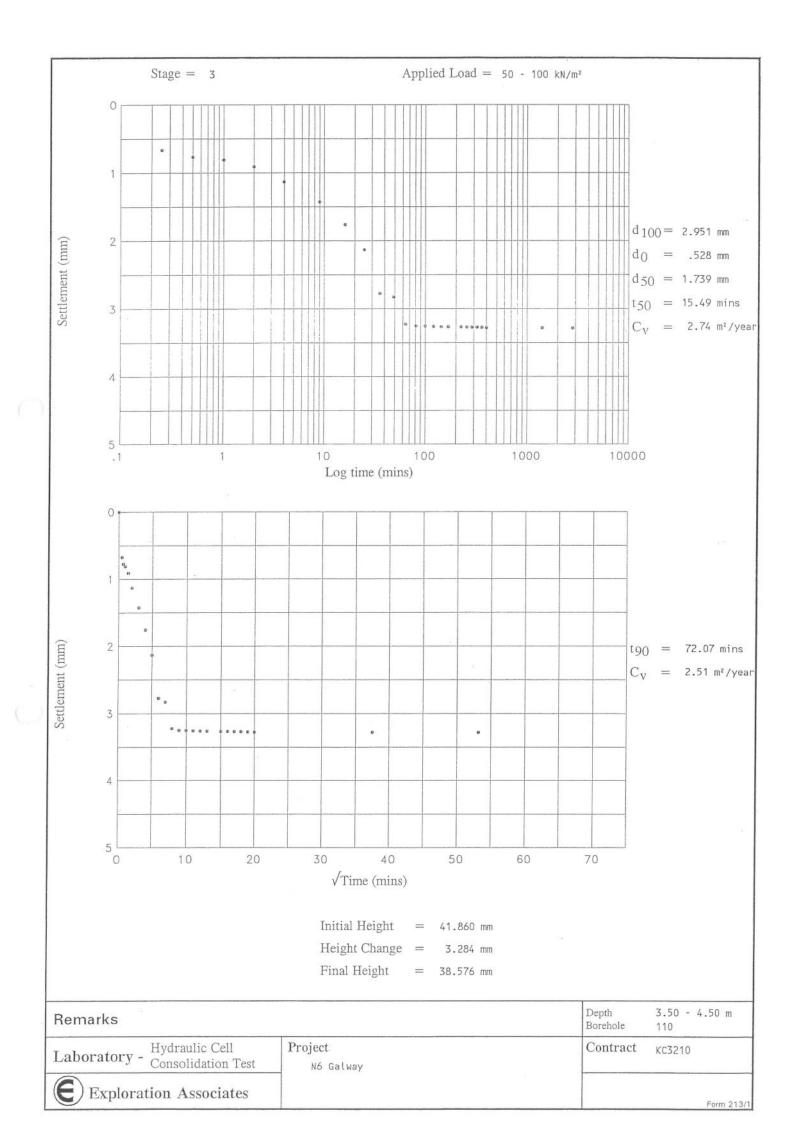
N6 Galway

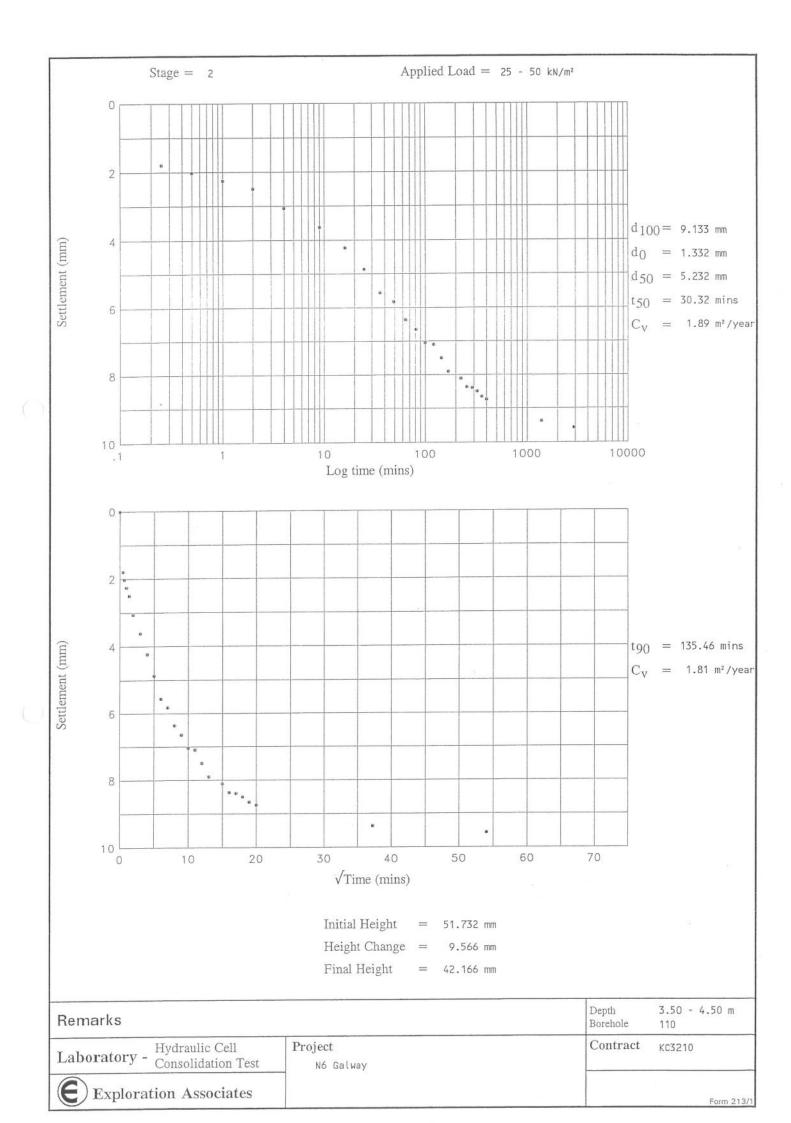
Figure

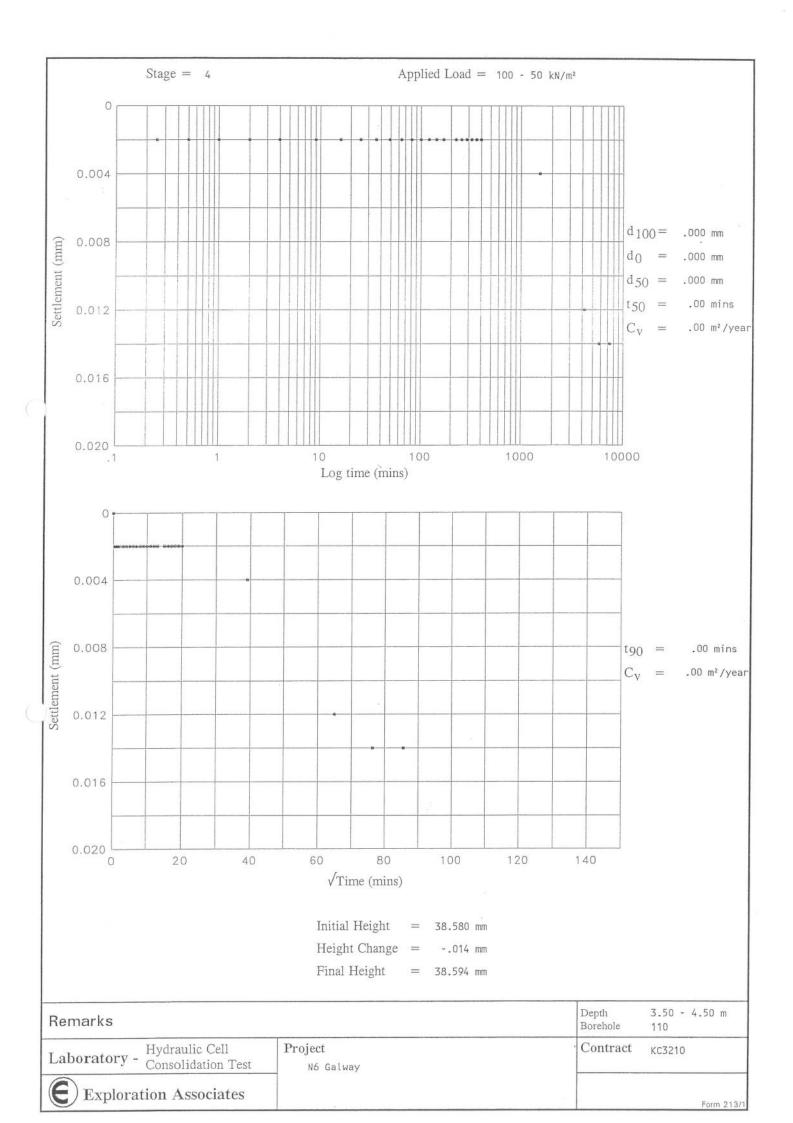
Form 28/1

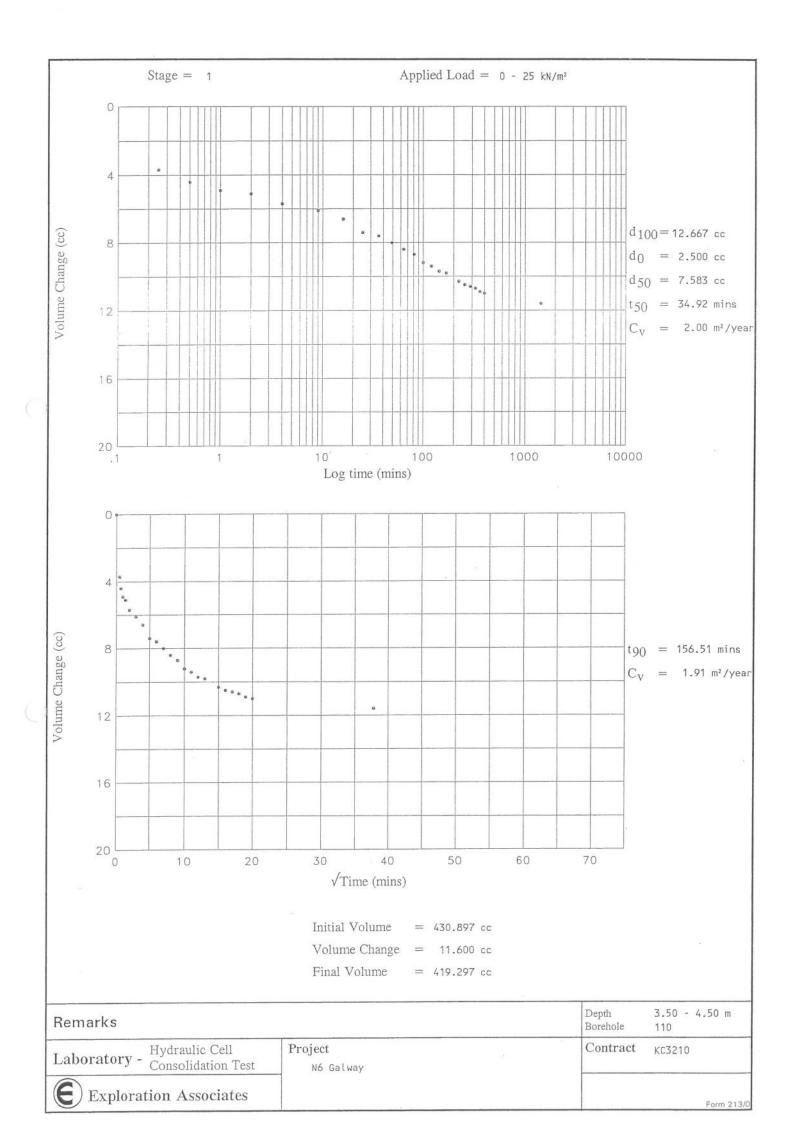


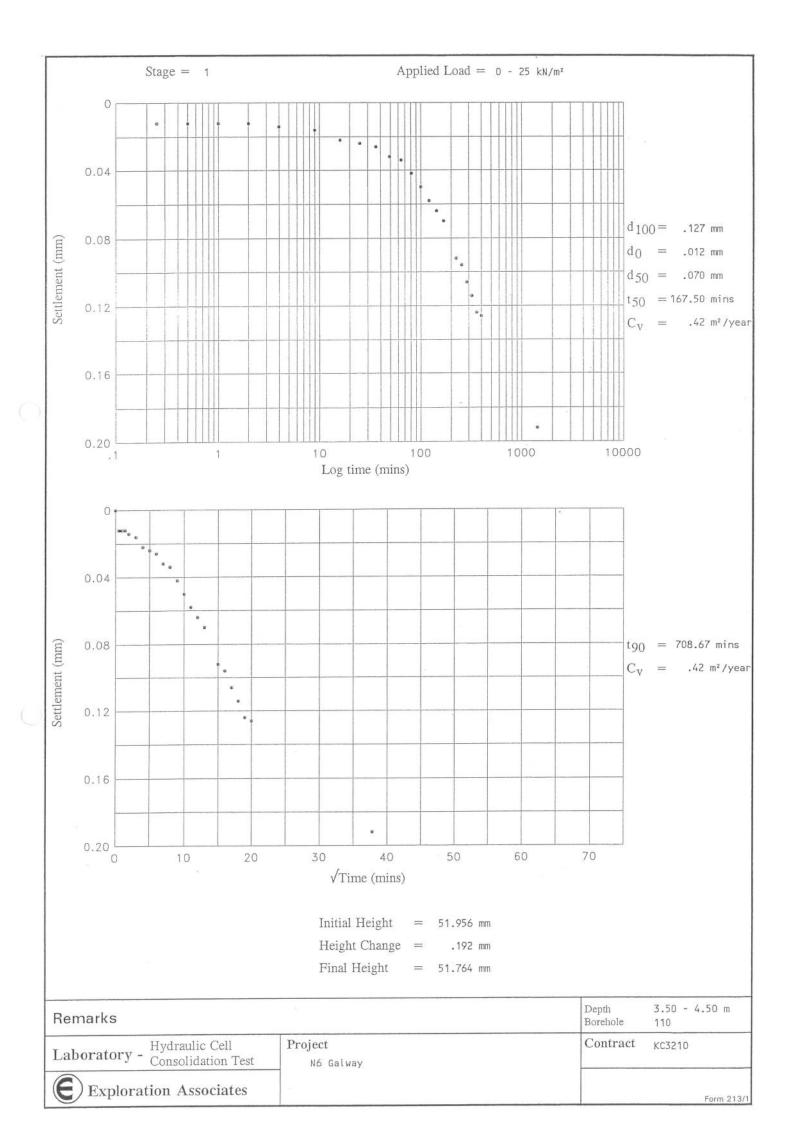


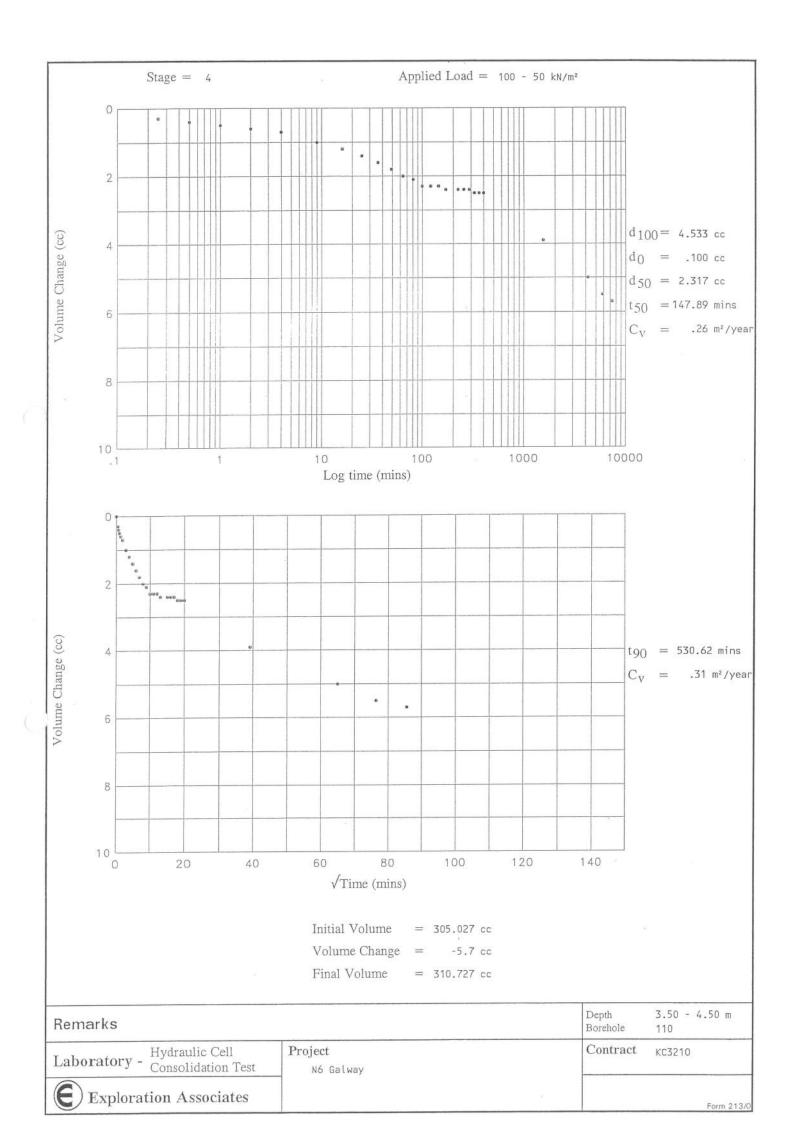


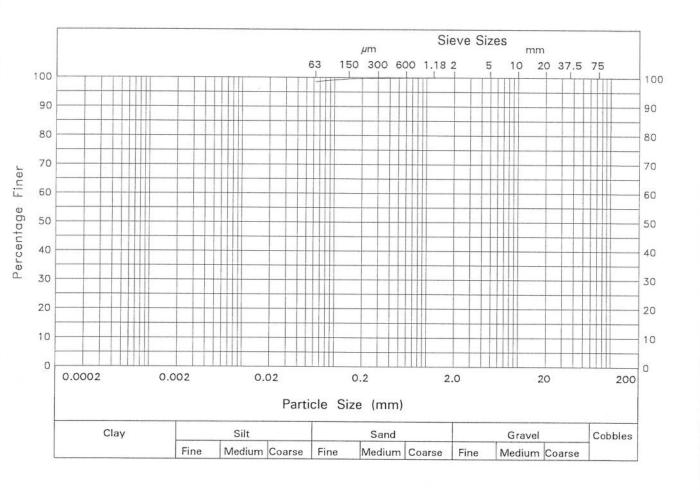






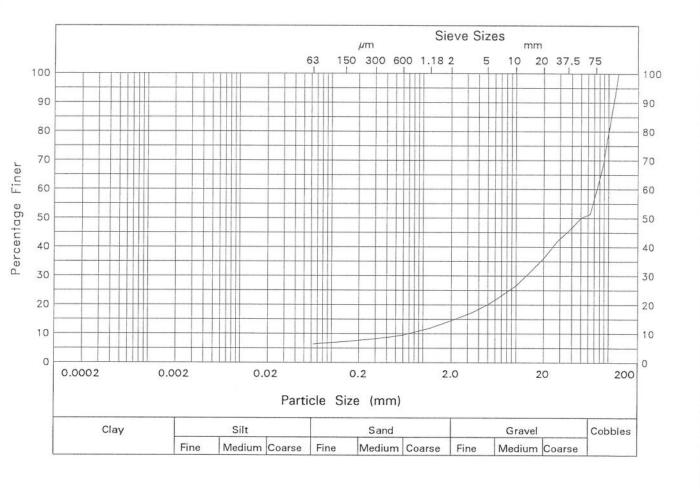




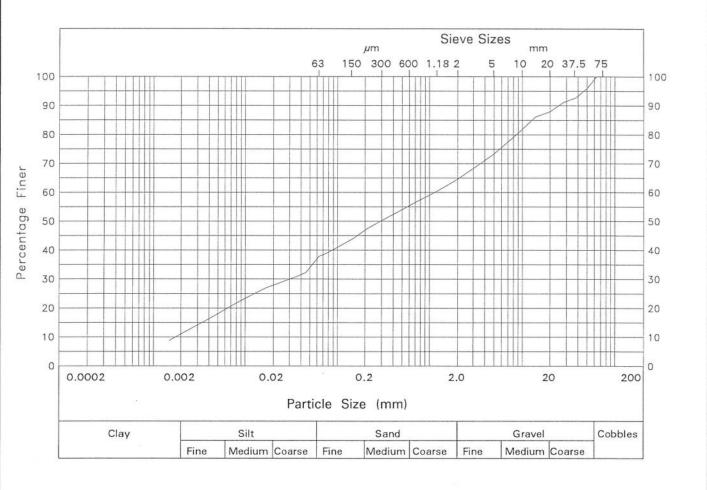


Particle Size	% Passing	Particle Size	% Passing
2 mm	100		
1.18 mm	100		
600 μm	100		
425 μm	100		
300 μm	100		
212 μm	100		
150 μm	100		
75 μm	99		
63 μm	98		
Hole	Description	3.85	
ВН39	SILT with rar	e sand	
Depth			
3.50 -4.00			
Гуре			
В			
Test Performed	Uniformity	Coefficient not ap	oplicable.
Wet			P

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet

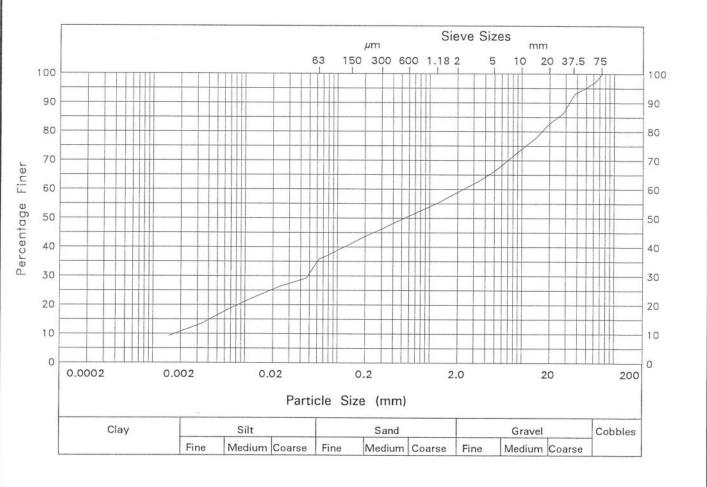


Particle Size	% Passing	Particle Size	% Passing
90 mm	70	2 mm	15
75 mm	60	1.18 mm	12
63 mm	51	600 μm	10
50 mm	50	425 μm	9
37.5 mm	46	300 μm	8
28 mm	42	212 μm	8
20 mm	36	150 μm	7
14 mm	31	75 μm	7
10 mm	27	63 μm	6
6.3 mm	22		
5 mm	20		
3.35 mm	17		
Hole	Description		
BH41	Clayey sandy	GRAVEL	
Depth	7		
2.50 -3.00			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient = 125	



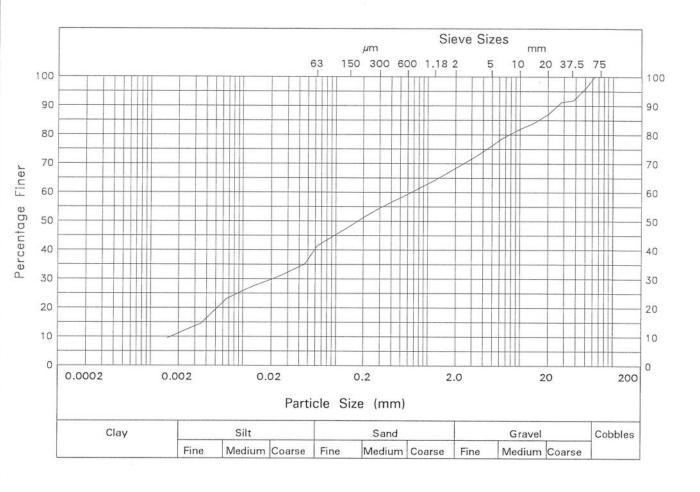
Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	55
50 mm	96	425 μm	53
37.5 mm	93	300 μm	50
28 mm	91	212 μm	47
20 mm	88	150 μm	44
14 mm	86	75 μm	39
10 mm	82	63 μm	38
6.3 mm	76	45 μm	32
5 mm	73	35 μm	31
3.35 mm	69	17 μm	27
2 mm	65		
1.18 mm	60		18
Hole	Description		
BH44	Slightly sand	y slightly gravel	ly to gravelly
Depth	CLAY		
0.50 -1.00			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	oplicable.
Wet	Southern Latter to the Co		

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet



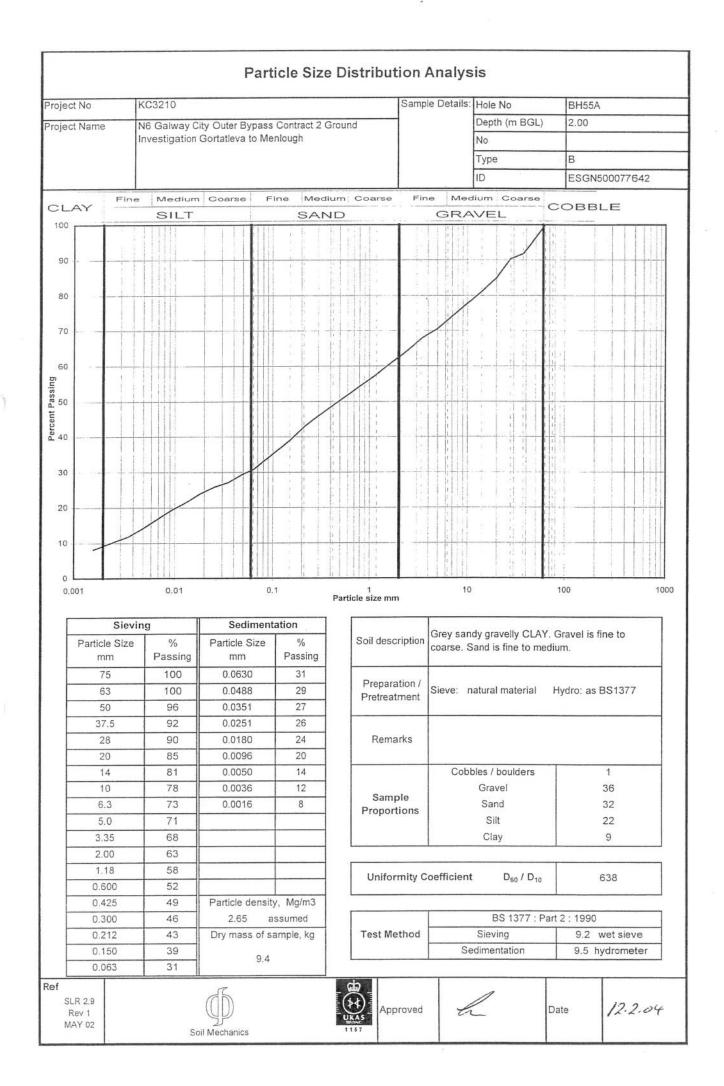
Particle Size	% Passing	Particle Size	% Passing
75 mm	100	1.18 mm	55
63 mm	97	600 μm	51
50 mm	95	425 μm	49
37.5 mm	93	300 μm	46
28 mm	86	212 μm	44
20 mm	83	150 μm	42
14 mm	78	75 μm	37
10 mm	74	63 μm	36
6.3 mm	69	46 μm	29
5 mm	66	24 μm	26
3.35 mm	63	13 μm	23
2 mm	59		
Hole	Description		
ВН50	Slightly sand	y gravelly CLAY	
Depth]		
1.50 -2.00			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not ap	oplicable.

