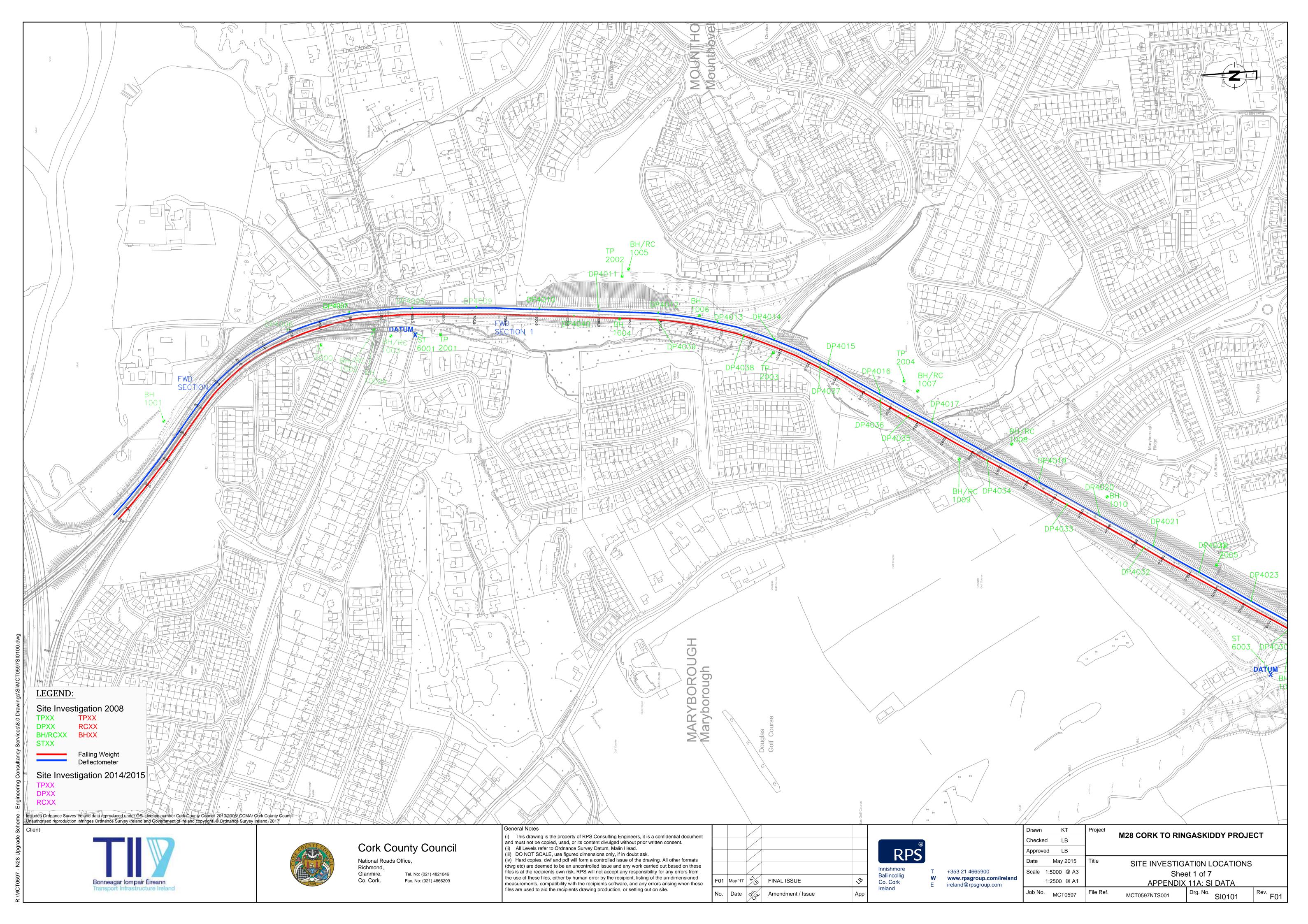
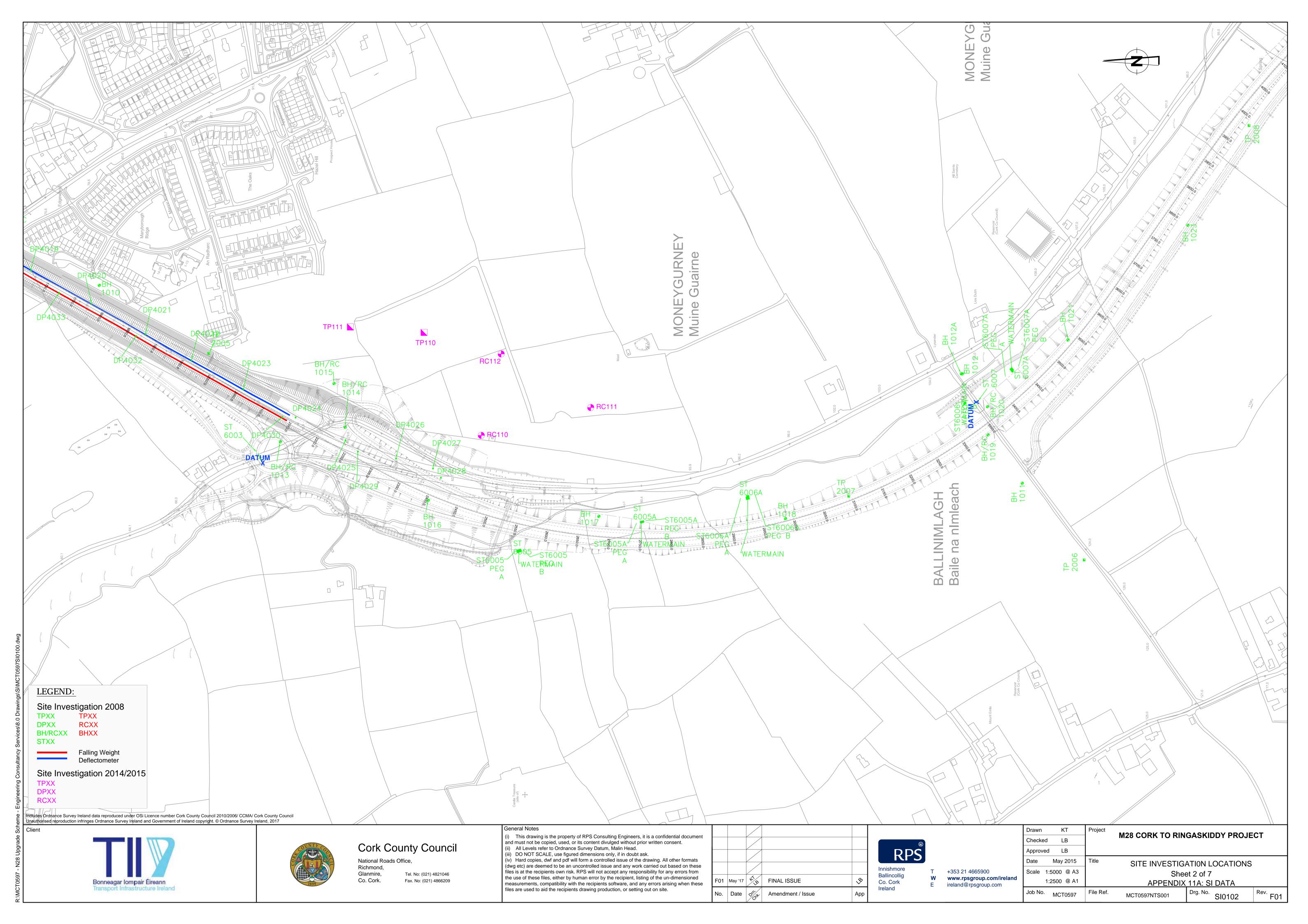
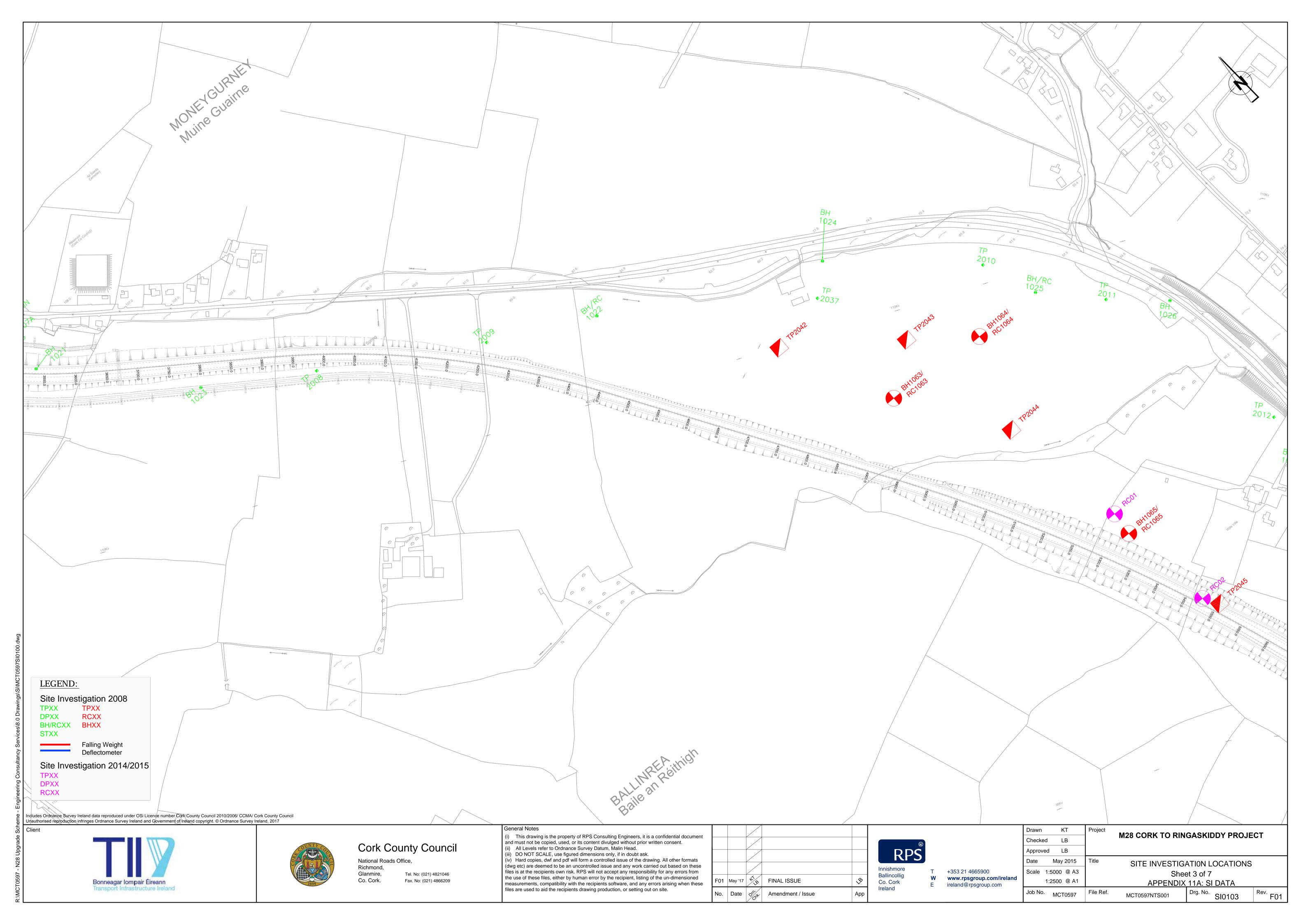
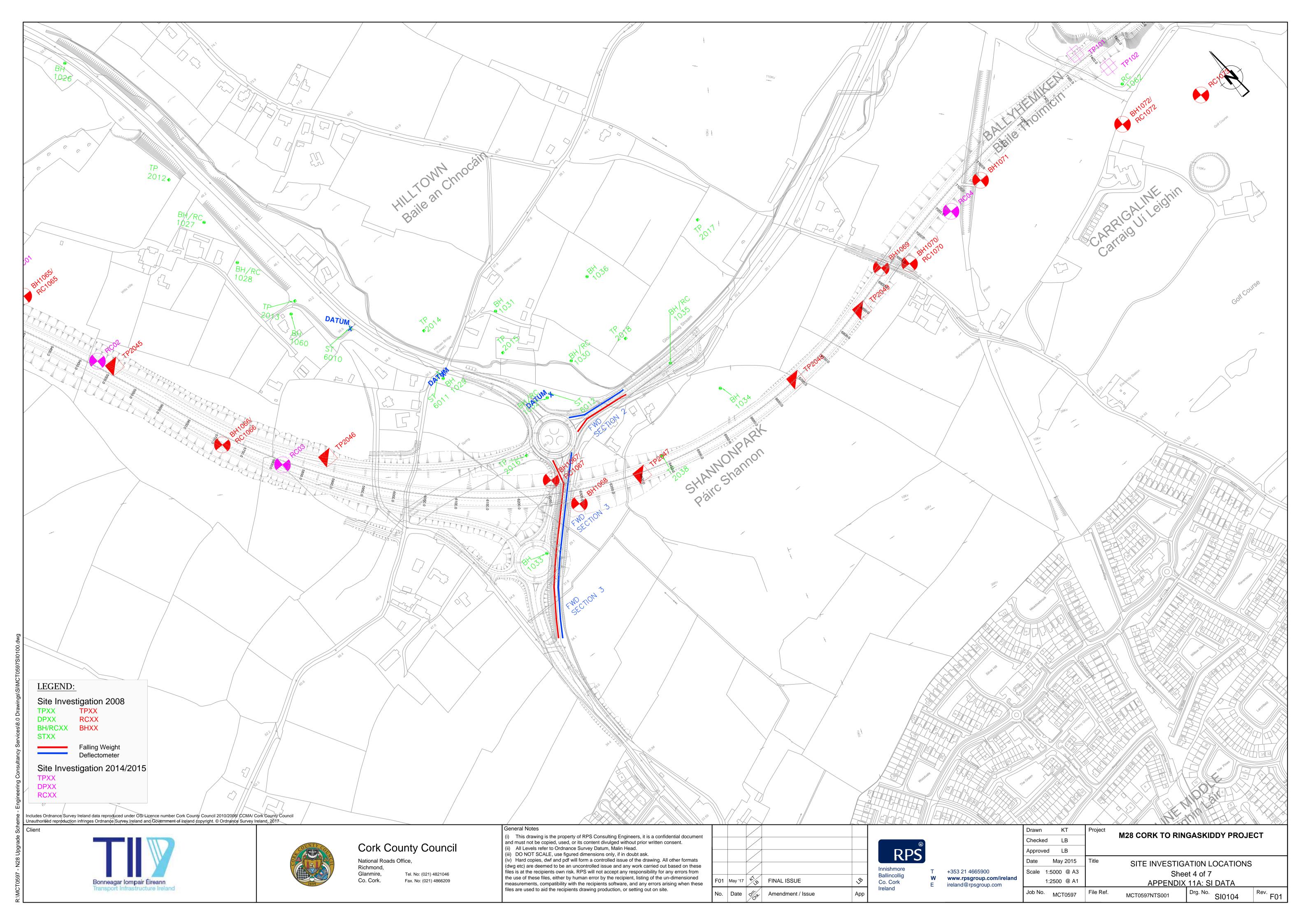