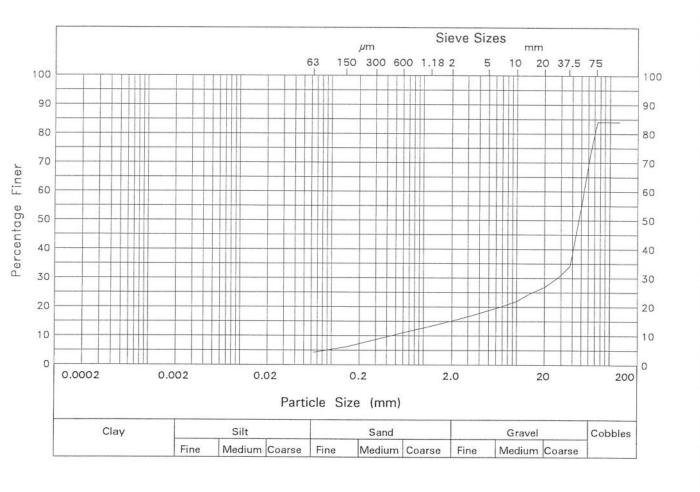
		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet



Test Performed Wet	Uniformity	Coefficient not ap	oplicable.
Type U			
0.50 -0.95	4		
Depth	500		
BH53	Slightly sand	y slightly gravel	y CLAY
Hole	Description		
1.18 mm	64		
2 mm	68	San	7.00
3.35 mm	72	13 μm	27
5 mm	76	24 μm	31
6.3 mm	79	46 μm	35
10 mm	82	63 μm	41
14 mm	84	75 μm	43
20 mm	87	150 μm	49
28 mm	91	212 μm	52
50 mm 37.5 mm	96 92	425 μm 300 μm	57 54
63 mm	100	600 μm	59
Particle Size	% Passing	Particle Size	% Passing

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet





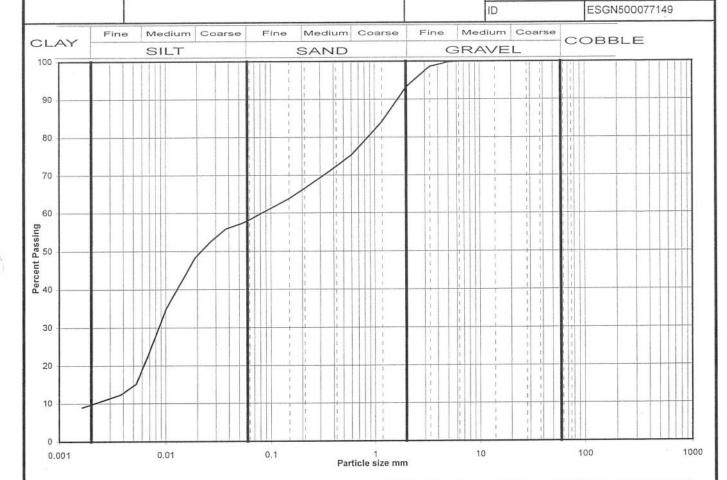
Particle Size	% Passing	Particle Size	% Passing
90 mm	84	2 mm	15
75 mm	84	1.18 mm	13
63 mm	73	600 μm	11
50 mm	54	425 μm	10
37.5 mm	34	300 μm	9
28 mm	30	212 μm	7
20 mm	27	150 μm	6
14 mm	25	75 μm	5
10 mm	22	63 μm	4
6.3 mm	20	500.780000	
5 mm	19		
3.35 mm	17		
Hole	Description		
BH64	Slightly silt	y sandy GRAVEL	
Depth			
1.50 -2.00			
Туре			
В			
Test Performed	Uniformity	Coefficient = 127	
Wet			

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet

Particle Size Distribution Analysis Sample Details: Hole No BH110 Depth (m BGL) 3.50 - 4.50 N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough No 11

Туре

P



Sieving		Sediment	ation
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100	0.0630	58
63	100	0.0528	57
50	100	0.0375	56
37.5	100	0.0267	53
28	100	0.0191	48
20	100	0.0102	35
14	100	0.0053	15
10	100	0.0038	12
6.3	100	0.0017	9
5.0	100		
3.35	99		
2.00	93		
1.18	84		
0.600	75		
0.425	72	Particle densit	y, Mg/m3
0.300	69	2.65 a	ssumed
0.212	67	Dry mass of s	ample, kg
0.150	64	0.7	
0.063	58	0.7	

KC3210

Project No

Project Name

Soil description	Soft brownish grey organic CLAY with fine rootlets and plant remains.		
Preparation / Pretreatment	Sieve: natural material	Hydro: as BS1377	
Remarks			
	Cobbles / boulders	0	
20 20	Gravel	7	
Sample Proportions	Sand	35	
	Silt	48	
	Clay	10	

Uniformity Coefficient	D ₆₀ / D ₁₀	39
	7200	

	BS 1377 : Part 2 : 1990		
Test Method	Sieving	9.2 wet sieve	
	Sedimentation	9.5 hydrometer	

Ref

SLR 2.9 Rev 1 MAY 02





Approved



Date

23.1.0

Particle Size Distribution Analysis

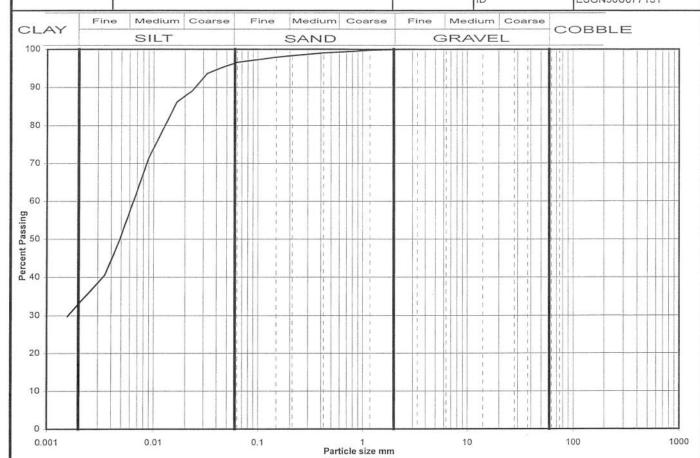
Project No KC3210

Project Name N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough

No 16

Type P

ID ESGN500077151



Sieving		Sediment	ation
Particle Size mm	% Passing	Particle Size mm	% Passing
75	100	0.0630	97
63	100	0.0458	95
50	100	0.0326	94
37.5	100	0.0234	89
28	100	0.0167	86
20	100	0.0091	72
14	100	0.0048	50
10	100	0.0035	41
6.3	100	0.0016	30
5.0	100		
3.35	100		
2.00	100		
1.18	100		
0.600	99		
0.425	99	Particle density	y, Mg/m3
0.300	99	2.65 a	ssumed
0.212	98	Dry mass of sa	ample, kg
0.150	98	1.6	
0.063	97	1.5	

Soil description	Soft un	compact light grey	slightly clayey SILT.
Preparation / Pretreatment	Sieve:	natural material	Hydro: as BS1377
Remarks			
	1		
	Co	bbles / boulders	0
	Co	bbles / boulders Gravel	0
Sample	Co		0 0 4
Sample Proportions	Co	Gravel	0 0 4 63

Uniformity Coefficient	D ₆₀ / D ₁₀	#N/A
------------------------	-----------------------------------	------

	BS 1377 : Part 2 : 1990	
Test Method	Sieving	9.2 wet sieve
	Sedimentation	9.5 hydrometer

Ref

SLR 2.9 Rev 1 MAY 02



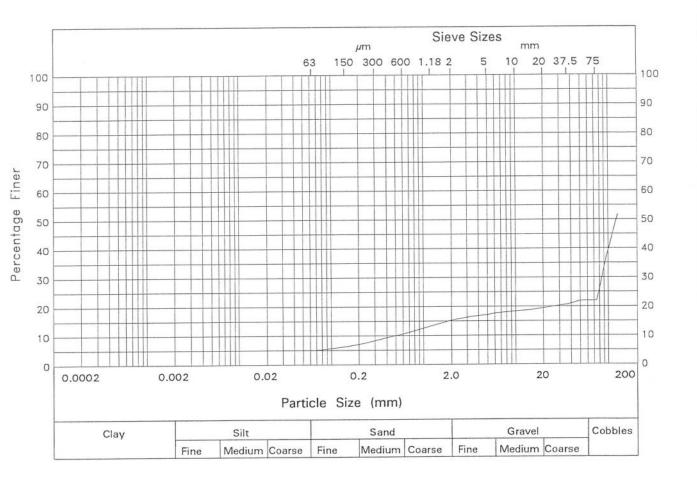


Approved



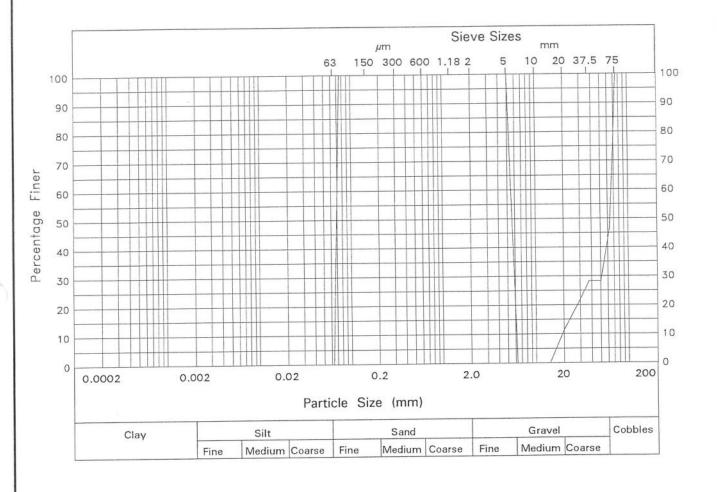
Date

23.1.04



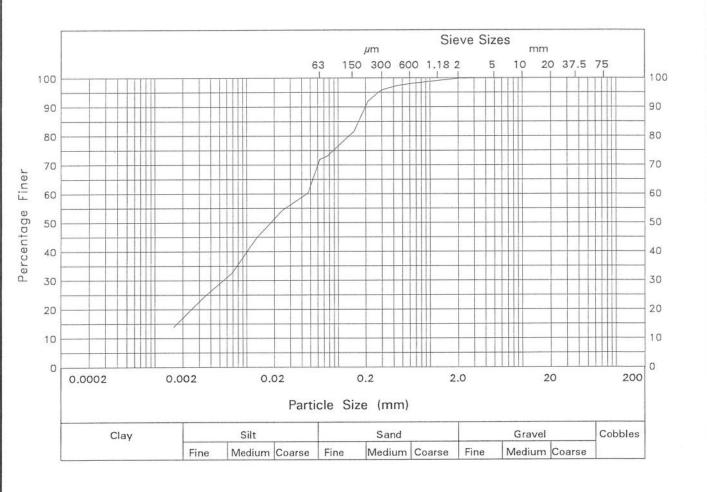
Particle Size	% Passing	Particle Size	% Passing
90 mm	34	2 mm	15
75 mm	22	1.18 mm	13
63 mm	22	600 μm	11
50 mm	22	425 μm	10
37.5 mm	21	300 μm	8
28 mm	20	212 μm	7
20 mm	19	150 μm	6
14 mm	19	75 μm	5
10 mm	18	63 μm	5
6.3 mm	18		
5 mm	17		
3.35 mm	17		
Hole	Description		
BH114	Silty sandy 0	GRAVEL	
Depth	1		
0.20 -0.60			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	pplicable.
Wet			

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Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet



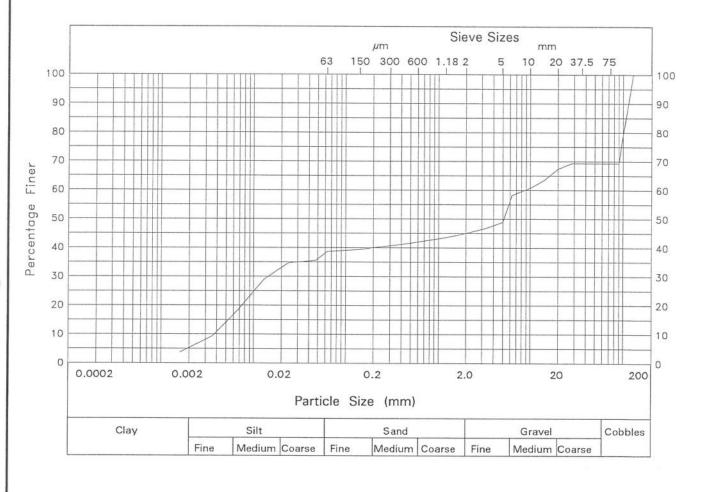
Particle Size	% Passing	Particle Size	% Passing
75 mm	100	1.18 mm	0
63 mm	47	600 μm	0
50 mm	28	425 μm	0
37.5 mm	28	300 μm	0
28 mm	20	212 μm	0
20 mm	11	150 μm	0
14 mm	0	75 μm	0
10 mm	0	63 μm	0
6.3 mm	0		
5 mm	0		
3.35 mm	0		
2 mm	0		
Hole	Description		
BH145A	GRAVEL		
Depth			
0.50 -1.00			
Type			
В			
Test Performed	Uniformity	Coefficient = 3.4	

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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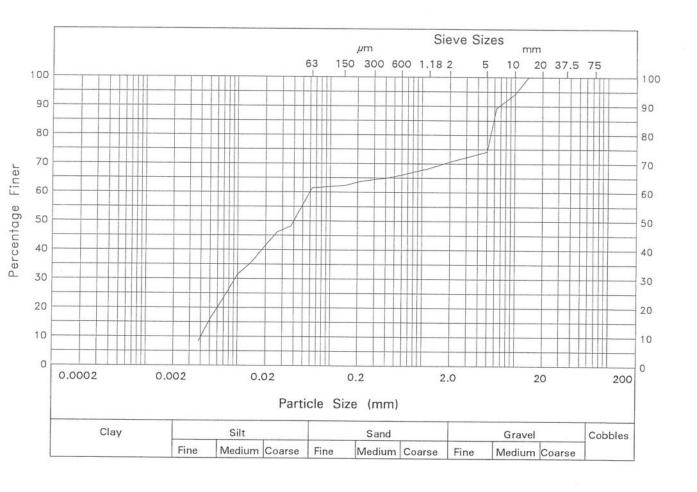
Particle Size	% Passing	Particle Size	% Passing
6.3 mm	100	47 μm	60
5 mm	100	24 μm	54
3.35 mm	100	13 μm	45
2 mm	100		
1.18 mm	99		
600 μm	98		
425 μm	97		
300 μm	96		
212 μm	92		
150 μm	82		
75 μm	73		
63 μm	72		
Hole	Description		
BH145A	Slightly sand	y SILT	
Depth			
5.50 -5.95			
Туре			
D			
Test Performed Wet	Uniformity	Coefficient not a	pplicable.

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet



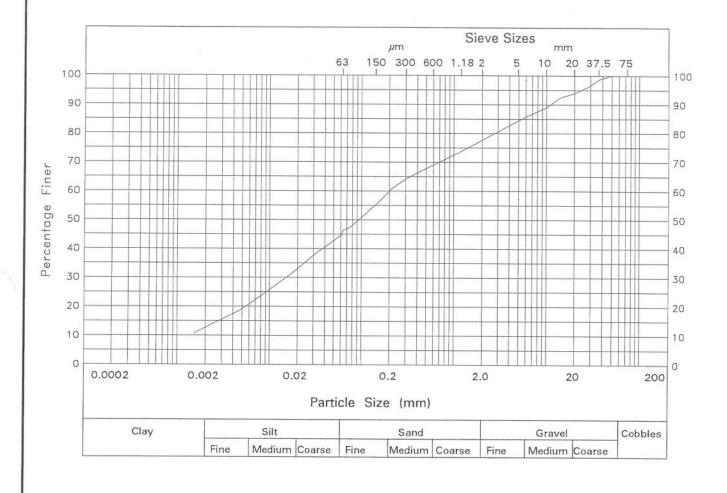
Particle Size	% Passing	Particle Size	% Passing
90 mm	69	2 mm	45
75 mm	69	1.18 mm	44
63 mm	69	600 μm	42
50 mm	69	425 μm	41
37.5 mm	69	300 μm	41
28 mm	69	212 μm	40
20 mm	67	150 μm	39
14 mm	63	75 μm	39
10 mm	61	63 μm	39
6.3 mm	58	47 μm	36
5 mm	49	24 μm	35
3.35 mm	47	13 μm	29
Hole	Description		
TP34		y gravelly CLAY	
Depth			
1.40 -1.60			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	oplicable.
Dry			

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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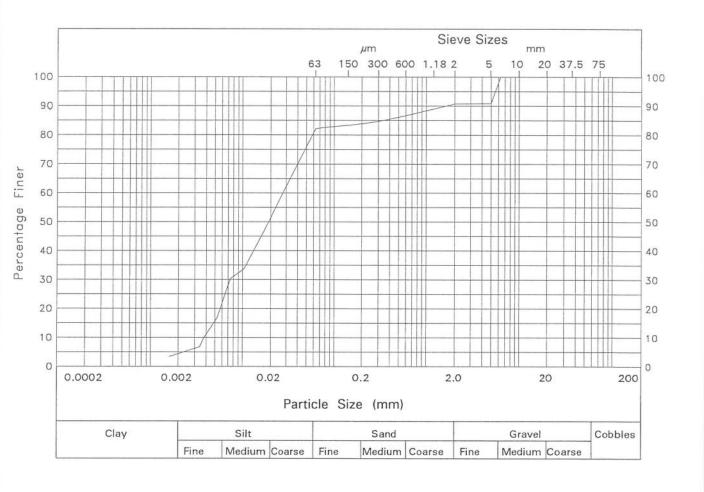
Particle Size	% Passing	Particle Size	% Passing
14 mm	100	75 μm	62
10 mm	94	63 μm	61
6.3 mm	89	37 μm	48
5 mm	74	26 μm	46
3.35 mm	73	14 μm	36
2 mm	71		
1.18 mm	68		
600 μm	66		
425 μm	65		
300 μm	64		
212 μm	64		
150 μm	62		
Hole	Description		
TP40	Slightly sand	y slightly gravell	y organic
Depth	SILT		
2.80			
Туре			
В			
Test Performed Wet	Uniformity (Coefficient not ap	oplicable.

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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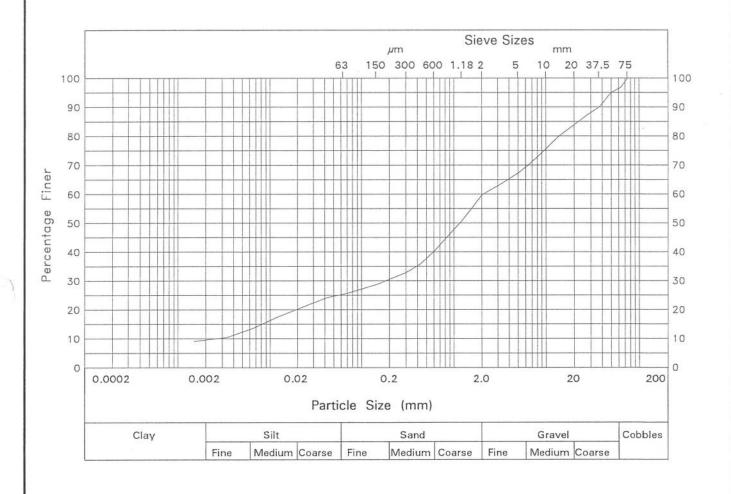
Particle Size	% Passing	Particle Size	% Passing
50 mm	100	425 μm	67
37.5 mm	99	300 μm	64
28 mm	96	212 μm	61
20 mm	94	150 μm	56
14 mm	92	75 μm	47
10 mm	89	63 μm	46
6.3 mm	86	61 μm	45
5 mm	84	32 μm	38
3.35 mm	81	17 μm	31
2 mm	78		
1.18 mm	74		
600 μm	69		
Hole	Description		1
TP56	Slightly sand	y slightly gravel	LV CLAY
Depth		, , , ,	
1.50 -2.00			
Туре			
В			
Test Performed	Uniformity	Coefficient not ap	oplicable.
Wet			

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Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet



Particle Size	% Passing	Particle Size	% Passing
6.3 mm	100	10 μm	34
5 mm	91	7 μm	30
3.35 mm	91	5 μm	17
2 mm	91	Cast Mann	5-000
1.18 mm	89		
600 μm	87		
425 μm	86		
300 μm	85		
212 μm	84		
150 μm	83		
75 μm	83		
63 μm	82		
Hole	Description		
TP104		y slightly gravel	ly organic SILT
Depth			,
3.40			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not ap	oplicable.

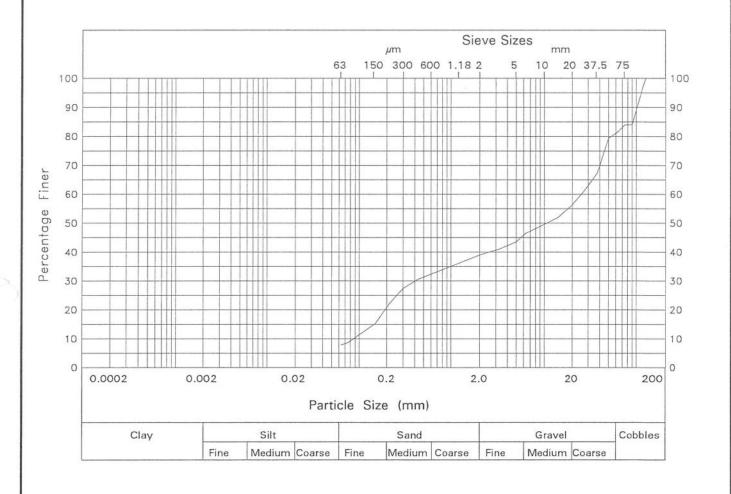
		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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Particle Size	% Passing	Particle Size	% Passing
75 mm	100	1.18 mm	50
63 mm	97	600 μm	40
50 mm	95	425 μm	36
37.5 mm	90	300 μm	33
28 mm	87	212 μm	31
20 mm	84	150 μm	29
14 mm	80	75 μm	26
10 mm	75	63 μm	25
6.3 mm	70	43 μm	24
5 mm	67	23 μm	21
3.35 mm	64	12 μm	18
2 mm	60	102	
Hole	Description		
TP113	Slightly sand	y gravelly CLAY	
Depth			
1.40			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not a	pplicable.

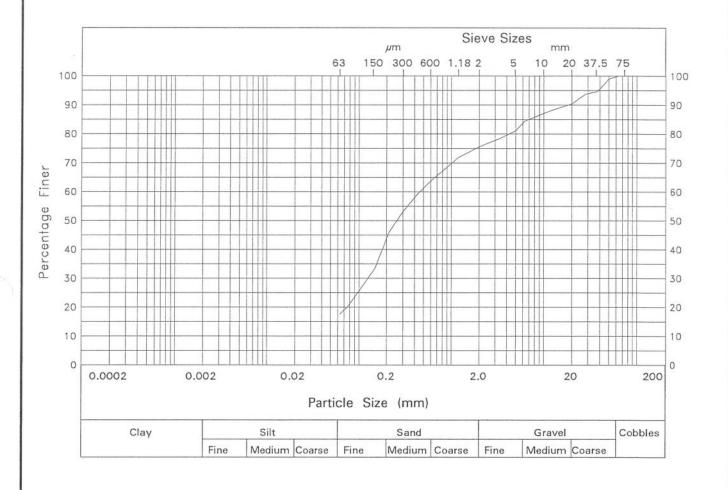
Laboratory - Particle Size Plot

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Ground Investigation Gortatleva to Menlough Galway County Council	Sheet	Contract	KC3210	
Contract	Contract	KC3210		
Contract	Contract	KC3210		
Contract	Contract	Contract	Contract	Contract
Contract	C			



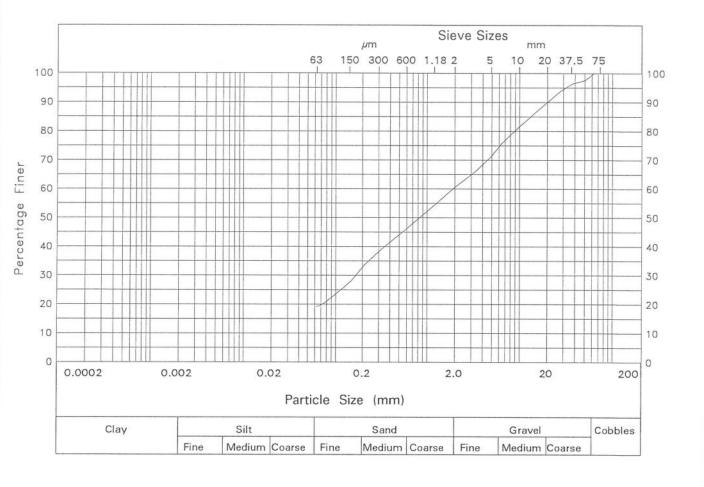
Particle Size	% Passing	Particle Size	% Passing
90 mm	84	2 mm	39
75 mm	84	1.18 mm	36
63 mm	82	600 μm	32
50 mm	79	425 μm	30
37.5 mm	67	300 μm	27
28 mm	62	212 μm	22
20 mm	56	150 μm	15
14 mm	52	75 μm	9
10 mm	50	63 μm	8
6.3 mm	46		
5 mm	44		
3.35 mm	41		
Hole	Description		
TP121	Clayey very s	andy GRAVEL	
Depth		and the contract of the contr	
1.00 -1.30			
Туре			
В			
Test Performed	Uniformity	Coefficient = 302	
Dry			

Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menloug	Sheet



Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	64
50 mm	99	425 μm	59
37.5 mm	95	300 μm	53
28 mm	94	212 μm	46
20 mm	90	150 μm	33
14 mm	89	75 μm	20
10 mm	87	63 μm	18
6.3 mm	84		
5 mm	81		
3.35 mm	78		
2 mm	76		
1.18 mm	72		
Hole	Description		
TP123	Clayey very gravelly SAND		
Depth		8	
1.50 -1.80			
Туре			
В			
Test Performed	Uniformity Coefficient not applicable.		
Dry			-L

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Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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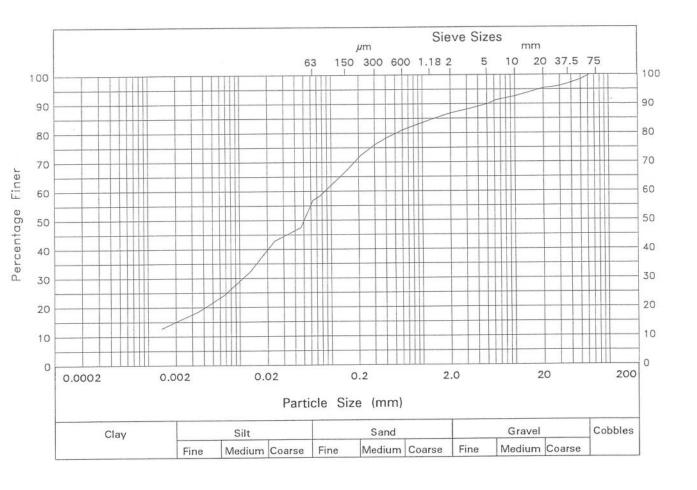
Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	46
50 mm	98	425 μm	42
37.5 mm	96	300 μm	38
28 mm	94	212 μm	34
20 mm	90	150 μm	28
14 mm	86	75 μm	20
10 mm	82	63 μm	19
6.3 mm	75	23	
5 mm	71		
3.35 mm	66		
2 mm	61		
1.18 mm	54		
Hole	Description		
TP125	Very clayey SAND and GRAVEL		
Depth	7		
1.50 -1.70			
Туре			
В			
Test Performed Dry	Uniformity Coefficient not applicable.		

Laboratory - Particle Size Plot

Exploration Associates

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N6 Galway City Outer Bypass Contract 2
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Galway County Council

Sheet

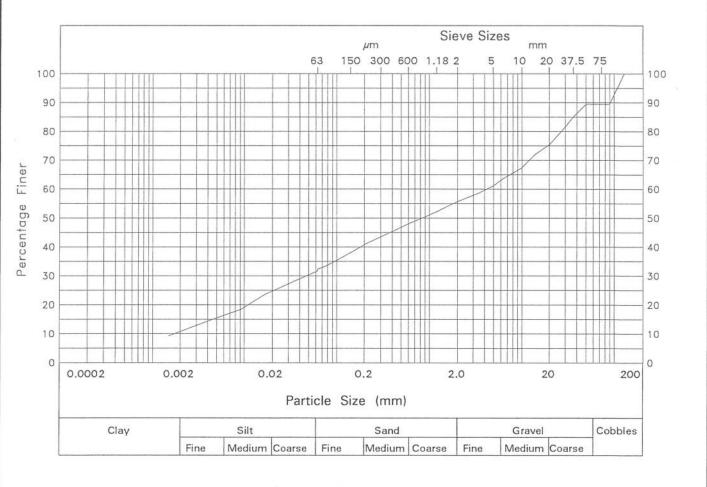


Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	81
50 mm	98	425 μm	79
37.5 mm	97	300 μm	76
28 mm	96	212 μm	72
20 mm	95	150 μm	67
14 mm	94	75 μm	58
10 mm	93	63 μm	57
6.3 mm	91	46 μm	47
5 mm	90	24 μm	43
3.35 mm	88	13 μm	32
2 mm	87		
1.18 mm	84		
Hole	Description		
TP127A	Slightly sand	dy slightly gravel	ly CLAY
Depth			
0.50 -0.80			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not a	pplicable.

Laboratory - Particle Size Plot

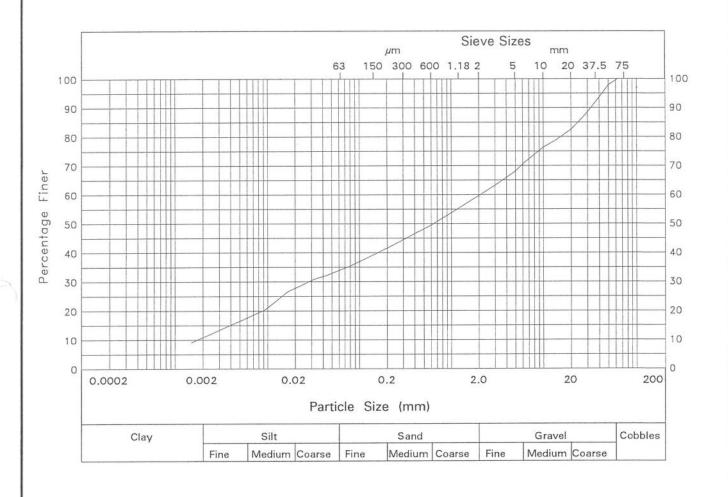
Project
N6 Galway City Outer Bypass Contract 2
Ground Investigation Gortatleva to Menlough
Galway County Council

Sheet



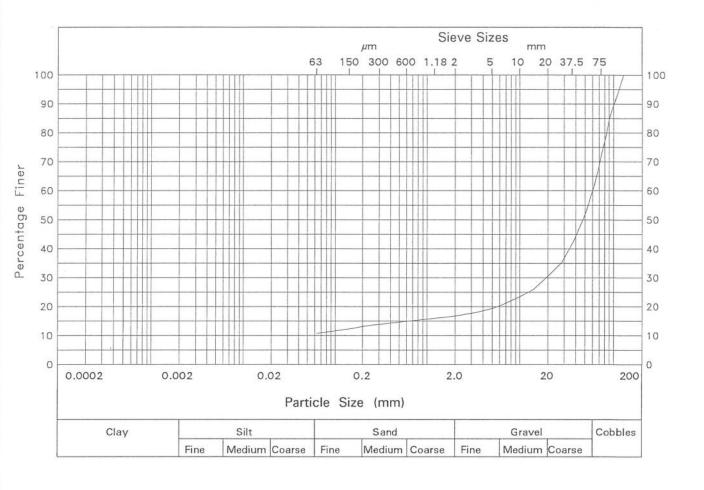
Particle Size	% Passing	Particle Size	% Passing
90 mm	89	2 mm	56
75 mm	89	1.18 mm	52
63 mm	89	600 μm	48
50 mm	89	425 μm	46
37.5 mm	85	300 μm	44
28 mm	81	212 μm	41
20 mm	75	150 μm	38
14 mm	72	75 μm	33
10 mm	67	63 μm	32
6.3 mm	64	62 μm	32
5 mm	61	33 μm	28
3.35 mm	58	17 μm	24
Hole	Description		
TP127B	Slightly sand	y gravelly CLAY	
Depth	The same of the sa	do Sacremo Sacremo Harabasa	
0.50 -1.00			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not a	oplicable.

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Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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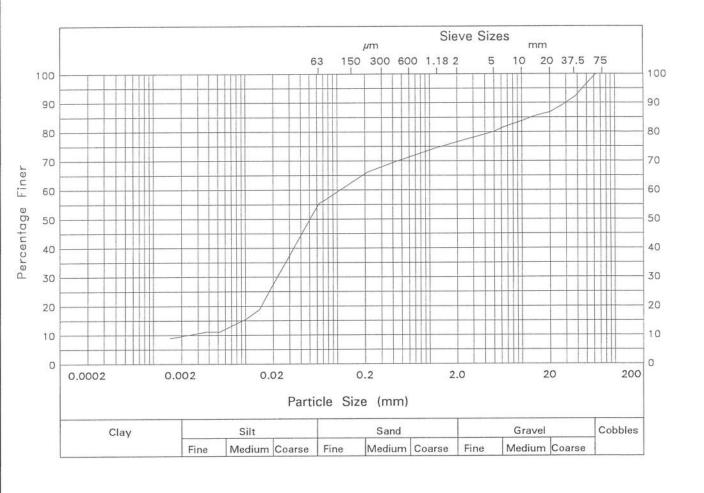
Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	49
50 mm	98	425 μm	47
37.5 mm	92	300 μm	44
28 mm	87	212 µm	42
20 mm	83	150 μm	40
14 mm	79	75 μm	35
10 mm	76	63 μm	34
6.3 mm	71	45 μm	32
5 mm	68	32 μm	31
3.35 mm	64	17 μm	27
2 mm	60		
1.18 mm	55		
Hole	Description		
TP128	Slightly sand	y gravelly CLAY	
Depth			
0.20 -0.30			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	pplicable.
Wet			

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Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
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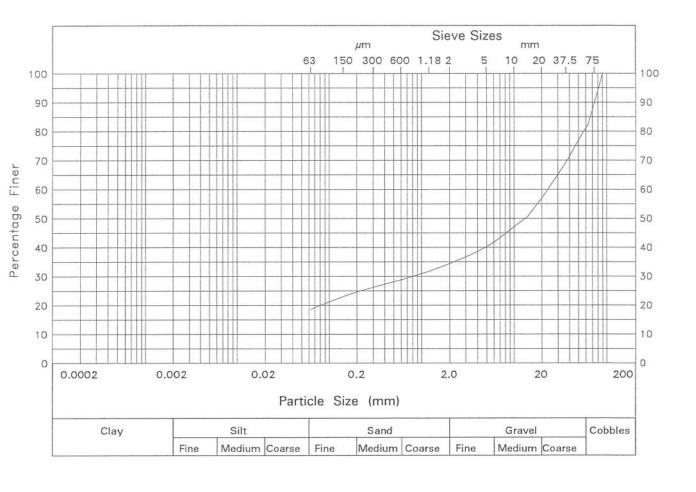
Particle Size	% Passing	Particle Size	% Passing
90 mm	85	2 mm	17
75 mm	73	1.18 mm	16
63 mm	62	600 μm	15
50 mm	52	425 μm	14
37.5 mm	42	300 μm	14
28 mm	35	212 μm	13
20 mm	31	150 μm	12
14 mm	26	75 μm	11
10 mm	23	63 μm	11
6.3 mm	21		
5 mm	19		
3.35 mm	18		
Hole	Description		
TP134	Clayey sandy	GRAVEL	
Depth			
0.50 -0.80			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	oplicable.
Wet	The same of the sa		

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Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet



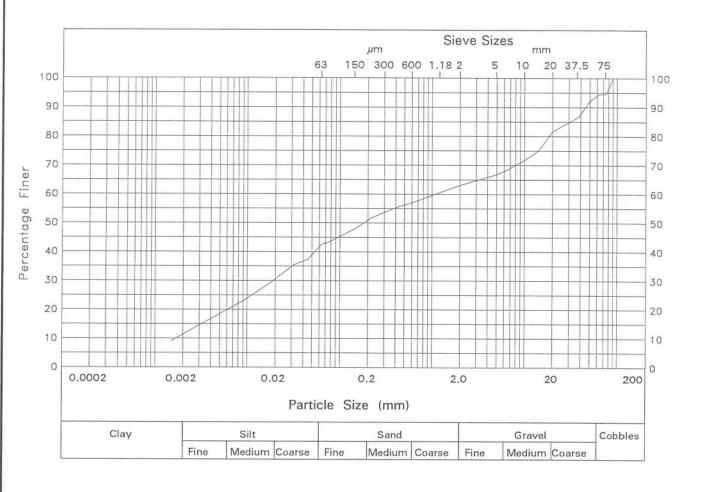
Particle Size	% Passing	Particle Size	% Passing
63 mm	100	600 μm	71
50 mm	97	425 μm	70
37.5 mm	92	300 μm	68
28 mm	89	212 μm	66
20 mm	87	150 μm	63
14 mm	86	75 μm	57
10 mm	84	63 μm	55
6.3 mm	82	14 μm	19
5 mm	80	10 μm	16
3.35 mm	78	7 μm	13
2 mm	77		
1.18 mm	75		
Hole	Description		
TP134A	Slightly sand	y slightly gravel	ly CLAY
Depth			
0.50 -1.00			
Type			
В			
Test Performed	Uniformity	Coefficient not a	pplicable.
Wet			

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menloug Galway County Council	Sheet



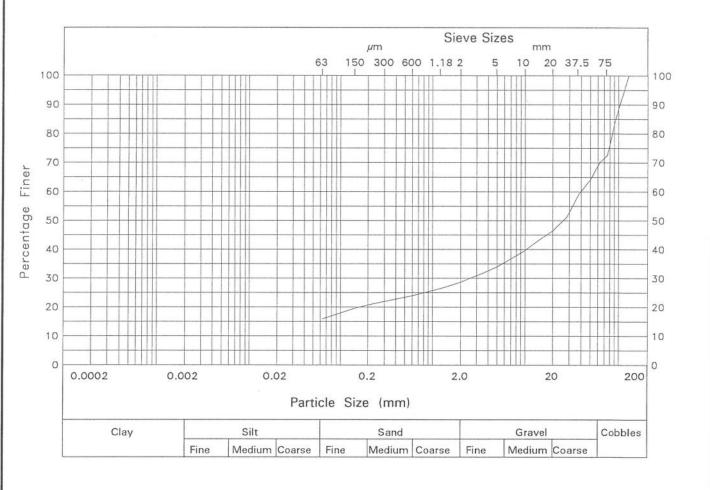
Particle Size	% Passing	Particle Size	% Passing
90 mm	100	2 mm	34
75 mm	91	1.18 mm	32
63 mm	82	600 μm	29
50 mm	77	425 μm	28
37.5 mm	70	300 μm	26
28 mm	64	212 μm	25
20 mm	57	150 μm	23
14 mm	51	75 μm	20
10 mm	47	63 μm	19
6.3 mm	42	V20	
5 mm	40		
3.35 mm	37		
Hole	Description		
TP136	MADE GROUND:	Slightly sandy ve	ry gravelly
Depth	CLAY		
0.50 -0.90			
Туре			
В			
Test Performed Wet	Uniformity	Coefficient not a	pplicable.

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet



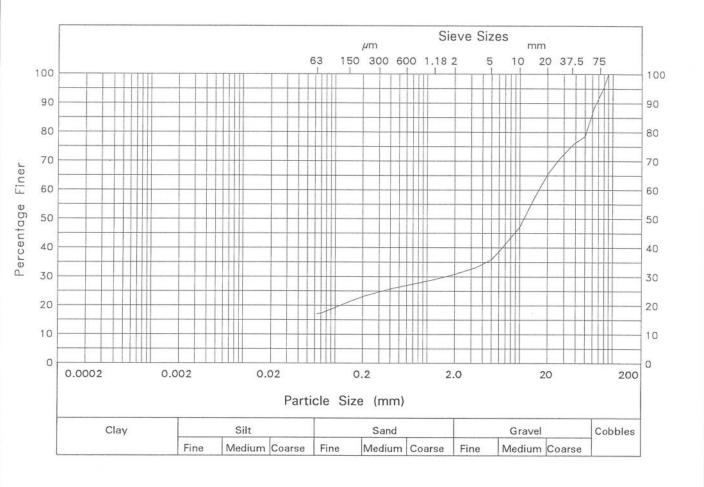
Particle Size	% Passing	Particle Size	% Passing
90 mm	100	2 mm	63
75 mm	94	1.18 mm	60
63 mm	94	600 μm	57
50 mm	92	425 μm	56
37.5 mm	87	300 μm	54
28 mm	84	212 μm	52
20 mm	82	150 μm	48
14 mm	75	75 μm	43
10 mm	72	63 μm	42
6.3 mm	68	45 μm	37
5 mm	67	32 μm	36
3.35 mm	65	17 μm	29
Hole	Description		
TP139	Slightly sand	y gravelly SILT	
Depth		, 9,	
0.20 -0.50			
Туре			
В			
Test Performed	Uniformity	Coefficient not ap	oplicable.
Wet			

Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
E Exploration Associates	Ground Investigation Gortatleva to Menlough	Sheet



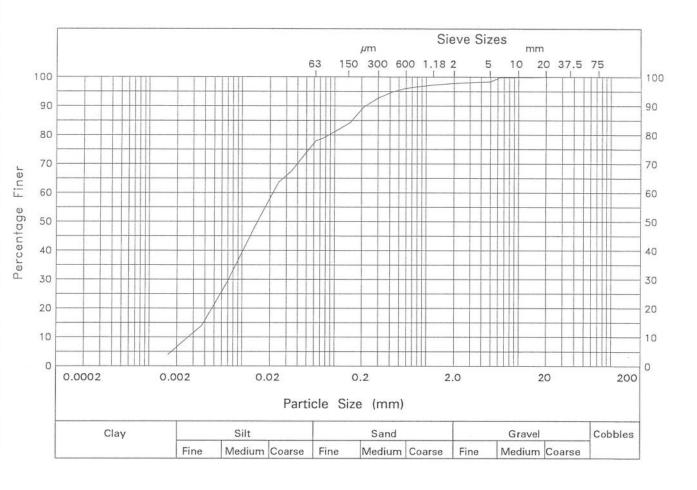
Particle Size	% Passing	Particle Size	% Passing
90 mm	83	2 mm	29
75 mm	72	1.18 mm	26
63 mm	70	600 μm	24
50 mm	64	425 μm	23
37.5 mm	59	300 μm	22
28 mm	51	212 μm	21
20 mm	46	150 μm	20
14 mm	43	75 μm	17
10 mm	40	63 μm	16
6.3 mm	36		
5 mm	34		
3.35 mm	32		
Hole	Description		
TP142	Slightly sand	y very gravelly S	ILT
Depth	55 330 5		
1.00 -1.40			
Туре			
В			
Test Performed	Uniformity	Coefficient not a	oplicable.
Wet		4	• • • • • • • • • • • • • • • • • • • •

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet



Particle Size	% Passing	Particle Size	% Passing
90 mm	100	2 mm	31
75 mm	93	1.18 mm	29
63 mm	89	600 μm	27
50 mm	79	425 μm	26
37.5 mm	76	300 μm	25
28 mm	71	212 μm	23
20 mm	65	150 μm	22
14 mm	57	75 μm	18
10 mm	47	63 μm	17
6.3 mm	39		
5 mm	36		
3.35 mm	33		
Hole	Description		
TP146	Slightly sand	y very gravelly S	ILT
Depth			
1.00 -1.50			
Туре	3		
В			
Test Performed Wet	Uniformity	Coefficient not ap	oplicable.

		Form 25/4
Laboratory - Particle Size Plot	Project N6 Galway City Outer Bypass Contract 2	Contract KC3210
Exploration Associates	Ground Investigation Gortatleva to Menlough Galway County Council	Sheet



Particle Size	% Passing	Particle Size	% Passing
20 mm	100	150 μm	84
14 mm	100	75 μm	79
10 mm	100	63 μm	78
6.3 mm	100	35 μm	68
5 mm	98	25 μm	64
3.35 mm	98	14 μm	48
2 mm	98	80	
1.18 mm	97		
600 μm	96		
425 μm	95		
300 μm	93		
212 μm	90		
Hole	Description		
TP148	Organic sligh	tly sandy CLAY wit	th rare gravel
Depth			
2.50 -2.70			
Туре			
В			
Test Performed	Uniformity	Coefficient not ap	oplicable.
Wet			

Laboratory - Particle Size Plot

No Galway City Outer Bypass Contract 2

Ground Investigation Gortatleva to Menlough Galway County Council

Sheet

Drilled by GC Logged by JL Checked by ROR	Start 03/10/2003 End 03/10/2003	Equipment, Method Dando 175 Cable Percussion 200	s and Remarks	0.00m 2,40m 200mm	Casing Depth	Ground Level Coordinates National Grid	E	+6.33 mOD 127495.60 228378.30
Samples a	nd Tests			Strata				
Depth	Type & No	Records	Date Time	Description		Depth,Level	Lagand	Backfill
pehai	Type or NO	Records	Casing Water			(Thickness)	Legend	Instrumen
0.50-0.95 0.50-0.90	SPTS B1	N=1 (-,1/-,-,1,-)	03/10/2003 0800	Peat with roots** Plastic to spongy dark brown to black amorphous Peat with frequent decaying rootlets and occasional grass.	0.20-1.50 m Driller noted ces of timber	0.20 +6.13 (1.30)	Was SAMA	0 0
1.60-2.05 1.60-2.00 - 2.20-2.30	SPTS B2 B3	N=1 (-,-/1,-,-,-)	03/10/2003 1800	Plastic to spongy dark brown to black amorphous Peat with frequent decaying rootlets/grass, occasional pockets of uncompact cream silt with shells and occasional cobbles sized pockets of spongy brown clayer fibrous peat		1.50 +4.83 (0.55) 2.05 +4.28 2.10 +4.23 (0.30)	000.0	10000
			Date Time	Spongy brown clayey fibrous peat. Cream SILT with shells** Grey angular GRAVEL** Recovered as gravelly COBBLES. Gravel is subangular coarse. Cobbles are subangular of limestone. EXPLORATORY HOLE ENDS AT 2.40 m		(0.30) 2.40 +3.93		SP
(m)	st strike behav	Records flour fter 20 minutes.	Casing Water Depth sealed (m)	Depth Related Remarks From to (m) 2.40 Encountered obstruction, borehole terminated.			Time To 00 mins	ols used
Notes: For explanation abbreviations see key evels in metres. Stratt n depth column. Scale 1:50	sheet. All depth um thickness giv	s and reduced	Project No.	N6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough KC3210 Galway County Council			3H36 eet 1 of 1	1

illed by MC ogged by CH necked by ROR	10/12/2003 End 10/12/2003	Cable Percussion 200n			i.00m.	Depth from to Diameter 0 0.00m 6.00m 200mm	asing Depth	Ground Level Coordinates National Grid	E	+6.40 mC 127534.2 228344.1
Samples	and Test	ts			Strata					
Depth	Type & No	Records	Date Casing	Time Water		Description		Depth,Level	Legend	Back
			10/12/2003		Dark brown non-fibro	us plastic PEAT	-	(Thickness)	1/2	Instrum
0.50-0.95	U 1	225 mm rec					=		21/1/2	
	0,	225 1111 160					=		1/2	
1.00	D2						=		1/2	//
								(2.20)	3/1/2	
1.50-2.00	B 3						1		11/2	1
							=		1/2	1
2.00	D 4						=		SINS.	
				- 1	Uncompact creamy b	rown SILT with	-	2.20 +4.20	1/2	//
2.50-3,50	P 5	500 mm rec		- 1	abundant shells and r	are sand.	=		× × ×	//
							=		* * ×	11
							=		× × ×	1
							=		× × ×	11
3.50 3.50-4.00	D 6 B 7								× × ×	11
							=		* × ×	11
				- 1			-	(3.50)	× × ×	11
4.50	D8						=		× × ×	11
4.50	D8					4.50 m B	ecoming		× × × × × ×	11.
5.00-5.70	P9	140 mm rec		- 1		bli	mottled ack SILT		x x	11
		140 11111111111111111111111111111111111							x	11
							=		××××	11
			10/12/2003	4000	DOLL DEDO - BOOK		_	5.70 +0.70	× × ×	
6.00-6.04 6.00	SPT C 7	'5 (25 for 20mm/75 for 20mm)	10/12/2003		BOULDERS or ROCK subangular to subroun	ded fine to medium		(0.30)	0	
6.00	D 10				GRAVEL. EXPLORATORY HO	E ENDS AT 6.00 m	4	5.00 +0.40		
				- 1			=			
							=			
							3			
							3			
	1									
							1			
							-			
							=			
							-			
							=			
Depth 1	Гуре & No	Records	Date Tin	me			=			
ndwater Entrie Struck Post	estrika babayis			D	epth Related Remarks		Ch	iselling		
(m)		out	Depth seale (n	n) 3	rom to (m) .50 In-situ vane	Peak 23kPa, Residual 13kPa	De	pths (m) Time 0 -6.00 90 m		sed
observed (see	e ricy Sileet)			6	.00 Encountered	obstrution, borehole terminated				
or explanation o tions see key sh	neet. All depths a		roject	N6	Galway City Outer Bypa	ss Contract 2 Ground		1		
column.	thickness giver	n in brackets P	roject No.	KC	3210	Menlough	B	orehole	20	
:50 (6	C) MESG HB/II (298), 10	0/03/2004 14:41:32 AGS C	arried out fo	or Gal	way County Council			BH Sheet		- 1

Drilled by MC Logged by CH Checked by ROR	Start 08/12/2003 End 08/12/2003	Equipment, Methods Cable Percussion 200m	and Remarks m diameter from 0.0n	to 4.00m. Depth 0.00	from to Diameter Casing Depth Om 2.00m 200mm	Ground Level Coordinates National Grid	+6.36 mOD E 127591.06 N 228328.15
Samples a	and Tests	<u> </u>		Strata			
Depth	Type & No	Records	Date Time		ription	Depth,Level	Logand Backfill
	10785 4.116	11000143	Casing Water			(Thickness)	Instrumer
0.50-0.95	U 1	3 blows	08/12/2003 0800	Dark brown pseudo-fibrous plas	stic PEAT		
1.50-2.00	В3		08/12/2003 1800				M. Julie
2.00-2.20 2.20	P4 D5	No recovery	1,50 09/12/2003 0800 1,70	Grey SILT**		2.00 +4.36 2.20 +4.16	××××
2.50-2.95 2.50-3.00	SPT C B 6	N=73 (11,17/14,18,18,23)		Grey clayey sandy GRAVEL		(0.80)	0.00
3.00	D7			ROCK or BOULDERS**		3.00 +3.36	30.2
-				NOOK OF BOOLDENO		(1.00)	00
			09/12/2003 1800			4.00 +2.36	
Depth Groundwater Entr	Type & No	Records	Date Time Casing Water	Depth Related Remarks		Chiselling	
No. Struck (m) 1 0.50 Ros 2 3.00 Ros	st strike behav se to 0.30 m a se to 0.40 m a	fter 20 minutes, fter 20 minutes.	Depth sealed (m)	From to (m) 4.00 No advance on chiselli	ing, borehole terminated.	Depths (m) Ti 3.50 -3.70 60	me Tools used mins) mins
Notes: For explanation abbreviations see key : levels in metres. Stratu in depth column. Scale 1:50		s and reduced en in brackets . 11/02/2004 15:31:07	Project No.	N6 Galway City Outer Bypass Cont nvestigation Gortatleva to Menloug KC3210 Galway County Council	ract 2 Ground gh		H41 et 1 of 1

Orilled by MC Logged by CH Checked by ROR	Start 08/12/2003 End 08/12/2003	Equipment, Methods Cable Percussion 200m	s and Remarks nm diameter from 0.0m	to 1.0m.	Depth from to Dis 0.00m 1.00m 20	ameter Casing Depth 00mm	Ground Level Coordinates National Grid	E 1	6.73 m(127638, 228329,
Samples a	nd Tests			Strata			-		
Depth	Type & No	Records	Date Time	Otrata	Description		Depth,Level		Bac
			O8/12/2003 0800	TOPSOIL**	Боосприон		(Thickness)		Instru
			00/12/2003 0000	Dark grey slightly sandy	aliabtly	0.20-1.00 m	0.20 +6.53	1//2	/
0.50-0.95	SPTC	N=72 (3,4/7,17,18,30)		gravelly to gravelly CLA	Y Siigntiy	Driller noted with cobbles		0	/
0.50-1.00	B 1						(0.80)	0 -0-	1
1.00	D2		08/12/2003 1800					0-0-	1
	0.2			EXPLORATORY HOLI	ENDS AT 1.00 m	1.00 m ROCK or BOULDERS	1.00 +5.73	0 4	-
						=			
						=			
						=			
						-			
						3			
						-			
						_			
						3			
						-			
						=			
						=			
						=			
						=			
						=			
						=			
						=			
						-			
						=			
						_			
						=			
						=			
						4			
Depth T	ype & No	Records	Date Time Casing Water			7			
undwater Entries Struck Post s (m) e observed (see	strike behavio	our		Depth Related Remarks From to (m) 1.00 - No advance o	n chiselling, borehole termina	ited.	Chiselling Depths (m) Tin 1.00 -1.00 60	ne Tools mins	used
For explanation of viations see key she theretes. Stratum	symbols and eet. All depths a thickness given	and reduced in brackets	Project N	6 Galway City Outer Bypas vestigation Gortatleva to N C3210	s Contract 2 Ground lenlough		Borehole		_
otn column.			Project No. K Carried out for G	C3210 alway County Council	array ethica sa rr anda	- 1		H44	
1:50 (c)) MESG HBIII (296), 13	/02/2004 17:57:56 AGS		-,in, obtained				et 1 of 1	

Drilled by MC Logged by CH Checked by ROR	Start 05/12/2003 End 05/12/2003	Equipment, Method Cable Percussion 200n	nm diameter from	s n 0.0m	o 2.20m. Depth from to Diameter Casing Depth 0.00m 2.20m 200mm	Ground Level Coordinates National Grid	E	+6.92 mOD 127695.00 228272.39
Samples a	and Tests	3			Strata	1		
Depth	Type & No	Records		Time Water	Description	Depth, Level	Legend	Backfil
			05/12/2003		TOPSOIL**	(Thickness)		Instrume
						(0.30) 0.30 +6.62	1/2	11
0.50-0.95	U 1	4 blows			PEAT**	(0.60)	3/1/2	1
						1	1/2	
1.00	D 2				Soft becoming very stiff grey slightly 0.90-2.20 m Driller noted with	0.90 +6.02		
					sandy gravelly CLAY cobbles	-		11
1.50-1.95	SPTC	N=33 (1,2/5,6,8,14)				(1.30)		1
1,50-2.00	B 3					1 (1.50)	· · · · ·	1
- 2.00	D4		05/12/2003	1800				
2.20-2.31	SPT C	75 (25/75 for 30mm)		1,90	2.20 m ROCK or	2.20 +4.72	.0.	1
2.20	D 5				EXPLORATORY HOLE ENDS AT 2.20 m BOULDERS			Y
· ·								
)								
					-			
	1							
_								
						-	1	
						1		
-					-			
-					-			
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				- 1				
				- 1				
				- 1	-			
				- 1				
				- 1				
					_			
				- 1				
						-		
						-		
Depth	Type & No	Records	Date T Casing W	ime later				
Groundwater Ent	ries				Depth Related Remarks	Chiselling		
	st strike behav	riour	Depth sea	led (m)	From to (m)	Depths (m)	Time To	ols used
	se to 1.90 m a	fter 20 minutes.		-	2.20 No advance on chiselling, borehole terminated.	2.20-2.20 6	ININS	
otes: For explanation obreviations see key vels in metres. Strati	of symbols and sheet. All depth:	s and reduced	Project		l6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough	Borehole		
vels in metres. Strati depth column.	um thickness giv	VISSES	Project No.		C3210	E	3H50	
		, 11/02/2004 15:32:02 AGS	Carried out	tor	Salway County Council	Shi	eet 1 of 1	

orilled by MC ogged by CH checked by ROR	Start 17/11/2003 End 17/11/2003	Equipment, Methods Cable Percussion 200mi	m diameter from 0.0m	to 2.5m. Depth from to Diameter Casing Depth 0.00m 2.50m 200mm	Ground Level Coordinates National Grid	+7.39 mC E 127771. N 228260.
Samples a	and Tests	S		Strata		
Depth	Type & No	Records	Date Time	Description	Depth,Level	Legend Back
			17/11/2003 0800	TOPSOIL**	(Thickness)	Instrum
0.50-0.95	U 1	41 blows		Soft becoming stiff grey brown slightly sandy slightly gravelly CLAY with some cobbles. Gravel is subangular to subrounded, fine to coarse. Cobbles are subangular to subrounded of limestone.	0.25 +7.14	0 0
1.50-1.95 1.50-2.00	SPT C B 3	N=27 (1,1/2,3,7,15)		1.50 m Stiff -	(2.25)	
- 2.00	D 4					
2.50-2.55 2.50	SPT C D 5	75 (25 for 20mm/75 for 30mm)	17/11/2003 1800	EXPLORATORY HOLE ENDS AT 2.50 m 2.50 m Rock or boulder	2.50 +4.89	1
-						
				= - - -		
				- - -		
Depth	Type & No	Records	Date Time Casing Water	=		
(m)	st strike beha	viour after 20 minutes.	Depth sealed (m)	Depth Related Remarks From to (m) 2.50 No advance on chiselling, borehole terminated.		Time Tools used 60 mins
tes: For explanation breviations see key els in metres. Strati depth column. ale 1:50		d hs and reduced ven in brackets	Project No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council		3H53 eet 1 of 1

Drilled by MC Logged by CH Checked by ROR	Start 18/11/2003 End 18/11/2003	Equipment, Metho Cable Percussion 200 terminated due to boo	mm diameter fro	m 0.0m	to 1,50m. Borehole d as BH55A. Depth from to Diameter Casing Depth 1.50m 200mm	Ground Level Coordinates National Grid	+6.74 mOD E 127819.02 N 228260.97
Samples ar	nd Tests	;			Strata		
Depth	Type & No	Records		Time Water	Description	Depth,Level Lege	end Backfil
Depth	U 1 D 2			1800		(Thickness)	Instrume
o. Struck Post si (m)	trike behavio	our	Depth seale (r	d		Chiselling Depths (m) Time 1.50 -1.50 60 mins	Tools used
es: For explanation of reviations see key she is in metres. Stratum tiepth column.	et. All depths a hickness given	and reduced in brackets	Project Project No. Carried out fo	K	6 Galway City Outer Bypass Contract 2 Ground vestigation Gortatleva to Menlough 23210 Ilway County Council	Borehole BH55 Sheet 1 o)

Drilled by MC Logged by CH Checked by RC	End	Equipment, Method Cable Percussion 200	ls and Remarks mm diameter from 0.0r	π to 2.80m.	Depth from to Diameter 0.00m 2.80m 200mm	Casing Depth	Ground Level Coordinates National Grid	E ·	6.70 mOD 127822.65 128260.42
Samples	and Tests	3		Strata					
Depth	Type & No	Records	Date Time		Description		Depth,Level	Legend	Backfill/
-	1000		18/11/2003 080		AND AND TO BE AND A STATE OF THE		(Thickness)	Legend	Instrument
				Firm grey slightly sandy s gravelly CLAY with occas Gravel is subangular to s to coarse. Cobbles are si limestone.	sional cobbles. ubrounded fine		(0.35) 0.35 +6.35 (1.65)	SIL	
2.00-2.45	SPT C	N=24 (1,2/5,6,6,7)					2.00 +4.70	0	
2.00-2.50	B 1			Stiff grey slightly sandy g with some subangular co	ravelly CLAY	=	2.00 +4.70	0 0	
2.50	D 2		19/11/2000	limestone.		3	(0.80)		111
2.80-2.91	SPTC	75 (25/25 for 20mm)	18/11/2003 1800			O m Pools	2.80 +3.90	. 0 -1	
2.80	D3			EXPLORATORY HOLE	ENDS AT 2.80 m	30 m Rock or Boulders	2.00 +3.90	ľ	
	Type & No	Records	Date Time Casing Water Depth sealed	Depth Related Remarks					used
(m)	ose to 1.30 m aft		Depth sealed (m)	0.00 2.00 Descriptions ta	ken from BH55 samples, chiselling, borehole terminated,			me Tools) mins	used
Notes: For explanation abbreviations see ke verls in metres. Strain depth column.	on of symbols and	and reduced n in brackets	Project No.	N6 Galway City Outer Bypass Investigation Gortatleva to M KC3210 Galway County Council	Contract 2 Ground			-155A et 1 of 1	