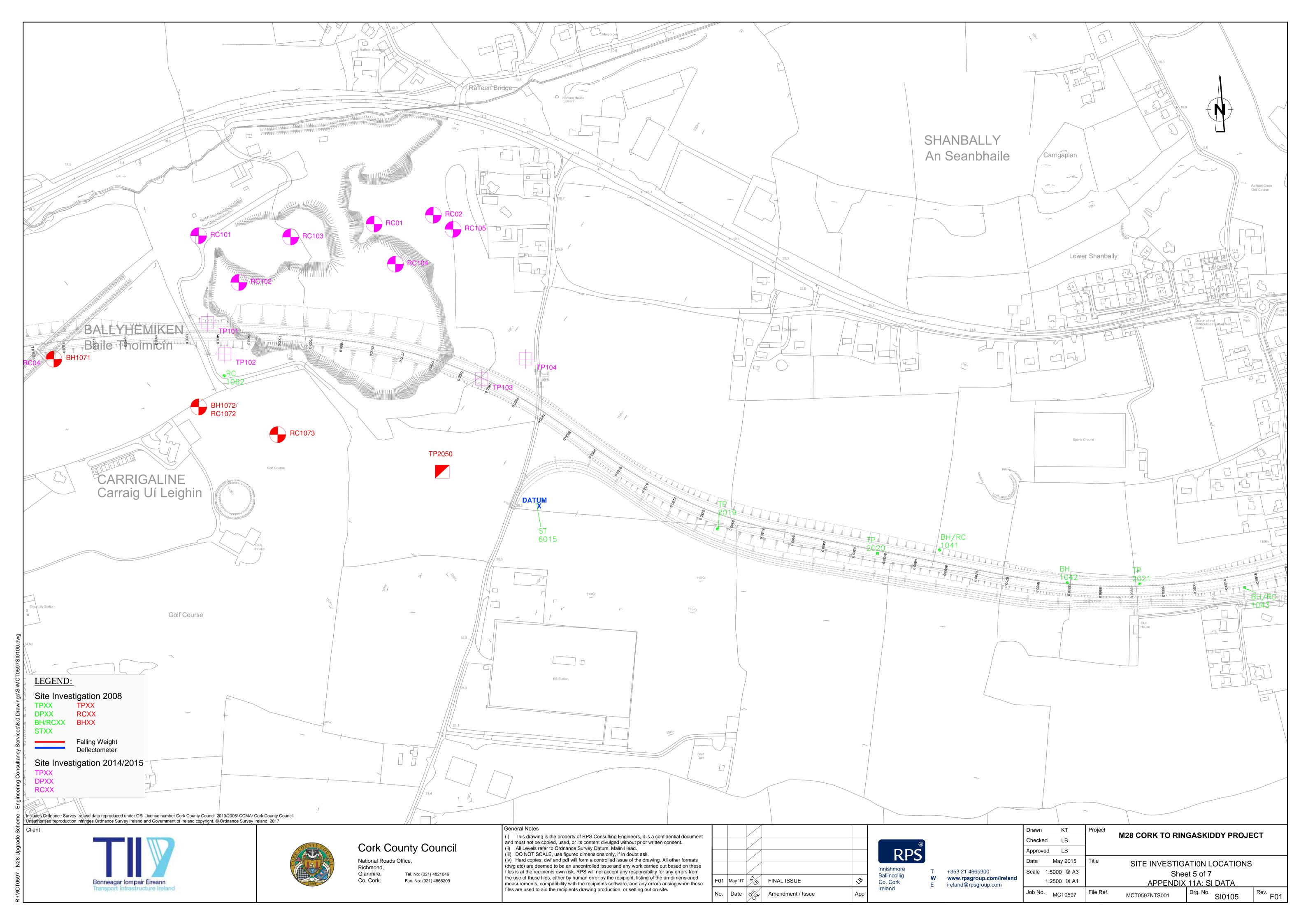
APPENDIX 11A: SI DATA

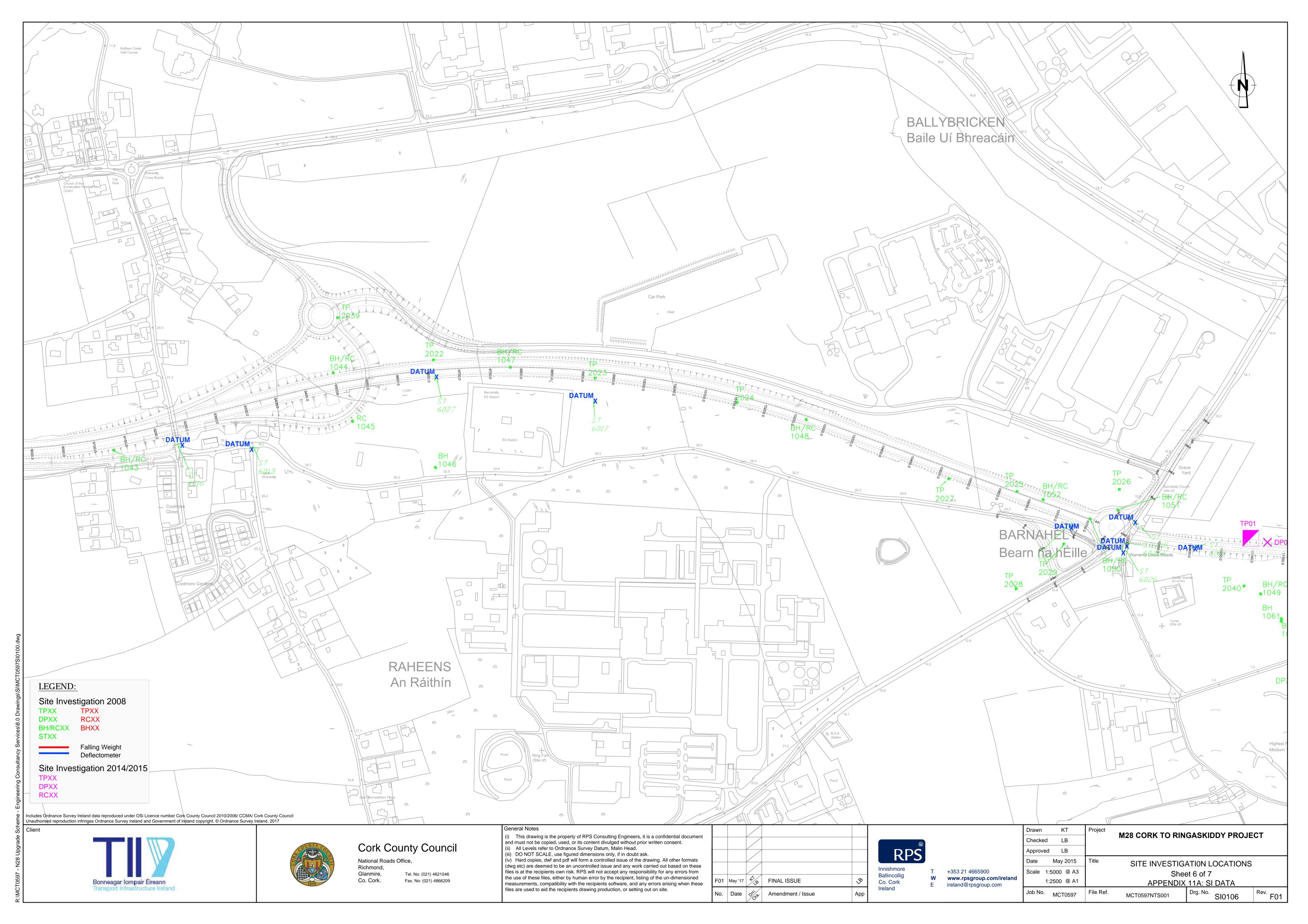


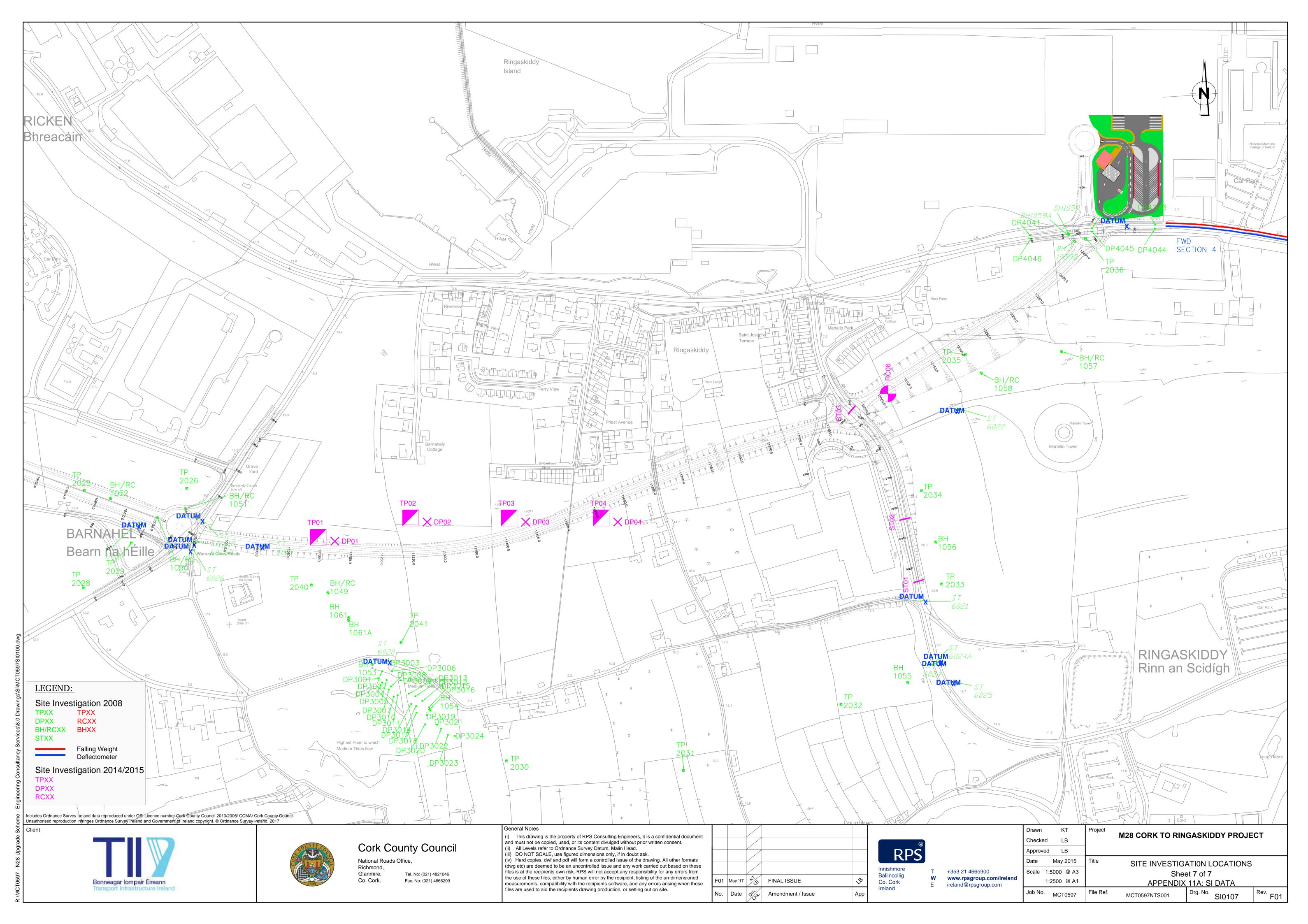












		askiddy		roject N			Sheet 1 of
Cork C		askiddy		OJOUL I	MO.		Hole Typ
Cork C				C6006		Co-ords: 171479E - 69582N	Cable
Sample							Scale
Sample						Level: 5.26 m AOD	1:50
Sample	wtenuo	Council				Dates: 07/09/2006	Logged B
			_			Dates. 07/09/2006	SA
		Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description	
0.00-0.50	В				*****	MADE GROUND - Firm, brown, sandy (fine-coarse gr gravelly (fine-medium grained, sub-angular to sub-round	ained), slightly
0.50	SPT	N=17			*****	gravelly (fine-medium grained, sub-angular to sub-rou SILT, includes timber and plastic	
0.50-0.95	D	(2,2/ 3,4,7,3)			*****		
		0,4,7,0)			*****		
1.00-1.50	В				****		
1.50	SPT	N=13			*****		
1.50-1.95	D	(2,3/ 3,4,3,3)			*****		

2.00-2.50	В				*****		
2.50	SPT	N=42			*****		
		15,15,8,4)			*****		

3.50	SPT	N=9	3.50	1.76	XXXXX	Medium dense, light brown, gravelly (fine-coarse grain	ned.
3.50-3.95	D	2,2,2,3)			1000	Sub-angular to sub-rounded), fine-coarse grained SA	ND.
					10.4		
4.30-4.80	В	(3,3/		ĺ	1000		
4.50-4.96	D	4,3,3,5)					
					1000		
					2010/01/02		
6.00	CPT	Nu16	5.80	-0.55	S133	Medium dense, sandy (fine-coarse grained), fine to or	parse
6.00-6.50	1	(3,3/				grained, sub-angular to sub-rounded GHAVEL	
		4,4,0,0)					
7.50	CPT	N=21					
7.50-8.00	В	(4,4/ 5,5,5,6)					
9.00	CPT	N=41 (8.8/	9.00	-3.75		Dense, broken, angular COBBLES - limestone rock	
9.00-9.60	В	10,9,10,12)					
					*		
9.80-10.10	В						
	Type	Results				Continued next sheet	
Chisellin	g 10.0	-10.1m / 1hr.	Standp	ipe ins	stalled at	10.0m. Water strike at 5.8m, rose to 3	.0m
	1.50 1.50-1.95 2.00-2.50 2.50 3.50 3.30-3.80 3.50-3.95 4.50 4.30-4.80 4.30-4.80 6.00 6.00-6.50 7.50 7.50 7.50-8.00 9.00 9.00 9.00 9.00-9.60 Chisellin	1.50 SPT 1.50-1.95 D 2.00-2.50 B 2.50 SPT 3.50-3.95 D 3.50-3.95 D 4.50 SPT 4.30-4.80 B 4.50-4.95 D 6.00 CPT 6.00-6.50 B 7.50 CPT 7.50-8.00 B 9.00 CPT 9.00-9.60 B	1.50 SPT N=13 (2.3/ 3.4,3.3) 2.00-2.50 B 2.50 SPT N=42 (6.8/ 15.15,8.4) 3.50 SPT N=9 (3.2/ 3.50-3.95 D 2.2,2.3) 4.50 SPT N=15 (3.3/ 4.30-4.80 B 4.30-4.80 B (3.3/ 4.3,3.5) 6.00 CPT N=16 (3.3/ 4.4,3.5) 7.50 CPT N=16 (3.3/ 4.4,3.5) 7.50 CPT N=21 (4.4/ 5.5,5.6) 9.00 CPT N=21 (4.4/ 5.5,5.6)	1.50 SPT N=13 (2,3/3,4,3,3) 2.00-2.50 B 2.50 SPT N=42 (8,8/15,15,8,4) 3.50 SPT N=9 (3,2/3,50-3,95 D 2,2,2,3) 4.50 SPT N=15 (3,3/4,3,3,5) 4.50 SPT N=15 (3,3/4,3,3,5) 6.00 CPT N=16 (3,3/4,4,3,5) 7.50 CPT N=21 (4,4/5,5,5,6) 7.50 CPT N=21 (4,4/5,5,5,5,6) 7.50 CPT N=21 (4,4/5,5,5,5,6) 9.00 CPT N=41 (8,8/4) 7.50-8.00 B 10,9,10,12) 9.00 CPT N=41 (8,8/4) 9.00 SPT N=21 (4,4/5,5,5,6) 9.00 CPT N=41 (8,8/4) 9.00 CPT N=41 (8,8/4)	1.50 SPT N=13 (2,3/3,4,3,3) 2.00-2.50 B 2.50 SPT N=42 (8,8/15,15,8,4) 3.50 SPT N=9 (3,2/3,50-3,95 D 2,2,2,3) 4.50 SPT N=15 (3,3/4,3,5) 4.50 SPT N=15 (3,3/4,3,5) 6.00 CPT N=16 (3,3/4,4,3,5) 7.50 CPT N=16 (3,3/4,4,3,5) 7.50 CPT N=21 (4,4/4) 5,5,5,6) 7.50 CPT N=21 (4,4/4) 5,5,5,6) 9.00 CPT N=41 (8,8/4) 5,5,5,6)	1.50 SPT N=13 (2,3/3,4,3,3) 2.00-2.50 B 2.50 SPT N=42 (8,8/15,15,8,4) 3.50 SPT N=9 (3,2/3,50,3,96) D 2,2,2,3) 4.50 SPT N=15 (3,3/4,3,5) 4.50 SPT N=15 (3,3/4,3,5) 4.50 SPT N=16 (3,3/4,3,5) 6.00 CPT N=16 (3,3/4,3,5) 7.50 CPT N=21 (4,4/7,5,5,6) 7.50 CPT N=21 (4,4/7,5,5,5,6) 7.50 CPT N=21 (4,4/7,5,5,5,6) 9.00 CPT N=41 (8,8/7,5,5,5,6) 9.00 CPT N=41 (8,8/7,5,5,5,6)	1.50 SPT N=13 (2.3/3.3) 2.00.2.50 B SPT N=42 (6.8/15.15.8.4) 3.50 SPT N=6 (3.2/3.35.0.3.50 D 2.2.2.3) 3.50 SPT N=15 (3.3/3.35.0.3.50 D 2.2.2.3) 4.50 SPT N=15 (3.3/4.3.4.5) 4.50 SPT N=15 (3.3/4.3.4.5) 4.50 SPT N=15 (3.3/4.3.4.5) 6.00 CPT N=16 (3.3/4.3.4.5) 6.00 CPT (3.3/4.3.3.5) 6.00 CPT (3.3/4.3.3.5) 6.00 CPT (3.3/4.3.3.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT N=21 (4.4/4.3.5.5) 6.00 CPT N=15 (3.3/4.3.5.5.5.6.6) 6.00 CPT N=16 (3.3/4.3.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.3.5.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.3.5.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.3.5.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.5.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.5.5.5.6.6) 6.00 CPT N=21 (4.4/4.5.5.6.6) 6.00 CPT N=21 (4.4/4.5.6.6) 6.00 CPT N=21 (4.

PR	IORIT ECHNI	Y ICAL				Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic)		BH-	nole No 1001 t 2 of 2
Proje	ct Na	ame			Pr	oject N	lo.				Type
		omfield to	Ring	askiddy		C6006		Co-ords:	: 171479E - 69582N		ıble
_oca	tion:	Cork						Level:	5.26 m AOD		cale :50
Clien	ıt:	Cork C	county	Council	_			Dates:	07/09/2006		ed By
	Water		es & Ir	Situ Testing	Depth (m)	Level (m AOD)	Legend		Steel on Description		
T.	Strikas	Depth (m) 10.00	Type	Results 55 (18,35/	(m) 10.10	(m AOD)	1,01,11,	Dense, broken,	Stratum Description angular COBBLES - limestone rock		-
				19,25,11 for 20mm)					End of Borehole at 10.10 m		
			Туре	Results							
ema	arks:		g 10.	0 -10.1m / 1hr. §	Standp	ipe ins	talled at	10.0m. Wate	er strike at 5.8m, rose to 3	3.0m	AGS

EO'	RIORIT	ICAL				Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic		BH-10 Sheet 1	04 of
	ect Na					oject N	lo.	Co-ords: 171644E - 68849N	Hole Ty	
		omfield to	Ring	askiddy	P	C6006		CO-0103. 171044E - 00049N	Cable	
.OC	ation:	Cork						Level: 37.24 m AOD	Scale 1:50	
lie	nt:			Council				Dates: 25/10/2006	Logged P R	Ву
ell	Water Strikes	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		
								TAR		- [
					0.30	36.94	****	Hardcore		
		0.50-1.00	В					Dense, clayey, slightly sandy (fine-coarse grained coarse grained angular to sub-rounded GRAVEL), fine to	
		1.00	CPT	50	1.08	36.16	3.3	coarse grained angular to sub-recinose GPAVEL		- [
				(25/ 25,25 for 60mm)	1.08	30.10		End of Borehole at 1.06 m		- †
										- [
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			Туре	Results						ŀ
m	arks:	Chisel: 1	.0 - 1	.08m / 1hr Stan	dina 8	:00 - 10	: 0:00 putt	ing Traffic management Standing 3:	00 - 6:00	
		waiting for	or inst	truction			put	g		10
									A(10

	RIORIT TECHN					Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic			BH-100 Sheet 1 c	05
	ect Na 3 - Blo	ame omfield to	Ring	askiddy		roject N C6006	10.	Co-ords: 171724E -	68835N	Hole Typ Cable	
	ation:							Level: 62.62 m A	OD	Scale 1:50	
Clie	nt:	Cork C	ounty	Council			_	Dates: 14/09/2006	3	Logged E	Ву
/eli	Water Strikes	Sample Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratu	m Description		T
	GUINGO	Depth (m)	rype	rysauta	0.9	(117400)		Driller describes - Stiff CLAY and	· · · · · · · · · · · · · · · · · · ·		+
							===			-	Ė
		0.50	CPT	N=51 (8,10/	0.50	62.12	FE 3	Stiff, brown, slightly sandy (fine-co (fine-coarse grained, Sub-angular	parse grained), gravelly	y .	7
		0.50-1.00	В	10,13,13,15)			苦菌	(fine-coarse grained, Sub-angula)	to sub-rounded), CLA	Υ	ŧ
		1.20	CPT	50							ŀ
				50 (25,0 for 0mm/ 25,25 for 50mm)	1.31	61.31		End of Bo	rehole at 1.31 m		
				25,25 151 5511119							ŧ
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			Туре	Results							-
em	arks:	Chisellin		- 1.31m / 1hr	1	1	1				
			J							AG	S

	RIORIT TECHN					Tel: 02 Fax: 03	Geotechr 1 4631600 21 463869 geotechnic)	BH-100 Sheet 1 o	8(
Pro	ect Na	ame			Pi	oject N	10.		Hole Typ	
		omfield to	Ring	askiddy		C6006		Co-ords: 171443E - 68219N	Cable	-
.oc	ation:	Cork						Level: 75.29 m AOD	Scale 1:50	
Clie	nt:	Cork C	ounty	Council				Dates: 12/09/2006	Logged B S A	у
/ell	Water Strikes	Sample Depth (m)	ts & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		T
		a apar (my	1300	riouns	10.0	Ç	XXX	TOPSOIL with broken rock fragments		+
		0.30-0.60 0.60	B CPT	50 (25,0 for 0mm/ 25 for 60mm)	0.30	74.99		Firm to stiff, brown, slightly sandy (fine-coarse grainer Sub-angular to sub-rounded), slightly gravelly (fine-co grained, angular to sub-angular) CLAY, with occassio Possible weathered bedrock	j, arse nal cobbles.	1
		1.50 1.30-1.70	CPT B	N=43 (5,6/ 8,8,10,17)						
		2.30	CPT	50 (25 for 60mm/						ŀ
				25 for 50mm)	2.46	72.83		End of Borehole at 2.46 m		ŧ
										-
										E
			Type	Results	-					F
em	arks:				red bed	drock.	Chisel: (.6 - 0.7m / 1hr; 2.3 - 2.46m / 1hr	$\overline{\mathbf{AG}}$	S

PRIORITY GEOTECHNICAL	Tel: 021 Fax: 021	otechnical Ltd Borehole No 131600 638690 BH-1009 sechnical@priority.ie Sheet 1 of 1
Project Name N28 - Bloomfield to Ringaskiddy	Project No PC6006	Co-ords: 171419E - 68304N Hole Type Cable
Location: Cork	1 00000	Level: 73.01 m AOD Scale 1:50
Client: Cork County Council		Dates: 11/09/2006 Logged By S A
Well Water Samples & In Situ Test Strikes Depth (m) Type Resu		gend Stratum Description
	0.20 72.81	TOPSOIL - Drillers descripton
		FILL - Drillers description, stiff clay and fill
0.70-0.90 B 0.90 CPT 50	0.70 72.31 S	Stiff, brown, sandy (fine-coarse grained, Sub-angular to sub-rounded), gravetly (fine-coarse grained, angular to
(25,0 for 25 for 3	Drmm/	sub-rounded) CLAY
		End of Borehole at 0.95 m
		-2
		[3]
		[4]
		5
		6
		1
		7
		*
		9
Remarks: Driller notes broken ro		g: 0.9 - 0.95m / 1hr
	John G. Fill Gillaell	AGS

PRIORI GEOTECHI					Tel: 02 Fax: 02	Geotechi 1 4631600 21 463869 geotechni)		BH-1012 Sheet 1 of 1
Project N					roject N		Co-ords	: 171215E - 66678N	Hole Type
N28 - Blo Location:	comfield to	Ring	askiddy	P	C6006		OU-OIGS.	. 1712132 - 0007614	Cable
Location	COIK						Level:	104.41 m AOD	Scale 1:50
Client:			Council				Dates:	28/09/2006	Logged By
Well Water Strikes	Sample Depth (m)	BS & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend		Stratum Description	
	0.50 0.50 1.50	CPT B	50 (8,10/ 15,20,15 for 45mm) N=34 (4,8/ 10,8,8,8)	2.00	102.41		FILL - Very stiff, sub-angular to s describes plastic	brown, gravelly (fine-coarse grained sub-rounded) CLAY, frequent cobble	s (driller
		Турв	Results						, 1
Remarks:	Chisel: 0).7 - 0	.94m / 1hr Term	ninated	due to	o preser	ce of concre	te in borehole	AGS

PRIORITI EOTECHN					Priority Geotechr Tel: 021 4631600 Fax: 021 463869 email: geotechnic	0	BH-1012
Project Na	ame			P	roject No.		Sheet 1 of Hole Type
	omfield to	Ring	askiddv		C6006	Co-ords: 171216E - 66680N	Cable
ocation:						1	Scale
						Level: 104.29 m AOD	1:50
241							Logged By
Client:	Cork C	ounty	Council			Dates: 28/09/2006-29/09/2006	PK
ell Water Strikes		Type	Situ Testing Results	Depth (m)	(m AOD) Legend	Stratum Description	
	a open (in)	1,990	1100010	1.7	- XXXX	MADE GROUND Slightly sandy (fine-coarse grained).	slightly
				-	****	gravelly (fine-coarse grained, sub-angular) CLAY (drille describes plastic & concrete)	er.
3	0.50	CPT	N=36 (8,8/		l		
	0.50-1.00	В	10,8,9,9)		· · · · · · · · · · · · · · · · · · ·		
	1.10	w					
					· ******		
	1.50	SPT	N=2 (2.3/				
6.7	1.50-1.95	D	1,0,1,0)	1.70	102.59	Soft, dark brown, spongy, slightly sandy, slightly gravel	lv.
)	1.70-2.20	В			20000	organic CLAY	-
S	2.00-2.45	U	61Blows		240495		
	2.45-2.60	D		2.45	101.84	Soft, grey, slightly sandy (fine-coarse grained), slightly	
.d	2.60 2.50-3.00	SPT	N=5 (1,1/		X X X X X	gravelly (fine-coarse grained, sub-angular to sub-round with rootlets	led) SILT
4	2.60-3.05	D	2,1,1,1)		* * * * *	THE TOOLS	
열	3.10-3.45	U	80Blows		K X X X X C X X X X X		
		_		3.55	100.74 X 8.8 X 8		
3	3.55-3.70 3.70	SPT	N=31	0.00		Stiff, brown, slightly sandy (fine-coarse grained), gravel (angular to sub-angular) CLAY	lly
d 1	3.50-4.00	B	(4,6/ 6,7,8,10)			for Book to got military) op 11	
4 1	0.110		0,7,0,70,		1000		
	4.50	w			2.		
	4.50 4.70	W SPT	N=35				
	4.50-5.00	В	(6,8/		2017.0V2		
4	4.70-5.15	D	8,7,9,11)		544		
∇							
				5.60	98.69	Medium dense, brown, very sandy (fine-coarse grained	n angular
3 1	5.60-6.00 6.00	B CPT	N=16			to sub-angular GRAVEL	,,9
3 1	0.00	011	(4,4/		1993		
1 1			4,4,3,5)		1000		
	6.80-7.20	В		6.80	97.49	Stiff, brown, very sandy (fine to coarse grained), gravel	ly
3 1	7.20	CPT	N=15		533	(fine to coarse grained, subangular to subrounded) CL	AY.
4			(3,3/ 4,4,3,4)		5.875		
9			-1-100-4)		140		
	7.50-8.10 8.00	SPT	N. ac		222		
	8.00 8.00-8.45	SPT B	N=36 (5,7/		222		
	8.00-8.45	B	8,8,10,10)		232		
	0.50.0.55			8.50	96.79	Dense, brown, sandy (fine-coarse grained), fine to coar	rse
	8.50-9.00	В				grained, sub-angular to sub-rounded GRAVEL with ma to sub-rounded cobbles	ny sub-angular
	9.00	CPT	N=37 (7,8/		250		
8			8,9,10,10)				
3							
	9.60-10.00	В					
		Type	Results	-	2000	Continued next sheet	
						rose to 4.5m after 20mins. Standpipe	

PRIORI GEOTECHN					Tel: 02 Fax: 00	Geotech 1 463160 21 46386 geotechn)	Borehole No BH-1012A Sheet 2 of 2
Project N	ame			P	roject N	Vo.		Hole Type
N28 - Blo	omfield to	Ring	askiddy		C6006		Co-ords: 171216E - 66680N	Cable
Location:	Cork						Level: 104.29 m AOD	Scale 1:50
Client:			Council				Dates: 28/09/2006-29/09/2006	Logged By P K
Well Water Strikes	Sample Death (m)	Type	Situ Testing	Depth (m)	Level (m AOD)	Legend	Stratum Description	
Well Strikes	Depth (m) 10.00 10.50-10.95 10.95	Type SPT B CPT	Results 50 (10,14/ 25,25) 25 (25,25 for 55mm/ 25 for 51mm)	Depth (m)	93.28	Legend	Stratum Description Dense, brown, sandy (fine-coarse grained), fine to coars grained, sub-angular to sub-rounded GRAVEL with man to sub-rounded cobbles End of Borehole at 11.01 m	e y sub-angular
Remarks:		Type 0.95 to 11	Results - 11.01m / 1hr. .0m	Water	strike a	at 5.6m	rose to 4.5m after 20mins. Standpipe	AGS