Orilled by MC Logged by CH Checked by ROR	Start 19/11/2003 End 19/11/2003	Equipment, Metho Cable Percussion 200	ds and Remar Omm diameter fr	rks rom 0.0n	to 2.0m.	Depth from to Diameter 0.00m 2.00m 200mm	Casing Depth	Ground Level Coordinates National Grid	E	6.56 mOI 127867.7 228233.6
Samples ar	nd Tests				Strata			1		
1	Type & No	Records	Date	Time	Otrata	Description		Depth,Level	1.	Backfi
			19/11/2003	Water 3 0800	Plastic dark brown to			(Thickness)	Legend	Instrume
					fibrous PEAT	olack pseudo	-		1/2	11
0.50-0.95	U1	3 blows					-		1/2	11
								(1.40)	7/1/2	
1,00	D 2						_		1/2 1	1
							_		1/12	4/
1.50-1.95	SPT C	N=61 (1,5/7,6,14,34)			BOULDERS**			1.40 +5.16	1	1//
			19/11/2003	1800			-	(0.60)	0 -	
							-		~0	11
					EXPLORATORY HO	LE ENDS AT 2.00 m		2.00 +4.56		
							=			
							3			
							-			
							-			
							3			
							-			
							_			
				- 1						
				- 1			=			
							3			
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							=			
							7			
							=			
							=			
epth Type	e & No	Records	Date Tin				=			
dwater Entries			Casing Wa	ter	and B. L. C.					
Struck Post stri	ke behaviou	,	Depth seale	d F	epth Related Remarks rom to (m)			hiselling epths (m) Time	Tools	eo.d
	1.15 m after	20 minutes.	(11	" 2	.00 Encountered	obstruction, borehole terminated.		50 -2.00 60 mil		sed
or explanation of au-	mhole and									
or explanation of syl tions see key sheet, metres, Stratum thic column.	All depths and kness given in	reduced brackets	Project	N6 Inv	Galway City Outer Bypas estigation Gortatleva to N	s Contract 2 Ground	E	Borehole		
Hieras, Statum me	INDAM MIACIT	DIGUNELS .	amore a period for 1677	111.0						
	SG HBIII (298), 11/02/	II TO 1	Project No. Carried out fo	110	3210 way County Council	lemougn		ВН	59	

Drilled by MC Logged by CH Checked by ROI	19/11/2003 End		as and Remar mm diameter fr	ks om 0.0m	to 3.50m.	Depth from to Diam 0.00m 3.50m 200r	neter Casing Depth mm	Ground Level Coordinates National Grid	E	-6.45 mC 127908.6 228208.2
Samples	and Test	ts			Strata			-		
Depth	Type & No	Records	Date Casing	Time Water	Julia	Description		Depth,Level		Back
			19/11/2003		Dark brown plastic non fi some rootlets.			(Thickness)	Legend	Instrum
0.80-1.25	U 1	4 blows						(1.30)	1/2 23/1/2 1/2	
1.30	D2								2/1/2	
1.50-1.95 1.50-2.00	SPT C B 3	N=32 (2,7/6,6,9,11)			Grey slightly silty sandy (limestone with some cobl subangular coarse. Cobb subangular of limestone.	hles Gravel is	-	1.30 +5.15	0 × 0 × 0 × 0 × 0	
2.00	D 4						2.00 m PEAT -		x 0. 0	1
2.50-2.95 2.50-3.00	SPT C B 5	N=36 (1,5/9,6,7,14)						(2.20)	x a x	
3.00	D 6		19/11/2003	1900			-		X o	
3.50-3.55 3.50	SPT C	75 (25 for 20mm/75 for 25mm		1800	EXPLORATORY HOLE E	ENDS AT 3.50 m	3.50 m Rock or Boulder	3.50 +2.95	2 2 2 X 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	7
Depth 7	√ype & No	Records	Date Tim	е						
	strike behavio to 1.20 m afte	ur	Casing Wat Depth sealed (m	D	epth Related Remarks rom to (m) .50 No advance on ch	niselling, borehole terminated.	D	chiselling epths (m) Time 50 -3.50 60 min		sed
For explanation of ations see key ship metres, Stratum column,	f symbols and leet. All depths al thickness given b) MESG HBIII (296), 1110	in brackets	roject roject No. arried out for	KC	Galway City Outer Bypass C estigation Gortatleva to Men 2210 way County Council	Contract 2 Ground lough	E	Borehole BH Sheet	64 1 of 1	

Logge	by JC d by JL ed by ROR	Start 02/10/2003 End 02/10/2003	Equipment, Methods Dando 3000 Cable Percussion 200mm			Depth from to Diameter Casing Depth 0.00m 5.23m 200mm	Ground Level Coordinates National Grid	+6.43 mOD E 128308.42 N 228096.68
Sai	mples a	nd Tests				Strata		
	Depth	Type & No	Records	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend Backfill
	.50-1.00	B1	N=0 (-,/-,-,-)	ousning	Yacor	TOPSOII** Plastic dark brown to black amorphous PEAT with occasional rootlets and decaying grass.	(0.30) 0.30 +6.13	14. SM/2 0
1.	.50-2.00	D2	``\$W=450 '					
2	.00-2.45 .00-2.45 .50-3.00	SPTS D4 B5	N=0 (-,-/-,-,-) SW=450	1.45	dry		(4.50)	W. 10 0
3	.00-3.45 .00-3.45	SPT S D 6	N=0 (-,-/-,-,-) SW=450	3.00	dry			
	.00-4.45 .00-4.45	SPTS D8	N=0 (-,-/-,,-) SW=450	4.00	dry			
	.80-5.20 .00-5.26	B 9 SPT C	50 (1,1/25,25 for 30mm)	5.00	dry	Plastic dark brown to grey clayey amorphous PEAT. EXPLORATORY HOLE ENDS AT 5.23 m EXPLORATORY HOLE ENDS AT 5.23 m	4.80 +1.63 (0.43) 5.23 +1.20	
_	(m)	ost strike beha	Records aviour after 20 minutes.	Date Casing Depth	Time Water sealed (m)	Depth Related Remarks From to (m) 5.23 Encountered obstruction, borehole terminated.	Chiselling Depths (m) 5.20 -5.23	Time Tools used 60 mins
abbrev levels	riations see ke in metres. Stra th column.	atum thickness g	nd ths and reduced given in brackets	Project Project Carried	No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council		3H107 heet 1 of 1

Drilled by BJ Logged by JL Checked by ROR	Start 04/10/2003 End 05/10/2003	Equipment, Methods Dando 175 Cable Percussion 200m			Depth from to Diameter Casing Depth 0.00m 9.30m 200mm	Ground Level Coordinates National Grid	E.	-6.28 mOI 128354.70 228101.70
Samples a	and Tests	S			Strata			
Depth	Type & No	Records		Time Water	Description	Depth, Level (Thickness)	Legend	Backf
0.00-0.50	B 1		04/10/2003	0800	TOPSOIL**		11.	11
					Plastic dark brown to black amorphous	(0.40)	W/W	11
0,50-0,95	SPT S B 3	N=1 (1,-/-,-,1,-)			PEAT.	0.50 +5.78	1/2	1
					Spongy to plastic dark brown pseudofibrous PEAT with abundant		NIV.	1
					rootlets and frequent grasses.		1/2	//
						(1.50)	1/2 3/11/2	1
1.50-1.95	U 4	4 blows	1.50	dry			3/1/2	1
							1/2	//
2.00-2.45	U 6	3 blows	2.00	dry		2.00 +4.28	311/2	//
2.05	D5				Spongy dark brown pseudofibrous PEAT with abundant fibres / rootlets		1/2 SIM	11
2.00						(1.00)	1/2	1
2.55	D7						MIL	//
2 00 2 45	SPT S	Net 74 7 4 A	3.00	dry			1/2	11
3.00-3.45 3.00-3.50	B 10	N=1 (1,-/-,1,-,-)	3.00	ury	Plastic dark brown to black amorphous PEAT with occasional rootlets / fibres.	3,00 +3,28	1/2	11
					PEAT WITH Occasional rootiets / libres.	(0.50)	3/1/2	1
3.50-4.50	P 11				Uncompact grey slightly sandy to sandy	3.50 +2.78	12.00	1
					slightly gravelly organic CLAY. Sand is fine to medium.		. :	//
					-		() ()	//
						(1.50)	Po.11/1/2	11
4.50-4.95	U 12	15 blows	4.50	0.00			0 317	1
					8		14.00	1
5.05	D 13				Uncompact grey organic SILT rare sand.	5.00 +1.28	Po:////	//
					officontpact grey organic SET fare Sand.		* * SYIN	1
5.50-5.95	SPT S	N=0 (1,1/-,-,-)	5.50	0.20			1/2 1	1
5.50-6.00	B 15						× 3/1/2	11
							/ × × ×	//
							× × × ×	1
6.50-7.50	P 16		6.00	0.30			× × ×	11
6.50-7.00	B 17						1/4× × ,	1
					į.	(4.00)	× × ZYIV	//
						(4.00)	× 7/1/2	//
			04/10/2003 7.50	1800 0.10			1/2××	
			05/10/2003 7.50	0800			× 7/1/7	1
			7.50	0,40			× × ×	1
					-		× \$\langle \langle \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	1)
							* × ×	1
8.50-8.95 8.50-9.00	SPT S B 19	N=1 (1,-/-,-,1,-)	8.00	0.10			12 J	1
							14.× 1	11
9.10-9.23	SPTC	50 (25 for 30mm/50)	9.10	0.90	GRAVEL**	9.00 -2.72 9.10 -2.82	1/4× × ×	//
9.30-9.34	SPTC	50 (25 for 10mm/50 for 30mm	05/10/2003	1800 1.30	LIMESTONE**	9.30 -3.02		11
					EXPLORATORY HOLE ENDS AT 9.30 m			
Depth	Type & No	Records		Time	ļ .			
Froundwater Ent		(47557075)	Casing V	Vater	Depth Related Remarks	Chiselling		
lo. Struck Por (m)	st strike beha	viour	Depth sea	led (m)	From to (m) 2.55 In-situ vane Peak 33kPa	Depths (m) Ti	me Too	ls used
None observed (s	see Key Shee	rt)		ACCOUNT.	3.00 7.50 Borehole kept full of water 5.05 In-situ vane Peak 25kPa			
					8.00 In-situ vane Peak 28kPa 9.30 Encountered obstruction, borehole terminated.			
ites: For explanation	n of symbols an	d T	Project		N6 Galway City Outer Bypass Contract 2 Ground	Deschola		
breviations see key els in metres. Strat	sheet. All depth	hs and reduced	Project No.		No Galway City Outer Sypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210	Borehole	1440	
depth column.	to Mark the Control	8), 10/03/2004 14:42:25 AGS	Carried out		Galway County Council		H110 et 1 of 1	
le 1:50	(c) MESG HBIII (29)	8), 10/03/2004 14:42:25 AFS				Sile	CLIUII	

orilled by JC ogged by JL checked by ROR	Start 02/10/0030 End 02/10/2003	Equipment, Method Dando 3000 Cable Percussion 2000	s and Remarks nm diameter 0.00m to 0.	65m.	Depth from to 0.00m 0.65m	Diameter Casing Depth 200mm	Ground Level Coordinates National Grid	E 1	7.37 mOD 128406.23 228094.97
Samples a	nd Tests			Strata					
Depth	Type & No	Records	Date Time		Description		Depth,Level (Thickness)	Legend	Backfi Instrume
Берит	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	11000100	O2/10/2003 0800	TOPSOIL**			(Tillekiless)		Maddine
0.20-0.60	81		02/10/2003 1800	Silty sandy GRAVEL with s	some cobbles. subrounded of		0.20 +7.17 (0.45)	0,000	
0.60-0.75	SPTC	50 (25/50)		EXPLORATORY HOLE E	NDS AT 0.65 m		0.65 +6.72		
						2			
						_			
						-	-		
							-		
							-		
							-		
							-		
Depth	Type & No	Records	Date Time Casing Water						
Froundwater En io. Struck Po (m)	ost strike beh		Depth sealed (m)	Depth Related Remarks From to (m) 0.65 Encountered	obstruction, borehole	terminated.	Chiselling Depths (m) 0.60 -0.65	Time T 60 mins	ools use
tes: For explanati	ion of symbols a	and oths and reduced given in brackets	Project	N6 Galway City Outer Bypa: Investigation Gortatleva to	ss Contract 2 Gro Menlough	und	Borehole		
lepth column.		298), 11/02/2004 15:40:11 AGS	Project No. Carried out for	KC3210 Galway County Council				BH114 heet 1 of	

Drilled by BJ Logged by JL Checked by ROR	Start 07/10/2003 End 07/10/2003	Equipment, Methods Dando 175 Cable Percussion 200m			Depth from to Diameter Casing Depth 0.00m 9.20m 200mm	Ground Level Coordinates National Grid	E	6.24 mO 129602.1 228148.1
Samples a	nd Test	S			Strata	1		
Depth	Type & No	Records	Date	Time	Description	Depth,Level	Lancad	Back
0,00-0.50	B1	rtosoras		Water		(Thickness)	Legend	Instrum
0.00 0.00	0.1		07/10/2003	0800	TOPSOIL**	(0.40)		0
0.50-0.76	SPT C	64 (4,7/14,50 for 30mm)			GRAVEL with some cobbles. Gravel is	0.40 +5.84	0000	
0.50-1.00	B3	01 (1,771,00 tot 00/111)			subangular to rounded medium to coarse.		0 000	7
					Cobbles are subangular to subrounded of silt granite and limestone.		0.0	N
					_		000	
							0000	
1.50-1.95 1.50-2.00	SPT C B 5	N=32 (6,8/9,7,9,7)	1.50	dry		(2.00)	:000	
1.50+2.00	В5						0000	
							. 0 .	N
							0000	N
2.50-2.95	U 6	10 blows	2.50	dry	Digatio deal, beauty and block assessment	2.40 +3.84	- 0 . 0	
2.50-2.85	0.6	TO DIOWS	2.50	dry	Plastic dark brown and black amorphous PEAT.		1/12	
							1/2	
3.05	D7						3/1/2	
							1/2	1
3.50-4.50	P 8	No recovery	3.50	dry	3.50-4.50 m With	(2.10)	2/1/2	1
3.50-4.50	B 9				occasional cobbles of		1/2	N
					granite		2/1/2	N
							Mr.	
							1/2	M
					Uncompact grey and brown slightly sandy	4.50 +1.74	1/4 × × ×	K
					SILT with occasional plant remains and frequent shells.		х. х	H
					reducit divisio.		1/3 . * ×	6
							* . Zyll	jo E
5.50-5.95	SPTS	N=1 (1,-/-,1,-,-)	5.50	dry			12 × ×	0
5.50-5.95 5.50-6.00	D 10 B 11		100000				· × . × .	0
							* × × ×	lo E
						(3.00)	In XX	6
							× , ×	0
							× × × ×	6
							;	0
							* X	毕
							/3 . × ×	SF
7.50-8.50 7.50-8.50	P 12	No recovery	7.50	3.60	Constant and beautiful and Total	7.50 -1.27	x - 3/1/21	
7.50-8.50	B 13				Spongy grey brown organic SILT with frequent plant remains.		/ALX X	//
							× × × ×	11
				- 1		(1.30)	× ŽVIX	//
							/4× ×	//
							× ZYIV	//
	220000			90000	GRAVEL**	8.80 -2.57	. D 0 D	11
9.00-9.10	ALMOND THE R. P.	50 (25 for 40mm/50 for 60mm)	07/10/2003	4.90 1800	LIMESTONE**	9.00 -2.77	,	//
9.20-9.25	SPT C	60 (25 for 10mm/50 for 40mm)	9.10	5.30	EXPLORATORY HOLE ENDS AT 9.25 m	9.25 -3.02		//
Depth	Type & No	Records		ime				
roundwater Entri	ies			Vater	Depth Related Remarks	Chiselling	-	
o. Struck Post (m)			Depth sea	led (m)	From to (m) 4.50 In-situ vane Peak 16kPa	Depths (m) Tir	ne Tools mins	s used
7.50 Ros	e to 3.60 m a	after 20 minutes.		-	6.50 In-situ vane Peak 13kPa 9.25 Encountered obstruction, borehole terminated.	8.80 - 9.00 45	mins mins	
es: For explanation	sheet. All depth	s and reduced	Project		6 Galway City Outer Bypass Contract 2 Ground vestigation Gortatleva to Menlough	Borehole		
els in metres. Stratur epth column.	n trickness giv		Project No.	1	C3210	ВН	145A	
le 1:50		, 10/03/2004 14:42:32 AGS	Carried out	101	alway County Council		et 1 of 1	



ENCLOSURE B INSTRUMENTATION MONITORING & PERMEABILITY TESTS

Groundwater Monitoring
Permeability Tests

Groundwater Monitoring



					Re	ading	
Hole No.	Instrument Type	Tip Depth (mBGL)	Date	Time (hhmmss)	Water Level (mBGL)	Head (m above Tip)	Comments
BH68	SPIE	9.00	02 Dec 2003		0.25	8.75	
BH68	SPIE	9.00	06 Dec 2003		0.16	8.84	
BH68	SPIE	9.00	11 Dec 2003		0.20	8.80	
BH68 BH68	SPIE SPIE	9.00	11 Feb 2004		0.20	8.80	
BH107	SP	5.20	14 Apr 2004 04 Nov 2003		0.20	8.80 4.82	
BH107	SP	5.20	06 Dec 2003		0.10	5.10	
BH107	SP	5.20	11 Feb 2004		0.15		
BH145A	SP	7.00	04 Nov 2003			5.05	
BH145A	SP	7.00			0.45	6.55	
3H145A			06 Dec 2003		0.20	6.80	
	SP	7.00	11 Feb 2004		0.00	7.00	
RC6A	SPIE	11.30	11 Feb 2004		2.01	9.29	
RC13	SP	15.00	04 Nov 2003		10.82	4.18	
RC13	SP	15.00	06 Dec 2003		11.83	3.17	
RC13	SP	15.00	11 Feb 2004		11.91	3.09	
RC13	SP	15.00	14 Apr 2004		11.60	3.40	9
RC17	SP	10.00	11 Dec 2003		8.72	1.28	
RC17	SP	10.00	11 Feb 2004		7.70	2.30	
RC17	SP	10.00	14 Apr 2004		7.50	2.50	
RC28	SP	4.00	04 Nov 2003		1.70	2.30	2
RC28	SP	4.00	06 Dec 2003		0.80	3.20	
RC28	SP	4.00	11 Feb 2004		0.80	3.20	
RC28	SP	4.00	14 Apr 2004		0.85	3.15	
RC49	SP	3.70	11 Dec 2003		0.50	3.20	
RC49	SP	3.70	11 Feb 2004		0.45	3.25	
C49	SP	3.70	14 Apr 2004		0.40	3.30	
C72	SP	14.00	17 Dec 2003		0.10	13.90	
C72	SP	14.00	11 Feb 2004		0.00	14.00	
C72	SP	14.00	14 Apr 2004		0.20	13.80	
C97	SPIE	9.50	14 Apr 2004		2.35	7.15	
C118	SPIE	11.00	04 Nov 2003		4.02	6.98	
C118	SPIE	11.00	06 Dec 2003		3.87	7.13	
C118	SPIE	11.00	11 Feb 2004		3.52	7.48	
C118	SPIE	11.00	14 Apr 2004		3.45	7.55	
C127	SP	3.00	06 Dec 2003		3.95	-0.95	Pipe damaged
C127	SP	3.00	11 Feb 2004		3.32	-0.32	Pipe damaged, wl approx. 2
C129	SP	14.00	17 Dec 2003		6.80	7.20	i ipe damaged, wi approx. 2
C129	SP	14.00	11 Feb 2004				
C129	SP	10.40			5.90	8.10	
C133	SP		04 Nov 2003		4.22	6.18	
		10.40	06 Dec 2003		3.50	6.90	
C133	SP	10.40	11 Feb 2004		4.19	6.21	
C133	SP	10.40	14 Apr 2004		4.00	6.40	
C138	SPIE	10.00	04 Nov 2003		5.60	4.40	
	SPIE	10.00	06 Dec 2003	1	4.95	5.05	

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer, HPIE - Hydraulic Piezometer, PPIE -Pneumatic Piezometer, EPIE - Vibrating Wire Piezometer, PWEL - Pumping Well

Project No.
Carried out for

N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatieva to Meniough KC3210

Galway County Council

Sheet

Sheet 1 of 1

Groundwater Monitoring

					Re	ading	
Hole No.	Instrument Type	Tip Depth (mBGL)	Date	Time (hhmmss)	Water Level (mBGL)	Head (m above Tip)	Comments
BH68	SPIE	9.00	02 Dec 2003		0.25	8.75	
BH68	SPIE	9.00	06 Dec 2003		0.16	8.84	
BH68	SPIE	9.00	11 Dec 2003		0.20	8.80	
BH68	SPIE	9.00	11 Feb 2004		0.20	8.80	
BH107	SP	5.20	04 Nov 2003		0.38	4.82	
BH107	SP	5.20	06 Dec 2003		0.10	5.10	
BH107	SP	5.20	11 Feb 2004		0.15	5.05	
DUIATEA	CD.	7.00	0.4.14		0.15		
BH145A	SP	7.00	04 Nov 2003		0.45	6.55	
BH145A	SP	7.00	06 Dec 2003		0.20	6.80	
BH145A	SP	7.00	11 Feb 2004		0.00	7.00	
RC6A	SPIE	11.30	11 Feb 2004		2.01	9.29	
RC13	SP	15.00	04 Nov 2003		10.82	4.18	
RC13	SP	15.00	06 Dec 2003		11.83	3.17	
RC13	SP	15.00	11 Feb 2004		11.91	3.09	
RC17	CD.	10.00	11 D 2002		0.70	4.00	
RC17	SP	10.00	11 Dec 2003		8.72	1.28	
RC17	SP	10.00	11 Feb 2004		7,70	2.30	
RC28	SP	4.00	04 Nov 2003		1.70	2.30	
RC28	SP	4.00	06 Dec 2003		0.80	3.20	
RC28	SP	4.00	11 Feb 2004		0.80	3.20	
RC49	SP	3.70	11 Dec 2003		0.50	2.20	
RC49	SP	3.70	11 Feb 2004		0.50 0.45	3.20 3.25	
11043	OI .	3.70	11 FED 2004		0.45	3.23	
RC72	SP	14.00	17 Dec 2003		0.10	13.90	
RC72	SP	14.00	11 Feb 2004		0.00	14.00	
RC118	SPIE	11.00	04 Nov 2003		4.02	6.98	
RC118	SPIE	11.00	06 Dec 2003		3.87	7.13	
RC118	SPIE	11.00	11 Feb 2004		3.52	7.13	
	0, 12	11.00	111002004		3.32	7.40	
RC127	SP	3.00	06 Dec 2003		3.95	-0.95	pipe damaged
RC127	SP	3.00	11 Feb 2004		3.32	-0.32	pipe damaged, wl approx 2.0r
RC129	SP	14.00	17 Dec 2003		6.80	7.20	
RC129	SP	14.00	11 Feb 2004		5.90	8.10	
RC133	SP	10.40	04 Nov 2003		4.22	6.18	
RC133	SP	10.40	06 Dec 2003		3.50	6.90	
RC133	SP	10.40	11 Feb 2004		4.19	6.21	
RC138	SPIE	10.00	04 Nov 2002				
RC136			04 Nov 2003		5.60	4.40	
	SPIE	10.00	06 Dec 2003		4.95	5.05	
RC138	SPIE andpipe, SPIE - Stand	10.00	11 Feb 2004	alway City Outer	5.52	4.48	ation Sheet

Notes: Type: SP - Standpipe, SPIE - Standpipe Piezometer, HPIE - Hydraulic Piezometer, PPIE -Pneumatic Piezometer, EPIE - Vibrating Wire Piezometer, PWEL - Pumping Well

Project No. Carried out for N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210

Galway County Council

Sheet

Sheet 1 of 1

rilled by MN ogged by CH hecked by ROR	Start 11/12/2 End 12/12/2		Equipment, Methods a C6 Rotary Open Hole 131mm 75mm diameter 4.10m to Borehole examined by tel	diameter 0.00mm to 10.30m.	0.00m 4.10m 131mm	er Casing Depth	Ground Level Coordinates National Grid	E	6.31 mOD 127502.50 228390.10
Samples a	nd Te	sts			Strata				
Depth	Type &	0.00	Records	Date Time Casing Water	Description		Depth, Level (Thickness)	Legend	Backfil
				11/12/2003 0800	PEAT**		(1.70)		
0.00-4.10	Rotary C	pen			Light grey SILT/CLAY**		1.70 +4.61	× × × × × × × × × × × × × × × × × × ×	
	Tidle Dil	iiiig			CLAY**		(1.00) 2.70 +3.61	× × × × × × × × × × × × × × × × × × ×	
							(1.20)		
					LIMESTONE** Strong light grey fine grained crystalline LIMESTONE.	4.38 m Driller -	3.90 +2.41 4.10 +2.21		
4,10-5.60	89 89 82				WEATHERING: Slight with some minor discolouration and dissolution features on fracture surfaces. DISCONTINUITIES: Subhorizontal to	induced fracture			
5.35			CS 1	11/12/2003 1800 4.10 0.00	subvertical closely to widely spaced planar to undulating smooth fractures	Assessed zone of core loss			
5.60-6.15 5.88-6.15	100 100 80		CS 2	12/12/2003 0800	1	planar rough fracture 5.80 m 65° rough fracture 5.95-6.00 m Non-intact			
6.15-7.65	100					6.39 m Rough — undulating fracture = 6.85 m 65° rough — undulating —			
		5 350 920				fracture -	(6.20)		
	100					7.65-7.75 m - Non-intact			
7.65-9.15	93 93					8,50 m Subvertical to 65° smooth fracture			
9.15-10.30	100 100 96				Stratum continued next sheet	9.40 m _ Subvertical to 65° smooth fracture 9.48 m Drilling induced fracture at 9.48m and			
Depth	TCR SCR RQD	lf	Records/Samples	Date Time Casing Water		9.3.79019/5	1		
Groundwater En do. Struck Po (m) None observed (tries ost strike			Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	Time To	ools used
otes: For explanation of the column of the c	y sheet. A itum thickn	ll dept less g	hs and reduced iven in brackets	Project No. Carried out for	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council			RC35	2

Drilled by MN Logged by CH Checked by ROR	Start 11/12/2003 End 12/12/2003	Equipment, Methods	and Remarks		Depth from to Dia 0.00m 4.10m 13 4.10m 10.30m 7	meter Casing Depth 1mm 5mm	Ground Level Coordinates National Grid	E	-6.31 mOD 127502.50 228390.10
Samples a	nd Tests	S		Strata					
Depth	TCR SCR If RQD	Records/Samples	Date Time Casing Water		Description		Depth, Level (Thickness)	Legend	Backfil
	med.		12/12/2003 1800	Strong light grey fine gra crystalline LIMESTONE.	ined	9.90m —	1111011116331		No.
-			4.10 0.30	crystalline LIMESTONE. WEATHERING: Slight w discolouration and disso on fracture surfaces. DISCONTINUITIES: Sut subvertical closely to wic planar to undulating smc	ith some minor lution features oborizontal to dely spaced		10.30 -3.99		
				EXPLORATORY HOLE		-			
						3			
4									
	Y								
			*						
Depth	TCR SCR If	Records/Samples	Date Time Casing Water						
roundwater Ent	tries st strike beha	aviour	Depth sealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time To	ols used
otes: For explanation obreviations see key vels in metres. Stradepth column.		nd ths and reduced given in brackets		N6 Galway City Outer Byp. Investigation Gortatleva to KC3210 Galway County Council	ass Contract 2 Ground Menlough		Borehole F Sh	RC35	2

necked by ROR		12/2003	75mm diameter 4,00m to	10.10m.				National Grid	.4.	228357.1
Samples	-	200-00-	3	D-1	-	Strata				
Depth	Тур	e & No	Records	Date Casing	Time Water	Description		Depth,Level (Thickness)	Legend	Back
0.00-4.00	Rotar Hole	y Open Drilling		10/12/2003	s 0800	Light grey CLAY** Limestone GRAVEL with boulders**		(2.40) 2.40 +3.86 2.60 +3.66	000	
4.00-4.50 4.50-5.00 5.00-5.60	100 80 60 100 100 100	NI 120 350		10/12/2003 4.00 11/12/2003 4.00	1.00	Strong dark grey fine grained massive LIMESTONE. WEATHERING: Slight with no obvious loss of mass / wall strength observed. DISCONTINUITIES: Closely to widely spaced planar smooth to rough fractures.	4.50 m Non-intact	(1.40) 4.00 +2.26	000	
5.40 5.60-7.10	100 100 100		CS 1				5.30-5.40 m Non-intact 6.40 m 35* rough fracture 6.50 m Smooth undulating fracture 7.00 m 45* smooth undulating undulating	(6.10)		
7.10-8.60	100 100 100	200 600 1000					fracture			
8.60-10.10	100 100 100			11/12/2003	1800	Stratum continued next sheet	Solid stick of core			
Depth	TCR SCR RQD	1f	Records/Samples		Time Water					1
undwater Ent Struck Po (m) 1.20 -		e behavi	iour	Depth se		Depth Related Remarks From to (m)		Chiselling Depths (m) T	ime Too	ls used
: For explanation viations see key in metres. Strait th column.	sheet. / turn thick	All depths iness give	and reduced en in brackets	Project Project No. Carried out	. !	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council	:	Borehole She	RC38	

Drilled by MN Logged by CH Checked by ROR	Start 10/12/20 End		ods and Remark	(S		Depth from to 0.00m 4.00m	Diameter Casing Depth 131mm	Ground Level Coordinates National Grid	E	6.26 mOD 127540.40 228357.10
	1									
Samples a		Sec. 1 Sec. 196 Ave. 196	Date	Time	Strata					
Depth	TCR SCR RQD	If Records/Sampl		Water		Description		Depth, Level (Thickness)	Legend	Backfill
E					Strong dark grey fine gra LIMESTONE.	ained massive		10.10 -3.84		11
E					WEATHERING: Slight w					
E					of mass / wall strength of	bserved.				
=					DISCONTINUITIES: Clo	sely to widely	The state of the s			
					spaced planar smooth to					
-					EXPLORATORY HOLE	ENDS AT 10.10 M				
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Depth	TCR SCR RQD If	Records/Samples	Date Ti	me						
Groundwater Entri	-100-11	records/samples		ater						
No. Struck Post		haviour	Depth seal	ed	Depth Related Remarks From to (m)			Chiselling Depths.(m) Tin	ne Tool	s used
(m)			(1	m)			-	(m) (III	1000	, useu
Notes: For explanation of	of symbols a	and	Project	N	6 Galway City Outer Bypas:	s Contract 2 Ground		Dozele		
abbreviations see key s levels in metres. Stratur in depth column.	n thickness	given in brackets	Project No.	In	vestigation Gortatleva to M C3210	lenlough		Borehole	000	
	(c) MESG HBIII ((298), 11/02/2004 11:08:12 AGS	Carried out for		alway County Council			R	C38	
		400						Snee	t 2 of 2	

orilled by MN ogged by CH checked by ROR	09/12/2003 End 10/12/2003	Rotary Open Hole 131m 75mm diameter 2 85m to	m diameter 0.00m to 2 11.05m.	0.00m 2.85m 131mm 2.85m. Rotary Core 2.85m 11.05m 75mm		Coordinates E 127579 National Grid N 228321			
Samples a	nd Tes	ts		Strata					
Depth	Type & No	Records	Date Time Casing Water	Description		Depth,Level (Thickness)	Legend	Back	
0.00-2.85	Rotary Oper Hole Drilling		09/12/2003 0800	Grey CLAY / GRAVEL** Limestone GRAVEL with boulders**	oulders**				
2.85-3.52	100 100 100			Strong to very strong light grey fine grained massive fossiliferous LIMESTONE. WEATHERING: Fresh, no evidence of		2.85 +3.42	¥ :0		
3.60		CS 1		weathering observed. DISCONTINUITIES: Subhorizontal ranging	=			1	
3.52-4.81	100 100 100		09/12/2003 1800 2.85 1.00 10/12/2003 0800	from closely to widely spaced, predominantly medium spaced planar smooth to rough fractures. Many are drilling induced.	4.24 m Drilling — duced fracture — 4.71 m — Subhorizontal				
5.28-5.55 4.81-6.31	100 100 100	CS 2	2.85 0.50	d	rilling induced fracture 				
6,31-7.81	190 100 350 100 1000			sm	i m 45° planar =	(8.20)			
7.95 7.81-8.45	100 100 100	CS 3							
8.45-9.64	100 100 100								
Depth	TCR SCR RQD If	Records/Samples	Date Time Casing Water	Stratum continued next sheet				7	
Struck Pos (m) 1.10 -		viour	Depth sealed (m)	Depth Related Remarks From to (m)		hiselling epths (m) Ti	me Tool	s used	
s: For explanation eviations see key s in metres. Stratu- pth column.	sheet. All depti m thickness gi	ns and reduced ven in brackets	Project No.	6 Galway City Outer Bypass Contract 2 Ground vestigation Gortatleva to Menlough C3210 alway County Council	E		C42 et 1 of 2		

Drilled by MN Logged by CH Checked by ROR	Start 09/12/2003 End 10/12/2003	1	s and Remarks	Depth from to Diameter Casing Depth 0.00m 2.85m 131mm 2.85m 11.05m 75mm	Ground Level Coordinates National Grid	+6.27 mOD E 127579.50 N 228321.70
Samples a		s		Strata	1	
Depth	TCR SCR RQD If	Records/Samples	Date Time Casing Water	Description	Depth,Level (Thickness)	Legend Backfill/
9,64-11.05	100 100 84		10/12/2003 1800	Strong to very strong light grey fine grained massive fossiliferous LIMESTONE. WEATHERING: Fresh, no evidence of weathering observed. DISCONTINUITIES: Subhorizontal ranging from closely to widely spaced, predominantly medium spaced planar smooth to rough fractures. Many are drilling induced. EXPLORATORY HOLE ENDS AT 11.05 m	11.05 -4.79	
Depth	TOR If	Records/Samples	Date Time Casing Water			
Groundwater Entri No. Struck Post (m)	strike behav		Depth sealed (m)	Depth Related Remarks From to (m)	Chiselling Depths (m) Tir	ne Tools used
Notes: For explanation of abbreviations see key si levels in metres. Stratun in depth column. Scale 1:50		s and reduced en in brackets , 13/02/2004 10:15:23	Project No.	N6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough 4C3210 Galway County Council	Borehole R Shee	C42 et 2 of 2

hecked by ROR		2/2003	75mm diameter 2.50m to	10.4011.						
Samples a	and 7	rests	5		Strata					
Depth	Туре	& No	Records	Date Time Casing Water	Description		Depth, Level (Thickness)	Legend Bac		
0.00-2.50	Rotary Hole I	/ Open Orilling		03/12/2003 0800	Boulder CLAY / GRAVEL**		(2.50)			
2.75 2.50-3.50 3.50-3.70	60 53 53	NI 130 190	CS 1 TCR 100, SCR 100, RQD 75	03/12/2003 1800 2.50 0.50 09/12/2003 0800	strength.	2.70 m 15° rough — fracture 3.10 m 60° — smooth fracture	2,50 +3.98	000		
3.80 4.00-4.50 3.70-4.54	100 100 95		CS 2 CS 3			09/12/2003 0800 2.50 0.50	to widely spaced planar smooth to rough fractures.	3.70-3.80 m 2 no. [15* planar rough fractures		
4.54-6.12	100 100 100						5.00 m Drilling induced fracture			
6.12-7.62	100 100 97	80 1000 1000			-		5.	7.12 m 35° planar – rough fracture	(7.90)	
7.62-9.12	100 100 100									
9.12-10.40	100 100 94			Date Time	Stratum continued next sheet	9.40 m 45° planar — smooth fracture				
Depth roundwater Entro o. Struck Pos (m) 1.80 -		If e behav	Records/Samples	Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	Time Tools used		
tes: For explanation breviations see key els in metres. Stratt depth column.	sheet. A um thick	All depth ness giv	s and reduced en in brackets	Project No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council		Borehole F She	RC45 eet 1 of 2		

Drilled by MN Logged by CH Checked by ROR	Start 03/12/20 End 09/12/20	003	Equipment, Methods	and Remark	(S	Depth from to Diameter Casing Depth 0.00m 2.50m 131mm 2.50m 10.40m 75mm	Ground Level Coordinates National Grid	E	6.48 mOD 127633.93 228317.04
Samples a		sts				Strata			
Depth	TCR SCR RQD	lf	Records/Samples	Date Casing	Time Water	Description	Depth,Level (Thickness)	Legend	
1960 1000	TCO		Records/Samples	Date Casing 09/12/2003		Description Strong dark grey fine grained	Depth,Level (Thickness) 10.40 -3.92	Legend	Backfi
Depth	TCR SCR RQD	f	Records/Samples	Date Casing	Time Vater				
Groundwater Entr lo. Struck Pos (m)		ehavio	ur	Depth se	aled (m)	Depth Related Remarks From to (m)	Chiselling Depths (m) T	ime Too	ols used
otes: For explanation obreviations see key s vels in metres, Stratu depth column. cale 1:50			nd reduced in brackets	Project Project No Carried ou		N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council	Borehole F She	RC45 eet 2 of 2	

Drilled by MN Logged by CH Checked by ROR	End	2/2003	Equipment, Methods a C6 Rotary Open Hole 131mn 75mm diameter 2.50m to	n diameter 0.00m to	0.00m 2.50m 1	iameter Casing Depth 31mm 75mm	Ground Level Coordinates National Grid	E	7.11 mOD 127702.90 228283.96
Samples a	nd '	Tests	3		Strata		1		
Depth	Тур	e & No	Records	Date Time Casing Water	Description		Depth,Level (Thickness)	Legend	Backfill/ Instrumen
0.00-2.50		y Open Drilling		03/12/2003 0800	Boulder CLAY GRAVEL**		(2.50)	8 60468 60468 6046	0000000
2.62	100 100 90		CS 1		Strong dark grey fine grained crystalline LIMESTONE. WEATHERING: Fresh to slight with no apparent loss of mass or wall strength, some minor dissolution features on some fracture surfaces.	3.15-3.20 m = - Non-intact -	2.50 +4.61	0.00	000000000000000000000000000000000000000
3.17-4.53 4.05-4.37	97 97 97	NI	CS 2		DISCONTINUITIES: Subhorizontal to subvertical closely to widely spaced fractures, locally some clay infilling.	3.47 m 45° smooth fracture 4.10 m 40° smooth fracture			SP
- - - 4.53-5.10	100 100 88	300 420				4.70 m 75*			
5.30 5.10-5.68 5.68-6.00	100 86 69 100 84 84		CS 3			5.50-5.60 m Non-intact, clay infilled fracture 5.90-6.00 m Non-intact 6.00-6.50 m Vertical rough fracture			
6.00-7.50	100 100 87					7.00 m Drilling induced fracture 7.50-9.50 m Solid core, no fractures	(8.00)		
7.50-9.00	100 100 100	270 1000 1900				8.50 m Drilling induced fracture			
9.00-10.50	100 100 100				Stratum continued next sheet	9.50 m 45*			
Depth	TCR SCR RQD	lf	Records/Samples	Date Time Casing Water	ORGANIT WITHINGS HEAL SHEEL				11
Groundwater Entr No. Struck Pos (m) 1 1.00 -	ies t strike			Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	îme Tool	s used
Notes: For explanation abbreviations see key s levels in metres. Stratu in depth column. Scale 1:50	sheet. A m thick	III depths ness give	and reduced en in brackets	Project No.	N6 Galway City Outer Bypass Contract 2 Ground investigation Gortatleva to Menlough KC3210 Galway County Council			RC49 eet 1 of 2	

Drilled by MN Logged by CH	Start 03/12/2003 End	Equipment, Method	s and Remarks		0.00m 2.50m 1	ameter Casing Depth 31mm 75mm	Ground Level Coordinates National Grid	E	+7.11 mOD 127702.90 228283.96
Checked by ROR	03/12/2003						, radional one	14.	220200.50
Samples a		S		Strata					
Depth	scr If	Records/Samples	Date Time Casing Water		Description		Depth,Level (Thickness)	Legend	
Depth	TOR		Date Time Casing Water 03/12/2003 180 2.50 1.00	Strong dark grey fine gra	slight with no wall strength, eatures on some horizontal to ely spaced ay infilling.	10.50 m 45° clay infilled fracture, with some dissolution features on fracture walls	Depth,Level (Thickness) 10.50 -3.39		Backfill/
Groundwater Entrie	s	•2000		Depth Related Remarks			Chiselling		
lo. Struck Post		940000	Depth sealed (m)	From to (m)			Depths (m) Ti	ime Tool	s used
otes: For explanation of breviations see key showles in metres. Stratum	neet. All depths thickness give	and reduced an in brackets		N6 Galway City Outer Bypas: Investigation Gortatleva to M	s Contract 2 Ground enlough		Borehole		
	moraroda give	an an and and the same and an	Project No.	KC3210		- 1	E	RC49	
ueptri column.		11/02/2004 11:12:17 AGS	Carried out for	Galway County Council		1	11.5	et 2 of 2	li li

Orilled by MN Logged by CH Checked by ROR	End	2/2003	Equipment, Methods C6 Rotary Open Hole 131m 75mm diameter 2.70m to Borehole examined using	m diameter 0.0		0.00m 2.70m 13	ameter Casing Depth 11mm 75mm	Ground Level Coordinates National Grid	E	7.38 mC 127773.3 228273.8
Samples a	nd '	Tests	;			Strata		1		
Depth	Туре	8 No	Records	Date Casing	Time Water	Description		Depth, Level (Thickness)	Legend	Back
0.00-2.70		y Open Drilling		01/12/2003	0800	Boulder CLAY GRAVEL**		(2.70)	9 60 9 60 60 60 60 60 60 60 60 60 60 60 60 60	
2.80 2.70-3.28	100 100 100		CS 1			Strong dark grey fine grained laminated fossiliferous LIMESTONE. WEATHERING; Fresh		2.70 +4.68	D: 92	
3.55 3.28-4.15 3.75-4.15	100 98 79		CS 2 CS 3	01/12/2003 2.70	1800 1.00	DISCONTINUITIES: Subhorizontal (0° - 30°) medium spaced planar rough fractures, clean.	3.28-3.38 m 2 no.closely spaced fractures, possibly drilling induced			
4.15-4.50	100 100 100			02/12/2003 2.70	0800 0.50		4.45 m — 4.45 m — Subhorizontal drilling induced fracture			
4.50-5.70	100 100 93						4.90 m Subhorizontal fracture with some slight clay smearing			
5.70-7.00	98 98 98	80 450 600					6.90 m	(7.55)		111111
7.00-8.02	100 100 100						Subhorizontal drilling induced fracture 7.30 m 35° planar rough fracture			
8.02-9.00	100 100 88						8.00 m 60* rough fracture, clean			
9.00-10.25	100						8.65 m 10° rough fracture 9.00-9.05 m Drilling induced conjugate fractures			
0.101-10.20	100					Stratum continued next sheet	9.70 m 70° rough — fracture, clay — smeared			1
Depth oundwater Entr		If			ime /ater	Depth Related Remarks From to (m)	**************************************	Chiselling		
(m) 2.00 - 2.00 - es: For explanation reviations see key ls in metres. Stratueth column.	sheet. A m thick	III depths ness give	en in brackets		(m)	N6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough CG3210 Galway County Council		Borehole R	RC52	s used

Drilled by MN Logged by CH Checked by ROR	End	2/2003	Equipment, Method	ls and Rema	irks	Depth from to Diameter Casing Dept 0.00m 2.70m 131mm 2.70m 10.25m 75mm	h Ground Level Coordinates National Grid	+7.38 mOD E 127773.30 N 228273.80
Samples a	nd T	ests				Strata	\dashv	
Depth	TCR SCR RQD	lf	Records/Samples	Date Casing	Time Water	Description	Depth,Level Le	gend Backfil
				02/12/200		Strong dark grey fine grained laminated fossiliferous LIMESTONE.	(Thickness)	Instrume
				-			10.25 -2.87	
						WEATHERING: Fresh	4	
						DISCONTINUITIES: Subhorizontal (0° - 30°) medium spaced planar rough		
-						fractures, clean. EXPLORATORY HOLE ENDS AT 10.25 m		
						EXPLORATORY HOLE ENDS AT 10.25 III	=	
							3	
						5		
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							3	
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Depth	TCR SCR RQD	lf	Records/Samples	Date Casing \	Time Water	9		
oundwater Entrie		behavio	our	Depth se	aled	Depth Related Remarks From to (m)	Chiselling	
(m)				oopiii se	(m)	Tom to (iii)	Depths (m) Time	Tools used
es: For explanation o reviations see key sh Is in metres. Stratum	f symbo	ols and depths	and reduced	Project	N Ir	l6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough	Borehole	
	UNCKIL	sss giver	i iii Drackets	Project No.	le le	C3210		
epth column.			1/02/2004 11:13:21 AGS	Carried out		Salway County Council	RC5	2

9.77-10.50	TCR SCR RQD If	5			I	meter Casing Depth 1mm 5mm	National Grid	N 2282	319.40 248.30
9.77-10.50					Strata				
9.77-10.50		Records/Samples	Date	Time			Depth,Level	Lamana B	ackfill
	95 95 95 95	Records/Samples		Water	Strong dark grey fine grained occasional laminated LIMESTONE. WEATHERING: Fresh to very slight weathering. DISCONTINUITIES: Subhorizontal closely to medium spaced planar rough fractures, clean. EXPLORATORY HOLE ENDS AT 10.50 m	fracture, assessed zone of core loss		Legend B	
Depth see	ike behaviou	id reduced	Date Tim Casing Wate Depth sealed (m) Project Project No.	N6	Galway City Outer Bypass Contract 2 Ground estigation Gortatleva to Menlough	Di	hiselling epths (m) Time	Tools used	

Orilled by MC Logged by CH Checked by ROR	Start 19/11/2003 End 19/11/2003	Equipment, Metho Cable Percussion 200	ds and Remar Omm diameter fr	rks rom 0.0n	to 2.0m.	Depth from to Diameter 0.00m 2.00m 200mm	Casing Depth	Ground Level Coordinates National Grid	E	6.56 mOI 127867.7 228233.6
Samples ar	nd Tests				Strata			1		
1	Type & No	Records	Date	Time	Otrata	Description		Depth,Level	1.	Backfi
			19/11/2003	Water 3 0800	Plastic dark brown to			(Thickness)	Legend	Instrume
					fibrous PEAT	olack pseudo	-		1/2	11
0.50-0.95	U1	3 blows					-		1/2	11
								(1.40)	7/1/2	
1,00	D 2						_		1/2 1	1
							_		1/12	4/
1.50-1.95	SPT C	N=61 (1,5/7,6,14,34)			BOULDERS**			1.40 +5.16	1	1//
			19/11/2003	1800			-	(0.60)	0 -	
							-		~0	11
					EXPLORATORY HO	LE ENDS AT 2.00 m		2.00 +4.56		
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epth Type	e & No	Records	Date Tin				=			
dwater Entries			Casing Wa	ter	and B. L. C.					
Struck Post stri	ke behaviou	,	Depth seale	d F	epth Related Remarks rom to (m)			hiselling epths (m) Time	Tools	eo.d
	1.15 m after	20 minutes.	(11	" 2	.00 Encountered	obstruction, borehole terminated.		50 -2.00 60 mil		sed
or explanation of au-	mhole and									
or explanation of syl tions see key sheet, metres, Stratum thic column.	All depths and kness given in	reduced brackets	Project	N6 Inv	Galway City Outer Bypas estigation Gortatleva to N	s Contract 2 Ground	E	Borehole		
Hieras, Statum me	INDAM MIACIT	DIGUNELS .	amore a period for 1677	111.0						
	SG HBIII (298), 11/02/	II TO 1	Project No. Carried out fo	110	3210 way County Council	lemougn		ВН	59	

Drilled by MN Logged by CH Checked by RO		Start 12/12/2003 End 13/12/2003	Rotary Open Hole 13	1mm diameter 0		5.60m. Rotary Core	Depth from to 0.00m 5.60m 5.60m 12.00m	Diameter Casing Dept 131mm 75mm	h Ground Level Coordinates National Grid	Ε	6.61 m 127864 228222
Samples			poretiole examined b	y televiewer.		I 644					
Depth				Date	Time	Strata					
Sopai	- 10	ype & No	Records	Casing	Water		Description		Depth, Level (Thickness)	Legend	Bac
				12/12/2000	0 0800	PEAT**		-	(1.70)	VII. SAVE	
						CLAY GRAVEL**			1.70 +4.91	. 8	1
								_	(0.40)	0 0	1
0.00-5,60	Rota Hole	ary Open e Drilling				Stiff grey CLAY GRAVE	L **		2.10 +4.51		
									(3.50)		
				5.60 13/12/2003	1800 0.10 0800	Strong fine grained light g	rev	-	5.60 +1.01		
6.25-6.70 5.60-7.50	95 74 56	NI 460 460	CS 1	5.60	0.10	crystalline LIMESTONE WEATHERING: Slight wit alteration or loss of wall st DISCONTINUITIES: Horiz subvertical medium becon spaced planar smooth to r clean.	h no obvious trength. contal or	6.30-6.90 m 80° smooth fracture			
7.65			000					7.50 m Drilling			//
7.50-9.00	100 100 47		CS 2					7.80-8.40 m Many random undulating rough fractures producing non-intact core			
.00-10.50	100								(6.40)		
	100	16	D	Date Tim		Stratum continued no	ext sheet	=			//
	TCR SCR RQD	lf	Records/Samples	Date Tim Casing Wat							7
Indwater Entrie Struck Post (m) 1.60 -	strike		ur	Depth sealed (m	d II F	Depth Related Remarks rom to (m)			Chiselling Depths (m) Time	Tools u	sed
For explanation o lations see key sh n metres. Stratum h column.	heet, Al n thickn	l depths ar ess given i	in brackets	Project Project No. Carried out for	KC	Galway City Outer Bypass estigation Gortatleva to Me 3210 way County Council	Contract 2 Ground nlough		Borehole RC Sheet		

rilled by MN ogged by CH hecked by ROF	End	12/2003	Equipment, Meth			Ò	oth from to Diame 0.00m 5.60m 131m 5.60m 12.00m 75m	eter Casing Depth m m	Ground Leve Coordinates National Grid	E	+6.61 m 127864 228222
Samples		Tests				Strata			-		
Depth	TCR SCR RQD	If	Records/Sample	Date Casing	Time Water		scription		Depth, Level	Legend	Bac
		460 700				Strong fine grained light grey crystalline LIMESTONE			(Thickness)		Instru
		955				WEATHERING: Slight with no	oobvious	2			1
						alteration or loss of wall streng	gth.				
	100					DISCONTINUITIES: Horizonta subvertical medium becoming	widely				1
10.50-12.00	100					spaced planar smooth to roug clean.	h fractures,	-			
								1			/
				13/12/2003	1800			_			1
						EXPLORATORY HOLE ENDS	AT 12 00 m		12.00 -5.3	,	1
					- 1	The state of the s	AT 12.50 III	-			
								3			
								=			
								=			
								=			
								=			
								=			
								1			
								=			
					- 1			-			
								=			
								=			
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								-			
								=			
								=			
								3			
								-			
								=			
								=			
1								=			
								=			
								=			
	TCR			D-/							
dwater Entrie	TCR SCR RQD H	f Re	cords/Samples	Date Tim Casing Wat	er						
Struck Post: (m)	strike be	ehaviour		Depth sealed	d Fi	epth Related Remarks rom to (m)		C	hiselling		
100 TE				(m)				epths (m) Tin	e Tools u	ised
or explanation of	f symbols	and		Project	Nie 4	Salway City Out - D					
tions see key shi metres. Stratum column.	thickness	epths and s given in	reduced brackets	Project No.	Inve KC	Galway City Outer Bypass Contra estigation Gortatleva to Menlough 1210	act 2 Ground	E	Borehole		
) MESG HBIII	(298), 13/02/2	004 18:01:01 AGS	Carried out for		way County Council			R	260	
	-								Shee	t 2 of 2	

Drilled by MN Logged by CH Checked by ROR	En	12/2003	Equipment, Methods C8 Rotary Open Hole 131n 75mm diameter 5.00m t	nm diameter 0.00m to	5.00m. Rotary Core	0.00m 5.00m 1	liameter Casing Depth 131mm 75mm	Ground Lev Coordinate National Gr	s E	+6.54 mOD 127915.02 228222.50
Samples	and	Test	3		Strata			1		
Depth	Тур	e & No	Records	Date Time Casing Water		Description		Depth,Leve	Legend	Backfill
				17/12/2003 080		l.		(Z.60)		
0.00-5.00	Rotar	y Open Drilling			GRAVEL CLAY**			2.60 +3	94	
5.45 5.00-6.00	100 100 90		CS 1		Strong light grey fine crystalline LIMESTON WEATHERING: Sligh dissolution or loss of s DISCONTINUITIES: S subvertical closely to planar rough to smoot	IE t with no obvious strength. Subhorizontal to	6.00 m Clay infilled fracture	5.00 +1.5	54	
6.00-7.25 7.05	100 100 100		CS 2				6.25 m 25° rough — fracture — fracture — 7.18 m 25° rough — fracture — fracture —			
7.25-8.75 8.35-8.75	100 100 80	70 450 600	CS 3				7.80 m 45° smooth fracture 8.10 m 25° clay infilled fracture 8.65 m Drilling induced fracture	(6.70)		
8.75-10.25	100 100 100			Date: W	Stratum continu	ued next sheet	9.75 m 70° clay smeared fracture			
Depth roundwater Entri o. Struck Post (m) 1.80 -		lf behavi		Date Time Casing Water Depth sealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time Too	s used
otes: For explanation breviations see key s rels in metres. Stratur depth column, ale 1:50	sheet. A im thickn	ll depths less give	n in brackets	Project No.	N6 Galway City Outer By; nvestigation Gortatleva t (C3210 Galway County Council	oass Contract 2 Ground to Menlough			RC63 eet 1 of 2	

Drilled by MN Logged by CH Checked by ROR	Start 17/12/200 End 17/12/200		ds and Remarks		Depth from to Diameter Casing Dept 0.00m 5.00m 131mm 5.00m 11.70m 75mm	h Ground Lev Coordinates National Gri	E	+6.54 mOD 127915.02 228222.50
Samples a	and Tes	ts			Strata	-		
Depth	TCR SCR If			ime ater	Description	Depth,Level		Backfill/
			- saming VV	utel	Strong light grey fine grained crystalline LIMESTONE	(Thickness) Legend	Instruments
E					crystalline LIMESTONE 10.25 m 70° To incipient fracture			
Ē					dissolution or loss of strength.			
10.25-11.70	100 100				DISCONTINUITIES: Subhorizontal to subvertical closely to medium spaced	=		
-	100				planar rough to smooth fractures.	=		
-				1800 0.50		=		
Ē			0.00	0.00	EXPLORATORY HOLE ENDS AT 11.70 m	11.70 -5.1	6	111
- Don't I	TOR	_	Date Tim-					
Depth S	S If	Records/Samples	Date Time Casing Water	+				
No. Struck Posts (m)	strike behav		Depth sealed (m)	F	Depth Related Remarks from to (m)	Chiselling Depths (m) Ti	me Tools	used
Notes: For explanation of abbreviations see key she levels in metres. Stratum	f symbols and eet. All depths	s and reduced	Project	N6	Galway City Outer Bypass Contract 2 Ground estigation Gortatleva to Menlough	Borehole		
it deput column.			Project No. Carried out for	KC	estigation Gortatieva to Menlough 3210 Iway County Council	R	C63	
Scale 1:50 (c)) MESG HBIII (298),	11/02/2004 11:21:55 AGS		Jul	, South Council	She	et 2 of 2	