-						Priority Tel: 02 Fax: 0		al Ltd	Borehole BH-101	
	RIORIT TECHN							@priority.ie		
ro	ject Na	ame			P	oject N			Sheet 1 o	
		omfield to	Ring	askiddy		C6006		Co-ords: 171130E - 67671N	Cable	be
	ation:	Cork				00000			Scale	_
								Level: 77.26 m AOD	1:50	
Clie	nt:	Cork C	ounty	Council				Dates: 14/09/2006	Logged E	Зу
ell	Water	Sample	es & In	Situ Testing	Depth	Level			SA	_
CII	Strikes	Depth (m)	Type	Results	(m)	(m AOD	and	Stratum Description		
					0.30	76.96	28, -	TOPSOIL		_
							590 A	Brown, sandy (fine-coarse grained, Sub-angular to su slightly gravelly (fine-coarse grained, sub-angular to	ib-rounded),	ŀ
							<u> </u>	sub-rounded) CLAY, with occassional cobbles		ŀ
		0.70-1.20	В				-			ŀ
		1.20	SPT	N=12 (2,3/	1.20	76.06		Firm brown, sandy, slightly gravelly CLAY		-{
		1.20-1.65	D	2,3,3,4)	1.65	76.61				ŀ
					1.65	75.61	Ť	Stiff, brown, slightly sandy (tine-coarse grained, Sub- o sub-rounded), gravelly (fine-coarse grained, angula	angular	7
		1.70-2.20	В	N OF			횗 -	sub-rounded) CLAY		ŀ
		2.20	SPT	N=21 (4,4/			Ξ			ŀ
		2.20-2.00		5,4,5,7)			궠			-
							궠			ŧ
		2.80-3.20 3.20	SPT	N=22			됢			ŀ
		3.20-3.65	D	(4,5/ 5,6,6,5)			궠			ŀ
				5,6,6,5)			亩			ŀ
		3.80-4.20	_				뉰			ŀ
		4.20	B SPT	N=27			뒭			ŧ
	▼	4.20-4.65	D	(5,5/ 7,7,6,7)			궠			-
		4.50	W	.,,,,,,			귉			Ė
		4.80-5.20	В				푊			ł
		5.20	SPT	N=27			취			F
				(4,4/ 5,6,8,8)	5.50	71.76	힢			ŀ
		5.50-6.00	В				월 1	Dense, sandy, fine to coarse grained, angular GRAVE sedrock	EL - weathered	ŀ
		6.00	CPT	N=31			湖 -			E
				(5,6/ 7,7,8,9)			욃			ŀ
							쳶			-
							33			È
							1			ŀ
		7.00-7.55	В				챍			ŀ
		7.50	CPT	N=43						ŀ
				(7,7/ 8,9,12,14)						ŀ
										ŀ
		8.20	CPT	50 (25,0 for 0mm/	8.32	68.94	34 _			1
				25,25 for 60mm)				End of Borehole at 8.32 m		ŀ
										ŀ
										ŀ
										ŀ
										F
	l l	Chical	Type	Results	les etr'	(0.01.5		to 4 Em offer Comin-	1_	Ì
ЯП	idrK5:	Onisei: 8	o.2 - 8	.oom / Thr. Wa	er strik	re at 5	rose	to 4.5m after 20mins.		J
									AG	S

Client:	Blo ion:	Cork C Sample Depth (m) 0.50 0.50-0.95 0.50-1.00 1.00-1.45 1.45-1.60 1.60	ounty	Council Situ Testing Pesuits N=25		C6006		Co-ords: 171163E - 66638N Level: 106.16 m AOD Dates: 19/09/2006	Hole Typ Cable Scale 1:50 Logged B	_
Client:	ion:	Cork C Sample Depth (m) 0.50 0.50-0.95 0.50-1.00 1.00-1.45 1.45-1.60 1.60	ounty es & In Type SPT D B	Council Situ Testing Pesuits N=25	Depth (m)	Level		Level: 106.16 m AOD	Scale 1:50	
Client:	t: Vater	Cork C Sample Depth (m) 0.50 0.50-0.95 0.50-1.00 1.00-1.45 1.45-1.60 1.60	SPT D B	Results N=25	(m)	Level (m AOD			1:50	
wit W	Vater	Sample Depth (m) 0.50 0.50-0.95 0.50-1.00 1.00-1.45 1.45-1.60 1.60	SPT D B	Results N=25	(m)	Level (m AOD	, ,	Dates: 19/09/2006	Logged B	Зу
ell Wystr	Vater trikes	0.50 0.50-0.96 0.50-1.00 1.00-1.45 1.45-1.60 1.60	SPT D B	Results N=25	(m)	Level (m AOD		·		
		0.50-0.96 0.50-1.00 1.00-1.45 1.45-1.60 1.60	D B		0.30		Legend	Stratum Description		I
		0.50-0.96 0.50-1.00 1.00-1.45 1.45-1.60 1.60	D B			105.86		TOPSOIL		ŀ
		0.50-1.00 1.00-1.45 1.45-1.60 1.60	В		0.50	105.66		Driller describes as "Stiff, brown, slightly sandy, gra: CLAY"	velly	ŧ
		1.45-1.60 1.60	U	(4,5/ 5,7,7,6)				Stiff, brown, sandy (fine-coarse grained), gravelly(fir	ne-coarse	-
		1.60		80Blows				grained, sub-angular to sub-rounded) CLÁY		
			D SPT							ŧ
		1.50-2.00	B	50 (1,3/						ŧ
		1.60-1.97	"	12,17,21 for 70mm)			語道			ŀ
										ŧ
		2.50 2.50-2.95	SPT	N=35 (2,5/	2.50	103.66		Dense, brown, very silty, very sandy (fine-coarse gr	ained),	ŧ
		2.50-3.00	В	8,10,8,9)				fine-coarse grained, sub-angular to sub-rounded GF occassional cobbles	SAVEL, with	ŀ
										ŧ
		3.50	SPT	N=23	3.50	102.66				1
		3.50-3.95	D	(2,4/ 6,7,5,5)				Firm, brown, slightly sandy (fine-coarse grained), gravelly(fine-coarse grained, sub-angular to sub-rou	inded) CLAY	ŀ
		3.50-4.00	В							E
١,	₩	4.00-4.45 4.40	U W	888lows						ŀ
		4.45-4.60 4.60	D SPT	50	4.50	101.66		Dense, very silty, sandy, fine-coarse grained, sub-ar	ngular	ŧ
		4.50-5.00 4.60-4.93	B	(4,7/ 14,25,11 for 30mm)			목걸.	GRAVEL.		ŀ
		4.00-4.00	"	14,25,111013011111						-
	∇	5.40	CPT	50 (25/ 25,25 for 50mm)	5.48	100.68	193 -	End of Borehole at 5.48 m		-
				and the admitty						
										ŀ
										-
										-
										Ė
										E
										F
										Ė
										ŧ
										F
			Type	Results						ŧ
emarl	rks:	Chisel: 5			er strik	i ke at 5	.4m, rose	to 4.4m after 20mins.	1	-
										100

	RIORIT TECHN					Tel: 02 Fax: 0	y Geotechni 21 4631600 21 4638690 geotechnic		BH-102
ro	ect N	ame			P	roject I	Vo.		Sheet 1 o Hole Typ
		omfield to	Ring	askiddy		C6006		Co-ords: 172017E - 65997N	Cable
OC	ation:	Cork						Level: 87.49 m AOD	Scale 1:50
lie	nt:	Cork C	ounty	Council				Dates: 22/09/2006	Logged B
E	Water	Sample Depth (m)	es & In	Situ Testing	Depth (m)	Level (m AOD	Legend	Stratum Description	
		Depth (m)	Type	riesuits	0.0	(III FIGE		TOPSOIL (Drillers description)	
		0.50 0.50-0.95 0.50-1.00	SPT D B	N=11 (2,2/ 3,2,2,4)	0.30	87.19		Firm, brown, sandy (fine-coarse grained), gravelly (fine-co grained, sub-angular to sub-rounded) CLAY	parse
		1.00-1.45	υ	63Blows					
		1.45-1.60 1.60 1.50-2.00 1.60-2.05	D SPT B D	N=23 (5,5/ 6,6,5,6)	1.60	85.89		Self, brown, sandy (fine-coarse grained), gravelly(fine-me grained, sub-angular to sub-rounded) CLAY,	dium
		2,20-2,40 2,20-2,40 2,50 2,50-2,95 2,50-3,00	D U SPT D B	508lows N=39 (6,7/ 8,10,10,11)	2.50	84.99		Stiff, brown, sandy (fine-coarse grained), gravelly(fine-coarse grained, sub-angular to sub-rounded) CLAY	1798
		3.00-3.45	U	90Blows					
		3.45-3.60 3.60 3.50-4.00 3.60-4.05	D SPT B D	N=18 (4,5/ 4,4,5,5)	3.60	83.89		Stiff, brown, sandy (fine-coarse grained), gravelly (fine-co- grained, sub-angular to sub-rounded) CLAY, with occassis	arse onal
		4.60 4.50-5.00 4.60-5.05	SPT B D	N=28 (4,8/ 6,7,7,8)					
	•	5.80 6.00 6.00-6.45 6.00-6.50	W SPT D B	N=28 (4,4/ 5,6,8,9)					
	V	7.75 7.50-8.00	SPT B	N=62 (14,11 for 45mm/					
		7.75-8.17	D	17,15,15,15)					
		8.49	CPT	50 (25/ 25,25 for 60mm)	8.49	79.00		End of Borehole at 8.49 m.	
m	arks:	Chisel: 8	Type	Results 49m / 1hr. Wat	er strik	e at 7	2m. rose	to 6.8m after 20mins; water strike at n on the 25th of September.	

PRIO	RITY CHNICAL				Tel: 02 Fax: 0	Geotech 1 463160 21 463869 geotechni)	BH-	1025 at 1 of
roject	t Name			Pi	roject N	Vo.			a Type
	Bloomfield to	Ring	gaskiddy		C6006		Co-ords: 172583E - 65575N		able
ocatio	on: Cork						Level: 78.00 m AOD		cale :50
Client:			Council				Dates: 25/09/2006		ged By K
ell Wa Stri	tter Sample ikes Depth (m)	Type	Results	Depth (m)	Level (m AOD	Legend	Stratum Description		
				0.30	77.70	$\langle \rangle \langle \rangle$	TOPSOIL (Drillers description)		
	0.50 0.50-0.95 0.50-1.00	SPT D B	N=19 (3,3/ 4,4,5,6)	0.30	77.70		Stiff, brown, gravelly (fine-coarse grained, sub-angular sub-rounded) CLAY	to	
	1.50 1.50-1.95 1.50-2.00	SPT D B	N=27 (4,4/ 6,6,7,8)						
	2.50	SPT	50	2.50	75.50		Stiff, brown, slightly sandy (fine-coarse grained), grave	d.	
			(7,6/ 8,10,25,7 for 20mm)	2.88	75.12		(fine-coarse grained, sub-angular to sub-rounded), CL	AY]
emark	ks: Chisel: 2	Type 2.8-2.8	Results 38m /1hr						AGS

PRIOR SEOTECH					Tel: 02 Fax: 02	Geotech 1 463160 21 463869 geotechni)	BH-102 Sheet 1 of	26
Project I		D:			oject N		Co-ords: 172740E - 65426N	Hole Ty	pe
ocation	loomfield to n: Cork	Hing	askiddy	P	C6006		00 01ds. 172740E - 0042014	Cable	
							Level: 50.62 m AOD	Scale 1:50	
Client:		_	Council				Dates: 06/10/2006	Logged I	Ву
ell Wate Strike	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Levei (m AOD)	Legend	Stratum Description		T
						*****	Driller describes HARDCORE		+
	0.50-1.00	В		0.30	50.32		Sliff, brown, elightly sandy (fine-coarse grained) gravelly (fine-coarse grained Sub-angular to sub-rounded) CLAY		-
									F
	1.20 1.00-1.40	CPT	50 (8,10/	1.20	49.42		Weathered, broken rock with clay smears		-
			25,25)	1.45	49.17		End of Borehole at 1.45 m		
									-7
									Ė
									-
									-
									-9
									-
emarks:	Chisel: 1	Type .4 - 1.	Results 45m / 1hr					AG	S

	RIORITI TECHN					Tel: 02 Fax: 0	y Geotechr 21 4631600 21 463869 geotechnic)		Borehole BH-10 Sheet 1	28
	ect Na		F.			roject N		Co-orde	: 172748E - 65003N	Hole Ty	ре
		omfield to Cork	Ring	askiddy	Р	C6006		00-0103	. 172740L - 0000314	Cable	
LUGG	ation.	COIK						Level:	54.56 m AOD	Scale 1:50	3
Clie	nt:	_		Council				Dates:	26/09/2006	Logged P K	Ву
Vell	Water Strikes	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m AOD	Legend		Stratum Description		Т
							883	TOPSOIL (drille	rs description)		
		0.50	SPT	N=11	0.30	54.26		Firm, brown, slig to sub-rounded)	ghtty gravelly (fine-medium grained, CLAY	sub-angular	7
		0.50-0.95	D	(2,2/ 3,2,3,3)				10 000 100 1000)	-		ŀ
		0.50-1.00	В				목됩				E
		1.00-1.45	U								-
		1.45-1.60 1.60	D SPT	N=15							ŀ
		1.50-2.00	B	(3,3/ 4,3,4,4)							Ė
		1.00-2.00		4101414)							-
		2.50	SPT	N=35	2.50	52.06					F
		2.50-2.95	D	(4,5/ 7,8,10,10)	2.50	52.06		Very stiff, brown sub-angular to s	i, slightly gravelly (fine-medium grain sub-rounded) CLAY	ned,	
		2.50-3.00	В	7,0,10,10)			===				Ė
											F
		3.40	CPT	50 (15,10 for 35mm/	3.54	51.02					_
				25,25)					End of Borehole at 3,54 m		-
											F
											1
											ŀ
											-
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											-8
											Ė
											-
om.	arke		Type	Results 3.54 / 1hr						1	1
OITS	arks.	Onisei: 3	.40 -	3.34 / INF						AC	S

	RIORITI TECHN					Tel: 02 Fax: 0	Geotech 1 463160 21 463869 geotechni	0	BH-103 Sheet 1 or	1
	ect Na				P	roject N	No.	Co. andr. 470047F 04077N	Hole Typ	
_		omfield to	Ring	askiddy	P	C6006		Co-ords: 173017E - 64677N	Cable	
.oc	ation:	Cork						Level: 29.67 m AOD	Scale 1:50	
lie	nt:	Cork C	ounty	Council				Dates: 04/10/2006	Logged B	Вy
ell	Water Strikes	Sample Depth (m)		Situ Testing Results	Depth (m)	Level (m AQD	Legend	Stratum Description		T
							$\times\!\!\times\!\!\!>$	TOPSOIL - (Drillers description)		ŧ
		0.50	SPT	N=7	0.30	29.37		Firm, brown, gravelly (fine-coarse grained angular to		Ŧ
		0.50-0.95	D	(2,2/				sub-angular) CLAY		Ė
		0.50-1.00	В	1,2,2,2)			253			F
		1.00-1.45	U	45Blows						ŀ
		1.00-1.50	В	43010WS						ŀ
		1.45-1.60	SPT	N=8	1.60	28.07	E33	Firm light hower elightly arready files accordingly		4
		1.50-2.00	B	(1,1/ 2,1,2,3)				Firm, light brown, slightly gravelly (fine-coarse grained angular to sub-rounded) CLAY		ŧ
		1.00-2.00	"	2,1,2,0)			EEF			ŀ
		2.20-2.65	U	75Blows			불극점			ļ
		2.20-2.00	0	/SDIOWS			1			ŀ
		2.65-2.85	D				E 3			ŀ
		3.00	SPT	N=20	3.00	26.67		Stiff, light brown, slightly gravelly (fine-medium grained		ł
		3.00-3.45	D	4,5,5,6)				angular to sub-rounded) CLAY		ŀ
							많김			Ì
							불립			ŀ
		4.00	SPT	N=31	4.00	25.67		Coll II. Like		_
		4.00-4.45	D	(4,4/ 6,7,8,10)				Stiff, light brown/grey, slightly sandy (fine-coarse grained) gravelly (fine-coarse grained angular) CLAY		ŀ
	V	4.00-4.50 4.50	B W	-1-1-1-1			医虫			ŀ
							달리			ŀ
		5.00	CPT	N=39			불립			ŀ
				(4,5/ 7,8,10,14)						E
		5.20-5.50	В		5.45	24.22				4
		5.58	CPT	50 (25/	5.58	24.09	347771	Dense, brown, dayey coarse grained, angular to sub-ang GRAVEL, with weathered bedrock	ular	ł
				25,25 for 70mm)				End of Borehole at 5.58 m		ŀ
										ŀ
										ŀ
										ŧ
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										1
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uro	arker	Chical: 5	Type	Results	l tor otil	ko ot F	2m	a to 4 Em after 20min	1 —	1
#ET)	drKS:	Unisel: 5	.5 - 5	.oom / Inr. Wa	ier stri	ke at 5	.zm, ros	e to 4.5m after 20mins.	AG	S

Priority Geotechnical Ltd Tel: 021 4631600 Fax: 021 4638690 email: geotechnical @ priority.ie Borehole No -BH-1033 PRIORITY GEOTECHNICAL Sheet 1 of 2 Project Name Project No. Hole Type Co-ords: 172832E - 64325N N28 - Bloomfield to Ringaskiddy PC6006 Cable Location: Cork Scale Level: 26.36 m AOD 1:50 Logged By Client: Cork County Council Dates: 05/10/2006-06/10/2006

oli	Water Strikes	Depth (m)	Type	Situ Testing Results	Depth (m)	(m AOD)	Legend	Stratum Description
			.,,,,				XXX	TOPSOIL Drillers report
					0.30	26.06		Stiff, brown, slightly gravely (fine-medium grained, angular),
		0.50	SPT	N=18				sandy (fine-medium grained) CLAY with rootlets
		0.50-0.95	D	(2,3/ 4,4,5,5)				
		0.50-1.00	В		0.95	25.41		Stiff brown eliability annuality (fine annual annual
		1.00-1.45	U					Stiff, brown, slightly gravelly (fine-coarse grained, sub-angular), slightly sandy (fine-coarse grained) CLAY
		1.45-1.60	SPT	N=26				
		1.50-2.00	B D	(3,5/				
		1.60-2.05	, v	5,6,7,8)				
	v	2.50	SPT	N=17			2-2-2-	
		2.50-2.95	D	(5,6/ 4,4,5,4)				
		2.50-3.00	В	delm's				
							323	
		3.50	SPT	N=27 (4,4/	3.50	22.86		Dense, brown,silty, fine to coarse grained, sub-angular to
		3.50-4.00	В	6,6,7,8)				sub-rounded GRAVEL, with rare sub-angular cobbles
					4.30	22.06	200	
		4.30-4.70	В		4.30	22.00		S1M, brown, slightly gravelly (fine-coarse grained,
		4.70	CPT	N=19				sub-angular), sandy (fine-medium grained) CLAY
	_			(3,3/ 4,5,5,5)				
	_			4,5,5,5)				
			1		5.50	20.86	Company of the Compan	Stiff, brown, gravelly (fine-coarse grained, sub-angular), very
İ		5.50-6.00	В					sandy (fine-medium grained) CLAY, with occassional cobbles
		6.00	CPT	N=20				
				(3,3/ 4,4,6,6)				
				4,4,6,6)			I-I-I-	
					7.00	19.36	3.100	Dense, brown, sandy, fine to coarse grained sub-angular to
		7.00-7.50	В					sub-rounded GRAVÉL, with frequent cobbles
		7.50	CPT	N=26			345	
				(4,6/ 6,5,7,8)				
		7.50-8.55	U I	80Blows				
			"	OUDIONS	8.10	18.26		SEM, grey, slightly sandy, slightly gravelly CLAY
		8.65	D					
							7-7-1	
		9.10	U	100Blows	9.10	17.26		
		9.10-9.60	В	- oodrona	3.10	11.20		Stiff, grey, gravelly (fine-coarse grained, sub-angular), CLAY, with frequent cobbles
		3.10-9.00	В					mor includes commen
		9.70	D					

Remarks: Chisel: 8.7 - 8.9m / 0.5hr; 10.0 - 11.6m / 8hrs; 11.6 - 12.0m / 4hrs (total => 12.5hr). Water strike at 7m, rose to 5.1m after 20mins; water strike at 3.5m, rose to 2.5m after 20mins.



PRIORITY GEOTECHNICAL	Priority Geotech Tel: 021 463160 Fax: 021 46386 email: geotechn	90	Borehole No BH-1033 Sheet 2 of 2
Project Name N28 - Bloomfield to Ringaskiddy	Project No. PC6006	Co-ords: 172832E - 64325N	Hole Type Cable
Location: Cork		Level: 26.36 m AOD	Scale 1:50
Client: Cork County Council		Dates: 05/10/2006-06/10/2006	Logged By

Well Water Strikes			Situ Testing	Depth	Level	Legend	Stratum Description
SUMMS	Depth (m)	Type	Results	(m) 10.00	(m AOD) 16.36	or others of	
	10.00-10.50 10.00-10.50 10.50	B D SPT	N=17 (4,5/ 6,4,4,3)	10.00	10.30		Medium dense, grey clayey, fine to coarse grained sub-angular to sub-rounded GRAVEL.
	11.00-11.40 11.00-11.40	B	0,4,4,3)	10.95	15.41		Stiff, grey, gravally (fine-coarse grained, sub-angular), CLAY
	12.00	SPT	(4,50) (4,50)	12.00	14.36		End of Borehole at 12.00 m

Remarks: Chisel: 8.7 - 8.9m / 0.5hr;10.0 - 11.6m / 8hrs; 11.6 - 12.0m / 4hrs (total => 12.5hr). Water strike at 7m, rose to 5.1m after 20mins; water strike at 3.5m, rose to 2.5m after 20mins.