Drilled by AC Logged by JL	Start 08/10/2	2003	Equipment, Methods a Hilltwister Rotary Core 65mm diame				Depth from to 0.00m 16.00m	Diameter Casing De 65mm	oth Ground Level Coordinates National Grid	E	6.57 mOD 128307.00 228114.60
hecked by ROR	End 08/10/2								, salona onu		
Samples a		200	7 1 25 T 25	Date	Time	Strata			Depth,Level		Backfi
Depth	TCR SCR RQD	If	Records/Samples	Casing	Water		Description		(Thickness)	Legend	Instrume
0.00-1.00	O N/A N/A		No Recovery	08/10/2003	0800	PEAT**			1	1/2 5/1/2	
	1945				2				-	1/12 SN/12	
1.00-2.50	0 N/A		No Recovery								11
	N/A									1/2 1/2	
									(5.20)	VII.	11
2.50-4.00	0 N/A N/A		No Recovery						- -	1/2 SAIN	
										VI.	
4.00-5.50	O N/A N/A		No Recovery								1
						Soft grey silty CLAY**			5.20 +1.3	7	
5.50-7.00	0 N/A N/A		No Recovery								
7.00-8.50	0 N/A N/A		No Recovery						(4.00)		
8.50-10.00	53 N/A N/A					Limestone BOULDERS	le.	j.b.,	9.20 -2.6	13	
9.72			CS 1			Stratum continu	ed next sheet		(0.80)	D	
Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water		2000 007000 May 31 PS 27 B				
Groundwater Ent No. Struck Po (m) None observed (st strike			Depth se	ealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time To	ools used
otes: For explanation of the control of the column. The column of the co			hh and reduced liven in brackets	Project No Carried ou		N6 Galway City Outer Byp Investigation Gortatleva to KC3210 Galway County Council	oass Contract 2 Grou o Menlough	ind		RC106	

filled by AC ogged by JL necked by ROR	End	0/2003	Equipment, Methods a			0.00m 16,00m 65	mm	Coordinates National Grid	+6.57 mC E 128307. N 228114.
Samples a	nd 7	Tests	5		Strata				
Depth	TCR SCR RQD	If	Records/Samples	Date Time Casing Water		Description		Depth,Level (Thickness)	Legend Back
10.00-11.50	20 N/A N/A				Possible BOULDERS** to coarse subangular to GRAVEL of limestone. F	subrounded		(2.55)	000000
11.50-13.00	37 30 30				Character for animal	oliobal).	12.60-14.50 m [12.55 -5.98	000
13.00-13.63		NI 260	CS 2		Strong grey fine grained fossiliferous LIMESTON calcite veins. WEATHERING: Slight s exposed surfaces. DISCONTINUITIES: 0° medium spaced rough to	olution features on	Driller noted weathered rock with clay bands 12.75-13.00 m 70-75° undulating rough fracture	(1.95)	
13.00-14.50	65 65 65	400			modum spaced rough to	SCHOOL HOURS	14.37-14.50 m		
14,50-16.00	O N/A N/A		No Recovery		CAVITY infilled with very	y soft SILT**	Subvertical undulating rough to smooth fracture with grey brown sandy gravelly clay smear.	(1.50)	× × × × × × × × × × × × × × × × × × ×
				08/10/2003 1800				16.00 -9.43	× × × \
Depth	TCR SCR RQD	lf	Records/Samples	Date Time Casing Water			-	6	
roundwater Ent b. Struck Po- (m) one observed (s	tries st strik			Depth sealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time Tools use
tes: For explanation previations see key els in metres. Strat depth column.	sheet, tum thic	All dept kness g	hs and reduced	Project No. Carried out for	N6 Galway City Outer Byp Investigation Gortatleva to KC3210 Galway County Council	ass Contract 2 Ground o Menlough			RC106

rilled by MN ogged by hecked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Methods Open Hole Drilling 131n	s and Remarks nm diameter from 0.0m	to 27.0m.	Depth from to Diameter 0.00m 27.00m 131mm	Casing Depth	Ground Level Coordinates National Grid	E	6.57 mOD 128307.45 228115.98
Samples a	nd Tests			Strata					
		Records	Date Time		Description		Depth, Level (Thickness)	Legend	Backfill
Depth	Type & No	Records	Date Time Casing Water 07/11/2003 0800	PEAT**	Description		(Thickness)		Instrument
			Date Time		ravel** continued next sheet		8.00 -1.4 (1.70)		
Depth	Type & No	Records	Date Time Casing Water					1	
Groundwater Er No. Struck P (m) 1 2.00 -	ntries ost strike beh	aviour	Depth sealed (m)	Depth Related Rem From to (m)	narks		Chiselling Depths (m)	Time T	ools used
lotes: For explanat libreviations see k evels in metres. Str n depth column. Scale 1:50		nd https and reduced given in brackets	Project Project No. Carried out for	N6 Galway City Oute Investigation Gortat KC3210 Galway County Cou			Borehole	RC106	A

lled by MN gged by ecked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Methods an	iu Kemark	19		Depth from to Diameter 0.00m 27.00m 131mm	Casing Depth	Coordinates National Grid		28307.45 28115.98
Samples a	nd Tests				Strata					Dealefill
Depth	Type & No	Records	Date Casing	Time Water		Description		Depth,Level (Thickness)	Legend	Backfill/ Instrumen
Dopan	3310-1-1-1-1		Jasing	vater	Grey boulder CLAY**			(0.70)	-0-	11
							_	10.40 -3.83	-	111
					Loose BOULDERS**		_		n - 1	11
							-		~0	
								(1.20)	0	
							=		0	11
								11.60 -5.03	0	1/
					Boulder CLAY**					
					Į.		-			
								(1.60)	U -	1
								(1.00)	_ 0	
									$_{-}^{-}$	
							-		0 -	1
					Black CLAY**			13.20 -6.63		11
0.00-27.00	Rotary Open								-	
0.00-27.00	Hole Drilling									1
								(1.50)		
									_	
										1
14.70-15.08	SPT S	50 (2,9/18,30,2)	14.70	2.00	LASTIC CANDA			14.70 -8.13		
14,70-15.00	0110				White SAND**		_			1//
					1			-		1/
										1
								(2.30)		. //
			16.20	2.0						1/
16.20-16.65	SPTS	N=50 (5,7/8,9,18,15)	16.20	2.0	1			=		1/
								17.00 -10.4		
					Brown SAND**			- 17.00 - 70.4	· . · · ·	1/
								1		1
									·	1/
								(2.20)		\cdot
								-		
								_		. \
								=		.1
								19.20 -12.6		: \
19.20-19.53	SPT S	50 (12,12/17,18,15 for 25mm	19.20	2.	Coarse white SAND	**		- 10.20		. /
								3		: /
					19,2507,000,00-200	Married agest about				:
		Basanda	Date	Time		ntinued next sheet				
Depth	Type & No	Records	Casing	y Wate	Depth Related Remar	rks		Chiselling		Table
Groundwater I No. Struck (m)	Post strike beh	naviour	Depti	h sealed (m	From to (m)			Depths (m)	Time	Tools use
Notes: For explan	ation of symbols	and	Projec	t	N6 Galway City Outer	Bypass Contract 2 Ground va to Menlough		Borehol	е	n
abbreviations see evels in metres. S	key sheet. All de Stratum thickness	and opths and reduced given in brackets	Projec		KC3210				RC10	
n depth column.		(298), 28/01/2004 14:17:49 AGS		d out fo	Galway County Counc	cil			Sheet 2	of 3

rilled by MN ogged by hecked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Method	s and Remarks		Depth from to Diameter 0.00m 27.00m 131mm	Casing Depth	Ground Level Coordinates National Grid	E	6.57 mOD 128307.45 228115.98
Samples a			1	Strata					
Depth	Type & No	Records	Date Time	Ottata	Description		Depth, Level (Thickness)	Legend	Backfill
			Casing Water	Coarse white SAND**			(1.60)		
				Brown CLAY**			20.80 -14.23		
							e .		
						2 2 3	(2.90)		
				Brown SAND**		3	23.70 -17.1	3	
							(3.30)		
			07/11/2003 1800 0.50)	LE ENDS AT 27.00 m		27.00 -20.4	13	
						-			
			Date Time						
Depth Groundwater Er No. Struck P (m)	Type & No ntries Post strike beh		Date Time Casing Water Depth sealed (m)	Depth Related Remark From to (m)	s		Chiselling Depths (m)	Time	Tools used
otes: For explanal obreviations see k vels in metres. Str depth column. cale 1:50		and pths and reduced given in brackets	Project Project No. Carried out for	N6 Galway City Outer B Investigation Gortatleva KC3210 Galway County Council	ypass Contract 2 Ground to Menlough		Borehol	e RC106 Sheet 3 o	6 A f3

orilled by TB ogged by Checked by ROR	Start 22/10/2003 End 22/10/2003	Equipment, Method Open Hole 131mm dia	s and Remarks meter from 0,0m to 20,0	m.	Depth from to Diameter Casing 0.00m 20.00m 131mm		Ground Level Coordinates National Grid	E 1	6.33 mOD 128349.60 228088.20
Samples a	nd Tests			Strata			9		
Depth	Type & No	Records	Date Time		Description		Depth, Level (Thickness)	Legend	Backfi
			Casing Water 22/10/2003 0800	Hard stiff brown CLAY**					
							(15.00)		
				Charles	and next cheet	1			
Depth	Type & No	Records	Date Time Casing Water	Stratum continu	eu next sneet				-7-7
roundwater En		Salahan Salahan	Depth sealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time To	ols used
tes: For explanation breviations see kerels in metres. Stradepth column.	on of symbols an y sheet. All depti tum thickness gi	d hs and reduced ven in brackets	Project Project No. Carried out for	N6 Galway City Outer By Investigation Gortatleva t KC3210 Galway County Council	oass Contract 2 Ground o Menlough		Borehole F St	RC111	2

Drilled by TB Logged by Checked by ROR	Start 22/10/2003 End 22/10/2003	Equipment, Methods	s and Remar	rks		Depth from to Diamete 0.00m 20.00m 131mm	r Casing Depth	Ground Level Coordinates National Grid	E 1	6.33 mOD 128349.60 228088.20
Samples a	nd Tests				Strata					
Depth	Type & No	Records	Date	Time		Description		Depth,Level	Legend	Backfill
Depth 0.00-20.00	Type & No Rotary Open Hole Drilling	Records	Date Casing	Time Water	Hard stiff brown CLAY** White SAND**	Description		Depth, Level (Thickness)	Legend	Backfill
					White SAND**			(4.00)		
Depth Groundwater Ent	Type & No	Records	22/10/2003 Date Casing	3 1800 Time Water	Hard brown CLAY** EXPLORATORY HOLE E Depth Related Remarks	NDS AT 20.00 m		19.00 -12.67 (1.00)		
No. Struck Po (m)	st strike behav		Depth s	(m)	From to (m) N6 Galway City Outer Bypas	s Contract 2 Ground			Time Too	ls used
lotes: For explanation bbreviations see key evels in metres, Strat n depth column. scale 1:50		s and reduced en in brackets 28/01/2004 14:18:05 AGS	Project No Carried or	0.	Investigation Gortatleva to N KC3210 Galway County Council	Menlough		R	C111 eet 2 of 2	

lied by AC gged by JL ecked by ROR	End	0/2003	Hilltwister Rotary Core 65mm diame	ter 0.00m to 14.5	50m.	0.00m 14.50m 65r		Coordinates National Grid		128401.80 228088.20
amples a	nd T	ests				Strata				
Depth	TCR SCR RQD	If	Records/Samples		me	Description		Depth,Level	Legend	Backf
	RQD			O9/10/2003 0	ater	PEAT**		(Thickness)	1/2	Instrum
0.00-1.00	0 0		No recovery	03.1012.000		Grey brown sandy gravelly CLAY with boulders**	1.00-1.63 m	(0.30) 0.30 +6.91	0.0	
1.00-2.50	66 13 13						Recovered as subrounded coarse GRAVEL of limestone 1.63-2.30 m Recovered as limestone COBBLES.	(2.00)	01000	
2.50-2.88			CS 1			Strong grey fine grained slightly fossiliferous LIMESTONE with occasional clay bands between 5.50m and 10.00m.	-	2.30 +4.91		
3.00 2.50-4.00	95 93 93		CS 2			WEATHERING: Occasional dissolution features on fracture surfaces, penetrating up to 40mm, resulting in small voids and localised brown discolouration. No loss in strength.	3.49-3.68 m 70"			
						DISCONTINUITIES: 20 - 45° closely to medium spaced smooth planar fractures, often with calcite on fracture surfaces and 0° - 10° subhorizontal closely spaced smooth planar and undulating fractures.	smooth undulating fracture with calcite on surface 3.69-3.80 m Non-intact, recovered as angular coarse			
4,00-5.50	100 100 80						gravel, _ assessed zone of core loss 4.54-4.61 m 60° smooth planar fracture with calcite on surface			
5.50-7.00	94 74 61						5.56-5.68 m Orange to light brown slightly sandy CLAY (up to 150mm) 5.68-5.91 m Non-intact, Assessed zone of core loss			
7.00-8.50	61 61 61						7.46-7.65 m Assessed zone of core loss			
		NI 360 670					8.10-8.50 m Assessed zone of core loss	(12.20)		
	51						8.73-9.47 m Assessed zone of core loss			
8.50-10.00	41 31						9.31-9.46 m Orange to light brown slightly sandy CLAY (up to 150mm)			
Depth	TCR SCR RQD	lf	Records/Samples		me	Stratum continued next sheet			-	-
roundwater Ent b. Struck Po (m) one observed (tries ost strik	ke beha	viour	Depth seal	ed m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	Time T	ools used
es: For explanation reviations see kels in metres. Stra epth column.	v sheet.	All dept	hs and reduced	Project Project No. Carried out t		N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council			RC115	

Drilled by AC Logged by JL Checked by ROR	Start 09/10/2 End 09/10/2	2003	t, Methods an	nd Remark	KS	Depth from to Diameter Casing Depth 0.00m 14.50m 65mm	Ground Level Coordinates National Grid		+7.21 mOD E 128401.80 N 228088.20
Samples a	and Te	ests				Strata			
Depth	TCR SCR RQD	If Records/	Samples	Date Casing	Time Water	Description	Depth,Level (Thickness)	Legen	Backfill/ Instrument
						Strong grey fine grained slightly fossiliferous LIMESTONE with occasional clay bands between 5.50m and 10.00m.			
	100 97 97					WEATHERING: Occasional dissolution features on fracture surfaces, penetrating up to 40mm, resulting in small voids and localised brown discolouration. No loss in strength.			
11.50-13.00	100 100 96					DISCONTINUITIES: 20 - 45° closely to medium spaced smooth planar fractures, often with calcite on fracture surfaces and 0° - 10° subhorizontal closely spaced smooth planar and undulating fractures.			
, É									
13.00-14.50	100 100 100								
-				09/10/2003	1800				
-					_	EXPLORATORY HOLE ENDS AT 14.50 m	14.50 -7.29	,	
=						-			
F		=							
t.									
. }									
F									
-									
_									
-	Ton			Date	Time				
Depth	RQU	If Records/S		Casing	Water				
Groundwater Ent No. Struck Po (m) None observed (s	st strike			Depth se	ealed (m)	Depth Related Remarks From to (m) 14.50 Unable to backreaming rods, cut off rods at ground level.	Chiselling Depths (m)	Time	Tools used
Notes: For explanatio abbreviations see key levels in metres. Strat	on of symb y sheet, Al turn thickn	ols and depths and reduced ess given in brackets	d F	Project Project No		N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210	Borehole		E
in depth column. Scale 1:50		88III (298), 16/02/2004 (9:59:3		Carried or		Galway County Council	St	RC11 neet 2 d	5 of 2
Soulo 100	(6) MESG	(2mg), 16/02/2004 09:59:1	~ 4101						

rilled by Hillard: ogged by SL hecked by ROR	End	0/2003	Equipment, Methods a Rotary Cored 65mm diam	and Remar eter from 0.0	ks 0m to 14.	50m.	Depth from to Di 0.00m 14.50m	ameter Casing Depth 55mm	Ground Level Coordinates National Grid	E	10.12 mOD 128452,80 228086.90
Samples a	nd T	ests	8			Strata					
Depth	TCR SCR RQD	If	Records/Samples	Date	Time	011414	Description		Depth, Level (Thickness)	Legend	Backfi
0.00-1.00	50 0			20/10/2003	Water 3 0800	SILT and BOULDERS** angular to subrounded li assessed zone of core le	mestone gravel,		(0.80)	00	. 4
1.15-1.34			CS 1			Moderate strong to stror crystalline fine grained fi LIMESTONE with occas WEATHERING: Fresh to	ossiliferous sional stylolites. o slight brown	1.04 m 45-55° = planar smooth fracture with light brown clay smear	0.80 +9.32		
1.00-2.50	60 37 29					discolouration on fractur DISCONTINUITIES Sub- very closely to widely pr medium spaced planar s	phorizontal to 10° redominately	1.08 m 45-55° — planar smooth — fracture with light — brown clay — smear			
2.23			CS 2			fractures.		2,00 m 45-55° possibly producing some non intact, assessed zone of core loss			
3.22 2.50-4.00	91 86 82		CS 3					2.33-2.40 m Subvertical planar stepped fracture			
								3.80 m 45-55° planar smooth fracture with light brown clay smear			
4.00-5.50	95 79 79							4.60 m 55-60° planar smooth fracture			
				20/10/200				5.15-5.37 m = 55-60° planar = smooth fracture =			
5.50-7.00	99 89 86			21/10/200	3 0000						
		NI 250 870						7.10 m Incipient 45-55° fracture			
7.00-8.50	99 99 99							7.53 m 45-55° planar smooth fracture	(13.70)		
								8.57 m 45-55" planar smooth fracture			
8.50-10.00	96 85 55					Stratum continu	and next sheet	9.40 m 60° planar smooth fracture with light brown clay smear on surface			
Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water	Suatum continu					
Groundwater Ent No. Struck Po (m) None observed (st strik			Depth :	sealed (m)	Depth Related Remarks From to (m)			Chiselling Depths (m)	Time T	fools used
otes: For explanation obreviations see key vels in metres. Stra depth column.	y sheet. tum thic	All dept kness g	hs and reduced	Project N		N6 Galway City Outer By Investigation Gortatleva t KC3210 Galway County Council		i		RC118	

Drilled by Hillards	Start 20/10 End	: V2003	Equipment, Methods	and Rema	rks		Depth from to 0.00m 14.50m	Diameter Casing Depth 65mm	Ground Level Coordinates National Grid	E	10.12 mOD 128452.80 228086.90
Checked by ROR	21/10	/2003							Hadonal Ond	,	220000.00
Samples a		1		Date	Time	Strata			Depth,Level		Backfill/
Depth	TCR SCR RQD	If	Records/Samples	Casing	Water		Description		(Thickness)	Legend	Instrument
10,00-13,00	50 40 40					Moderate strong to stron crystalline fine grained for LIMESTONE with occas WEATHERING: Fresh to discolouration on fractur DISCONTINUITIES Subvery closely to widely promedium spaced planar stractures.	ossiliferous ional stylolites. o slight brown e surfaces. shorizontal to 10° edominately	10.30 m 45-55* pianar smooth fracture 10.60-10.90 m Subvertical planar stepped smooth fracture possibly produced some non intact, assessed zone of core loss. 11.65-12.00 m Non Intact; Recovered as coarse angular limestone gravel			SPIE
13.00-14.50	100 97 97			21/10/200	3 1800	EXPLORATORY HOLE	ENDS AT 14.50 m	14.20-14.27 m 55-60" planar smooth fracture with brown discoleuration on surface	14.50 -4.39		
Depth	TCR	If	Records/Samples	Date Casing	Time Water						
Groundwater Entri No. Struck Pos	ies	e behav	viour	Depth s		Depth Related Remarks From to (m)			Chiselling Depths (m)	Time To	ols used
(m) None observed (se				Depuis	(m)				Sopula (III)	e fc	DOCK COL
Notes: For explanation abbreviations see key levels in metres. Stratu in depth column.	sheet. A	All depth	s and reduced ven in brackets	Project N		N6 Galway City Outer Bypa Investigation Gortatleva to KC3210		nd	Borehole	C118	
Scale 1:50	(c) MESC	HBIII (298), 05/02/2004 13:24:22 AGS	Carried o	ut for	Galway County Council				eet 2 of	

Drilled by TB Logged by JL Checked by ROR	End	t 0/2003 0/2003	Equipment, Methods a Soil Mech Rotary Open Hole 100mm 65mm diameter 1.05m to televiewer.	diameter 0.0	00m to 1	0.00m 1.05m 100 .05m. Rotary Core 1.05m 12.30m 65	neter Casing Depth mm mm	Ground Level Coordinates National Grid	E	16.44 mOD 128583.50 228031.20
Samples a	and T	ests				Strata				
Depth		& No	Records		Time Water	Description		Depth,Level (Thickness)	Legend	Backfil
0.00-1.05	Rotary Hole I	Open Orilling		07/10/2003		Boulder CLAY**	- - - - -	(0.80)	-0 -C	
1.05-1.70	100 71 29					LIMESTONE** Strong grey fine grained LIMESTONE WEATHERING: Slight solution features on occasional fracture surfaces. DISCONTINUITIES: 1.05m - 3.60m: 0 - 20°	1.09-1.19 m 50* smooth undulating fracture 1.28-1.37 m Non-intact	0.80 +15.64 1.05 +15.39		
1.70-2.75	97 86 74	NI 110 260				very closely to medium spaced predominantly closely spaced smooth undulating smooth fractures. 3.60m - 12.30m: 0 -20° very closely to widely spaced, predominantly medium spaced smooth undulating fractures.	2.70-2.75 m 45° E			
2.75-3.60 3.20	98 91 87		CS 1				smooth undulating fracture 2.75-2.78 m Non-intact 3.03-3.44 m 80° smooth planar fracture with abundant calcite			
3.85-4.30			CS 2				on fracture – surface –			1
3.60-5.10	98 98 98									
5.10-6.60	87 87 87						4.82-4.87 m 40° C smooth undulating fracture 5.17-5.24 m 50° Smooth planar fracture 5.43-5.60 m 3 No 45° fractures all displaying slight calcite mineralisation on fracture surfaces			
6,60-8,10 7,55	100 96 77		CS 3				6.56-6.60 m 40° ⊏ smooth planar fracture	(11.25)		
		NI 500 1150					7.88-7.90 m = - Non-intact			
8.10-9.15	97 97 95		Slipped Core							
9.15-10,10	100 100 67		Slipped Core			Stratum continued next sheet	9.84-9.90 m 45° \Box			
Depth	TCR SCR RQD	If	Records/Samples	Date Casing	Time Water		smooth planar			1
Groundwater En lo. Struck Po (m) None observed (ost strik			Depth se	ealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	Time T	ools used
otes: For explanation of the column of the column.	y sheet. atum thic	All dept kness g	hs and reduced	Project No Carried ou		N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council			RC122	

Drilled by TB Logged by JL Checked by ROR	End	0/2003	Equipment, Methods	and Remar	ks	Depth 0.00 1.03	0m 1.05m 100	neter Casing Depth Imm imm	Ground Leve Coordinates National Grid		+16.44 mOD E 128583.50 N 228031.20
Samples a	nd '	Tests	,			Strata					
Depth	TCR SCR RQD	lf	Records/Samples	Date	Time Water	Descr	ription		Depth,Level (Thickness)	Legen	d Backfill/
10.10-11.60	100 99 75			07/10/2003 1.05 08/10/2003 1.05	3 1800 dry	Strong grey fine grained LIMES WEATHERING: Slight solution occasional fracture surfaces. DISCONTINUITIES: 1.05m - 3.1 very closely to medium spaced predominantly closely spaced s undulating smooth fractures, 3.6 12.30m: 0 -20° very closely to w spaced, predominantly medium	features on 60m: 0 - 20° mooth 60m - videly	fracture with — calcite on — surface — 10.08 - 10.10 m — 35° smooth — undulating — fracture with calcite on fracture surface = 10.48 - 10.50 m — Non-intact.	(1110011033)		
11.60-12.30	100 100 100			08/10/2003	3 1800 dry	smooth undulating fractures. EXPLORATORY HOLE ENDS A	T 12.30 m		12.30 +4.1	4	
Depth	TCR	if	Records/Samples	Date	Time Natar						
Groundwater Entri	ies		- 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	Casing	Nater	Depth Related Remarks			Chiselling		
No. Struck Post (m) None observed (se	t strike	/ Sheet)		Depth se	aled (m)	From to (m)				Time Te	ools used
Notes: For explanation abbreviations see key's levels in metres. Stratur in depth column. Scale 1:50	sheet. A m thick	All depths ness give	and reduced en in brackets	Project Project No Carried ou	. 1	N6 Galway City Outer Bypass Cont nvestigation Gortatleva to Menloud (C3210 Galway County Council	tract 2 Ground gh		Borehole R Sh	C122 eet 2 of	2

Drilled by TB Logged by JL Checked by ROR	End	10/2003	Equipment, Methods Soil Mech Rotary Open Hole 131 di diameter 0.90m to 10.70	ameter 0.00m to 0.90	0.00m 0.90m 131 0m. Rotary Core 66mm 0.90m 10.70m 66	neter Casing Depth mm mm	Ground Level Coordinates National Grid	E	16.03 mOI 128748.7 228019.5
Samples a	and	Tests	3		Strata		1		
Depth	1	e & No	Records	Date Time Casing Water	Description		Depth,Level	Legend	Back
0.00-0.90		ry Open Drilling		09/10/2003 0800	Clay bound LIMESTONE**	<u> </u>	(Thickness)		Instrun
0.90-1.70	84 60 34	NI 60 160			Strong grey fine grained fossiliferous LIMESTONE with occasional calcite veins. WEATHERING: Possible solution features on fracture surfaces.	rough planar fracture producing partially non-intact core 1.22-1.64 m Non-intact,	0.90 +15.13		
1.85			CS 1		DISCONTINUITIES: 0° - 20° very closely to medium spaced, predominantly closely	recovered as _ coarse gravel		\vdash	1
1.70-3.00	100 100 91				spaced to 1.70m, then predominantly medium spaced smooth planar to undulating fractures.	Assessed zone of core loss 1.64-1.70 m 40° smooth undulating fracture			
						2.83-2.85 m 30° = smooth undulating to _ stepped fracture			
3,00-4,50	100 100 96					3.61-3.72 m 70° smooth undulating fracture 3.78-4.63 m 80° smooth planar fracture with occasional calcite on fracture surfaces.			
4.50-6.10	93 93 79	NI				5.69-5.73 m = - Non-intact -	(9.80)		
6.70-7.09 6.10-7.60	100 100 100	400 590	CS 2						
7.60-9.10	91 84 84					8,55-8,62 m 55°			
9.10-10.70	100 98 95				Stratum continued next sheet	9.15-9.21 m Non-intact -			
Depth	TCR SCR RQD	If	Records/Samples	Date Time Casing Water					1
roundwater Entr b. Struck Pos (m) one observed (s	st strike			Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m) T	ime Too	ls used
tes: For explanation previations see key els in metres. Stratu depth column.	sheet. A um thick	All depths ness give	and reduced en in brackets	Project No.	N6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough KC3210 Galway County Council			C124 eet 1 of 2	

Drilled by TB Logged by JL	Start 09/10/200 End		s and Remarks		Depth from to 0.00m 0.90m 0.90m 10.70m	Diameter Casing Depth 131mm 66mm	Ground Level Coordinates National Grid	+16.03 mOD E 128748.72 N 228019.54
Checked by ROR	09/10/200							11 2200 10.04
Samples a		ts		Strata				
Depth	TCR SCR RQD	Records/Samples	Date Time Casing Water		Description		Depth,Level (Thickness)	Legend Backfill/
-				Strong grey fine grained LIMESTONE with occasi	fossiliferous	_		1
E			09/10/2003 1800	WEATHERING: Possible				
E			0.90 dry	on fracture surfaces.			10.70 +5.33	
E				DISCONTINUITIES: 0° - to medium spaced, predo	minantly closely	3		
E				spaced to 1.70m, then pr medium spaced smooth	edominantly planar to	‡		
E				undulating fractures. EXPLORATORY HOLE	ENDS AT 10.70 m			
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	TCR SCR RQO If	Records/Samples	Date Time Casing Water					
Groundwater Entrie No. Struck Post		aviour	Depth sealed	Depth Related Remarks From to (m)			Chiselling Depths (m) Tir	ne Tools used
(m) None observed (se			(m)					10013 4364
Notes: For explanation of abbreviations see key si levels in metres. Stratum	of symbols ar heet. All dept	nd ths and reduced	Project N	6 Galway City Outer Bypass evestigation Gortatleva to M	s Contract 2 Ground		Borehole	
in depth column.		10-10-0	Project No. K	C3210 alway County Council	emougn	- 1	RO	C124
Scale 1:50	(c) MESG HBIII (29	88), 11/02/2004 11:33:34 AGS	vacior G	uy County Council			Shee	et 2 of 2

Drilled by TB Logged by JL Checked by ROR	Start 08/10/2003 End 08/10/2003	Equipment, Methods Soil Mech Rotary Open Hole 131 di diameter 1.00m to 6.20m	ameter 0,00m to 1,00	0.00m 1.00m 13	meter Casing Depth 1mm 8mm	Ground Level Coordinates National Grid	+9.89 mOD E 128883.40 N 227998.86
Samples a	nd Tests			Strata			
Depth	Type & No	Records	Date Time	Description		Depth,Level	Legend Backfill
Бориг	Type wite	Records	Casing Water			(Thickness)	Instrumen
0.00-1.00	Rotary Open Hole Drilling		08/10/2003 0800	Weathered clay bound LIMESTONE**	3	(1.00)	
1.00-1.40	85 52 36			Strong grey fine grained LIMESTONE WEATHERING: Occasional slight solution features on fracture surfaces. DISCONTINUITIES: 30° and 60° very closely to medium spaced predominantly closely to medium spaced smooth undulating fractures with frequent brown clay smearing on fracture surfaces.	1.00-1.40 m Non-intact. Recovered as angular coarse gravel 1.52-1.83 m Non-intact, assumed zone of core loss 1.83-1.90 m Subvertical to 85 degree smooth planar fracture 1.90-2.20 m	1.00 +8.89	
2.60-3.00 3.10 3.00-3.40 3.40-3.84 3.40-4.00 3.90	90 73 38 100 85 75 NI 100 170 73 440	CS 1 CS 2			Non-intact 2.66-2.72 m — Non-intact. Assessed zone of core loss 2.90-3.00 m 75' — smooth planar fracture = 3.17-3.19 m Non-intact 3.30-3.33 m Non-intact 3.63-3.83 m 80' smooth planar fracture with	(5.20)	
4.00-4.80	75 55 44	CS 4			calcite on fracture surface 4.03-4.30 m Subvertical smooth planar fracture with calcite on surface		
4.80-5.55	81 71 37		48		4.30-4.64 m Non-intact, assessed zone of core loss 4.64-5.38 m Subvertical to 80* smooth planar fracture with		
5.55-6.20	92 92		08/10/2003 1800 1.00	EXPLORATORY HOLE ENDS AT 6.20 m	slight calcite mineralisation on surface 6.00-6.20 m 65° smooth planar fracture with calcite on surface	6.20 +3,69	
Depth	TCR SCR RQD If	Records/Samples	Date Time		-		
Groundwater Enti No. Struck Pos (m) None observed (s	ries st strike behav	riour	Casing Water Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m) Ti	ime Tools used
Notes: For explanation abbreviations see key levels in metres. Stratu in depth column. Scale 1:50	sheet. All depth um thickness giv	s and reduced en in brackets . 11/02/2004 11:34:11 AGS	Project No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council			C126 eet 1 of 1