PRIOR GEOTECH					Tel: 02 Fax: 0	Geotechr 1 4631600 21 463869 geotechnic)	Boreho BH-1 Sheet	036
Project N28 - P	Name Bloomfield to	Rino	askiddy		oject N C6006		Co-ords: 173166E - 64626N	Hole Cat	
Location		7 11119	измичу		00000		Level: 25.40 m AOD	Sci 1:5	ale
Client:	Cork C	ounty	Council				Dates: 04/10/2006-05/10/2006	Logge	
Vell Wat Strik	er Sample es Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description		
	0.50 0.50-0.95 0.50-1.00 1.20-1.60 1.50 1.50-1.95 2.20-2.60 2.50 3.00	SPT D B SPT D CPT	N=11 (2,2/ 2,2,4,3) N=32 (4,6/ 7,8,8,9) N=47 (4,8/ 8,10,14,15) 50 (18,7 for 25mm/ 25,25)	0.30	25.10 24.20 23.20 22.30		TOPSOIL (Drillers description) Soft to firm, brown, slightly sandy, slightly gravely (fine-coarse grained angular to sub-angular) SILT Stiff, brown, slightly gravelly (fine-coarse grained, angusub-angular), sandy CLAY with rare cobbles Stiff to very stiff, brown, sandy, slightly gravelly (fine-coarse grained sub-angular) CLAY End of Borehole at 3.10 m	lar to	-2
Remarks	s: Chisel: 3	Type	Results .1m / 1hr						AGS

	RIORIT TECHN					Tel: 02 Fax: 02	Geotechnic 1 4631600 21 4638690 geotechnica	al Ltd		Borehole N BH-104 ⁻ Sheet 1 of
	ect N	ame omfield to	Ringa	skiddy		roject N C6006	lo.	Co-ords	: 175175E - 64033N	Hole Type Cable
Loca	ation:	Cork						Level:	38.94 m AOD	Scale 1:50
Clie	nt:	Cork C	ounty C	Council				Dates:	16/10/2006-17/10/2006	Logged By P K
Vell	Water Strikes			Results	Depth (m)	Level	Legend		Stratum Description	
	-	Depart (III)	Тури	rwauta	0-4	(1117522)	XXXX	TOPSOIL (Drill		
		0.50 0.50-0.95 0.50-1.00	SPT D B	N=9 (2,2/ 3,2,2,2)	0.30	38.64		Loose, brown, fine-coarse gra	very silty, very sandy (fine-coarse grain ined, sub-angular GRAVEL	ed),
		1.00-1.45 1.45-1.60 1.60 1.50-2.00 1.60-2.05	D SPT B D	N=14 (2,2/ 4,4,3,3)						
		2.50 2.50-2.95	SPT D	N=11 (2,3/ 3,2,3,3)						
		3.00-3.45	U							
		3.45-3.60 3.60 3.50-4.00 3.60-4.06	D SPT B D	N=12 (2,2/ 3,3,3,3)	3.45	35.49		Stiff, brown, slig	phtly sandy CLAY	
		4.50 4.50-4.95 4.50-5.00	SPT D B	N=14 (3,4/ 4,3,3,4)						
		6.00 6.00-6.45 6.00-6.50	SPT D B	N=21 (4,4/ 5,5,6,5)	6.00	32.94	XXXXX	Stiff, brown, slig slightly gravelly sub-rounded), \$	phtly sandy (sand is fine to coarse grain (fine-coarse grained, sub-angular to SILT.	nad),
		7.50 7.50-8.00	SPT B	N=22 (4,5/ 5,6,6,5)			X X X X X X X X X X X X X X X X X X X			
		9.00 9.00-9.45 9.00-9.50	SPT D B	N=24 (4,6/ 5,6,6,7)	9.00	29.94	X X X X X X X X X X X X X X X X X X X	Medium dense,	brown, clayey, fine to medium grained	SAND
			Туре	Results	-		100		Continued next sheet	

PRI	IORITI ECHIN					Tel: 02 Fax: 0	/ Geotech 1 463160 21 463869 geotechni)		BH-1041 Sheet 2 of
Proje N28 -		ame omfield to	Ring	askiddy		oject N C6006		Co-ords:	175175E - 64033N	Hole Type Cable
Locat	tion:	Cork						Level:	38.94 m AOD	Scale 1:50
Clien	t:			Council				Dates:	16/10/2006-17/10/2006	Logged By P K
/ell V	Vater trikes	Sample Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m AOD	Legend		Stratum Description	
		10.50 10.50-10.95 11.00-11.50 11.30 11.30-11.63 11.70	B B SPT D CPT	N=35 (5,6/ 6,7,10,12) 50 (10,15/ 20,20,10,ligr 30mm) (25,5 for 15mm/ 25,25)	11.30	27.64		Dense, dark brow	n, clayey, fine to coarse grained SAN End of Borehole at 11.78 m	D

Type Results
Remarks: Chisel: 11.70 - 11.78m / 1hr



	RIORIT TECHN					Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic)	BH-10 Sheet 1	46
	ect Na				Pr	oject N	lo.	0	Hole Ty	
		omfield to	Ring	askiddy	P	C6006		Co-ords: 176183E - 63945N	Cable	•
Loc	ation:	Cork						Level: 36.59 m AOD	Scale 1:50	
Clie	nt:	Cork C	county	Council				Dates: 13/10/2006	Logged P K	Ву
Veli	Water Strikes	Sampl Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		
							XX	TOPSOIL (Drillers description)		. +
		0.30 0.50 0.50 0.50 0.60-1.00 0.60-1.00	SPT D SPTLS B D	N=9 (13,6/ 3,2,2,2)	0.30	36.29		Firm, brown, slightly sandy (fine-coarse grained), grav (fine-coarse grained, sub-angular to sub-rounded) SIL rare sub-rounded cobbles	relly T, with	-
		1.50	SPT	N=66 (6,12/	1.50	35.09	0000	Very dense, grey, sandy, fine to coarse grained, angu-	ler to	-
		1.50-1.95	SPTLS	11,15,18,22)	1.95	34.64		sub-angular GRÁVEL		- [
			Type	Results	+					F
Rem	arks:	Chisel: 1	1.3 - 1	.35m / 0.5hr; 1	.9 - 1.9	5m / 1h	ır Stopp	ed on possible rock obstruction	AC	is

	ZIORITI TECHN					Tel: 02 Fax: 0	Geotechn 1 4631600 21 463869 geotechnic		BH-1049 Sheet 1 of	
	ect Na - Blo	ame omfield to	Ring	askiddy		roject N		Co-ords: 177509E - 63742N	Hole Typ Cable	
Loc	ation:	Cork						Level: 10.07 m AOD Scal 1:50		
Clie	nt:		_	Council				Dates: 16/10/2006	Logged E	Зу
Well	Water Strikes	Sample Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description		Т
		0.20	D		0.20	9.87		TOPSOIL (Drillers description)		İ
		0.50 0.50-0.95	SPT SPTLS	N=33 (2,4/ 5,4,15,9)	0.50	9.57		Stiff, brown, slightly sandy (line-coarse grained), gravel (fine-medium grained, sub-angular to sub-rounded) CL rare sub-rounded oabbles	y AY, with	1
		0.50-1.00 0.50-1.00 1.20	D D	, , , , ,				Stiff, brown, slightly sandy (fine-coarse grained), gravel (fine-medium grained, sub-angular to sub-rounded) CL/ rare sub-rounded cobbles	Y AY, with	-
		1.50 1.50-1.95	SPT SPTLS	N=8 (2,2/ 2,0,1,5)	1.50	8.57		Soft to firm, brown, slightly sandy (fine-coarse grained), slightly gravelly (fine-medium grined, sub-angular to sub-rounded) CLAY, with rare sub-angular cobbits		-
		1.80-2.20 1.80-2.20	B D					and service and any angular coules		-2
		2.50 2.50-2.95	SPTLS	N=4 (1,2/						-
		2.80-3.20 2.80-3.20	B	0,1,2,1)	2.80	7.27		Soft, brown, slightly sandy (fine-coarse grained), slightly gravelly (fine-modium grained, sub-angular to sub-roun with rare sub-angular cobbles	ded) CLAY,	-3
		3.50 3.50-3.95	SPT SPTLS	N=5 (0,0/ 1,2,1,1)	3.50	6.57		Soft, brown, slightly sandy (line-coarse grained), slightly gravelly (line-modium grained, sub-angular to sub-roun with frequent angular cobbles	ded) CLAY,	-
		3.90-4.20 3.90-4.20	B D					with irrequent angular copples		f
		4.50	CPT	25 (25,25/ 25 for 50mm)	4.55	5.52		4.5m. Clay becoming very stiff, End of Borehole at 4.20 m		
										-6
										-7
										8
			Ties	De- 4						
Rem	arks:	Chisel: 1	Type .0-1.1	Results m / 0.5hr; 4.0-	4.2m /	1hr, 4.	5 - 4.55n	/ 1hr.		- 1

	RIORIT TECHN					Tel: 02 Fax: 0	Geotechr 1 4631600 21 463869 geotechnic)	BH-105 Sheet 1 o	5
	ject Na				P	roject N	lo.		Hole Typ	
		omfield to	Ring	askiddy		C6006		Co-ords: 177580E - 63627N	Cable	
00	ation:	Cork						Level: 0.05 m AOD	Scale 1:50	
lie	nt:			Council				Dates: 19/10/2006	Logged E P K	3)
III	Water Strikes	Sample Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		
	▼	0.20	w					Stiff, brown, slightly sandy (fine-coarse grained), slightly gravelly (fine-medium grained, sub-angular to sub-roun with occassional cobbles	y ded) CLAY,	
		0.50	SPT	N=21 (4,4/						
		0.50-0.55		5,5,6,5)	1.20	115				
		4.50	CDT	N-04	1.20	-1.15		Dense, silty, angular, broken/ weathered limestone roci cobbles	kwith	
	1.50	CPT B	N=34 (4,5/ 6,10,10,8)			* * * * *				
	1.50-2.00		6,10,10,6)							
		2.80	CPT	50	2.89	-2.84	8 × 8			
				(25/ 25,25 for 50mm)	2.00	-2.04		End of Borehole at 2.89 m		
			Type	Results						
m	arks:				: ter strik	e at 1.	2m, ros	e to 0.2m after 20mins.	1 -	1
	_								160	į
									AG	b

	RIORI					Tel: 02 Fax: 0	Geotechn 1 4631600 21 4638690	0	BH-1054
GEO	TECHN	ICAL				email:	geotechnic	al@priority.ie	Sheet 1 of
	ject N					roject N		Co. order 177070E 00554N	Hole Type
N28	3 - Blo	omfield to	Ring	askiddy	P	C6006		Co-ords: 177673E - 63554N	Cable
_oc	ation:	Cork						Level: 0.51 m AOD	Scale 1:50
Clie	nt:	Cork C	ounty	Council				Dates: 18/10/2006-19/10/2006	Logged By
/ell	Water Strikes	Sample Depth (m)		Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description	
- 10		Depai (iii)	Type	ricouns	4.0	Ç 1 100	, 1:11:11:11	Soft, brown, slightly sandy (fine-coarse grained), gravell	
								(fine-medium grained, angular to sub-rounded) CLAY, v occassional cobbles	vith
		0.50	SPT	N=0 (0,0/					
	∇	0.50-0.95 0.50-1.00	B	-,-,-,-)					
		1.00-1.45	U	44D'					
				44Blows					
		1.45-1.60 1.60	SPT	N=6	1.60	-1.09		Loose to medium dense, brown, silty, sandy (fine-opars	
		1.60-2.05	D	(2,2/ 1,1,2,2)				grained), fine to coarse grained, sub-angular to sub-rou GPAVEL, with cobbles	nded
		2.00-2.50	В					Service Hill Colored	
		2.50	CPT	N=17					
		2.50	GFI	(3,3/					
				4,4,4,5)					
	V	3.50	CPT	N=17					
		3.50-4.00	В	(4,4/ 4,5,4,4)					
		0.30 4.00		4,5,4,4)	4.00	-3.49			
					4.00	3.45		Soft to very soft, grey, slightly sandy (fine-medium grain SILT.	ed)
		4.50	CPT	N=5					
				(3,3/ 1,2,1,1)					
		4.80-5.20	В	,					
		5.20-5.65	U	35Blows					
		5.65-5.80 5.80	D SPT	N=0					
		5.80-6.25	D	(0,0/					
		6,20-6,60	В	25.25)				6.2m. Stit becoming very soft.	
		0.20-0.00	2						
		7.30	SPT	N=0 (0,0/					
		7.30-7.75	D	,,,,,)					
		7.00.0							
		7.80-8.20	В						
		8.80	SPT	N=2 (0,1/					
		8.80-9.25	D	0,1,0,1)	0.05	.074			
					9.25	-8.74	XXXXX	Very soft, brown/grey, sandy (fine-coarse grained), SIL1	f
							KXXXXX KXXXX		

	[Chical	Type	Results	Motor	estable a	ot 2 5	Continued rext sheet	
em	arks:	Offisel:	0.00	10.20M / TNF.	vvater	STIKE	at 3.5m,	rose to 1m after20mins.	
									AC

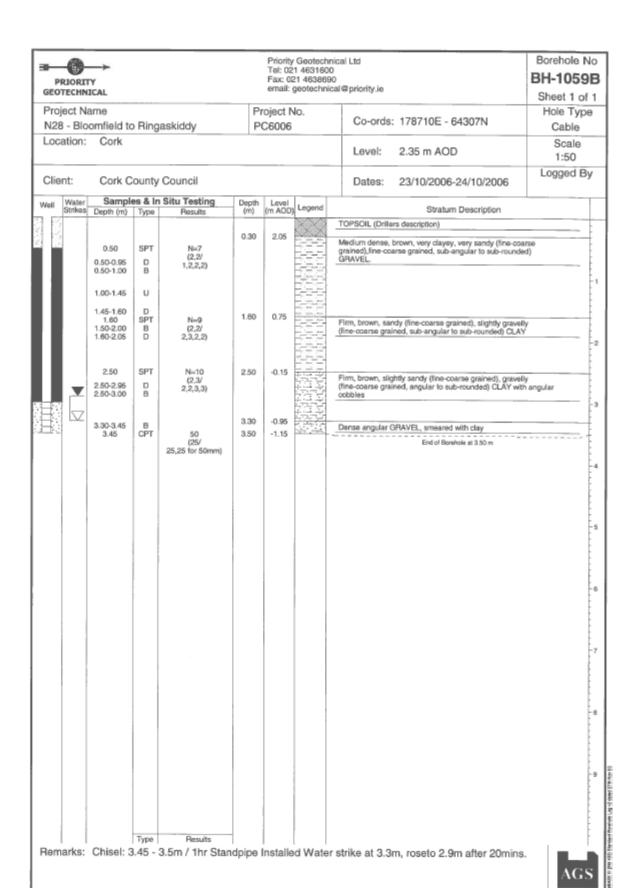
	RIORI TECHN					Tel: 02 Fax: 0	Geotechn 1 4631600 21 4638690 geotechnic			BH-1054 Sheet 2 of 2
	ect N					roject N		Co-orde	177673E - 63554N	Hole Type
		comfield to	Ring	askiddy	P	C6006		CO-ords.	177073E - 03004N	Cable
LOC	ation:	Cork						Level:	0.51 m AOD	Scale 1:50
Clie				Council		,		Dates:	18/10/2006-19/10/2006	Logged By P K
Vell	Water Strikes	Depth (m)	Type	Situ Testing Results	Depth (m)	(m AOD	Legend		Stratum Description	
		10.00-10.50 10.30 10.30-10.75	B SPT D	N=5 (0,1/ 1,1,1,2)			N X X X X X X X X X X X X X X X X X X X	Very soft, brown	/grey, sandy (fine-coarse grained), Si	LT.
		11.30-11.80 11.80	B SPT	50 (8,10/ 18,18,14 for 50mm)			KARR KARR KARR KARR KARR KARR KARR KARR			
		12.80-13.20 13.20 13.20-13.50	B SPT D	50 (10,15/ 25,25)	13.20	-12.69	X X X X X X X X X X X X X X X X X X X	Dense, orange,	clayey, fine grained SAND	
		14.80 14.80-15.07 15.28	SPT D	50 (10,15 for 60mm/ 25,25 for 60mm)	15.28	-14.77			End of Borehole at 15.25 m	
				(25/ 25,25 for 50mm)					Chi o borende al 1320 m	-
										-1
Rem	arks:		Type 5.08	Results - 15.28m / 1hr. \	l Water	strike	at 3.5m,	rose to 1m a	fter20mins.	AGS

	ZIORIT TECHN					Tel: 02 Fax: 00	Geotechn 1 4631600 21 463869 geotechnic			Borehole BH-105 Sheet 1 c	57
roj	ect N	ame			P	roject N	lo.			Hole Ty	
V28	- Blo	omfield to	Ring	askiddy	Р	C6006		Co-ords:	178688E - 64130N	Cable	
OCE	ation:	Cork						Level:	36.00 m AOD	Scale 1:50	
lie	nt:	Cork C	ounty	Council				Dates:	12/10/2006	Logged I	Ву
ell .	Water	Sample	es & In	Situ Testing	Depth (m)	Level	Legend		District Description		
	Strikes	Depth (m)	Type	Results	(m)	(m AOD)	Lugerio	TOPSOIL (Drille	Stratum Description		
		0.30	D		0.30	35.70	$\Diamond \Diamond \Diamond \Diamond$				
		0.50 0.50-0.95	SPTLS	N=13 (5,6/				Stiff, brown, sligi (fine-coarse grai cobbles	htty sandy (fine-coarse grained), gri ned, sub-angular) SILT, with rare a	avelly ngular	
		0.50-1.00 0.50-1.00	B D	4,3,3,3)							
		1.30	D		1.30	34.70					
		1.50	SPT	52 (7,4/				Dense brown, cl angular to sub-a	ayey, slightly sandy, fine to coerse ngular GRAVEL	grained,	
		1.50-1.95	SPTLS	9,11,15 for 35mm)			4.4				
					1.95	34.05			End of Borehole at 1.95 m		-
							1				
- 1											
											1
			Type	Results							ŀ
				1.95m / 1hr		1	1			1	-

PRIO GEOTEC					Tel: 02 Fax: 0	Geotechi 1 4631600 21 463869 geotechnic			BH-1	058 1 of 1
Project		Disco			oject N		Co-ords: 17855	59F - 64095N	Hole	Туре
	Bloomfield to on: Cork	Hing	askiddy	P	C6006			m AOD		ale
Client:	Cork C	ou intra	Council						1:5 Logge	o0 ed By
			Situ Testing	Dooth	1 1	-	Dates: 13/10.	/2006	PI	<
Veil Strii	kes Depth (m)	Type	Results	Depth (m)	(m AOD	Legend		Stratum Description		
	0.40 0.50 0.50-1.00 0.50-1.00	D SPT B D	N=12 (2,2/ 2,3,3,4)	0.40	33.90		fine-coarse grained, angul Stiff, brown, slightly sandy	rown, silty, sandy (fine-coa ar to sub-angular GRAVEL (fine-coarse grained), gray		
	1.50	SPT	85 (6,11/ 15,20,25,25 for 1mm)	1.30	33.00		(fine-coarse grained, angu	far to sub-angular) CLÁY		
										2 3
										-7
										8 9
lemark	rs:	Type	Results						1	\GS

PF GEO	RIORIT	TY HICAL				Tel: 02 Fax: 02	Geotechn 1 4631600 21 4638690 geotechnic		Borehole N BH-1059 Sheet 1 of
	ect N			-114		roject N		Co-ords: 178699E - 64319N	Hole Type
		comfield to	Ringa	askiddy	P	C6006		CO-0rds. 178099E - 64319N	Cable
LOCE	ation:	Cork						Level: 2.73 m AOD	Scale 1:50
Clie	nt:			Council				Dates: 23/10/2006	Logged B
Voll	Water Strikes	Sample Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description	n
					0.10	2.63		Driller records TAR	/
							*****	Driller records hardcore	
					0.80	1.93		End of Sorehole at 0.80 m	
	j								
ema	arks:	Refused	Type on Wa	Results avin Sewer Pip	ов				AGS

PRIORITY GEOTECHNICAL	-			Tel: 02 Fax: 02	Geotechni 1 4631600 11 4638690 geotechnica			Borehole No BH-1059A Sheet 1 of 1
Project Name				oject N	lo.	Co-ordo	178699E - 64318N	Hole Type
N28 - Bloomfi		askiddy	P	C6006		Co-orus.	170099E - 04310N	Cable
Location: Co	ork					Level:	2.69 m AOD	Scale 1:50
	ork County					Dates:	23/10/2006	Logged By
Well Water S Strikes Dept	th (m) Type	Situ Testing Results	Depth (m)	Level (m AOD)	Legend		Stratum Description	
			0.20	2.49	2000	Driller records T	AR	
			0.40	2.29	XXXXX	Driller records ha		
								-1
Remarks: Bor	Type rehole stopp	Results ped at 0.4m by e	engine	ers ins	truction			



PRIO						Tel: 02: Fax: 02	Geotechni 1 4631600 1 4638690 geotechnic			Borehole N BH-1060 Sheet 1 of
rojec	t Na	ame			P	roject N	lo.	Τ		Hole Type
		omfield to	Ring	askiddy	P	C6006		Co-ords:	172762E - 64884N	Cable
ocatio	on:	Cork						Level:	50.63 m AOD	Scale 1:50
lient:				Council				Dates:	01/11/2006-02/11/2006	Logged By P R
	ater ikes	Sample Depth (m)		Results	Depth (m)	Level (m AOD)	Legend		Stratum Description	
							****	Hardcore (Driller	rs description)	
		1.20	СРТ	N=51 (8,10/ 15,15,15,6)	1.60	49.03			AY, cobbles and boulders (Drillers des	
		1.60-2.00	В		1.00	40.00		grained, sub-and	ndy (fine-coarse grained), gravelly (fine gular to sub-rounded) CLAY with angu	e-coarse lar to
		2.00	SPT	N=14 (3,3/	2.00	48.63		sub-angular cob	bles	/
		2.00-2.45	D	4,4,3,3)	2.45	48.18		Firm, brown, san (fine-medium gra	ndy (fine-coarse grained), slightly grav sined, sub-rounded) CLAY	ely
		2.60-3.00	В					Firm, brown, slig sub-rounded), sa sub-angular cobi	httly gravelly (fine-coarse grained, andy (fine-coarse grained) CLAY with	angular to
		3.00	SPT	60 (3,4/ 6,9,20,25 for 6mm)	3.00	47.63			lightly sandy (fine-coarse grained), fin	0.000000
	Ž	4.00 4.00-4.45	CPT B	N=37 (5,6/ 6,7,8,16)				grained, angular	to sub-rounded GRAVEL with angula	rcobbles
		4.80	СРТ	50 (25 for 19mm/ 50 for 16mm)	4.80	45.83	2		End of Borehole at 4.80 m	
							H			
			Туре	Results						
mark	ks:	Chisel: 1		.5m / 0.5hr; 4.7	- 4.8n	1hr V	Vater str	ike at 4m, ro	ose to 3.6m after 20mins.	AGS

PRIOR GEOTECE					Tel: 02 Fax: 0	Geotechn 1 4631600 21 4638690 geotechnic		BH-100 Sheet 1 of	61
Project					oject N		Co-ords: 177542E - 63702N	Hole Ty	ре
N28 - E Locatio	Bloomfield to n: Cork	Ringa	askiddy	P	C6006		G0-0rus. 177542E - 63702N	Cable	
Locatio	n. Cork						Level: 8.69 m AOD	Scale 1:50	,
								Logged	Bv
Client:	Cork C	ounty	Council				Dates: 27/10/2006	PR	_,
Well Wat	er Sample Bs Depth (m)	es & In	Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description		Т
	Dopin (m)	· ypu	Theatina	1 4-9	Ç	XXX	TOPSOIL (drillers description)		+
	0.50 0.50-0.96 0.50-1.00	SPT D B	N=21 (3,3/ 4,5,6,6)	0.30	8.39		Stiff, brown, slightly sandy (fine-coarse grained), gravetly (fine-coarse grained, sub-rounded) CLAY fragments of weathered limestone rock)	slightly , (with angular	
	1.30-1.60 1.50	B CPT	50 (10,15/ 25,25)	1.76	6.93		End of Borehole at 1.76 m		2
									5 6 7
Remarks	s: Chisel: 1	Type .7 - 1.7	Results 76m / 1hr					ll-c	8

	LIORIT ECHN					Tel: 02 Fax: 02	Geotechr 1 4631600 1 463869 geotechnic			BH-106	1 <i>A</i>
-	ect N					oject N	lo.	Co-orde	: 177542E - 63698N	Hole Typ	
	- Blo ation:	omfield to Cork	Ring	askiddy	P	C6006		00-0103	. 177542E - 03096N	Cable	
	20,071.	Joint						Level:	8.42 m AOD	Scale 1:50	
Clier				Council				Dates:	30/10/2006-31/10/2006	Logged B	Ву
	Water Strikes	Sample Depth (m)		Situ Testing Results	Depth (m)	(m AOD)	Legend		Stratum Description		T
								TOPSOIL (Drille	ers description)		+
		0.50 0.50-1.00	CPT B	N=15 (3,3/ 4,3,4,4)	0.30	8.12		Firm, brown, ve grained, sub-an rock.	ry sity, very sandy (fine grained), fino- gular GRAVEL, and angular fragment	medium s ef limestene	
		1.50	CPT	N=30							
		1.50-2.00	В	(5,6/ 7,7,8,8)							E
											Ē
											-
		2.50 2.50-2.95	SPT	N=14 (3,3/	2.50	5.92		Firm, brown, sli	ghtly sandy (fine grained), slightly grav rained, sub-angular) CLAY	elly	-[
		2.50-3.00	В	4,4,3,3)	2.95	5.47					-[
								(fine-coarse gra	ghfly sandy (fine-medium grained), gra ined, sub-angular to sub-rounded) CL	AY	E
		3.50	SPT	N=13 (4,3/							
		3.50-3.95 3.50-4.00	B	3,4,3,3)							Ė
											F
		4.50	SPT	N=17							ŀ
		4.50-4.95 4.50-5.00	D B	(4,4/ 5,4,4,4)							ŧ
		4.50 0.00									ŀ
											ŧ
											Ì
		6.00	SPT	N=18	6.00	2.42		Coll L	hill cond. Ill cond.		Ė
		6.00-6.50	В	(4,5/ 5,4,5,4)				gravelly (fine-or with rare sub-ar	ghtly sandy (fine-medium grained), slig sarse grained, sub-angular to sub-roun	ntity ded) CLAY,	ŀ
								- Automotive automotive	-garen totalines		ŧ
											ŀ
											Ė
		7.50	SPT	N=23			1				ŀ
		7.50-7.05 7.50-7.05	B	(4,5/ 6,6,5,6)			===				1
		7100 7100					建装				ŀ
											ŀ
		9.00	SPT	N=19			돌물				ŧ
		9.00-9.45 9.00-9.50	D B	(4,4/ 3,5,6,5)							E
	W	9.50	W				\$ (2 E)				- 1

Remarks: Chisel: 12.7 - 12.76m / 1hr Stopped on possible rock obstruction. Water strike at 12.3m, rose to 9.5m after 20mins.



=	—				Priority	Geotech 1 463160	nical Ltd		Borehole No
PRIORI					Fax: 0	21 463869	90		BH-1061A
GEOTECHN							cal@priority.ie		Sheet 2 of 2
Project N N28 - Blo	lame oomfield to	Ring	askiddy		oject N 06006		Co-ords:	177542E - 63698N	Hole Type Cable
Location	Cork						Level:	8.42 m AOD	Scale 1:50
Client:	Cork C	ounty	Council				Dates:	30/10/2006-31/10/2006	Logged By P R
Well Water Strikes	Sample Depth (m)		Situ Testing Results	Depth (m)	Level (m AOD	Legend		Straturn Description	
				4			Stiff, brown, slight gravelly (fine-cost with rare sub-ang	ntly sandy (fine-medium grained), slighters grained, sub-angular to sub-round	ded) CLAY,
	10.50 10.50-10.95	SPT	N=23 (4,4/						
	10.50-11.00	В	6,6,5,6)						-11
	11.70	SPT	N=28 (6,6/ 7,7,6,8)						- 12
				12.30	-3.88		Dense, angular f	ragments of clay smeared rock	
	12.30-12.70 12.70	B CPT	50	10.70			and the same of	agranta or stay arrested rotal	
			(25/ 25,25 for 50mm)	12.76	-4.34			End of Borehole at 12.76 m	-13
									-14
									!
									l
									-15
									-18
									1
									17
									-18
									19 8
									88
Remarks:		Type 2.7 -	Results 12.76m / 1hr Sto	nned	on no	ssible re	ock obstruction	n. Water strike at 12.3m, ro	see to l
omano	9.5m afte	er 20n	nins.	ppou	5.1 pu	Janaie iC	A ODOLIUUIOI	valor strike at 12.3ffl, fC	VCC
									AGS

_	A					Priority	Geotech	nical	Borehole N	lo
⊒≣——	RIORIT	ry				Fax: 02	1 463160 21 463869	00	BH1063	3
	rechn					email:	geotechni	cal@priority.le	Sheet 1 of	
	ect N					oject N		Co-ords: 172299E - 65590N	Hole Type	9
	3-Bloo ation:			skiddy, Add. W	orks P	C6006	A	33 3,43. 1722322 3333311	Cable	\dashv
LOC	auon.	rungas	kiddy	, COIK				Level: 87.74 m AOD	Scale 1:50	- 1
011		0-1-0		01				D. J	Logged By	,
Clie	nt:		•	/ Council				Dates: 14/03/2008	SC	╝
Well	Water Strikes		es & li Type	n Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		0.00-0.50	В				888	TOPSOIL described as brown, slightly gravelly (fine to co sub-angular), slightly sandy (fine to medium) SILT with oc cobbles (sub-rounded).	arse, xasional	:
l		0.50	SPT	50	0.50	87.24				
l				(6,8/ 33,17 for 24mm)			racar Razaz	Very stiff to stiff, brown, slightly gravelly (fine to medium, sub-angular), slightly sandy (fine to medium) SILT.		
l										1
l		1.00-1.50	В				rocki Razaz			
l		1.50	SPT	N=28 (1,7/ 7,6,7,8)						
l				7,0,7,0)	2.00	85.74				2
l		2.00-2.50	В					Brown, very silty, very sandy (medium) GRAVEL (fine to o sub-angular), with many cobbles (sub-angular).	coarse,	
l		2.50	CPT	50 (8,8/	2.50	85.24	2749	Weathered SILTSTONE recovered as medium dense, bro	own, gravelly (fine	to
l		2.50-3.00	В	16,19,15 for 41mm)				coarse, sub-angular), very sity SAND (medium) with cobt (sub-angular).	bles	
l		3.00 3.00	CPT	50 (25 for 41mm/	3.00	84.74	******	End of Borehole at 3.00 m		3
l				50)			ΙI			
l							ΙI			
l							ΙI			4
l							ΙI			
l							ΙI			
l							ΙI			
l							ΙI			
l							ΙI			
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l							ΙI			-6
I										
l							ΙI			7
l							ΙI			
l							ΙI			
l							ΙI			
l							ΙI			8
										9
l										
l										
			Type	Results			Ш			

Remarks: Chiselling from 0.75m to 0.95m for 20 minutes; from 2.90m to 3.00m for 1 hour. Borehole terminated at 3.00m, siltstone obstruction.

	-(iii)-					Tel: 02 Fax: 02	Geotechi 1 463160 21 463869	0	Borehole N BH1068	
GEOT	rechn:	ICAL				emaii:	geotechni	cal@priority.le	Sheet 1 of	
_	ect N					oject N		Co-ords: 172923E - 64353N	Hole Type	9
				skiddy, Add. W	orks P	C6006	A	C0-0rds. 172923E - 643333N	Cable	
Loca	ation:	Ringas	kiddy	, Cork				Level: 24.84 m AOD	Scale 1:50	
Clie	nt:			Council				Dates: 27/03/2008	Logged By MK	/
Well	Water Strikes			Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		0.00-0.50 0.50-1.00 1.00	B U SPT	72 N=27	1.00	23.84		TOPSOIL described as brown, slightly sandy (fine to coa gravelly (fine to coarse, angular to sub-angular) SILT.		
		1.00	SPTLS B	(4,4/ 6,6,7,8) N=5	2.00	22.84		Medium dense, brown, gravelly (fine to coarse, angular to very sity SAND (fine to medium).		2
		2.00-2.45 2.00-2.45 3.00	SPTLS B	(1,0/ 1,1,1,2) N=33	3.00	21.84		Very loose, brown, very gravelly (fine to coarse, angular is sub-rounded), very sitty, SAND (fine) with some coboles. Medium dense, brown, very sandy (fine), very sitty, GRA!		3
	丞	3.00-3.45 4.00	SPTLS B	(1,9/ 9,9,9,6)	4.00	20.84		coarse, angular to sub-rounded) with occasional cobbles		4
		4.00	g o	(25 for 16mm) 50 for 6mm)	4.00	20.84		End of Borehole at 4.00 m		5 6
			Type	Results						

Remarks: Waterstrike at 4.00m, rose to 3.90m after 5 minutes, remained at 3.90m after 20 minutes. Chiselling from 3.90m to 4.00m for 1 hour. Borehole terminated due to limestone obstruction. Sample at 4.0m recovered as angular, fine to coarse grained GRAVEL.

PRIORITY GEOTECHNICAL	Priority Geotechnica Tel: 021 4631600 Fax: 021 4638690 email: geotechnical			Borehole No BH1071 Sheet 1 of 2
Project Name: N28-Bloomfield to Ringaskiddy, Add. Work	Project No. PC6006A	Co-ords	: 173751E - 64340N	Hole Type Cable
Location: Ringaskiddy, Cork		Level:	26.48 m AOD	Scale 1:50
Client: Cork County Council		Dates:	02/04/2008	Logged By AM

Olio		COINC	Currey	Codition				Dates. 6210-112550	AM	
Well	Water Strikes	Sample Depth (m)		n Situ Testing Results	Depth (m)	Level (m AOD)	Legend	Stratum Description		_
	Suikes	Deput (m)	Туре	Results	(iii)	(III ACC)	3.7.27	Brown-pink slightly sandy (fine to coarse) gravelly (coars	se, angular to	_
		0.00-0.50	В					sub-angular) SILT, occasional cobbles rare rootlets.		
					0.50	25.98	202.02	Stiff, brown slightly gravelly (coarse, angular to sub-angu	ılar),	
		0.50-1.00	U	75			2×5×5	slightly sandy (fine to medium), CLAY, with some cobble	s rare rootlets.	
		1.00 1.00	SPT	N=13 (3.3/			**************************************			1
		1.00-1.45 1.00-1.45	B	(3,3/ 4,5,2,2)			3000		ŧ	
		1.00-1.40	١				# # × K**			
									E	
		2.00	SPT	N=16 (3,3/					ŀ	2
		2.00-2.45 2.00-2.45	B	3,4,5,4)			2 × 2 × 2 × 2 × 2 × 2 × 2 × 2 × 2 × 2 ×		[
									ŧ	
							2×6×2		[
		3.00 3.00-3.45	SPT	N=15 (3,3/ 3,3,4,5)			2×2×2×	Rare sub-angular cobbles between 3.0m to 3.45m	Ē	3
		3.00-3.45	B D	3,3,4,5)			1 × 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1 × 1 ×			
			l _ l				#X # X # X # X # X # X # X # X # X # X		Ė	
		3.50-4.00 4.00	SPT	N=12			2×2×3×			
		4.00-4.45	В	(3,3/			2×2×2	CLAY firm below 4.0m	Ę.	•
		4.00-4.45	ď	3,3,3,3)			200 XX		ŧ	
		5.00	SPT	N=12					Ė	- 5
		5.00-5.45	В	(3,3/ 3,3,3,3)			20202			
		5.00-5.45	D	0,0,0,0)	5.45	21.03	Property Contract of the Contr	CHE howen clinitis arounds (sub-positive fine in concess)) cliobity	
							V 521 6	Stiff, brown, slightly gravelly (sub-angular , fine to coarse sandy (fine) SILT.	e), orginy	
		6.00	SPT	N=15					1	6
		6.00-6.45	В	(1,3/ 3,3,4,5)					E	
		6.00-6.45	P	-1.1.1.7			100			
									E	
									1	7
		7.00-7.50	В				2.5		-	
		7.50	SPT	N-20			100		ŀ	
		7.50-7.95	D	(3,4/ 5,5,5,5)					į	
					8.00	18.48	- F	Medium dense, very sandy, very slity, GRAVEL.		8
		8.00-8.45	В						ŀ	
									ŀ	
		9.00	SPT	N=25 (4,7/					İ	9
		9.00-9.45 9.00-9.45	B D	5,6,7,7)	9.45	17.03				
					3.40	17.00		Pink-brown sity gravely (fine to medium) SAND (fine to	medium)	
							Y			
			Type	Results	1			Continued next sheet		

Remarks: Completed at 18.1m Limestone obstruction. Chiselling: 14.75m to 14.95m 35 min; 17.6m to 17.8m 25 min, 18.0m to 18.1m 1 hour. Waterstrike 13.5m rose to 12.5m after 20 minutes.

	RIORIT					Tel: 02 Fax: 02	Geotechn 1 4631600 21 4638690		Borehole No BH1071
GEO.	TECHN	ICAL				email:	geotechnic	al@priority.le	Sheet 2 of 2
	ject N			<u> </u>		roject N		Co-ords: 173751E - 64340N	Hole Type
			_	skiddy, Add. W	orksP(C6006	A	CO-0143. 17-37-51E - 04-34014	Cable
Loc	ation:	Ringas	kiddy,	Cork				Level: 26.48 m AOD	Scale 1:50
Clie	nt:			Council				Dates: 02/04/2008	Logged By AM
Well	Water Strikes			Situ Testing Results	Depth (m)	Level (m AOD	Legend	Stratum Description	
		10.00-10.45 10.00-10.45 10.50	B D SPT	N=26 (5,6/ 6,6,7,7)	10.00	16.48		Medium dense, brown silty SAND (fine to medium) and o coarse, sub-angular to angular)	GRAVEL (fine to
		11.00-11.45	B SPT	N=25					-1:
	<u></u>	12.00-12.45 12.00-12.45	BD	(4,5/ 6,6,6,7)	12.45	14.03		Very stiff, brown-orange slightly sandy (fine to medium), to coarse, angular to sub-angular) SILT.	gravely (fine
	b	13.00-13.45 13.00-13.45 13.50	B D SPT	N=25 (2,2/ 5,7,7,6)	13.45	13.03		Very stiff, brown-yellow sandy (fine to coarse) gravelly (ficarse, angular to sub-anguglar) CLAY	en to
		14.00-14.45	Б						-1-
		15.00 15.00-15.45	SPT B	N=28 (5,6/ 7,7,7,7)	15.00	11.48	KXXXX XXXX KXXXX XXXX XXXX XXXX	Very stiff, white -grey slightly sandy (fine to medium) slig gravely (angular, fine to coarse) SILT with angular cobbi	htly es.
					16.00	10.48	****	Loose, white -brown, sandy (fine to medium), very slity,	GRAVEL 1
		16.00-16.45	D				1	(angular, fine to coarse) with many cobbles."	
		16.50	SPT	N=8 (1,-/ 2,2,2,2)					-1:
		17.00-17.45	В						
		17,60-18.10 18.00 18.00 18.10	B SPT D CPT	(75 (75 for 40mm) (75 (75 for 31mm)	18.00 18.10	8.48 8.38		Dense, brown GRAVEL (coarse, angular to sub-angular) (angular to sub-rounded) End of Borehole at 18.10 m	with many Cobbies
			Туре	Results					- 11
Ren	narks:	Completed to 18 1m	d at 18.	1m Limestone ob	struction	n. Chise	elling: 14.7	5m to 14.95m 35 min; 17.6m to 17.8m 25 min, 18 minutes.	3.0m
		10 10.1M	nour	. vvalerstrike 13.0	in rose t	12.5h	anter 20 I	HILLIUES.	

-								Tel: 02	Geotechr 1 4631600)	Borehole	
	RIORI TECHN	-							21 463869 geotechnic	0 cal@priority.ie	RC-100	_
	ect N						В	roject N	lo		Sheet 1 o	
		omfield to	Rino	naskio	ddv		- 1	C6006	NO.	Co-ords: 171724E - 68835N	Hole Typ Rotary	
	ation:			,000				00000			Scale	_
										Level: 62.62 m AOD	1:50	
Clie		Corte								D-1 00/44/0000 47/44/0000	Logged E	3y
JII U	π.	Cork C								Dates: 09/11/2006-17/11/2006	PR	
fell	Water Strikes	Sample Depth (m)	Type		Testin Results	ig	Depth (m)	Level (m AOD)	Legend	Stratum Description		
									====	Driller describes - stiff CLAY and broken rock		1
							0.50	62.12				ŀ
							0.00	02		Stiff, brown, slightly sandy (fine-coarse grained), gravel (fine-coarse grained, sub-angular to sub-rounded) CLA	ly Y.	7
												ŀ
							1.30	61.32		Madagatah diseasa ayada NEJDOTONE M		Ė
		4 00 0 10	40-							Moderately strong, purple, MUDSTONE. Weathering - discolouration along fracture surfaces, highly weatherer 1.3 - 2.1m. Fractures: 2.1 - 30.65m 50 degrees, very classifications.	d between	ŀ
		1.30-2.10	100	0	0					spaced, planar / undulating, smooth, medium persisten 17.95m 20 degrees, closely spaced, planar, rough, medium	ce. 13.1 -	ŀ
						-				persistence. Detail: 1.3-2.1m NI & AZCL due to weather fracturing 4.4 - 4.65m NI & AZCL due to weathering an	ring and	ŀ
		2.10-2.70	100	48	0					fracturing, 9.05 - 9.25m NI & AZCL due to weathering a fracturing 9.65 - 9.8m NI & AZCL due to weathering an	nd	
					-					fracturing 11.7 - 12.15m NI & AZCL due to weathering fracturing 24.30 - 30.65m highly fractured	and	
		2.70-3.35	100	86	0							Ì
						NI 40						ŀ
		3.35-3.75	100	95	0	210						ł
												-
		3.75-4.40	100	92	0							-
		4.40-4.50	100	0	0							-
		4.50-4.65	100	0	0							F
		4.65-5.05	100	100	0							-
		5.05-5.35	100	80	0							ŀ
		5.35-6.00	100	95	0							ŀ
		5.35-0.00	100	90	0							ŀ
		6.00-6.20	100	100	0							Ė
												ŀ
		6.20-7.20	100	94	0							ŀ
												ŀ
		7.00 7.00	100	400								ŀ
		7.20-7.60	100	100	0							ŀ
		7.60-7.95	100	0	0							ŀ
		7.95-8.45	100	100	0							ŀ
												-
		8.45-8.65	100	100	0							
		8.65-9.05	100	58	0							ŀ
		9.05-9.25	100	0	0							ŀ
		9.25-9.65	100	55	0	NI						}
		9.65-9.80	100	0	0	40						-
			TCR	SCR	ROD	210 FI				Continued next sheet		-

Remarks: Core diameter: H Rig type used: Boart Longyear Deltabase 520 Tracked.



	RIORIT							Priority Geotechn Tel: 021 4631600 Fax: 021 463869 email: geotechnic)		RC-100)5
	ect N						P	roject No.			Sheet 2 o	
		omfield to	Ring	jaskio	ddy			C6006	Co-ords	: 171724E - 68835N	Rotary	
Loc	ation:	Cork							Level:	62.62 m AOD	Scale 1:50	
Clie	nt:	Cork C							Dates:	09/11/2006-17/11/2006	Logged E	Зу
Vell	Water Strikes			SCR		FI	Depth (m)	(m AOD) Legend		Stratum Description		
		9.80-10.20	90	100	0				1.3 - 2.1m. Frac spaced, planar / 17.95m 20 degr persistence. Def fracturing 4.4 - 4 fracturing. 9.05	ng, purple, MUDSTONE. Weathering - long fracture surfaces, highly weatherer tures: 2.1 - 30.65m 50 degrees, very ck undulating, smooth, medium persisten rees, closely spaced, planar, rough, med tail: 1.3-2.1m Nl & AZCL due to weathering and 4.65m Nl & AZCL due to weathering and - 9.25m Nl & AZCL due to weathering as	osely ce. 13.1 - dium ring and d und	
		11.00-12.15	100	51	0				fracturing 11.7 -	9.8m NI & AZCL due to weathering and 12.15m NI & AZCL due to weathering a 30.65m highly fractured	d and	
		12.15-13.70	100	89	0							
		13.70-15.00	100	77	16							
		15.00-16.35	94	59	9	NI 60 130						
		16.35-17.95	100	21	0							
		17.95-19.10	78	78	0							
		19.10-20.30		62 SCB	0 RQD	FI				Date of the second		
em	arks:						ed: Bo	art Longyear D	eltabase 520	Continued next sheet Tracked.	AG	S

	RIORIT TECHN							Tel: 02 Fax: 0	y Geotech 21 463160 21 463869 geotechni		R	C-1005 heet 3 of 4
	ject N						Pr	oject l	Vo.		-	tole Type
N28	3 - Blo	omfield to	Ring	jaskio	ddy			C6006		Co-ords: 171724E - 6	8835N	Rotary
.oc	ation:	Cork								Level: 62.62 m AO	D	Scale 1:50
Clie	nt:	Cork C	ounty	Cou	ncil					Dates: 09/11/2006-	17/11/2006	ogged By PR
all	Water Strikes		TCR		RQD	FI	Depth (m)	Level (m AOD	Legend	Stratum	Description	
		20.30-21.10	100	57	0					Moderately strong, purple, MUDSTI discolouration along fracture surface 1.3 - 2.1m. Fractures: 2.1 - 30.65m spaced, planer / undulating, smooth 17.95m 20 degrees, closely spaced persistence. Detail: 1.3-2.1m Ni & AZCL, fracturing 9.44 - 4.65m Ni & AZCL, fracturing 9.95 - 9.25m Ni & AZCL, directuring 9.95 - 9.95m Ni & AZCL, dracturing 9.65 - 9.8m Ni & AZCL, fracturing 11.7 - 12.15m Ni & AZCL, fracturing 24.30 - 30.65m highly f	es, highly weathered betwee 50 degrees, very closely n, medium persistence, 13.1 l, planer, rough, medium VZCL due to weathering and ue to weathering and due to weathering and due to weathering and	en .
		22.30-23.30	100	57	0							
		23.30-24.30	100	60	0							
		24.30-25.40	100	66	16							
		25.40-26.35	95	77	0							- *
		26.35-27.85	87	87	0							- 4
		27.85-29.35	0	0	0		27.85	34.77		No Recovery		
							29.35	33.27		Moderately strong, purple, MUDST discolouration along fracture surfac 50 degrees, very closely spaced, pi	es Fractures: 2.1 - 30.65m	black
эm	arks:	Core dia			ROD Rig typ		ed: Boa	art Lor	ngyear D	Continued eltabase 520 Tracked.	next sheet	

=-	-@	→						Priority	Geotech 1 463160	nical Ltd		Borehole		1
	RIORI							Fax: 02	21 46386	0		RC-10	05	l
	TECHN							emaii: g	geotechn	cal@priority.ie		Sheet 4	of 4	ļ
	ject N							oject N	lo.	Co.orde	171724E - 68835N	Hole Ty	ре	1
		omfield to	Ring	jaskio	idy		_ P	C6006		Co-ords.	171724E - 00033N	Rotary		l
Loc	ation:	Cork								Level:	62.62 m AOD	Scale	9	l
-												1:50		1
Clie	nt:	Cork C	ounty	/ Cou	ncil					Dates:	09/11/2006-17/11/2006	Logged	Ву	l
Well	Water	F	lotary	Corir	na	_	Denth	Level				PR		ł
YVell	Strikes	Depth (m)	TCR	SCR	RQD	FI	Depth (m)	Level (m AOD)	Legend		Stratum Description			l
		29.35-30.65	38	21	0					medium persisten	ce. Detail: 29.35 - 30.65m highly frac	tured		Į
														ı
							30.66	31.97			End of Borehole at 30.65 m			l
													-31	l
													[L
													-	L
													-	L
													- 32	L
													E	L
													-	ı
														L
													-33	L
													Ė	L
														ı
													-34	L
														L
														ı
													-35	ı
													H	
													- 38	
				1										
													ΕI	
													37	
													F 31	
													-33	
													- 39	Mar 03
														Sed 275
													1	40 10 10
														i di
				SCR										ordery B
Rem	arks:	Core dia	mete	r: H F	Rig typ	e use	ed: Bo	art Lon	gyear [eltabase 520	Tracked.			400.03
												AC	\mathbf{s}	AL IN
														Nobell A.