Drilled by T8 Logged by SL Checked by ROR	Start 21/10/2003 End 21/10/2003	Equipment, Methods Open hole 131mm diam 75mm diameter from 2.3	eter from 0.0m to 2.50	Om. Rotary Cored	Depth from to Diame 0.00m 2.50m 131m 2.50m 6.00m 75m	ter Casing Depth m	Ground Level Coordinates National Grid	+6.66 mO E 129014.9 N 228032.3
Samples a	ind Tests			Strata			1	
Depth	Type & No	Records	Date Time Casing Water		Description		Depth,Level	Legend Backf
0.00-2.50	Rotary Open Hole Drilling	If //	21/10/2003 0800				(2.50)	O O O O O O
2.50-4.00	30 0 0			Broken LIMESTONE or Recovered as angular G with light brown smears surfaces.	RAVEL of limestone		2.50 +4.16	SP
3.70		CS 1						0.00
4.00-4.50	60 0					4.25-4.48 m Possible BOULDER of Imestone	(3.50)	
4.50-6.00	30		21/10/2003 1800			200	6.00 + <i>0.66</i>	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
				EXPLORATORY HOLE	ENDS AT 6.00 m			
Depth Groundwater Entri No. Struck Pos (m) 1 2.50 - 2 3.20 -	res es t strike behavi	Records/Samples	Date Time Casing Water Depth sealed (m)	Depth Related Remarks From to (m) 3.00 6.00 Borehole cav	ed in.		Chiselling Depths (m) Tir	me Tools used
lotes: For explanation bbreviations see key sevels in metres. Stratu depth column.	sheet. All depths	n in brackets	Project No.	N6 Galway City Outer Bypa Investigation Gortatleva to KC3210 Galway County Council	ss Contract 2 Ground Menlough			C127 et 1 of 1

Logged by SL Checked by ROR	End	10/2003 1 10/2003	Open Hole 131mm dia Cored75mm diameter	from 1.0m to 1	4.50m.	ons, aviary	0.00m 1.00m 1.00m 14.50m	131mm 75mm	Coordinates National Grid		129164.7 228076.2
Samples a	and '	Tests	5			Strata					
Depth	Тур	e & No	Records	Date Casing	Time Water		Description		Depth,Level (Thickness)	Legend	Back
0.00-1.00	Rotar Hole	y Open Drilling		18/10/200	3 0800	OVERBURDEN**	No. Life de B		(0.70) 0.70 +17.91	0.00	
1.00-2.00	80 N/A N/A					Broken LIMESTONE** as coarse angular lime occasional slight browr than 1mm thick on surf	stone GRAVEL with clay smears less		(1.30)		
2.00-3.50	87 47 9	NI 50 170				Strong grey fine graine: WEATHERING: Slight discolouration on fractu occasional light brown than 1mm thick. DISCONTINUITIES: 1. Subhorizontal to 10° ve closely predominately v	light brown tre surfaces with clay smear less 00-3.50m: try closely to	2.25-2.45 m Subvertical planar smooth fracture with light brown clay smear less than 1 mm on surfaces. 2.75-2.83 m 60-70° planar to	2.00 +16.61		0000000
3.50-4.80	92 85 46					spaced planar to undul- rough fractures, 3,50-10 Subhorizontal to 10° ve medium predominately planar to undulating sm fractures.	ating smooth to 0.80m: ary closely to closely spaced	slightly undulating smooth fracture 3.95 m Subhorizontal to 25° undulating smooth fracture			0000 0 0000
4.80-6.30	100 75 39							4.65 m 45-50° planar smooth fracture with less than 1mm light brown clay smear on fracture surfaces			0 0000 0 000
6.30-7.90	38 37 34	5 150 340						6,00-6,20 m 45-50* planar smooth fracture producing some non intact core			000000000000000000000000000000000000000
7.90-8,30	100 83 0			18/10/2003				-	(12.50)		000000000000000000000000000000000000000
8.30-9.90	94 78 56			19/10/2003	1800			8.60 m 55-60* planar smooth fracture s.80-8.93 m Subvertical to 70* planar rough fracture 9.20-10.80 m LIMESTONE becomes dark grey.			0000 0 0000
Depth	TCR SCR RQD	If	Records/Samples	20/10/2003 Date	Time	Stratum continue	ed next sheet				0
oundwater Entri Struck Pos (m) one observed (se	ies t strike	e behavi		Casing Depth se	Water	Depth Related Remarks From to (m)			Chiselling Depths (m) Ti	me Too	Is used
es: For explanation reviations see key s els in metres. Stratul epth column.	sheet. A m thick	ill depths ness give	and reduced in in brackets	Project No Carried ou	. 1	N6 Galway City Outer Byp nvestigation Gortatleva to CC3210 Salway County Council	ass Contract 2 Ground Menlough			C129 et 1 of 2	

Drilled by TB Logged by SL Checked by ROR	End	0/2003	Equipment, Methods	and Remar	ks	Depth from to Diameter Casing Depth 0.00m 1.00m 131mm 1.00m 14.50m 75mm	Ground Level Coordinates National Grid	E	18.61 mOD 129164.75 1228076.23
Samples a		Tests	3			Strata	1		
Depth	TCR SCR RQD	lf	Records/Samples	Date Casing	Time Water	Description	Depth, Level (Thickness)	Legend	Backfill
9.90-10.80	98 88 88					Strong grey fine grained LIMESTONE. WEATHERING: Slight light brown discolouration on fracture surfaces with occasional light brown clay smear less than 1mm thick.	(microless)		o o
10.80-11.30	0 0 0					DISCONTINUITIES: 1.00-3.50m: Subhorizontal to 10° very closely to closely predominately very closely spaced planar to undulating smooth to			
11.30-12.10	0 0			20/40/2000		rough fractures, 3.50-10.80m: Subhorizontal to 10° very closely to medium predominately closely spaced planar to undulating smooth to rough fractures.			
				20/10/2003	1800	<u> </u>		\vdash	0 0
				21/10/2003	3 0800		,		
				21/10/2003	1800				SP
						EXPLORATORY HOLE ENDS AT 14.50 m	14.50 +4.11		
	TCR SGR RQD	If	Records/Samples		Fime Vater	- - - -			
Groundwater Entrie No. Struck Post (m) None observed (se	strike		our	Depth sea	aled (m)	Depth Related Remarks From to (m)	Chiselling Depths (m) Ti	me Too	is used
Notes: For explanation of abbreviations see key st levels in metres. Stratum in depth column. Scale 1:50	heet. Al n thickn	l depths ess give	n in brackets	Project Project No. Carried out	K	l6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatleva to Menlough IC3210 salway County Council		C129 et 2 of 2	

Drilled by TB Logged by SL Checked by ROR	Start 17/10/2004 End 17/10/2004	Equipment, Method Open hole 131mm dia diameter from 1.0m to	meter from 0.0m to 1.0m	n. Rotary Cored 75mm	0.00m 1.00m 1	iameter Casing Depth 31mm 75mm	Ground Level Coordinates National Grid	E	0.86 mOD 129384.30 228142.61
Samples a	ind Tests			Strata					
Depth	Type & No	Records	Date Time Casing Water		Description		Depth,Level	Legend	Backfill
- 0.00-1.00	Rotary Open Hole Drilling		17/10/2003 0800	OVERBURDEN** Strong grey fine grained	Second Second		(0.60) 0.60 +10.26	0.00	Instrumer
1.00-1.50	30 0 0			LIMESTONE. WEATHERING: Slight light colouration on fracture DISCONTINUITIES: 1.00	ght brown e surface.	1.00-1.40 m Assessed zone of core loss			
1.50-2.15	77 31 15 0 80 160			Subhorizontal to 10° ven closely predominately ck planar smooth fracture. 3 Subhorizontal very close predominately closely sp	y closely to osely spaced 3.80-5.25m: ly to medium	1.40-1.50 m Undulating rough fracture with brown discolouration on surface 1.52 m 45-55°			
2.15-2.65	88 46 0			smooth fracture.		undulating rough fracture 2.15 m 55 to 65* undulating rough fracture			
2.65-3.60	68 48 34					3.20-3.28 m 60 to 70° planar smooth fracture	(4.65)		
3,60-5,25	83 56 9 36 150 450								
			17/10/2003 1800 1.00	EXPLORATORY HOLE	ENDS AT 5.25 m	_	5.25 +5.61		
Depth Groundwater Entri No. Struck Post (m) None observed (se	t strike behavi	Records/Samples	Date Time Casing Water Depth sealed (m)	Depth Related Remarks From to (m)		-	Chiselling Depths (m) Tir	me Tool	s used
otes: For explanation breviations see key s vels in metres. Stratur depth column. cale 1:50	sheet. All depths	n in brackets	Project No.	N6 Galway City Outer Bypas N6 Galway City Outer Bypas CG3210 Galway County Council	ss Contract 2 Ground Menlough			C132 et 1 of 1	

Drilled by TB Logged by SL Checked by ROR	End	10/2003	Equipment, Methods Open hole 131mm diam 75mm diameter from 1.0	eter from 0.0	m to 1.00	m. Rotary Cored	Depth from to Dian 0.00m 1.00m 131 1.00m 10.40m 75	neter Casing Depth mm mm	Ground Level Coordinates National Grid	E	11.66 m 129358 228156	3.85
Samples	and '	Tests	;			Strata						
Depth	1	e & No	Records	Date Casing	Time Water		Description		Depth,Level (Thickness)	Legend	Bac	
0.00-1.00	Rotar Hole	y Open Drilling		14/10/200	3 0800	Boulders possible weathere	ed LIMESTONE**	5	(1,00)			
1.00-1.70	21 0 0					BOULDER / weathered LIN Intact: Recovered as coarse to angular limestone GRAV zone of core loss.	e subrounded	= = = = = = = = = = = = = = = = = = = =	1.00 +10.66			
1.70-2.70	138 18 0			14/10/2003	3 1800				(1.70)			
2.70-3.60	61 47 28			16/10/2003	3 0800	Strong to moderate strong of finegrained LIMESTONE. WEATHERING: Fresh to slidiscolouration on fracture su	ight light brown		2.70 +8.96			
3.60-4.45	66 29 0	NI 110 200				DISCONTINUITIES: 0.0m to Subhorizontal very closely to predominately closely spaces smooth fractures. 6.80m to Subhorizontal very closely to spaced predominately medi planar smooth fractures.	to closely ed planar 10.40m: to medium	3.60-3.80 m Subvertical to 75° planar smooth fracture 3.80-3.90 m Non intact assessed zone of core loss				
4.45-4.60			TCR 100, SCR 0, RQD 0			pianai sinooni nactures.		recovered as coarse angular gravel 4.45-4.60 m Non Intact: Recovered as coarse angular				
4.60-6.10	29 0 0							gravel. 4.60-8.00 m Core narrows to a min of 42mm diameter due to core slip.				
6.10-6.80	93 0 0								(7.70)			
6.80-8.00	82 0 0							6.85 m 45° planar - smooth fracture			1000	
8.00-9.10	98 86 0	30 260		16/10/2003				8.00 m 45° planar smooth fracture 8.09-8.25 m Subvertical undulating rough fracture			0 0000 0	
9.10-9.55	87 0 0	520						8.85 m 45° planar – smooth fracture – 8.95 m 45° – smooth fracture – 9.35 m 60° planar – smooth fracture –			000000	
9.55-10.40 Depth	79 29 13 TCR SCR RQD	lf .	Records/Samples		Time Water	Stratum continued ne	xt sheet				000	
roundwater Entr b. Struck Pos (m) one observed (s	st strike			Depth se	aled (m)	Depth Related Remarks From to (m)			Chiselling Depths (m) Ti	me Too	ls used	
es: For explanation previations see key els in metres, Stratu epth column, ale 1:50	sheet. A um thicki	II depths ness give	and reduced en in brackets	Project Project No Carried ou	. I	I6 Galway City Outer Bypass C nvestigation Gortatleva to Mer CG3210 Galway County Council	Contract 2 Ground nlough			C133 et 1 of 2		

Orilled by TB Logged by SL Checked by ROR	Start 14/10/2003 End 17/10/2003		and Normand	Depth from to Diameter Casing Depth 0.00m 1.00m 131mm 1.00m 10.40m 75mm	Ground Level Coordinates National Grid	+11.66 mC E 129358.8 N 228156.2
Samples a	nd Tes	ts		Strata	1	
Depth	TCR SCR RQD If	Records/Samples	Date Time Casing Water	Description	Depth,Level	Legend Back
	Neo		17/10/2004 1800	Strong to moderate strong grey finegrained LIMESTONE.	(Thickness)	Instrum
				WEATHERING: Fresh to slight light brown discolouration on fracture surfaces.	10.40 +1.26	SF
-				DISCONTINUITIES: 0.0m to 6.80m; Subhorizontal very closely to closely predominately closely spaced planar smooth fractures. 6.80m to 10.40m; Subhorizontal very closely to medium spaced predominately medium spaced planar smooth fractures. EXPLORATORY HOLE ENDS AT 10.40 m		
				EXPLORATORY HOLE ENDS AT 10.40 m		
Depth oundwater Entri	TCR SCR RQD If	Records/Samples	Date Time Casing Water			
Struck Post (m)	strike beh		Depth sealed (m)	Depth Related Remarks From to (m)	Chiselling Depths (m) Tir	me Tools used
es: For explanation of reviations see key si is in metres. Stratun epth column.	heet. All dept	hs and reduced	Project No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council	Borehole R(C133

Drilled by TB Logged by JL Checked by ROR	Enc	0/2003	Equipment, Methods Soil Mech Rotary Open Hole 131mr 68mm diameter 1.00m to	m diameter 0.00m to	1.00m. Rotary Core 0.00m 1.00m 1.00m 10.00m	Diameter Casing Depth 131mm 68mm	Ground Level Coordinates National Grid	+16.65 n E 12940 N 22829
Samples a	and '	Tests			Strata		1	
Depth	Туре	e & No	Records	Date Time Casing Water	Description		Depth, Level (Thickness)	Legend Ba
0.00-1.00		y Open Drilling		11/10/2003 0800	OVERBURDEN** Possible LIMESTONE / COBBLES**		(0.50) - 0.50 +16.15 (0.50)	5.00
1.00-1.40	·23 0 0				Possibly fractured LIMESTONE** Recovered as coarse gravel and cobbles (poor recovery)	d 1.00-1.82 m Non-intact Assumed zone of core loss	1.00 +15.65 (0.40) 1.40 +15.25	
1.40-2.30	100 39 11				Strong grey brown fine grained LIMESTONE with occasional heavily crenulated stylolites and rare calcite veins.	1.90-1.98 m		
2.35	100	NI	CS 1		WEATHERING: Dissolution features are common with fracture surfaces displaying chalky residue, often accompanied by orange brown discolouration. Calcite veins stained yellow	2.27-2.34 m Non-intact		
2.30-3.05 3.05-3.40	75 31 100 100	NI 80 140			DISCONTINUITIES: 0° -15° very closely to medium spaced, predominantly closely spaced to 4.15m then medium spaced, smooth planar to undulating fractures.	2.72-2.94 m Non-intact		
	95				35° - 50° medium to widely spaced smooth undulating fractures, commonly found with chalky white residue on surface.	3.40-3.47 m Non-intact		
3.40-4.70 4.15-4.65	91 77		CS 2			4.50-4.63 m 75		日
4.70-5.85	100 82 82					degree smooth undulating fracture 4.63-4.82 m Non-intact. Assumed zone of core loss 5.35-5.46 m Non-intact		
5.85-6.80 6.50 6.72	75 73 73		CS 3 CS 4	11/10/2003 1800 1.00 12/10/2003 0800 1.00	10	5.70-5.76 m 60-70 degree smooth undulating fracture with white chalky residue and orange brown clay smear on fracture surface 6.44-6.70 m Non-intact.	(8.60)	
6.80-8.40	91 91 91	NI 280 490				Assumed zone of		
8.40-10.00	68 43 43		Core Slipped	12/10/2003 1800 1.00		8.92-8.98 m Non-intact 8.98-9.10 m Subveritcal smooth undulating fracture 9.18-9.36 m Non-intact		
Depth	TCR SCR RQD	1f	Records/Samples	Date Time Casing Water	EXPLORATORY HOLE ENDS AT 10.00 m			
oundwater Ent b. Struck Po- (m) one observed (s	ries st strik			Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m)	ime Tools use
es: For explanation previations see key els in metres, Strat lepth column.	sheet. / rum thick	All depths ness give	and reduced	Project No.	N6 Galway City Outer Bypass Contract 2 Ground Investigation Gortatleva to Menlough KC3210 Galway County Council	1		C135 eet 1 of 1

Drilled by TB Logged by JL Checked by ROR	Start 10/10/2003 End 11/10/2003	Equipment, Methods Soil Mech Rotary Open Hole 131m 68mm diameter 1.00m to	m diameter 0.00m to	0.00m 1.00m 1	iameter Casing Depth 31mm 68mm	Ground Level Coordinates National Grid	+13.10 mO E 129503.3 N 228274.5
Samples a	and Tests	3		Strata		1	
Depth	Type & No	Records	Date Time	Description		Depth,Level	Legend Back
- 0.00-1.00	Rotary Open		10/10/2003 0800		-	(0.50) (0.50) (0.50 +12.60	Instrum D. of
-	Hole Drilling			Weathered LIMESTONE** Strong light grey fine grained to	1.00-1.21 m	(0.50)	
1.00-1.70	100 54 23			crystalline LIMESTONE with occasional becoming frequent crenulated stylolites. WEATHERING: Dissolution features are common with fracture surfaces displaying	Non-intact 1.52-2.43 m		
1.70-2.70	52 28 28			chalky residue and occasional brown clay smearing DISCONTINUITIES: 1.0m -6.0m; 0° -10° very closely to medium spaced.	Assessed zone of core loss. 1.80-2.10 m Driller noted soft band		
2.50		CS 1		predominantly closely spaced smooth undulating fractures. 6.0m - 10.0m; 0° -10° medium to widely spaced predominantly medium spaced smooth	2.62-2.70 m 80° - [_ 75° smooth _ planar fracture _		
3.00 2.70-4.20	100 100 84	CS 2		undulating fractures.	with dissolution features on surface		
3.70-3.92	04	CS 3					
4.20-4.50		TCR 63, SCR 0, RQD 0			4.16-4.20 m 40° smooth smooth undulating fractures 4.20-4.50 m Non-intact, assessed zone		
4.50-6.00	100 73 64				of core loss 4.81-4.85 m 50° smooth planar fracture 4.85-5.00 m = 60°-70° smooth undulating fracture	(9.00)	
6.00-6.40	95 95 70				5.07-5.10 m 30° smooth planar fracture 5.22-5.27 m Non-intact 5.33-5.36 m 45° smooth undulating		
6.40-7.40	80 80 80				fracture with some non-intact material 5.45-5.50 m 50" smooth planar fracture with solution features		
7.40-8.40	100 100 100		10/10/2003 1800 1.00 dry		on fracture surfaces 5.50-5.71 m Non-intact 5.71-5.86 m 80° smooth undulating fractures, possibly drilling induced, producing		
8.40-10.00	100 100 100		11/10/2003 0800 1.00		partially non-intact core 6,40-7,50 m Driller noted slipped core		0000
Depth	TCR SCR RQD If	Records/Samples	11/10/2003 1800 1.00 Date Time	EXPLORATORY HOLE ENDS AT 10.00 m	-		
oundwater Entr	ies t strike behav	iour	Casing Water Depth sealed (m)	Depth Related Remarks From to (m)		Chiselling Depths (m) Ti	me Tools used
es; For explanation reviations see key Is in metres. Stratu apth column.	sheet. All depths	and reduced en in brackets	Project No. F	N6 Galway City Outer Bypass Contract 2 Ground nvestigation Gortatieva to Menlough IC3210 Galway County Council			C138

orilled by TB ogged by JL Checked by ROR	En	10/2003	Equipment, Methods Soil Mech Rotary Open Hole 131mm 68mm diameter 0.20m - using televiewer.	m diameter 0	.00m to 0	Depth from to Diameter Casing Depth 0.00m 0.70m 131mm 0.70m 10.00m 68mm	Ground Le Coordinate National G	es	+11.58 mC E 129502.6 N 228240.8
Samples a	and	Test	s			Strata	1		
Depth	Тур	e & No	Records	Date Casing	Time Water	Description	Depth, Lev (Thicknes		gend Back
0.00-0.70	Rotal Hole	y Open Drilling		12/10/2003	0800	OVERBURDEN** LIMESTONE**	0.20 +11	De"	7
0.70-1.90	73 53 22		-			Strong light grey brown fine grained to crystalline LIMESTONE. WEATHERING: Dissolution features are common, with fracture surfaces displaying chalky residue, often accompanied by yellow brown discolouration. Strong light grey brown fine grained to 0.70-0.77 m Non-intact, assumed zone of cre loss of cre	0.70 +10	0.88	
2.15-2.35 1.90-2.60	90 67 59		CS 1			DISCONTINUITIES: 0 - 10 degree closely to medium spaced, predominantly closely spaced smooth planar to undulating fractures. Between 0.70m - 5.50m: 60 - 75 degree medium spaced smooth planar to undulating fractures, often with yellwo			
2.60-3.20	103 83 83	NI 110 210				brown staining on surface. 1.54-1.59 m Non-intact 1.73-1.90 m Assumed zone of core loss 1.93-2.03 m Subvertical			
3.20-3.90 3.60	89 71 71		CS 2			smooth planar fracture 2.03-2.20 m Non-intact, assumed zone of core loss			
3.90-4.45 4.40 4.45-4.75 4.75-5.00	100 75 56		TCR 87, SCR 13, RQGS 3 TCR 100, SCR 88, RQD 68	12/10/2003 0.70 13/10/2003 0.70		2,60-2,66 m — Assumed zone of — Core loss 3,34-3,50 m Non-intact , assumed zone of — core loss 3,64-3,65 m Non-intact 3,98-4,10 m Non-intact 4,10-4,50 m			
5.00-6.50	100 100 85			13/10/2003 1.00	1800	Subvertical to 85 degree rough undulating fracture with solution features = on surfaces 4.56-4.77 m Non-intact 4.79-5.20 m Subvertical to 85 degree smooth undulating	(9.30)		
6.50-8.10	100 100 100	60 260 880		14/10/2003 1.00	0800	fracture withchalky white residue on surface 5.30-5,32 m 35 degree smooth planar fracture 5.65-5.67 m Non-intact			
8,10-9.70	94 94 89								
Depth	TCR SCR ROD	If	Pagarda/Samalas	14/10/2003 1.00 Date T	1800 ime	9.16-9.23 m Subvertical Subvertical Information Info			
oundwater Entri Struck Post (m) ne observed (se	es t strike	behavi	iour	Depth sea	ater	EXPLORATORY HOLE ENDS AT 10.00 m Depth Related Remarks From to (m)	Chiselling Depths (m)	Time	Tools used
s: For explanation oviations see keys in metres. Straturoth column.	heet. A n thickr	ll depths less give	en in brackets	Project Project No. Carried out	lr K	6 Galway City Outer Bypass Contract 2 Ground vestigation Gortatleva to Menlough C3210 alway County Council		RC14	

Trial Pit Log

necked by ROR	Start - End -	Excavated using a tra	ds and Remarks ack machine.	Dimensions and Orientation Width 2.00 m Length 2.50 m	5 (Deg)	Ground Level Coordinates National Grid	Ε	6.27 mOE 127503.10 228405.00
Samples a	nd Tests	i	Strata					
Depth	Type & No.	Date Records		Description		(Thickness)	Legend	Backfill
			1 TOPSOIL			0.10 +6.17		
			2 Plastic dark brown clayey ps	eudo fibrous PEAT.	-	0.10 10.77	1/2 -	
					-		- <u>-</u> \\/.	
0.40-0.60	B 2				-			
0.40-0.60 0.50	B 3 D 1						1/2 -	
	- 1						-3/1/3	
					-	(1.35)	-2/1/2	
			(4		-		1/2 -	
1.00	D4				-		-2/1/4	
1.00 1.00-1.30	B 5 B 6						1/2 -	
1.40-1.60	B 8				-			1
1.40-1.60	B 9 D 7		Soft light grey slightly sandy abundant shell fragments, m	gravelly CLAY with	-	1.45 +4.82		
1.00			grey silt.	nainly laminated with soft		1.65 +4.62		
			Soft grey gravelly CLAY . Gr	ravel is subangular to	7	1.70 +4.57		
			subrounded, fine to coarse of	of limestone. OLE ENDS AT 1.70 m	_/ [
			EXPLORATORY H	OLE ENDS AT 1.70 M				
					-			
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					-			
		Records						
Depth oundwater Entr	Type & No.	Date	Depth Related Remarks			Stability Mo	derate	
. Struck Post Str (m)	rike Behaviour		From to (m)	due to obstruction - boulders or rock.		I monthly will		
1.45 Slight in	iflow.		mai pit terminated	was to subject of the		Shoring No	ne	
						Weather		
es: For explanation	on of symbols ar	nd the and reduced	Project N6 Galway C	City Outer Bypass Contract 2 Ground		Trial Pit		
reviations see ke els in metres, Stra epth column.	tum thickness g	nd ths and reduced iven in brackets		Gortatleva to Menlough			TP34	
		a), 27/01/2004 09:45:57 AGS	Carried out for Galway Cour	nty Council			eet 1 of	1

Trial Pit Log

ogged by CH hecked by ROR	20/11/2003 End 20/11/2003	Excavated using track	тасліпе	Width 1.00 m Length 3.50 m	160 (Deg)	Coordinates National Grid		127577.99 228331.56
Samples a	nd Tests	3	Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/ Instrume
1.00	B 1 D 2	a de la constante de la consta	Dark brown to black pseudo fit abundant wood fragments (80r some reed debris.	prous plastic PEAT with nm x 100mm x 200mm) and		(2.40)		1
2.60 2.60 2.60 2.80 2.80	HV HV D3 D4 B5	p 35 kPa, r 12 kPa p 6 kPa, r 2 kPa	Uncompact soft creamy dark be sandy slightly gravelly SILT wireed debris. Very soft creamy brown slightly with abundant shells EXPLORATORY HOLE	y organic SILT/CLAY	-	2.40 +3.99 2.60 +3.79 2.80 +3.59		
Depth	Type & No.	Records Date	Donth Polated Person		-	and the second		
roundwater Entr b. Struck Post Str (m) 1 1.10 Inflow for 1 2.30 Strong In	ike Behaviour om side A nflow		Depth Related Remarks From to (m) 2.80 Trial pit terminated due	to walls collapsing.		Stability Ver Shoring Nor Weather		
tes: For explanation breviations see key els in metres. Stra depth column.	y sheet. All dept tum thickness g	hs and reduced		Outer Bypass Contract 2 Ground rtatleva to Menlough Council			TP40 eet 1 of 1	Į.

necked by ROR	Start 20/11/2003 End 20/11/2003	Excavated using a tra	ds and Remarks ck machine.	Dimensions and Orient Width 1.00 m Length 3.00 m	A B -	Coordinates National Grid		7.11 mOD 27704.33 28287.76
Samples a	nd Tests	3	Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/ Instrume
		Records	1 TOPSOIL					
0.10	D1		Grey slightly clayey sandy G Cobbles are subangular of lir	RAVEL with some cobbles. mestone	-	0.10 +7. <i>01</i> (0.45)	00° ×0° ×0° ×0° ×0° ×0° ×0° ×0° ×0° ×0°	
0.40 0.40	D 2 B 3		Firm yellow/brown very sand with occasional cobbles. Cob	iy slightly gravelly CLAY	0.50 m Boulders of limestone 200 x 300 x 300mm	0.55 +6.56	0.0.4	
0.80 0.80	D 4 B 5		subrounded of limestone.			(0.70)		1
1.00	HV	p 42 kPa			1.00 m Boulders of limestone 900mm x 1000mm x		·	
)			EXPLORATORY H	OLE ENDS AT 1.25 m	1200mm -	1.25 +5.86	a	
					-			
					-			
					_			
					_			
						1		
						-		
		Records				-		
Depth oundwater Enti	Type & No.	Date	Depth Related Remarks			Stability Go	od	
o. Struck Post Str (m) 1 1.00 Slight in	ike Behaviour		From to (m)	on obstruction - presumed bedrock.		Shoring No Weather		
tes: For explanation tes: For explanations see ke les in metres. Stradepth column.	y sheet. All dep tum thickness (nd ths and reduced given in brackets	Project No. Investigation KC3210	City Outer Bypass Contract 2 Ground Gortatleva to Menlough nty Council			TP47 neet 1 of 1	