PRIORITI OTECHN							Tel: 02 Fax: 0	Geotechni 1 4631600 21 4638690 geotechnic		RC-100)
oject Na						D				Sheet 1 c	
	ame omfield to	Ring	naski	ddy			oject N C6006		Co-ords: 171419E - 68304N	Hole Typ	
cation:		2 1 11115	jaora	auy			00000			Rotary	_
									Level: 73.01 m AOD	1:50	
ent:	Cork C					,			Dates: 20/09/2006-21/09/2006	Logged 8	В
Water Strikes	Sample Depth (m)	Type		Results		Depth (m)	(m AOD	Legend	Stratum Description		Ī
9						0.20	72.81	2012	TOPSOIL - drillers description		
								****	FILL - drillers description, stiff clay and fill		
1						0.70	72.31	*****			
									Stiff, brown, sandy (fine-coarse grained, sub-angular to sub-rounded), gravelly (fine-coarse grained, angular to		
		-	-		1	1.15	71.86	0 0 0	sub-rounded) CLAY		_
1								0000	Assumed weathered SILTSTONE.		
	1.15-2.05	61	7	0							
] [2.06	70.96	0,000			
	2.05-2.55	80	60			2.00	70.90	**************************************	Moderately strong to moderately weak, purple, thinly lar SILTSTONE, weathering - brown discolouration along to	ra chuna	
	2.00		-	L.				*****	surfaces from 2.05 - 10.0m; Fractures: 2.05 - 6.3m 65-7 degrees, very closely spaced, undulating smooth, low	5	
								2 8 8 8 8 8 8 8 8 8 8 8 8 8	persistence. 6.3 - 10.0m, 45 degrees, very closely spacundulating smooth, low persistence. Detail: 5.4 - 5.7m N	ed,	
	2.55-3.40	100	85	0				*****	6.45m Ni. 7.53 - 7.59m Clay band present due to weath	ering 8.5 -	
									8.85m Ni. 9.25 - 9.5m Moderately weak Ni. 9.6 - 10.0m due to weathering 9.72 - 9.77m clay band	NI. AZGL	
	3.40-4.30	100	100	0				****			
	3.40-4.30	100	100	0				****			
			_	-	NI Ni.			* * * * * * * * * * * * * * * * * * *			
					70			X X X X X X X X X X X X X X X X X X X			
1	4.30-5.15	100	82	0				X 2 X 3 X 3 X 3 X 3 X 3 X 3 X 3 X 3 X 3			
								X X X X X X X X X X X X X X X X X X X			
	5.15-5.60	100	67	0				X X X X X X X X X X X X X X X X X X X			
				-							
1 1	5.60-6.30	100	71					X 8 X 8 X 8 X 8 X 8 X 8 X 8 X 8 X 8 X 8			
1	5.60-6.30	100	/1	0				H H			
								X X X X X X X X X X X X X X X X X X X			
[]								2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
	6.30-7.30	95	50	0				X 8 E 8 E 8 E X 8 E 8 E 8 E 8			

				1				X X X X X X X			
								X X X X X X X			
	7.30-8.50	100	75	0				** ** ** ** ** ** * * * * * * * * ** * * *			
								* * * * * * * *			
								222222			
	8.50-9.50	90	45					X X X X X X X X			
	3.22 0.00	-	-	1				X X X X X X X X X X X X X X X			
	9.50-10.00	90	30	0				1111111			
								X X X X X X X X X X X X X X X X X X X			
l l		TCR				Corr	dla	0 11 5	End of Borehole at 10,00 m	00	
iarks:	Tracked.	e ins	talle(adt 10	v.um.	Core (uamet	er: H Rig	type used: Boart Longyear Deltabase 5	AG	Ī

	RIORIT TECHN							Tel: 02 Fax: 0	y Geotechi 21 4631600 21 463869 geotechni		RC-101; Sheet 1 of	3
	ect Na							roject N		Co-ords: 171106E - 67775N	Hole Type	
	3 - Blo ation:	omfield to Cork	Ring	gaskio	ddy		P	C6006		Co-ords: 1/1106E - 6///5N	Rotary	
	auoir.	COIK								Level: 70.76 m AOD	Scale 1:50	
Clie		Cork C					,			Dates: 26/09/2006-27/09/2006	Logged By P K	у
Well	Water Strikes	Sample Depth (m)	Type		Testir Results	ng	Depth (m)	(m AOD	Legend	Stratum Description		
							0.60	70.16		Stiff clay and shaley rock - probable FILL.		E
										Medium dense to dense, brown, slightly sandy (fine-coarse grained, sub-angular to sub-rounded), slity, fine-coarse grained, sub-angular to sub-rounded GRAVEL.		1
		2.70-3.60	100	66	0		2.70	68.06		Moderately strong to moderately weak, grey, SILTSTONE, thinly laminated, brown weathering along joints, Discontinut - 35-45 degrees, very closely spaced, very low paraistence, smooth Detail: mudstone band at 4.1-4.45m	rery des	3
		3.60-4.30	100	73	0							
		4.30-4.45	100	100	0							Ē
		4.45-5.20	100	65	0							-5
		5.20-5.86	100	92	0		5.62	65.14		Moderately strong to moderately weak, purple, thinly lamina fine grained SANDSTONE, brown weathering along joints,	ted,	
		5.85-6.55	100	37	0					Fractures: 35-40 degrees, closely spaced, stepped, rough, i persistence. Detail: Micderately to highly weathered, light cream/ brown mudstone band 6.25-6.55m.	ow	-6
		6.55-7.50	100	35	0							7
		7.50-8.60	100	90	0							-8
		8.60-9.10	100	88	20							- 9
		9.10-9.50	100	45	0							
			TCR	SCR	POD	FI	-			Continued next sheet		F
Rem	arks:						sed: Bo	part Lo	ngyear [Peltabase 520 Tracked.	AGS	S

	RIORIT TECHN							Tel: 02 Fax: 02	Geotech 1 463160 21 46386 geotechn	0	3	1
	ject N							roject N	No.	Hole Typ		1
		omfield to	Ring	jaskio	ddy		P	C6006		Co-ords: 171106E - 67775N Rotary		1
LOG	ation.	Cork								Level: 70.76 m AOD Scale 1:50		
Clie	nt:	Cork C	ounty	Cou	ncil					Dates: 26/09/2006-27/09/2006 Logged B	У	1
Well	Water Strikes	Depth (m)	TCR	Corin		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description	Г	1
		9.50-10.50 10.50-11.80	100	59 83	19					Moderately strong to moderately weak, purple, thirtly laminated, fine grained SANDSTONE, brown weathering along joints, Fractures: 35-40 degrees, closely spaced, stapped, rough, low persistence. Detail: Moderately to highly weathered, light cream/ brown mudstone band 6.25-6.55m.	-11	
		11.80-12.40	100	37	0						-12	l
		12.40-13.95		19	0		12.26	58.50		Moderately weak, grey, SILTSTONE, very thinty laminated, brown weathering along joints, Discontinuities - 35-45 degrees, very closely spaced, very low persistence, smooth	13	
		13.95-15.60	48	26	19		13.95	56.81		Purple, thinly laminated, fine grained SANDSTONE, brown weathering along joints, Fractures: 35-40 degrees closely spaced, stepped, rough, low persistence. 13.95 - 15m, NI.	-14	
							15.60	55.16		15 - 15.1m. Highly fractured. End of Borehole at 15.60 m		
											- 16	
											-17	
											18	
											-19	Annual Property Spinsters of Street, Spinster, St.
					RQD						-	ŀ
Rem	arks:	Core dia	meter	r: H F	Rig ty	pe us	ed: Bo	art Lo	ngyear	Deltabase 520 Tracked.	S	CONTRACTOR SECURED

n	DYOD!	~						Tel: 02	y Geotechr 21 4631600 21 463869)			RC-1	
	RIORI TECHN							email:	geotechnic	al@priority.ie			Sheet	
Pro	ject N	lame					Р	roject I	No.				Hole 1	
N28	B - Blo	omfield t	o Ring	gask	iddy			C6006		Co-ords	s: 172583	E - 65575N	Rota	
Loc	ation:	Cork								1			Sca	_
										Level:	78.00 n	n AOD	1:50	
Clie	nt:	Cork C								Dates:	18/10/2	006-19/10/2006	Logge P R	
Voli	Water Strikes	Sampl Depth (m)	Type	n Situ	Results	ng	Depth (m)	Level (m AOD	Legend		S	tratum Description		
			70						XX	TOPSOIL				
							0.30	77.70	77-77	Stiff, brown, gra	evelly (fine-co	arse grained, sub-ang	ular to	-
										sub-rounded) (ZAY			
									7.3.5					ŧ
									777					ŀ
														- 1
									海到					-
							2.50	75.50	1111111	Recovered as p	ourple siltston	e and grey sandstone	GRAVEL with	
									2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	cobbles.				ŀ
		2.50-4.00	15	0	0				X 8 X 8 X 8 X 8 X 8 X 8 X 8 X 8					ŧ
		3.50	SPT		N=18				X 1 X X X X X					
					(1,2/ 2,4,5,7)				N 1 K N K K K					
				-					*****					Ē
														Ė
		4.50	SPT		N=23 (2.2)				X X X X X X X X X X X X X X X X X X X					Ė
		4.00-5.50	30	5	(2,2/ 3,5,7,8) 0				*****					
														-
		5.50	-GPT		N=24				******					
		3.30	0. 1		(2,3/3,6,6,9)				******					Ė
					9,0,0,0)				X X X X X X X X X X X X X X X X X X X					
		5.50-7.00	21	5	0				212222					ŀ
									X 1 X 2 X 2 X 2 X 1 X 2 X 2 X 2 X 2 X 2 X 2 X 2					ŀ
					1 1				# 1 X 1 X 2 X 3					Ė
		7.00	SPT	_	N-26 (1,4/				N T X X T X X					ŀ
					4,6,8,8)									F
		7.00 7.70	_						K					-
		7.00-8.50	7	0	0				K X X X X X X X					ŧ
									K					Ė
		8.50	SPT		N=29				*****					F
		0.50	J		(2,5/ \$,6,9,9)				******					ŀ
					7,0,0,0)				******					-
		8.50-10.00	14	2	0				******					Ė
									*****					Ė

			TCD	SCP	RQD	-			110111			ritinued next sheet		E

Core diameter: HQ. Rig type: Hilltwister. SPT results: 3.5m: 1,2,2,4,5,7. 4.5m: 2,3,3,6,6,9. 7m: 1,4,4,6,8,8. 8.5m: 2,5,5,6,9,9. 10m: 2,9,12,12,14,15. 11.5m: 4,11,25,36,38. 13m: 6,10,21,22,28,27. 14.5m: 2,5,8,11,13,13. 16m: 4,7,7,12,14,14. 17.5m: 5,8,12,12,13,17. 19.5m: 3,4,4,5,8,11. 21.5m: 4,11,12,22,26,35.



PRIOR GEOTECH						Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic		RC-102	5
Project N28 - B	Name Bloomfield to	Ringa	skiddy			roject N		Co-ords: 172583E - 65575N	Hole Type Rotary	
Locatio								Level: 78.00 m AOD	Scale 1:50	
Client:	· Cork C	ounty (Council					Dates: 18/10/2006-19/10/2006	Logged By	у
Well Wat Strik	er F es Depth (m)	TCR S	oring	FI	Depth (m)	Level (m AOD)	Legend	Stratum Description		П
	10.00	SPT	N=53 (2,9) 12,12,14 0 0					Recovered as purple siltstone and grey sandstone GRAVE cobbles.	SL with	-11
	11.50	SPT	99 (4,11/ 25,36,3		11.50	66.50		WEATHERED ROCK: Moderately weak to moderately stro- siltstone with alternating grey sandstone, fine to medium s- bedding. Fractures: sub-horizontal - 10 degrees, very close spaced, undulating, rough, very high persistence. Details: 22 NI.	paced	12
	11.50-13.00		32 0					66 19.		
	13.00	SPT	N=98 (6,10/ 21,22,28							-13
	13.00-14.50	33 2	0 0	NI						-14
	14.50	SPT	N=45 (2,5/ 8,11,13,	90 160						
	14.50-16.00	13	6 0							-15
	16.00	SPT	N=47 (4,7/ 7,12,14,							-16
	16.00-17.50	10	0 0							-17
	17.50 17.50-18.00	SPT 44 1	N=54 (5,8/ 212,12,13, 0	17)						
	18.00-19.50	22 (0 0							18
	19.50	SPT	N=26 (3,4/ 4,5,8,11)						
Remarks			CR RQD		Hillmai	etar Ci	PT recui	Continued next sheet ts: 3.5m: 1,2,2,4,5,7. 4.5m: 2,2,3,5,7,8.		
romana	5.5m: 2,3 4,11,25,3	3,3,6,6, 36,38.	9. 7m: 13m: 6.	1,4,4,6 10,21,	3,8,8. 22,28.	8.5m: 2 27. 14	2,5,5,6,9 l.5m; 2.5	ls: 3.5m: 1,2,2,4,5,7. 4.5m: 2,2,3,5,7,8. ,9. 10m: 2,9,12,12,14,15. 11.5m: ,8,11,13,13. 16m: 4,7,7,12,14,14. 17.5m: ,12,22,26,35.	AGS	;

	DRITY CHNICAL						Tel: 02 Fax: 0	/ Geotech 21 463160 21 463869 geotechni	o 0 sal@priority.ie	RC-102	25
	t Name					P	roject N	Vo.		Sheet 3 o Hole Typ	
-	Bloomfield to	o Ring	gaski	ddy			C6006		Co-ords: 172583E - 65575N	Rotary	
.ocatio										Scale	
									Level: 78.00 m AOD	1:50	
lient:	Cork C	county	y Cou	ncil					Dates: 18/10/2006-19/10/2006	Logged B	Зу
		Rotary	Corin	ng		Depth	Level			PR	_
Stri	ikes Depth (m)	TCR	SCR	RQD	FI	(m)	(m AOD	Legend	Stratum Description WEATHERED ROCK: Moderately weak to moderately strong		4
	19.50-21.00 21.00-22.00	14	0	0					siltstone with alternating grey sandstone, fine to medium spaced bedding. Fractures: sub-horizontal - 10 degrees, very closely speced, undulating, rough, very high persistence. Details: 16-22 Nt.	ted	
	21.50	SPT	12	N=95 (4,11/ 22,26,3	5)						ŀ
			-			22.00	56.00	X X X X X X X X X X X X X X X X X X X X	Moderately weak, purple, SILTSTONE, no obvious bedding.		+
	22.00-23.00	70	42	14					Weathering: clsy smearing along fractures. Fractures: 23.0-26 40-50 degrees, sub-vertical, very closely spaced, undulating, smooth, low parsistence; sub-horizontal - 10 degrees, very closely spaced, undulating, rough, very high persistence.	i.0m	
	23.00-24.50	79	30	0							
	24.50-26.00	87	49	0	8 40 90						
						26.00	52.00		End of Borehole at 26.00 m		-
 mark		TCR			FI	Hillbude	tor Cr	OT recut	s: 3.5m: 1,2,2,4,5,7. 4.5m: 2,2,3,5,7,8.		ŀ
THE IT	5.5m: 2,3 4,11,25,3	3,3,6,6 36,38	6,9. . 13n	7m: 1 n: 6.1	,4,4,€ 0.21.	3,8,8. 22.28.:	8.5m: 2 27. 14	2,5,5,6,9 .5m: 2.5	s: 3.5m: 1,2,2,4,5,7. 4.5m: 2,2,3,5,7,8. 9. 10m: 2,9,12,12,14,15. 11.5m: 8,11,13,13. 16m: 4,7,7,12,14,14. 17.5m: 12,22,26,35.	AG:	S

	RJORIT TECHN							Tel: 02 Fax: 0	y Geotech 21 463160 21 463869 geotechni)	RC-1028 Sheet 1 of	8
Pro	ject Na	ame				_	P	roject I	No.		Hole Type	
N28	B - Blo	omfield to	Ring	gaskid	ldy			C6006		Co-ords: 172748E - 65003N	Rotary	
.00	ation:	Cork								Level: 54.56 m AOD	Scale 1:50	
Clie	nt:	Cork C								Dates: 06/10/2006-10/10/2006	Logged By P R	y
ell	Water: Strikes	Sample Depth (m)	Type		Testi: Results		Depth (m)	Level (m AOD	Legend	Stratum Description		
									200	TOPSOIL (drillers description)		E
							2.50	52.06		Firm, brown, slightly gravelly (fine-medium grained, sub-any to sub-rounded) CLAY Very stiff, brown, slightly gravelly (fine-medium grained, sub-angular to sub-rounded) CLAY		
		4.35-4.80 4.80-5.60	100	0	0							
		5.60-6.45	88	33	0		5.60	48.96		Moderately weak, dark to light grey MUDSTONE, no visible structure, Weathering: orange discolouration along fracture surfaces. Fractures: 5.6-7.25m 90 degrees extremely closel spaced, rough, planar, very low persistence; 7.25-9.85m 70 degrees Very closely spaced, rough, stepped, very low parastance; 9.85-12.35m 45 degrees very closely spaced, undulating, very low persistence. 5.6 - 9.85m, predominant	ly rough,	
		6.45-7.25	100	15	0							
		7.25-8.35	100	48	0							
		8.35-9.05	100	46	0	NI 30 200						
		9.05-9.85	100	43	0							
			TCB	SCR	BOD	E						
em	arks:	Core dia					ed: Bo	part Lo	ngyear I	Continued next sheet Deltabase 520 Tracked.	AGS	`

	RIORIT TECHN							Tel: 02 Fax: 0	Geotechn 1 4631600 21 4638690 geotechnic		RC-102 Sheet 2 o	28
	ject N						P	roject N	ło.	0	Hole Ty	
N28	B - Blo	omfield to	Ring	gaskid	ddy		P	C6006		Co-ords: 172748E - 65003N	Rotary	
Loc	ation:	Cork								Level: 54.56 m AOD	Scale 1:50	
Clie	nt:	Cork C								Dates: 06/10/2006-10/10/2006	Logged I	Зу
Vell	Water Strikes		TOR	SCR	RQD	FI	Depth (m)	Level (m AOD)	Legend	Stratum Description		T
		9.85-10.65 10.65-11.65	100	75 46	0					Moderately weak , dark to light grey MUDSTONE, no vis structure, Weethering: orange discolouration along fract surfaces. Fractures: 56-7.25m 90 degrees extramely clospaced, rough, planar, very low persistence; 7.25-9.85m dagrees Very closely spaced, rough, stopped, very low persistence; 9.85-12.35m 45 degrees very closely space undulating, very low persistence. 5.6 - 9.85m, predominal processing services.	ure selly 70 d. rough.	
		11.65-12.35	100	10	0							-1
		12.35-13.10	100	64	13		12.35	42.21		Moderately weak, grey / purple SANDSTONE, quartz ve visible structure. Weathering - Yellow and purple discolar along fracture planes. Fractures: 12.35-25.0m 20-30 deg predominantly dissely spaced, rough, undulating, low persistence. Datalt: 12.16-12.35m NI due to weathering	ining, no uration grees	
		13.10-13.45	100	29	0					15.4-15.66m NI & AZCL due to weathering 14.7-14.9m to weathering	NI & AZCL due	-
		13.45-14.05	100	0	0							
		14.05-14.90	88	9	0							-1
		14.90-15.80	78	13	0							1
		15.80-16.65	100	24	0							1
		16.65-17.80	100	66	29							
		17.80-18.60	100	49	19							-1
		18.60-19.40	88	41	21	NI 50 280						-1
		19.40-20.15	100	79	19							
					RQD		1		Party Party Control of	Continued next sheet	1	ŀ
en	iarks:	Core dia	rnetë	r: M I	rig ty	pe us	ea: Bo	oart Lo	ngyear D	eltabase 520 Tracked.	AG	S

PRIORIT	ry						Tel: 02	Geotechi 1 463160 21 463869	Borehole RC-10	
EOTECHN									al@priority.ie Sheet 3	
roject N	ame					Pr	roject N	lo.	Hole T	
128 - Blo	omfield to	Ring	askid	ldy			C6006		Co-ords: 172748E - 65003N Rotar	
ocation:	Cork								Scal	_
									1:50	
lient:	Cork C	ounty	Cou	ncil					Dates: 06/10/2006-10/10/2006	Ву
Water Strikes			Corin		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description	П
	20.15-20.90		49	19					Moderately weak, grey / purple SANDSTONE, quartz veining, no visible structure. Weathering - Yellow and purple discolouration along fracture planes. Fractures: 12.35-25.0m 20-30 degrees predominantly closely spaced, rough, undulating, low persistence. Detail: 12.16-12.35m Ni due to weathering 15.4-15.66m Ni & AZCL due to weathering 14.7-14.9m Ni & AZCL due	
	20.90-21.20	0	0	0					to weathering	
	21.20-22.40	100	50	8						
	21.20-22.40		-							
	22.40-23.90	100	80	39						
	23.90-25.00	100	78	44		25.00	29.56		End of Borehole at 25.00 m.	
emarks:				RQD Rig ty		ed: Bo	art Lor	ngyear (eltabase 520 Tracked.	

■			Geotechn			Borehole No
PRIORITY		Fax: 02	1 4631600 21 4638690	D		RC-1041
GEOTECHNICAL		emaii: (geotechnic	al@priority.ie		Sheet 1 of 2
Project Name		oject N	10.	Co-orde:	175175E - 64033N	Hole Type
N28 - Bloomfield to Ringaskiddy	PC	6006		Co-orus.	175175E - 64033N	Rotary
Location: Cork				Level:	38.94 m AOD	Scale 1:50
Client: Cork County Council				Dates:	23/10/2006	Logged By P R
Well Water Samples & In Situ Testing Strikes Depth (m) Type Results	Depth (m)	Level (m AOD)	Legend		Stratum Description	
September 1990 Presum	4.4		XXX	TOPSOIL (Drillers		
	0.30	38.64	S 22.23	Loose, brown, ver	y silty, very sandy (fine-coarse grained),	
				fine-coarse grains	d, sub-angular GRAVEL.	
						[1]
						1
						-2
						- 1
						-3
	3.45	35.49		Stiff, brown, slight	ly sandy CLAY	
			EEG			-4
			E-E-E			
			F			
						-5
						£
			EEE			1
	6.00	32.94				
	0.00	52.01	KXXXX KXXXX	Stiff, brown, slight gravelly (fine to co	ty sandy (fine to coarse grained), slightly sarse grained, sub-angular to sub-rounde	8
			XXXX	SILT		
			XXXXX			[]
			XXXX			.,
			*****			[]
			KXXXX			
			XXXXX			E
			KXXXX KXXXX			- 8
			××××			
			XXXXX XXXXX			1
			×××× ××××			
	9.00	29.94	XXXX	Medium dense, h	rown, clayey, fine to medium grained SA	ND 8
			10,110	and the second		- 60
						1 2
						1 488
Type Results	-		Age, Valle		Continued next sheet	, and the state of
Remarks: Core diameter: HQ Rig type us	sed: Hi	Iltwist	er.			- A
						AGS

- p	RIORI	—→ rv						Tel: 02 Fax: 0	Geotechn 1 4631600 21 4638690		Borehole RC-104	
	TECHN							email:	geotechnic	al@priority.ie	Sheet 2 o	
	ject N						P	roject N	No.		Hole Typ	
		omfield to	Ring	jaski	ddy			C6006		Co-ords: 175175E - 64033N	Rotary	
Loc	ation:	Cork								Level: 38.94 m AOD	Scale	
										20.34 11 700	1:50	
Clie	nt:	Cork C	ounty	Cou	ıncil					Dates: 23/10/2006	Logged B	Зу
Well	Water	Sample	es & Ir	n Situ	Testin	ng	Depth (m)	Level	Legend		PH	_
_	Strikes	Depth (m)	Type	-	Results		(m)	(m AOD	STATE OF	Stratum Description Medium dense, brown, clayey, fine to medium grained	SAND	+
										and the state of t	GP4ED	F
												ŀ
												ŧ
							11.30	27.64				ŀ
				-	_		11.30	27.64	****	Dense, dark brown, clayey, fine to coarse grained SAN	iD	7
									****			ŧ
									*****			ŀ
		11.50-13.00	0	0	0				*****			ŧ
									*****			ŀ
		13.00	-SPT		N=16		13.00	25.94	****			Ė
					(2,2/ 3,4,4,5)					OVERBURDEN: Sandstone and mudstone GRAVEL (angular to subangular) with rare mudstone cobble.	predominantly coars	10
												ŧ
		13.00-14.50	40	0	0							ŧ
												ŧ
												ŧ
		14.50-15.00	20	0	0	NI						E
		15.00	SPT-		N-24 (3,4/	50 60						E
					4,6,6,8)							ŀ
												E
												E
												E
		15.00-18.00	9	0	0							E
												F
												F
												F
												Ē
		18.00	SPT-		N=33		18.00	20.94		End Front of the Co.		ŧ.
				((3,5/ 8,8,8,11)					End of Borehole at 18,00 m		ŀ
												F
												ŀ
												F
												ŀ
												ŧ
					RQD							F
lem	arks:	Core dia	meter	: HQ	Rig t	уре и	sed: H	illtwist	er.			j
											1.00	-

	RIORIT TECHN							Tel: 02 Fax: 02	Geotech 1 463160 21 463869 geotechni		15
Pro	ject N	ame					P	roject N	lo.	Hole Ty	
		omfield to	Ring	jaskio	ddy		P	C6006		Co-ords: 176049E - 64019N Rotary	
.00	ation:	Cork								Level: 32.97 m AOD Scale 1:50	
lie	nt:	Cork C	ounty	Cou	ncil					Dates: 01/11/2006 Logged F	Ву
ıll	Water Strikes	Depth (m)	TCR		RQD	FI	Depth (m)	Level (m AOD)	Legend	Stratum Description	
		0.00-1.50	60	35	0					OVERBURDEN: Boulder CLAY with frequent cobbles.	
		1.50-3.00	93	44	0		1.50 1.63	31.47 31.34		Moderately weak, NI, MUDSTONE Moderately weak, purple MUDSTONE, no fabric. Westhering: orange discolouration and day smearing on fracture surfaces. Fractures: 1.63 - 8.35m 20 degrees, very closely to desely spaced, undulating, rough, medium persistence, 1.7 - 6.5m 70 - 80 degrees, closely spaced, planar, rough, medium persistence, 2.64 - 3.0m NI & AZCL, due to weathering: 4.95 - 4.8m NI & AZCL, due to weathering and intersecting fractures; 6.47 - 8.35m Quartz veining	
		3.00-4.30	100	64	0	NI					
		4.30-4.80	60	0	0	100 230 NI 90					
		4.80-6.25	97	82	21						
		6.25-6.75	100	84	0						
		6.75-7.76	100	52	18						
		7.75-8.35	100	37	0		8.35	24.62		End of Boretole at 6.35 m	
					RQD						
em	arks:	Core dia	meter	r: H I	Rig ty	pe us	ed: Bo	art Lor	ngyear l	Deltabase 520 Tracked.	j

	ZIORIT ECHN							Tel: 02 Fax: 0	Geotech 1 463160 21 463869 geotechni	20.40
	ect Na						P	roject i	No.	Hole Type
		omfield to	Ring	jaski	ddy		P	C6006		Co-ords: 177235E - 63862N Rotary
Loca	ition:	Cork								Level: 21.84 m AOD Scale 1:50
Clier	nt:	Cork C	ounty	Cou	ncil					Dates: 02/11/2007 Logged By
Vell	Water Strikes	Sample Depth (m)	es & Ir		Testir Results		Depth (m)	Level (m AOD	Legend	Stratum Description
		Dopar (III)	Турс		T VESOTION		0.9	· ·	XXX	TOPSOIL - Drillers Description
		0.30	D				0.30	21.54		Stiff, brown, slightly sandy (fine to coarse grained), gravelly
		0.50 0.50-0.95 0.50-1.00	SPTLS B		N=13 (5,6/ 4,3,3,3))				(fine to coarse grained, sub-angular) CLAY, with rare angular cobbles
		1.20	D							
		1.50	SPT				1.30	20.54	300	Brown, dayey, slightly sandy, fine to coarse grained, angular
			SPTLS		52 (7,4/					to sub-angular GRAVEL
				9,11,1	5,1710	omm)	1.95	19.89	34.43	
						1				Strong, purple MUDSTONE, with day smeering on fracture surfaces. Fracture at 45 - 60 degrees are very closely to closely spaced (becoming widely spaced with depth), have high persistence, are predominantly undulating and rough. Fractures
										at 10 - 20 degrees are smooth, planar, widely spaced and have medium persistence.
		2.50-4.00	100	72	8					
				-						
				ĺ						
		4.00-5.50	100	96	11					
						ĺ				
		5.50-7.00	100	73	19					
										h
		7.00-8.50	100	80	30					
		0.00.00.00	45-							
		8.50-10.00	100	90	27					
	. 1		TCR							Cominued next sheet
Rema	arks:	Core dia	mete	r: HQ	. Rig	type	used: I	Hilltwis	ter.	AGS

	RIORIT TECHN							Priority Geotechr Tel: 021 4631600 Fax: 021 463869 email: geotechnic	R R	C-1057	7
	ject N							roject No.		Hole Type	
		omfield to	Ring	gaskio	idy		P	C6006	Co-ords: 177235E - 63862N	Rotary	
_00	ation:	Cork							Level: 21.84 m AOD	Scale 1:50	
Clie	nt:	Cork C	ounty	/ Cou	ncil				Dates: 02/11/2007	ogged By	1
/ell	Water	F	otary	Corir	ıa		Depth	Level		PR	
011	Strikes	Depth (m)	TCR	SCR	RQD	FI	(m)	(m AOD) Legend	Stratum Description		
		10.00-11.50	100	100	48				Strong, purple MUDSTONE, with clay smearing on fracture surfaces. Fracture at 45 - 80 degrees are very closely to closely spaced (becoming widely spaced with depth), have high persistence, are predominantly undufating and rough. Fracture at 10 - 20 degrees are smooth, planar, widely spaced and have medium persistence.	8	
		11.50-13.00	100	79	68						
		13.00-14.50	100	92	21						
		14.50-16.00	100	98	23				14.5m. Fractures at 90 degrees with undulating smooth fracture surfaces.		
		16.00-17.50	100	100	32						
		17.50-19.00	100	95	18	10 370				 	
		19.00-20.50		86 SCR	0 ROD	710					
em	arks:						used:	Hilltwister.	Continued rest sheet	1 m - 2	
										AGS	,

	JORIT ECHNI							Tel: 02 Fax: 02	Geotech 1 463160 21 463869 geotechni	0		RC-105 Sheet 3 o	57
	ct Na	ame omfield to	Ring	askio	idy			roject N C6006	lo.	Co-ords:	177235E - 63862N	Hole Tyl Rotary	pe
		Cork		,	,					Level:	21.84 m AOD	Scale 1:50	
Clier	Water Rotary Coring Depth Level									Dates:	02/11/2007	Logged I	Ву
Well	Water Strikes	Depth (m)		Corin		FI	Depth (m)	Level (m AOD)	Legend		Stratum Description		Т
		20.50-22.00		83	25		VIII	(11700)		closely spaced (t persistence, are	UDSTONE, with day smearing or e at 45 - 60 degrees are very do: secoming widely spaced with dep predominantly undulating and rou- is are smooth, planer, widely spa-	th), have high igh. Fractures	21
		22.00-23.50	100	100	24								-22
		23.50-25.00	100	85	62								-24
		25.00-28.50	100	86	56								25
		26.50-28.00	100	100	44								-27
		28.00-29.50	100	69	40								28
			TCR	SCR	RQD	FI					Consinued next sheet		
Rema	arks:	Core dia:	mete	r: HQ	. Rig	type	used: I	Hilltwis	ter.			AG	S

PR	IORIT ECHIN							Priority Geotech Tel: 021 463160 Fax: 021 463869 email: geotechni	0	RC-10 Sheet 4	57
Proje	ect N	ame					Pr	roject No.		Hole Ty	
		omfield to	Ring	gaskio	ddy			C6006	Co-ords: 177235E - 63862N	Rotan	
.oca	tion:	Cork							Level: 21.84 m AOD	Scale	9
_										1:50 Logged	
Clien	ıt:	Cork C							Dates: 02/11/2007	PR	Бу
ell S	Water Strikes	Depth (m)	TCR	Corin	RQD	FI	Depth (m)	Level (m AOD) Legend	Stratum Description		Т
		29.50-31.00	100	100	1				Strong, purple MUDSTONE, with clay smearing on fracture surfaces. Fracture at 45 - 60 degrees are very closely to closely spaced (becoming widely spaced with depth), have persistence, are predominantly undulating and rough. Fra- at 10 - 20 degrees are smooth, planar, widely spaced and medium persistence.	e high chures	
		31.00-32.50	100	100	62						
		32.50-34.00	100	100	69						
		34.00-35.50	100	95	44		25.50				
							35.50	-13.66	End of Borehole at 35,50 m		
											Ė
ema	ırks:				RQD . Rig		used: I	Hilltwister.		AC	S

PRIO							Fax: 0:	21 463160 21 46386 geotechn		958
	HNICAL								Sheet 1	
	t Name Bloomfield to	o Rine	naski	ddv			roject N C6006		Co-ords: 178559E - 64095N Hole T	
Locatio		O Franci	guoni	duy		-	00000		Rota Sca	<u> </u>
									Level: 34.30 m AOD 1:50	
Niant.	Ond: O								Logged	
Client:									Dates: 02/11/2006-06/11/2006 P.R.	
ell Wa Stri	iter Sampl kes Depth (m)			Testin Results		Depth (m)	Level (m AOD	Legend	Stratum Description	
	Separ (m)	Туро		riodella		6-9	Ç	XXX	TOPSOIL (Drillers description)	-
						0.40	33.90			
									Medium dense to dense, silly, sandy (fine-coarse grained), fine-coarse grained, angular to sub-angular GRAVEL	ŀ
								350		-
						1.30	33.00		Purple / grey, bedded, MUDSTONE. Weathering: Orange discolouration along fracture surfaces and clay ameaning. 1.3 -	
	1.30-2.35	95	0						3.85m well weathered + NI. Fractures: 4.6 - 40.45m 45 - 50 degrees, very closely to closely spaced, undulating and planar,	
	1100-2100	00	"	ľ					rough, high persistence; 7.85 - 11.9m 70 - 90 degrees, closely spaced, planar, smooth, low persistence; 29.15 - 29.9m 70 - 0-90	ŀ
									degrees, closely spaced, planar smooth, Detail: 1.3 - 3.85m NI & AZCL due to weathering and intersecting fractures; 11.85	ŀ
								13/2	12.05m NI & AZCL due to intersceting fractures; 10.35 - 14.15m AZCL due to intersecting fractures; 15.85 - 17.45m AZCL due to	ŀ
									Intersecting fractures; 33.15 - 34.3m AZCL due to intersecting fractures; 37.4 - 38.4m AZCL due to intersecting fractures; 25.5	
	2.35-3.85	100	0	0				127	 26.35m AZCL due to intersecting fractures. 	ŀ
										Ė
										-
			-	+	1					
									4m. MUDSTONE is moderately weak.	
										Ė
	3.85-5.45	91	76	0						ŧ
										E
										F
]					ŀ
	5.45-6.35	100	100							ŧ
									6m. MUDSTONE is weak to moderately weak,	
										-
	6.35-6.95	100	92	23						E
				-	-					Ė
										Ė
	6.95-7.96	100	91	38						-
										F
									8m. MUDSTONE is moderately weak,	Ė
	7.95-9.40	100	79	29						E
										F
										F
		-	-							Ė
		4.5.5								-
	9.40-10.35		87 SCR	16 RQD	FI				0-4	_
emark						ed: Bo	art Lo	ngyear	Deltabase 520 Tracked.	
				,						

5-	-(3)								1 463160			e No
	RIORI							Fax: 0	21 463869		RC-10	
											Sheet 2	
	ject N	ame comfield to	Rine	naekk	delu			oject N C6006		Co-ords: 178559E - 64095N	Hole T	-
	ation:) mini	jaskic	auy		- P	C6006			Rotar	-
	auoii.	COIK								Level: 34.30 m AOD	Scal 1:50	
011											Logged	
Clie	nt:	Cork C	ounty	/ Cou	ncil					Dates: 02/11/2006-06/11/2006	PR	-,
(all	Water Strikes		TOR	Corin		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description		
		10.35-11.85	70	71	20		10.00	24.30		Weak to moderately weak, purple / grey, bedded, M Weathering: Orange discolouration along fracture is clay smearing, 1.3 - 3.85m well weathered + Nt. Fra 40.45m 45 - 50 degrees, very closely to closely speurodulating and planar, rough, high persistence; 7.8 - 90 degrees, closely spaced, planar, smooth, low p 29.15 - 29.9m 70 - 0-90 degrees, closely spaced, pl Detail: 1.3 - 3.85m Nt & AZCJ, due to weathering an fractures; 11.85 - 12.06m Nt & AZCJ, due to intersect fractures; 10.35 - 14.15m AZCJ, due to intersecting in 15.85 - 12.46m AZCJ, due to intersecting in 15.85 - 12.46m AZCJ, due to intersecting in 15.85 - 12.46m AZCJ.	urlaces and clures: 4.6 - ceed, 5 - 11.9m 70 ersistence; anar smooth, d intersecting sting	
										15.85 - 17.45m AZCL due to intersecting fractures; AZCL due to intersecting fractures; 37.4 - 38.4m AZ Intersecting fractures; 25.5 - 26.35m AZCL due to in fractures.	CL due to tersecting	
		11.85-12.35	80	52	30							ŀ
		12.35-12.65	100	89	50							-
												-
												ŀ
		12.65-14.15	100	87	11							ŀ
									7.7			
												-
												ŀ
		14.15-15.15	100	97	60							ŀ
												ŀ
												-
		15.15-15.85	100	90	29							ŀ
			_									-
												ŀ
		15.85-17.45	100	86	22							ŀ
												-
												-
												- }
		17.45-18.35	100	66	0							- [
												- }
												ŀ
												Ì
		18.35-19.95	100	87	43							ŧ
												ŀ
			TCR	SCR	RQD	FI				Continued next sheet		-
em	arks:					pe us	ed: Bo	art Lo	ngyear [eltabase 520 Tracked.		
												0.0

PRIO	RITY HNICAL						Priority Geotech Tel: 021 463160 Fax: 021 463865 email: geotechni	RC-105	8
Project	Name					Pi	roject No.	Sheet 3 o	
	Bloomfield to	Ring	gaskio	idy			C6006	Co-ords: 178559E - 64095N Rotary	
ocatio.	on: Cork							Level: 34.30 m AOD Scale 1:50	
Client:								Dates: 02/11/2006-06/11/2006 Logged B	Зy
ell Wa Stril			SCR		FI	Depth (m)	(m AQD) Legend	Stratum Description	
	19.95-21.25	100	92	54				Weak to moderately weak, purple / gray, bedded, MUDSTONE. Weathering: Orange discolouration along fracture surfaces and clay smearing. 1.3 - 3.65m well weathered + Ni. Fractures: 4.6 - 40.45m 45 - 50 degrees, very closely to closely spaced, uncludating and planar, rough, high persistence; 7.8 - 11.9m 70 - 90 degrees, closely spaced, planar, smooth, low persistence; 29.15 - 29.9m 70 - 0-90 degrees, closely spaced, planar smooth, Detail: 1.3 - 3.85m Ni & AZCL due to intersecting fractures; 11.85 - 12.05m Ni & AZCL due to intersecting	
	21.25-22.35	91	78	19				fractures; 10.35 - 14.15m AZCL due to intersecting fractures; 15.85 - 17.45m AZCL due to intersecting fractures; 33.15 - 34.3m AZCL due to intersecting fractures; 37.4 - 38.4m AZCL due to intersecting fractures; 25.5 - 26.35m AZCL due to intersecting fractures.	
	22.35-23.95	100	99	53	NI 150 601				And the state of t
	23.95-25.50	100	97	7					
	25.50-26.35	47	47	27					
	26.35-26.85	100	90	0					
	26.85-27.65	100	76	47					
	27.65-29.15	97	78	40				28m. MUDSTONE is weak.	
	29.15-30.35		78	10					
l emark	s: Core dia		r: H			ed: Bo	part Longyear	Continued next sheet. Deltabase 520 Tracked.	S

	RIORIT TECHN							Tel: 021 Fax: 02	Geotechi 1 4631600 1 463869 geotechnic	RC	-1058 et 4 of 5	3
Pro	ject N	ame					Pr	oject N	lo.		le Type	_
		omfield to	Rino	askio	ddy			C6006		Co-orde: 178559E - 64095N	Rotary	,
	ation:										Scale	
											1:50	
Clie	nt.	Cook C	aat		n a!!					Log	ged By	ī
Olle	nt.	Cork C	ounty	Cou	HCII					Dates: 02/11/2006-06/11/2006	PR	
fell	Water Strikes			Corin		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description		Ī
		30.35-31.55		100	46	NI 30	30.00	4.30		Weak to moderately weak, purple / gray, bedded, MUDSTONE. Weathering: Ovange discolouration along fracture surfaces and clay amearing. 1.3 - 3.85m well weathered + NI. Fractures: 4.6 - 40.45m 45 - 50 degrees, very closely to closely spaced, undulating and planar, rough, high persistence; 7.85 - 11.9m 70 - 90 degrees, closely spaced, planar, amooth, low persistence; 29.15 - 29.9m 70-90 degrees, closely spaced, planar smooth. Detait: 1.3 - 3.85m NI & AZCL due to weathering and intersecting fractures; 11.85 - 12.05m NI & AZCL due to intersecting fractures; 10.35 - 14.15m AZCL due to intersecting fractures; 33.15 - 34.3m AZCL due to intersecting fractures; 25.5 - 26.35m AZCL due to intersecting fractures; 25.5 - 26.35m AZCL due to intersecting	1	
		31.55-32.35	0	0	0					fractures.		5
		32.35-32.55	100	100	0				1, 1, 16, 16		ŧ	
		32.55-33.15	100	100	0						F	
											į.	
		33.15-34.30	87	63	18							
		34.30-35.80	100	100	57							
		35.80-37.40	94	84	6							
		37.40-38.40	100	65	0							
		38.40-38.80	100	87	0							
		38.80-40.45			40 PQD	E						
em	arks:	Core dia					ed: Bo	art Lor	ngyear (Continued next sheet. Oeltabase 520 Tracked.	AGS	

PRI	IORIT ECHNI							Tel: 02 Fax: 02	Geotech 1 463160 21 46386 geotechn	
Proje							Pr	oject N	lo.	Hole Type
		omfield to	Ring	askio	ldy		P	C6006		Co-ords: 178559E - 64095N Rotary
Locat	tion:	Cork								Level: 34.30 m AOD Scale 1:50
Clien		Cork C								Dates: 02/11/2006-06/11/2006 Logged By P R
Vell S	Water Strikes	Depth (m)	TCR	SCR		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description
5	natikės –	Depth (m)	TOR	SOR	RQD	F	(m) - 40.45	-6.15		Weak to moderately weak, purple / grey, bedded, MUDSTONE. Weathering: Orange discolouration along fracture surfaces and clay amesring. 1.3 - 3.85m well weathered + Ni. Fractures: 4.6 - 40.45m 45 - 50 degrees, very discely to closely spaced, undutating and planar, rough, high persistence; 7.85 - 11.9m 70 - 90 degrees, closely spaced, planar smooth, burst of the control of the con
										į.
			TCR	SCR	BOD	FI				į.
ema	irks:						ed: Bo	part Lor	ngyear	eltabase 520 Tracked.

э-	-	→							y Geotech 21 463160		lo
	RIORI							Fax: 0	21 46386	RC-1062	2
GEO	TECHN	ICAL						emaii:	geotecnn	cal@priority.ie Sheet 1 of	
	ject N							roject l		Co-ords: 174025E - 64313N Hole Type	9
		omfield to	Ring	jaski	ddy		P	C6006		Rotary	_
Loc	ation:	Cork								Level: 44.89 m AOD Scale	
<u> </u>										1:50	-
Clie	nt:	Cork C	ounty	Cou	ncil					Dates: 21/11/2006-23/11/2006 Logged By	Ί.
Well	Water	Sample	es & Ir	n Situ	Testin	g	Depth	Level			\dashv
	Strikes	Depth (m)	Туре		Results		(m)	(m AOD	Legend	Stratum Description No Recovery.	
									*****	no necovery.	