Logged by DB Checked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Method Excavated using a trac	s and Remarks k machine	Dimensions and Orientation Width 0.85 m A Length 4.00 m D C 132 (Deg	Ground Level Coordinates National Grid	+6.98 mOD E 127805.85 N 228242.44
Samples a	nd Tests		Strata			
Depth	Type & No.	Date Records		Description	Depth, Level (Thickness)	Legend Backfill
0.10	D1	Records	TOPSOIL: Firm brown slightly sandy s CLAY with many roots. Gravel is suba 2 rounded.	slightly gravelly ingular to	0.15 +6.83	مو
0.50-1.00 0.50-1.00	B 2 B 3		Stiff grey slightly sandy slightly gravel many cobbles and boulders. Gravel is to coarse. Cobbles and boulders are slimestone. Boulders are up to 400mm	subrounded of	- (2.35)	
1.50 1.50-2.00 1.50-2.00	D4 B5 B7					
			EXPLORATORY HOLE ENDS		2.50 +4.4	8 ~ 00
)						
			\$\rightarrow{\pi}{2}			
					-	
Depth	Type & No.	Records Date				
Groundwater Ent No. Struck Post St (m) 1 2.30 Rose to	ries rike Behaviour		Depth Related Remarks From to (m) 2:50 Trial pit terminated due to obst	ruction - presumed bedrock.	Stability Po	por below 0.70m.
Notes: For explanati abbreviations see ke levels in metres. Str in depth column. Scale 1:25	ey sheet. All dep atum thickness	nd oths and reduced given in brackets o), 16/02/2004 11:43:06	Project N6 Galway City Outer Investigation Gortatlev Project No. KC3210 Carried out for Galway County Counc		Trial Pit	TP56 heet 1 of 1

Logged by CH Checked by ROR	Start 20/11/2003 End 20/11/2003	Equipment, Method Excavated using a tra	is and Remarks ck machine	Dimensions and Orientation Width 1.00 m Length 3.00 m	-	Ground Level Coordinates National Grid	E 1	6.52 mOD 127909.92 228224.87
Samples a	nd Tests	i	Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/ Instrumer
0.80 - 1.00 1.00	Type & No.	Records	Dark brown to black fibrous non plastic PEAT with some wood ar slightly sandy organic clay. Light grey silty sandy GRAVEL v limestone. EXPLORATORY HOLE	1.00 m sandy CLAY sulphate 1.20 m E of lin with cobbles of	Slightly organic . Strong te odour . Soulders of granite	(2.20)		
Groundwater Entri			Depth Related Remarks			Stability Poo	r	
No. Struck Post Stri (m) 1 1.40 Rose to 2 2.00 Rose to	1.30 m after 10 1.70 m after 5 n	ninutes.		flooding. Water rose to 0.80m in an hour,		Shoring Nor Weather		
Notes: For explanation abbreviations see key evels in metres. Strati n depth column. Scale 1:25	sheet. All depti um thickness gi	ns and reduced	Project N6 Galway City O Investigation Gort Project No. KC3210 Carried out for Galway County C	uter Bypass Contract 2 Ground atleva to Menlough ouncil			ГР62 eet 1 of 1	

Logged by DMF Checked by ROR	Start 07/10/2003 End 07/10/2003	Equipment, Metho Excavated using a tr	os and Remarks ack machine	Dimensions and Orientation Width 2.20 m Length 3.50 m Dimensions and Orientation	5	Ground Level Coordinates National Grid	E	6.50 mOE 128296.70 228116.60
Samples a	nd Tests		Strata	'				
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfil
0.50 0.50 0.50	D1 D2 B3 B4		Spongy dark brown black fibrous PE. decaying organic matter.		0.50 m — lecoming — ge brown —			1
1.50 1.50 1.50	D 5 B 6 B 7			brown, mode	1.50 m ning dark orgaincs erately to partially omposed	(3.10)		2
2.50 2.50 2.50	B 10 D 8 B 9		3	decc from	Organics less proposed m 2.30m less proposed m 2.60 m less proposed per decoming proposed yellow less			3
3.40 3.40 3.40 3.40	D 11 B 12 B 13 W 14		Uncompact grey highly organic fibrous slightly gravelly SILT with abundant s fragments. EXPLORATORY HOLE ENDS	hells and shell	-	3.10 +3.40 (0.40) 3.50 +3.00		4
Dooth	Tune P N	Records						
Depth roundwater Entri Struck Post Strii (m) 1 0.80 Slight see 2 1.90 Slight see 3 2.60 Slight see 4 3.50 Rose to 2	ke Behaviour epage epage	Date	Depth Related Remarks From to (m) 3.50 Trial pit terminated on clients ins	itructions		Stability Mode Shoring None Weather		
otes: For explanation breviations see key rels in metres. Stratu depth column. ale 1:25	n of symbols and sheet. All depth: um thickness giv (c) MESG HBIII (298).	s and reduced en in brackets	Project N6 Galway City Outer E Investigation Gortatleva KC3210 Carried out for Galway County Council	3.77° 37° 13° 13° 37° 37° 37° 37° 37° 37° 37° 37° 37° 3			P104 et 1 of 1	

Depth Ty 0.10 0.50 0.50 0.50 0.50 1.40 1.40 1.40 1.40	D 1	Date Records	Strata				
0.10 0.50 0.50 0.50 0.50	D1			B 1.6	B		
0.50 0.50 0.50				Description	Depth, Level (Thickness)	Legend	Backfill/ Instrume
0.50 0.50	D2		TOPSOIL: Firm brown sandy slight Gravel is angular to subangular fire	htly gravelly CLAY. ne to coarse.	0.25 +6.77		
1.40	B3 B4		Firm yellow brown mottled grey sawith many cobbles and some bou angular to subangular fine to coar boulders are angular to subround boulders up to 2200mm in length.	Iders. Gravel is rse. CObbles and ed of limestone, 0.50 m Hand	(0.95)	9 9 9 9 9	
	D 5 B 6 B 7		Soft grey sightly sandy gravelly C cobbles and boulders. Gravel is a fine to coarse. Cobbles are subar of limestone, boulders are angula to 1100mm in length.	ingular to subangular ngular to subrounded	1.20 +5.82		1
2.30 2.30 2.30	B 10 D 8 B 9		EXPLORATORY HOLE E	ENDS AT 2.40 m	2.40 +4.62	0.00	1
roundwater Entries b. Struck Post Strike E (m)	Behaviour	Records Date minutes, Slight seepag	Depth Related Remarks From to (m) 2.40 Trial pit terminated due to	boulders	Stability Mo		
otes: For explanation of breviations see key she rels in metres. Stratum I depth column.	f symbols an neet. All depth thickness gi	d ns and reduced ven in brackets	Project N6 Galway City Ou Investigation Gorta Project No. KC3210	uter Bypass Contract 2 Ground atleva to Menlough	Shoring No Weather Trial Pit	гР113	

Logged by DJB Checked by ROR	Start - End -	Equipment, Metho Excavated using a JO	ds and Remarks CB.	Dimensions and Orientation Width 2.20 m Length 2.20 m	70 (Deg)	Ground Level Coordinates National Grid	E1	3.20 mOD 128505.78 228038.65
Samples a	nd Tests	6	Strata					
Depth	Type & No.	Date		Description		Depth, Level	Legend	Backfill/
- - - 0.30	D1	Records	TOPSOIL: Firm brown slightly sandy, sliggravelly, fibrous CLAY with many cobble boulders. Gravel is subrounded to suban coarse. Cobbles and boulders are subrolimestone, boulders up to 1100mm in len Brown clayey very sandy GRAVEL with boulders. Gravel is subangular to subroup	s and gular, fine to unded of gth. many cobbles and unded fine to		(0.35) (0.35) 0.35 +12.85		Instrumen
- - - 1.00 1.00-1.30 - 1.00-1.30	D 2 B 3 B 4		coarse. Cobbles and boulders are suban subrounded, boulders are up to 90mm in	guiar to length.	-	(1.05)		
Depth T Groundwater Entries No. Struck Post Strike (m) None observed (see K	Behaviour	Records Date	Depth Related Remarks From to (m) 1.40 Trial pit terminated, due to side walls	collapsing and boulder at the base of pit.		1.40 +11.80 Stability Poor Shoring None. Weather		
Notes: For explanation of abbreviations see key slevels in metres. Stratum n depth column.	heet. All depths	and reduced en in brackets	Project N6 Galway City Outer Bypas Investigation Gortatleva to N KC3210 Carried out for Galway County Council	ss Contract 2 Ground lenlough			2121 et 1 of 1	

Logged by DJB Checked by ROR	Start - End -	Equipment, Metho Excavated using a Jo	ds and Remarks	Dimensions and Orientation Width 0.90 m Length 2.75 m C	280 (Deg)	Ground Level Coordinates National Grid	E	6.46 mOD 128625.40 228033.20
Samples a	nd Tests	5	Strata					
Depth	Type & No.	Date		Description		Depth, Level	Legend	Backfill/
- - - 0.30 -	D1	Records	TOPSOIL: Firm brown slightly sand fibrous CLAY. Gravel is subangular fine to coarse. Brown clayey very gravelly SAND w boulders. Gravel is subangular to su occasional elongate. Cobbles and b	ith many cobbles and O.40-1. Occass	00 m	(0.40) - 0.40 +16.06		Instrumen
- 1.00 1.00-1.30 1.00-1.30	D 2 B 3 B 4		occasional elongate. Cobbles and b subangular of limestone. Boulders u length.	p to 700mm in		(1.40)		
1.50-1.80 1.50-1.80	B 6 B 7			Becoming with occas bould	grey ional	1.80 +14.66	, O.	
-			EXPLORATORY HOLE END	S AT 1.80 m	-	1.00		
Depth T	Type & No.	Records						
Groundwater Entries		Date	Donth Related Donordo					
lo. Struck Post Strike (m) None observed (see K	e Behaviour (ey Sheet)		Depth Related Remarks From to (m) 1.80 Trial pit terminated due to obstr	uction, possible limestone bedrock or boulder.		Stability Mode Shoring None. Weather		
otes: For explanation of bbreviations see key slevels in metres. Stratun depth column.	heet. All depths	and reduced en in brackets	Project N6 Galway City Outer I Investigation Gortatleva Project No. KC3210 Carried out for Galway County Council				P123 et 1 of 1	

Logged by DJB Checked by ROR	Start - End -	Equipment, Methor Excavated using a J		Dimensions and Orientation Width 0.80 m Length 3.00 m C	Ground Level Coordinates National Grid	E	13.83 mOI 128791.4 228017.0
Samples a	ind Tests	3	Strata				
Depth	Type & No.	Date Records		Description	Depth, Level	Legend	Backfi
0.20 0.40 0.40-0.60 0.40-0.60	D1 D2 B3 B4		TOPSOIL: Firm brown slightly sandy slic CLAY. Gravel is subangular to rounded coarse. Firm brown slightly sandy gravelly CLAY occasional cobbles and occasional rock subangular to subrounded, fine to coars Grey slightly clayey SAND and GRAVE cobbles. Gravel is subangular, fine to co Cobbles are subangular of limestone.	fine to / with s. Gravel is e	(Thickness) - 0.20 +13.63 - (0.40) - 0.60 +13.23		Instrur
1.50 1.50-1.70 1.50-1.70	D 5 B 6 B 7			1.90 m With occasional	(1.90)		
2.30-2.50 2.30-2.50 2.50	B 10 B 9		EXPLORATORY HOLE ENDS AT	subrounded boulders of limestone (up to 800mm in length)	2.50 +11.33		
Depth Doundwater Entrie Struck Post Strik (m) one observed (see h	e Behaviour	Records Date	Depth Related Remarks From to (m) 1.90 Trial pit terminated due to obstruction	n, possible bedrock or boulder.	Stability Good Shoring None.		
es; For explanation eviations see key s is in metres. Strature epth column.	sheet. All depths	n in brackets	Project N6 Galway City Outer Bypa Investigation Gortatleva to I Project No. KC3210 Carried out for Galway County Council	iss Contract 2 Ground Menlough		P125 et 1 of 1	

Logged by DJB Checked by ROR	Start 15/10/2003 End 15/10/2003	Equipment, Method Excavated using a JC		Dimensions and Orientation Width 0.80 m Length 2.50 m D C 110 (Deg)	Ground Level
Samples a	and Tests	3	Strata		
Depth	Type & No.	Date Records		Description	Depth, Level (Thickness) Legend Backfill/ Instruments
- 0.10 -	D 1	Needida	1 MADE GROUND: Firm brown slightly si 2 gravelly fibrous CLAY with rare brick fra Gravel is subangular to rounded fine to	gments. coarse.	0.10 +7.12
- 0.50 0.50-0.80 0.50-0.80	D 2 B 3 B 4		Very stiff grey slightly sandy slightly gra with many cobbles. Gravel is subangular fine to coarse. Cobbles are subangular	r to angular	(0.70)
-			EXPLORATORY HOLE ENDS AT	□ 0.80 m	0.80 +6.42
-					
-					
- - -					
-					
-					
				-	
Depth	Type & No.	Records Date			
Groundwater Entri No. Struck Post Stri (m) None observed (see	ke Behaviour	varo	Depth Related Remarks From to (m) 0.80 Trail pit terminated due to obstruction	on - presumed bedrock,	Stability Good Shoring None Weather
Notes: For explanation abbreviations see key levels in metres. Strati in depth column. Scale 1:25	n of symbols and sheet. All depth: um thickness giv (c) MESG HBIII (298),	s and reduced en in brackets	Project N6 Galway City Outer Byp. Investigation Gortatieva to KC3210 Carried out for Galway County Council	ass Contract 2 Ground Menlough	Trial Pit TP127A Sheet 1 of 1

Logged by DB Checked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Metho Excavated using a Jo		Dimensions and Orientation Width 0.90 m A Length 3.20 m C	272 (Deg)	Ground Level Coordinates National Grid	E.	8.28 mOD 129058.83 227961.17
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/ Instrumen
- 0.10 -	D1	Reddida	TOPSOIL: Brown slightly gravelly roots. Gravel is subangular to subscience.	CLAY with many prounded fine to		0.10 +8.18	00 N	instrumen
- 0.50 - 0.50-1.00 - 0.50-1.00	D 2 B 3 B 4		Stiff brown slightly sandy gravelly cobbles and boulders. Gravel is s subrounded fine to coarse. Cobbl subangular to subrounded of lime up to 1100mm in length.	subangular to les and boulders are	-	(1.10)		
			Weathered LIMESTONE: Recover many cobbles. Gravel is angular to coarse. Cobbles are angular to such that the coarse.	to subangular fine to		1.20 +7.08		
)			limestone.	Ibangular of		1.50 +6.78		
			EXPLORATORY HOLE E	NDS AT 1.50 m				
Depth 1	Гуре & No.	Records						
Groundwater Entrie No. Struck Post Strike (m) None observed (see K	s e Behaviour	Date	Depth Related Remarks From to (m) 1.50 Trial pit terminated due to ob	bstruction - presumed bedrock,		Stability Good Shoring None Weather		
lotes: For explanation of obbreviations see key slevels in metres. Stratun in depth column.	of symbols and heet, All depths in thickness give i) MESG HBIII (298), 10		Project N6 Galway City Outs Investigation Gortath KC3210 Carried out for Galway County Coun	G-0.12 (1) 14 (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)			127B et 1 of 1	

Logged by DJB Checked by ROR	Start 14/10/2003 End 14/10/2003	Equipment, Meth Excavated using a .	ods and Remarks CB	Dimensions and Orientation Width 0.85 m Length 2.50 m	135 (Deg)	Ground Level Coordinates National Grid	E	20.00 mOD 129155.76 228074.72
Samples a	nd Tests	3	Strata					
Depth	Type & No.	Date Records		Description		Depth, Level	Legend	Backfill/
- 0.10	D 1	7,000,00	1 TOPSOIL: Firm brown slightly sibrous CLAY. Gravel is subrou	sandy gravelly slightly	7	(Thickness) 0.10 +19.90		Instrume
- 0.20 0.20-0.30 0.20-0.30	D 2 B 3 B 4		to coarse. Stiff grey brown slightly sandy many cobbles. Gravel is suban	gravelly CLAY with	/-	Providence Salation	· · · · · · · · · · · · · · · · · · ·	
			to coarse. Cobbles are subrour EXPLORATORY HOLE	nded of limestone.	- Arrivative -	0.35 +19.65		
					=			
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Depth T	ype & No.	Records Date						
roundwater Entries			Depth Related Remarks From to (m)			Stability Good		
(m) None observed (see K	ey Sheet)		The Control of the Co	obstruction - presumed bedrock,		Shoring None Weather		
otes: For explanation of breviations see key shoels in metres. Stratum depth column.	f symbols and neet. All depths thickness giver		Project No. KC3210	iter Bypass Contract 2 Ground titleva to Menlough		Trial Pit	2128	
	MESG HBIII (298), 16/	02/2004 11:47:47 AGS	Carried out for Galway County Co				et 1 of 1	

Logged by DB Checked by ROR	Start 14/10/2003 End 14/10/2003	Excavated using a	ods and Remarks JCB	Dimensions and Orientation Width 1.00 m Length 3.50 m	230 (Deg)	Ground Level Coordinates National Grid	E	5.97 mOD 129229.91 228105.04
Samples a	nd Tests		Strata					
Depth	Type & No.	Date		Description		Depth, Level	Legend	Backfill/
			1 Strong grey fine to medium grained LIMESTONE. Weathering: Orange brown discolor 2-3mm along fracture surfaces. Discontinuities: No orientation or or determinable, surfaces undulating Recovered as clayey slightly sandy cobbles and boulders. Gravel is an fine to coarse. Cobbles and boulders subangular of limestone, boulders. EXPLORATORY HOLE EN	d crystalline puration penetrating penings are and rough. GRAVEL with many gular to subangular rs are angular to up to 500mm.		Depth, Level (Thickness) (0.50) 0.50 +15.47	Legend	Backfill/Instrume
Depth Ty roundwater Entries b. Struck Post Strike (m)	Behaviour	Records Date	Depth Related Remarks From to (m) 0.50 - Trial pit terminated due to obsti	ruction - presumed bedrock.		Stability Good Shoring None		
tes: For explanation of previations see key shels in metres. Stratum lepth column.	f symbols and eet. All depths a thickness given	E I	Project N6 Galway City Outer Investigation Gortatley Project No. KC3210 Carried out for Galway County Council				131 t 1 of 1	

Logged by DJB Checked by ROR	Start 14/10/2003 End 14/10/2003	Equipment, Methor Excavated using JCE	ds and Remarks	Dimensions and Orientation Width 1,00 m Length 2,80 m		Ground Level Coordinates National Grid	E ·	1.73 mOD 129358.80 228152.78
Samples a	nd Tests	3	Strata		\neg			
Depth	Type & No.	Date Records		Description		Depth, Level	Legend	Backfill/
- - - - 0.50 - 0.50-0.80 - 0.50-0.80	D 1 B 2 B 3		MADE GROUND: Grey clayey cobbles and boulders. Gravel is subrounded fine to coarse. Col subangular of limestone, bould length. (Backfill from quarry)	s subangular to bbles and boulders are ers are up to 1000mm in	1 1 1 1 1 1 1	(0.80)		Instrumer
			EXPLORATORY HOL	E ENDS AT 0.80 m		.50 +10.93		
Depth T	ype & No.	Records Date						
Groundwater Entries No. Struck Post Strike (m) None observed (see K	e Behaviour ey Sheet)			obstruction - possible limestone bedrock or boulder.	s	Stability Good Shoring None Veather		
otes: For explanation of observiations see key si- vels in metres, Stratum depth column.	of symbols and neet. All depths n thickness give MESG HBIII (298), 10	170	Project N6 Galway City O Investigation Gort KC3210 Carried out for Galway County Co	uter Bypass Contract 2 Ground atleva to Menlough puncil	Т		134 et 1 of 1	

Logged by DB Checked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Method Excavated using a JC	ds and Remarks B	Dimensions and Orientation Width 0.90 m Length 4.00 m	278 (Deg)	Ground Level Coordinates National Grid	E.	9.60 mOD 129365.44 228197.29
Samples a	nd Tests		Strata	2 22				
Depth	Type & No.	Date Records		Description		Depth, Level	Legend	Backfill/
- 0.10	D 1	Records	TOPSOIL: Firm brown slightly sandy slig CLAY with abundant roots. Gravel is sub	htly gravelly angular to		(Thickness)		Instrumen
- - - 0.50 - 0.50-1.00 - 0.50-1.00	D 2 B 3 B 4		subrounded fine to coarse. Firm to stiff grey slightly sandy slightly gr CLAY with many cobbles and boulders. of subangular to subrounded fine to coarse, boulders are subrounded of limestone. B to 1000mm.	avelly Gravel is Cobbles and		0.20 +9.40	0.00	
						(1.20)		
5			EXPLORATORY HOLE ENDS AT	and the second s		1.40 +8.20	000	
Depth T	Гуре & No.	Records						
Groundwater Entries No. Struck Post Strike (m) None observed (see K	s e Behaviour (ey Sheet)	Date	Depth Related Remarks From to (m) 1.40 Trial pit terminated due to obstruction	- possible rockhead or boulder.		Stability Good Shoring None Weather		
lotes: For explanation of bbreviations see key shavels in metres. Stratum in depth column.	of symbols and heet. All depths in thickness give is MESG HBIII (296), 27		Project N6 Galway City Outer Bypas Investigation Gortatleva to M KC3210 Carried out for Galway County Council	s Contract 2 Ground enlough			134A et 1 of 1	

Logged by DJB Checked by ROR	Start 14/10/2003 End 14/10/2003	Equipment, Metho Excavated using a JO	ds and Remarks B	Dimensions and Orientation Width 0.85 m Length 2.40 m	47 (Deg)	Ground Level Coordinates National Grid	E f	3.60 mOD 129449.65 228215.41
Samples a	nd Tests	3	Strata					
Depth	Type & No.	Date Records		Description		Depth, Level	Legend	Backfill/
- 0.10	D 1	Records	MADE GROUND: Soft to firm brow. slightly gravelly slightly fibrous CLA subangular to rounded fine to coars	Y. Gravel is		(Thickness) - 0.10 +13.50		Instrumen
- 0.50 - 0.50-0.90 - 0.50-0.90	D2 B3 B4		MADE GROUND: Firm to stiff grey very gravelly CLAY with many cobb boulders. Gravel is subangular fine Cobbles and boulders are angular timestone, boulders up to 750mm in	brown slightly sandy les and some to coarse. o subangular of		(0.80)		
			EXPLORATORY HOLE END	OS AT 0.90 m		0.90 +12.70		
Depth Groundwater Entrie No. Struck Post Strike (m)		Records Date	Depth Related Remarks From to (m)			Stability Good		
(m)			From to (m) 0.90 Trial pit terminated due to bould	ders.		000d		
None observed (see K	key Sneet)					Shoring None Weather		
Notes: For explanation of abbreviations see key sevels in metres, Stratur	of symbols and heet. All depths	and reduced	Project N6 Galway City Outer Investigation Gortatley	Bypass Contract 2 Ground		Trial Pit		
depth column.	T THICKNESS GIVE		Investigation Gortatiev Rroject No. KC3210 Carried out for Galway County Council				P136 et 1 of 1	

Logged by DB Checked by ROR	Start 07/11/2003 End 07/11/2003	Equipment, Metho Excavated using a JO	ds and Remarks B	Dimensions and Orientation Width 1.00 m Length 3.10 m C 272 (Deg)	Ground Level Coordinates National Grid	+12.90 m E 129501 N 228256
Samples a	nd Tests	3	Strata	•		
Depth	Type & No.	Date Records		Description	Depth, Level (Thickness)	Legend Back
0.10 0.20-0.50	D1 B3	Records	1 TOPSOIL: Firm brown slightly sand CLAY. Gravel is subrounded fine to	o coarse.	242 .42.00	O'x d · x · x · x · x · x · x · x · x · x
0.20-0.50	D 2		Stiff grey brown slightly sandy grav many cobbles and boulders. Grave subrounded fine to coarse. Cobbles subrounded of limestone, boulders length.	el is subangular to s and boulder are	(0.60)	0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 × 0 ×
			EXPLORATORY HOLE EN	DS AT 0.70 m	0.70 +12.20	0x, 0
				-		
Depth 1	Гуре & No.	Records Date				
oundwater Entrie Struck Post Strike (m) ne observed (see K	e Behaviour	vale	Depth Related Remarks From to (m) 0.70 Trial pit terminated due to obst	truction – presumed bedrock.	Stability Good Shoring None Weather	
es: For explanation of reviations see key sels in metres. Strature pth column.	of symbols and heet. All depths in thickness give in MESG HBIII (298), 10	and reduced in in brackets	Project N6 Galway City Outer Investigation Gortatlev KC3210 Carried out for Galway County Counc			2139 et 1 of 1

Logged by DJB Checked by ROR	Start 14/10/2003 End 14/10/2003	Equipment, Metho Excavated using a Jo	CB Widt	ensions and Orientation h 0.90 m A gth 3.20 m D g a 120 (Deg)	Ground Level Coordinates National Grid	E:	1.39 mOD 129551.80 228222.90
Samples a	nd Tests		Strata				
Depth	Type & No.	Date Records	Des	cription	Depth, Level (Thickness)	Legend	Backfill/ Instrumen
- - 0.20 - - -	D1		TOPSOIL: Firm brown slightly sandy slightly g fibrous CLAY. Gravel is subangular to rounded coarse. Stiff grey occasional mottled brown slightly sar very gravelly SILT with many cobbles and som boulders. Gravel is angular to subangular fine coarse. Cobbles and boulders are subangular limestone, boulders are up to 700mm.	ndy	0.20 +11.19	0x 0x 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
- - - 1.00 1.00-1.40 - 1.00-1.40	D 2 B 3 B 4		EVEL OPATORY HOLE ENDS AT 1.40 m	- - -	(1.20) 1.40 +9.99	8, x x 0 x 0 y 0 x x 0 x 0 y 0 x x x 0 x 0	
ſ			EXPLORATORY HOLE ENDS AT 1.40 m	4			
Depth 1	ype & No.	Records					
Groundwater Entrie		Date	Denth Related Remarks				
No. Struck Post Strike (m) None observed (see K	e Behaviour (ey Sheet)		Depth Related Remarks From to (m) 1.40 Trial pit terminated due to obstruction - possi		Stability Good Shoring None Weather		
Notes: For explanation of abbreviations see key sillevels in metres. Stratun in depth column. Scale 1:25 (c)	of symbols and heet. All depths n thickness give		Project N6 Galway City Outer Bypass Con Investigation Gortatleva to Menlous KC3210 Carried out for Galway County Council	tract 2 Ground gh		142 et 1 of 1	

Logged by DJB Checked by ROR	Start 18/10/2003 End 18/10/2003	Equipment, Methor Excavated using a tr	ods and Remarks ack machine	Dimensions and Orientation Width 0.80 m Length 3.95 m D a	133 (Deg)	Ground Level Coordinates National Grid	E 1	6.15 mOD 129622.80 228145.70
Samples a	nd Tests		Strata					
Depth	Type & No.	Date Records		Description		Depth, Level (Thickness)	Legend	Backfill/
- - - 0.50 0.50-0.70	D 1 B 2		MADE GROUND: Firm brown slightly fibrous CLAY with in brick, tile and abundant woo is subangular to subrounder organic and oily odour.	nany cobbles, fragments of od and rare glass. Gravel	-	(0.75)		
0.50-0.70	В3		Firm grey slightly sandy ver cobbles and boulders. Grav fine to coarse. Cobbles and	rel is angular to subangular boulders are subangular	-	0.75 +5.40	0×3, ×3, 0	•
1.00 1.00-1.50 1.00-1.50	D4 B5 B6		of limestone, boulder up to	1100mm in length.				
	-		EXPLORATORY H	HOLE ENDS AT 2.00 m		2.00 +4.15	0× 0 × × ×	
Depth T	ype & No.	Records Date						
Groundwater Entries lo. Struck Post Strike (m) 1 0.70 Fast flow			Depth Related Remarks From to (m) 2.00 Trial pit terminated du	ue to obstruction - presumed bedrock.		Stability Good Shoring None Weather	1	
otes: For explanation of observations see key streets in metres. Stratum depth column.	of symbols and neet. All depths I thickness give MESG HBIII (298), 10		Project N6 Galway Cit Investigation G Project No. KC3210 Carried out for Galway Count	ty Outer Bypass Contract 2 Ground Gortatleva to Menlough y Council			P146 et 1 of 1	

Logged by DJB Checked by ROR	Start 18/10/2003 End 18/10/2003	Equipment, Meth Excavated using a t	ods and Remarks ack machine	Dimensions and Orientation Width 0.90 m Length 2.75 m	120 (Deg)	Ground Level Coordinates National Grid	E	5.91 mOE 129604.80 228088.80
Samples a	nd Tests		Strata					
Depth	Type & No.	Date		Description		Depth, Level	Legend	Backfi
		Records	1 Spongy brown slightly sandy	pseudofibrous PEAT.		(Thickness)	1	Instrun
2.00 2.00-2.50 2.00-2.50 2.50-2.70 2.50-2.70	D1 B2 B3 B5 B6 D7 B8 B9	Records	Spongy brown slightly sandy Soft grey slightly sandy CLAY soft grey / light brown silt (ma EXPLORATORY HO	with interbedded with		(2.45)	Legend We Shire We Shire	Instrun
oundwater Entries 5. Struck Post Strike (m) one observed (see Kines: For explanation or explanation see key sirely in metress. Stratum	ey Sheet)	Records Date and reduced in brackets	Project N6 Galway City	to soft nature of ground and plant distance from the side Outer Bypass Contract 2 Ground rtatleva to Menlough		Stability Good Shoring None Weather Trial Pit		
epth column.	I Thickness giver		Project No. KC3210 Carried out for Galway County	rtatleva to Menlough Council		TP	148 et 1 of 1	