									*****		1
			\vdash				1.30	43.59		OVERBURDEN: Very stiff, gravelly (fine to coarse, angular to	
										subangular) CLAY with frequent cobbles.	
		1.30-2.30	10	6	0				000		2
		2.30	-CPT-		-50				200		Ĺ
		2.00	Or I	١,	(12,14/ 0,15,25						
				l '	0,10,20						: 1
		2.30-3.85	45	0	0						-3
									000		
		3.85 3.85-4.10	CPT	0	N=33						
		3.85-4.10	0	-	(4,6/ 7,7,9,10) 0						4
					"						
		4.10-5.00	22	10	0						
		5.00	-GPT-		4,11/50						-5
				50	for Omn	n)					
		5.00-6.10	27	9	0						
		6.10	OPT	_	N=32		6.10	38.79		Weak to moderately weak, very weathered light grey/ white	6
		6.10-6.70	83	52	(4,6/ 7,8,8,9)				111	LIMESTONE, recovered as angular gravel and non intact limestone	
					18						
						NI					
		6.70-7.70	45	18	0						
									1777		
							7.70	37.19		Moderately strong to moderately weak, grey LIMESTONE.	
									111	Weathering: orange discolouration and clay smearing along fracture surfaces. Fractures: 7.7 - 20.0m 10 degrees, closely to	-8
		7.70-8.70	100	91	78					medium spaced, undulating, rough, high persistence; 8.65 - 20.0m, 50-60 degrees, cosely spaced, planar, rough, medium	: 1
										persistence. Detail: 13.1 - 13.4m Calcite veining.	
									HH		
											9 99 90
		8.70-10.00	92	89	63						0.000
									TTT	I.	100
			TOO	000	POD	El			1111		1 Boxb
Rem	arks:				RQD Rig tvo		ed: Bo	art Lo	i ngvear l	Deltabase 520 Tracked. CPT results: 2.3m;	Special
		12,14,10	,15,2	5. 3.8	35m: 4	1,6,7,	7,9,10	. 5m:	14,11/5	0,50/0. 6.1m: 4,6,7,8,8,9.	,

-	RIORI	→ rv						Tel: 02	Geotechr 1 4631600 21 463869		Borehole I RC-106
	TECHN									al@priority.ie	Sheet 2 of
ro	ject N	ame					Р	roject N	No.		Hole Typ
		omfield to	Ring	gaski	ddy			C6006		Co-ords: 174025E - 64313N	Rotary
OC	ation:	Cork									Scale
										Level: 44.89 m AOD	1:50
lie	nt:	Cork C	ounty	, Cou	ıncil					Dates: 21/11/2006-23/11/2006	Logged B
-										Dates. 21/11/2000-23/11/2000	PR
il	Water Strikes	Depth (m)	TCR		RQD	FI	Depth (m)	(m AOD)	Legend	Stratum Description	
		10.00-11.60	69	69	64	NI 740				Moderately strong to moderately weak, grey LIMESTONI Weathering: orange discolouration and clay smearing all fracture surfaces. Fractures: 7.7 - 20.0m 10 degrees, dio medium spaced, undulating, rough, high persistence; 8.6 20.0m, 50-60 degrees, cosely spaced, planar, rough, me persistence. Detail: 13.1 - 13.4m Calcite veining.	ong sely to 5 -
		11.60-13.10	93	91	63						
		13.10-14.70	100	93	14	NI 640					
		14.70-16.20	100	95	53						
		16.20-17.70	93	80	57						
		17.70-18.90	100	86	12						
		18.90-20.00		67	55						
					RQD					End of Bonehole at 20,00 m eltabase 520 Tracked, CPT results; 2.3m	

								Priority	Geotechi	nical Borehole	No
■-	-(11)	→						Tel: 02	1 463160 21 463869	D0400	
	RIORIT TECHN:									cal@priority.le Sheet 1 o	
Proj	ject N	ame:					Pr	oject N	No.	Hole Typ	
		mfield to				ld. W	orks P	C6006	A	Co-ords: 172299E - 65590N Rotary	
Loc	ation:	Ringas	kiddy	, Cor	k					Level: 87.74 m AOD Scale	
<u> </u>										1:50	By .
Clie	nt:	Cork C	ounty	Cou	ıncil					Dates: 21/04/2008 Logged E	у
Well	Water	Sample					Depth	Level	Legend		\top
	Strikes	Depth (m)	Туре	<u> </u>	Results		(m)	(m AOD)	Legenu	Stratum Description OVERBURDEN, Open hole boring, (See BH1063 for OVERBURDEN det	als.)
					750		440	25.64			1 2
		4.10 4.10-5.50 5.50-7.10	100 97	54	22		4.10	83.64		Weak to moderately weak, pink, moderately strong / moderately weak, fine-grained SANDSTONE. Between 4.1m and 5.6m: SANDSTONE is porous. Weathering: rock is slightly weathered (all along cross section) to a pink / red colour. Occasional orange-brown and black product of weathering is visible. From 4.1m to 11.0m. Fractures: rock is strongly stactured. There are two sets of fractures: I) Dip of 60 to 70 degrees; closely spaced to medium spaced; undulating smooth surfaces. II) Vertical dip of circa 90 degrees; planar surfaces. There are numerous irregular fractures. There are observable laminations in MUDSTONE (dip of circa 60 degrees).	5
							6.70	81.04			1
								Table		Weak to moderately weak MUDSTONE.	-,
						1	7.05	80.69		Pink, moderately strong / moderately weak, fine-grained SANDSTONE.	
							7.50	80.24		Weak to moderately weak MUDSTONE.	+ I
		7.10-8.50	96	0	0						8
		8.50-10.10	100	54	29		9.10	78.64		Plnk, moderately strong / moderately weak, fine-grained SANDSTONE.	9
							9.65	78.09		Moderately strong to moderately weak MUDSTONE.	-{ l
			TCS	SCR	ROD	FI	-				
Rem	narks:	-	·	JUN	- 1000	- 11				Continued next sheet	\neg

	RIORIT							Tel: 02 Fax: 02	Geotechr 1 4631600 21 463869 geotechnic		RC1063 Sheet 2 of	3
	ject N						Pr	oject N	lo.	1	Hole Type	
		mfield to	Ringa	skido	ly, Ad	ld. W				Co-ords: 172299E - 65590N	Rotary	
Loc	ation:	Ringas	kiddy	, Corl	k					Level: 87.74 m AOD	Scale 1:50	
Clie		Cork C								Dates: 21/04/2008	Logged By MK	_
Well	Water Strikes	Depth (m)	totary TCR	SCR	RQD	FI	Depth (m)	Level (m AOD)	Legend	Stratum Description		
										Moderately strong to moderately weak MUDSTONE.		:
		10.10-11.00	94	4	0		10.45	77.29		Pink, moderately strong / moderately weak, fine-grained S	ANDSTONE.	
							11.00	76.74		End of Borehole at 11.00 m		-11
												-12
												-13
												14
												-15
												-16
												17
												-18
												-19
<u> </u>			TCR	SCR	RQD	FI			\Box			Ш
Ren	narks:	-										

		7.20-8.70	100	42	0						
		5.60-7.20	100	58	11					pleces of older green/grey MUDSTONE with occasions and occasional fine-grained crystals of mica.	al SILTSTONE lense
							6.10	78.97		Weak to moderately strong pink MUDSTONE with nume younger solid material (MDDSTONE) including carbona	erous pores fill by
		4.00-5.60	88	41	41					Moderately weak, pink SILTSTONE with occasional piek MUDSTONE and numerous pores filled by younger mat Including carbonaceous.	ces of green/ grey ertal (MUDSTONE)
					(25)		4.15	80.92		Moderately weak, weathered, fine-grained, rustiplink SAI Weathering: rustiplink colour across all of rock. From 4.0m to 18.0m. Fractures: vertical and sub-ver (dip of 75 degrees to 90 degrees). Weak cleavage is Fractures are parallel to surface of cleavage. Surfac are undulating smooth.	tical fractures
		4.00	СРТ		(25)		4.00	81.07			
Well	Water Strikes	Sample Depth (m)	Type		Testi Results	ng	Depth (m)	Level (m AOD)	Legend	Stratum Description OVERBURDEN. Open hole boring. (See BH1064 for Overburg)	/ERBURDEN details
Clie	nt:	Cork C								Dates: 22/04/2008-23/04/2008	Logged By MK
Loc	ation:	Ringas	kiddy	, Cor	k					Level: 85.07 m AOD	Scale 1:50
	ect Na 3-Bloo	ame: mfield to	Ringa	skido	dy, Ad	ld. W		oject N 06006/		Co-ords: 172468E - 65578N	Hole Type Rotary
	RIORIT								1 46386 geotechn	cal@priority.le	RC1064 Sheet 1 of 2

	IICAL						Fax: 02 email: 9			RC1064 Sheet 2 of 2
Project N N28-Bloc	lame: omfield to l	Rings	ckida	lv A-	ld M		oject N cenne		Co-ords: 172468E - 65578N	Hole Type Rotary
Location:				_	id. vvi	UIK\$F	500007	n	1	Scale
		,		-					Level: 85.07 m AOD	1:50
Client:	Cork C	ounty	Cou	ncil					Dates: 22/04/2008-23/04/2008	Logged By MK
Vell Water Strikes			Corir		FI	Depth (m)	Level (m AOD)	Legend	Stratum Description	
	9.90-10.90	100	85	45					Weak to moderately strong pink MUDSTONE with nume younger solid material (MUDSTONE) including carbonal pieces of older green/ grey MUDSTONE with occasions and occasional fine-grained crystals of mica.	eous, and occasions I SILTSTONE lenses
	10.90-12.40	100	60	23						-
	12.40-13.70	100	69	55						
	13.70-14.40	100	45	24						
	14.40-15.50	100	62	0						
	15.50-17.00	100	71	56						
	17.00-18.00	100	83	56						
						18.00	67.07		End of Borehole at 18.00 m	
		TCR	SCR	RQD	FI					

3-	PRIOR)—— ITY					Tel: 02 Fax: 0	y Geoteo 21 46316 21 4638	500 690				Drilled By		hole No
	ОТЕСН					1	www.p	riorityge	otechni	cal.le			Logged By JMS		et 1 of 2
Pro	ject N	lame:					Pro	ject No	D.					Hol	е Туре
N2	8 Cork	to Ringas	skiddy				P14	054			Co-ords: 174	052E - 6	4473N	Rota	ry Cored
Clie	ent: R	PC					Date	95:		\neg					icale
Cir	ent. IX							2/2014	-04/12/	2014	Level: 23.25	m AOD		1	:50
Well / Backfil	Water		imples (& In Si				Casing /	Level	Depth (m)		Stratum	Description	•	Legend
W.X		Depth (m)) Type		Res	sults		100.00%	III NOO	(111)	Open hole bort	ing, Driller	described gravelly (day.	
													,	,	
		0.70	CPT	(25)		- 39		0.00	22.55	0.70	Lithology: Mod	erately stro	ing, light grey LIME	STONE	
		0.70-1.70	100	100	100						strength on fra 1 dipping 50-70 fracture surfac	tion colour gmented a degrees v es and clos	ing: Slightly weathe ation and minor los reas. Fractures: 2 s with undulating rou se spacing. Set 2 di	s of ets. Set poing	
											20-40 degrees and medium sp	with undul	ating rough fracture	surfaces	2
		1.70-2.70	100	94	94										
		2.70-3.70	100	94	94										3
		3.70-4.70	91	89	45										4
		4.70-5.70	95	42	25										5
		5.70-6.70	28	20	20										6
		6.70-7.70	18	0	0	50mm r 180mm r 900mm r	avg				6.70m - 7.70 Limestone.	Om: Slightly	y sandy CLAY with 1	ragmented	7
		7.70-8.70	20	0	0						7.70m - 8.70 Limestone	Om: Slightly	y sandy CLAY with 1	ragmented	8
	Water	8.70-9.70 Depth (m)	29 TCR	20 SCR	0 RQD	Fracture space	ing	Casing	Level	Depth	Limestone		y sandy CLAY with f	ragmented	
	undwa			ealed	Comr		Hole	le Info	matio Hole Di	n:	Casing Diameter 131mm	Chise	lling: (m) Time (h	hmm)	Tool
Rem	arks:	Hole termin	nated at 1	2.70m.			•		•	Shift I	Data: Groundwat	er Shift(ddimmiyyyy) Casin 2/2014 0.78m 2/2014 0.78m	Sta	marks rt of shift l of shift rt of shift l of Borehole
Equi	pment	t & Metho	ods: De	eltabase	520				\dashv			04/1	2/2014 12.70m	End	or Borehole

	PRIOR	ITY INICAL					Tel: 02 Fax: 0	y Geotec 21 4631 21 4638 priorityge	500 690				Drilled B DC Logged 8	Ву	RC102	
		Name:					Dro	ject No					JMS	-	Sheet 2 of 2 Hole Type	-l
	-	to Ringask	iddv					054	.		Co-ords: 1740	052E - 6	4473N	- 1	Rotary Cored	- 1
	ent: R						Date			\neg				\top	Scale	一
Circ	ent. N							2/2014	-04/12/	2014	Level: 23.25	m AOD			1:50	_
Well/ Backfli	Water Strikes	Depth (m)		ary Co		Fractur	· ·	Casing / Flush	Level (m AOD	Depth (m)		Stratum	Description		Legend	
XX											Lithology: Mode with clay bands	erately stro	ing, light grey L	JMESTONE	1,1,1	\Box
		9.70-10.70	98	66	66			9.70			common oxidat strength on frag 1 dipping 50-70 fracture surface 20-40 degrees v and medium sp	ion colour mented a degrees as and clo with undul lacing.	ation and mino reas. Fractures with undulating	rioss of s: 2 sets. Se rough	t	10
		10.70-11.70	100	90	26											-11
		11.70-12.70	100	68	0											12
									10.48	12.77	E	End of Borel	noie at 12.70 m			-13
																-14
																15
																-16
																-17
_	100.0	Bar to a d	TOD	000	BOD	Emeter	inc		1							Ц
Grou Struc	ındwa	Depth (m) ater: Rose to A		ealed	Comr		Hole	le Info	Hole DI	n:	Casing Diameter 131mm	Chise Depths	(m) Tim	ne (hhmm)	Tool	
		Hole termina			520					Shift (Data: Groundwate	er Shift(ddimm/yyyy) C 2/2014 8 2/2014 12	asing depth 70m 70m 70m	Remarks Start of shift End of shift Start of shift End of Boreh	ole
Rema	undwa	ater: Rose to A	ter S	ealed -Non 2.70m.	Comn e encou		Hole	le Info	matio Hole DI 131	n: ameter mm	Casing Diameter 131mm	Depths to	(m) Tim			oie

PRIO GEOTEC						Tel: 02 Fax: 0 www.p	21 4631 21 4638 priorityge	690 eotechnic			-	Drilled By DS Logged By JMS	R	hole No C103 et 1 of 2	3
Project							ject No	0.		Co-ords: 174	135E - 64	4526N		le Type	
	rk to Ringask	iddy					054		\dashv				_	ry Corec	_
Client:	RPS					Date 26/1		-27/11/	2014	Level: 31.45	m AOD			:50	
ell / Wate	er San	nples 8	& In Sit	tu Tes	ting	_	Casing /	Level	Depth		Stratum	Description		Legeno	T
ockfill Strike	Depth (m)	Туре		Res	sults		Flush 100.00%	(m AOD)	(m)					- Gara	1
	1.50	СРТ					0.00			Gravel.	rg. Dillia C	described: Boulders :	aiu		0.00.00.00.00.00.00
8			N=59 ((6,9/11,	14,16,18)			29.75	1.70		d: Rock. B	lasted 0.30m to prov	e	A. Tr.	Ť
	2.00	100	95	95			2.00	29.45	2.00	SILTSTONE. V oxidation colou bleaching com 1. Dipping 10- surfaces ar	Veathering: ration on fi- mon throug -20 degree nd medium -90 degree	n thinly laminated : Slightly weathered vacture surfaces. Col hout. Fractures: 2 se s with planar rough the spacing. Set s with planar rough the	ets. Set racture		-3
	3.00-4.00	100	97	59						4.00m - 4.17	'm: Non int	act.			1
	4.00-5.00	100	60	25						4.70m - 5.10	lm: Non Int	act.			
	5.00-6.00	100	73	44	,										
	6.00-7.00	100	84	84											
	7.00-8.00	100	69	10											
	8.00-9.00	100	78	55	50mm 120mm 950mm	avq									
		TCR	SCR	BOD	Emelion or	rina									1
Froundy Struck	ed Depth (m) vater: Rose to A	ter S	ealed	Comr	Fracture spai nent intered.	Hol	le Info			Casing Diameter 131mm	Chisell Depths ((m) Time (hh	mm)	Tool	
	: Hole termina								Shift I	Data: Groundwate	er Shift (c	dd/mm/yyyy) Casing 2014 2,00m 2014 2,00m		emarks of shift of shift of shift of Bore	hole

GEO:	ect N	NICAL lame:	****				rei: 02 Fax: 03 www.p	21 46316 21 4638 priorityge ject No	690 eotechnic		Co-ords: 174135	Drilled By DS Logged By JMS	Borehole No RC103 Sheet 2 of 2 Hole Type
Clier		to Ringask	iiddy				Date		-27/11/	2014	Level: 31.45 m	AOD	Rotary Cored Scale 1:50
Well/N	Water Strikes			ary Co				Casing /	Level (m AOD)	Depth	Str	atum Description	Legend
		Depth (m) 9.00-10.00	100	SCR 50	0	Fractur	es		(III AGO)	()	Remaining Detail : 9 intact.	9.00m - 9.70m ; 9.00m - 9.7	70m: Non
		10.00-11.00	100	70	13						10.35m - 10.48m	n: Non Intact.	
		11.00-12.00	100	87	56								
		12.00-13.00	100	31	0						12.00m - 12.26m 12.60m - 13.60m		12
		13.00-14.00	100	45	0								13
		14.00-15.00	100	85	65				16.45	15.00			
											End o	of Borehole at 15.00 m	16
_	Water	Depth (m)	TCR	SCR	RQD	Fracture space	ing	Casing	Level	Depth	1		
Groun	ndwa		ter S	ealed	Comr		Hole	le Info	matio	n:	CI	hiselling: epths (m) Time (hhi to	mm) Tool
		Hole terminal			nei i					Shift (Data: Groundwater	Shift (ddimm/yyyy) Casing 35/11/2814 2.00m 27/11/2814 2.00m 27/11/2814 2.00m	depth Remarks Start of shift End of shift Start of shift End of Borehole

8.60 CPT (25 for 0mm) 13.87 8.20 Driller described: Rock. Blasted rock from 8.20m - 8.60m to prove encounter. Uthology: Light grey thinly laminated SILTSTONE. Weathering: Slightly weathered with orange oxidation Water Depth (m) Type Results Casing Level Depth Groundwater: Struck Rose to After Sealed Comment -None encountered. Hole Information: 8.60 Driller described: Rock. Blasted rock from 8.20m - 8.60m to prove encounter. Uthology: Light grey thinly laminated SILTSTONE. Weathering: Slightly weathered with orange oxidation Continued next sheet Hole Information: 8.60m 131 131mm Chiselling: Depths (m) Time (hhmm) Tool 1.80m 131 131mm Remarks: Hole terminated at required depth. Shift Data: Groundwater Shift (did/mm/lyyyy) Casing depth Remarks		PRIOR				Tel: 0: Fax: 0	21 4631 21 4638					Drilled DS Logged		RC104 Sheet 1 of 2
Clembra Clem		-				1	-	0.		Co-ords: 1743	301F - 84	1401N		
Value Value Samples & In Situ Testing Daings Leve Depth	N28	Cork	to Ringask	iddy		P14	1054		\dashv	CO-0143. 1740	001E - 01	170114		
Depth Type	Clie	ent: R	PS					-26/11/	2014	Level: 22.07	mOD			
1.50 CPT N=35 (4.67,8,10,10) 0.00	Well/ Backfill	Water Strikes		•							Stratum (Description	n	Legend
3.00 CPT N=41 (6,79,9,11,12) 0.00	XX		Depth (m)	Туре	Results		1		(m)	Open hole borin	ng. Driller d	lescribed: B	oulder Clay.	-9-5-9
4.50 CPT (25 for 0mm) 0.00 7.50 CPT N=51 (9,13/13,14,16,18) 0.00 8.60 CPT (25 for 0mm) 19 0.00 13.47 8.50 Unifier described: Rock. Blasted rock from 8.20m - 8.50m to prove encounter. Water Depth (m) Type Results Casing Level Depth Water Struck Rose to After Sealed CommentNone encountered. Hole Information: Hole Depth Hole Diameter Casing Diameter Struck Rose to After Sealed CommentNone encountered. Scient Sealed Comment Type Results Casing Diameter Casing Diameter Casing Diameter Casing Diameter Depth (m) Time (hhmm) Tool 1,50m 13 13 mm Remarks: Hole terminated at required depth. Shift Data: Groundwater Shift (odimm/yyyy) Casing depth Remarks			1.50	СРТ	N=35 (4,6/7,8,10,10)		0.00							
7.50 CPT N=61 (9,13/13,14,16,18) 0.00 13.87 8.20 Driller described: Rook. Blasted rook from 8.20m - 8.60m to prove encounter. University weathered with orange oxidation Water Depth (m) Type Results Casing Level Depth Groundwater: Struck Rose to After Sealed Comment - None encountered. Hole Information: 13 mm 13 mm Remarks: Hole terminated at required depth. Shift Data: Groundwater Shift (ddimm)yyyy) Casing depth Remarks			3.00	СРТ	N=41 (6,7/9,9,11,12)		0.00							
7.50 CPT N=61 (9,13/13,14,16,18) 8.60 CPT (25 for 0mm) Water Depth (m) Type Results Casing Level Depth Groundwater: Struck Rose to After Sealed Comment None encountered. Hole Information: Hole Depth Hole Diameter Casing Diameter Casing Diameter Sealed Comment 13.87 8.20 Diffiler described: Rock Biasted rock from 8.20m- 8.60m type encounter. Ulthology: Ught grey thinly laminated SLTSTONE. Weathering: Slightly weathered with orange oxidation Continued and sheet Hole Information: Hole Depth Hole Diameter Casing Diameter Depth Sealed Comment 13.1 mm Chiselling: Depths (m) Time (hhmm) Tool Remarks: Hole terminated at required depth. Shift Data: Groundwater Shift (dd/mm/yyyy) Casing depth Remarks			4.50	СРТ	(25 for 0mm)		0.00							5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -
8.60 CPT (25 for 0mm) Water Depth (m) Type Results Casing Level Depth Groundwater: Struck Rose to After Sealed Comment - None encountered. Hole Information: Hole Depth Hole Diameter Casing Diameter Shift (dd/mm/lyyyy) Casing depth Remarks Remarks: Hole terminated at required depth. Shift Data: Groundwater Shift (dd/mm/lyyyy) Casing depth Remarks			6.00	СРТ	N=58 (5,5/9,13,17,19)		0.00							
8.60 CPT (25 for 0mm) 19 0.00 13.47 8.60 Dillier described: Rock, Blasted rock from 8.20m - 8.60m to prove encounter. Uthology: Ught grey thinly laminated SILTSTONE. Weathering: Slightly weathered with orange oxidation Water Depth (m) Type Results Casing Level Depth Groundwater: Struck Rose to After Sealed Comment -None encountered. Hole Information: Hole Information: Hole Depth Hole Diameter Casing Diameter Depths (m) Time (hhmm) Tool 8.60m 131 Shift Data: Groundwater Shift (dd/mm/lyyyy) Casing depth Remarks			7.50	СРТ	N=61 (9,13/13,14,16,18)	0.00							7 7 7 7 7 7 7 7 7 7 7 7 7 7 8 7 8 7 8 7
Water Depth (m) Type Results Casing Level Depth			8.60	СРТ	(25 for 0mm) 19		0.00			8.60m to prove	encounter.			
Groundwater: Struck Rose to After Sealed Comment None encountered. Hole Information: Hole Depth Hole Diameter Casing Diameter Depths (m) 131 131mm Remarks: Hole terminated at required depth. Hole Information: Hole Information: Depths (m) 131 131mm Time (hhmm) Tool Shift Data: Groundwater Shift (dd/mm/lyyyy) Casing depth Remarks		Water	Depth (m)	Туре	Results		Casing	Level	Deoth	1	Continued	ned sheet		
of the board of th		ındwa	iter:			Hol	le Info	rmatio	n: ameter	Casing Diameter	Depths (m) Ti	lme (hhmm) Tool
	Rema	arks:	Hole terminat	ed at re	quired depth.	•			Shift (Data: Groundwate			Casing dept	
Equipment & Methods: Deltabase 520 - 2511/2014 8.50m End of shift 51 51 51 51 51 51 51 51 51 51 51 51 51	Equip	oment	& Method	is: De	eltabase 520			_		Ë			-	Start of shift End of shift Start of shift End of Borehole

	PRIOR						Tel: 02 Fax: 0	y Geoteo 21 46316 21 4638 priorityge	600 690				I	ed By DS ged By	R	hole No C104
		Name:						ject No								et 2 of 2 e Type
	-	to Ringask	iddy					054			Co-ords: 174	301E - 6	4491N			otary
Clie	ent: R	RPS					Date 25/1	es: 1/2014	-26/11/	2014	Level: 22.07	mOD				icale :50
Well / Backfil	Water Strikes			ary Co				Casing /		Depth		Stratum	Descrip	otion		Legend
		Depth (m) 8.60-9.60	TCR 100	SCR 100	RQD 54	Fractur 50mm r		riusn	(m AOD) (m)	1. Dipping 10	-30 degree	s with un	ndulating roug	ıh .	
		9.60-10.60	100	89	30	85mm : 420mm		9.60			frácturé sur 2. Dipping 80 planar roug 9.50m - 9.70	to 90 dear	rees with	spacing. Set close spacin	gand	-10
88																
200,000									10.47	11.60		End of Borel	nole at 11.6	90 m		
																-12
																-13
																-14
																-15
																-16
																-17
	Water	Depth (m)	TCR	SCR	RQD	Fracture spar	cing	Casing	Level	Depti	1					
	undwa	ater: Rose to A				nent intered.	Hole	le Infor Depth 60m		lameter	Casing Diameter 131mm	Chise Depths	(m)	Time (hhr	nm)	Tool
		Hole terminal							_	Shift I	Data: Groundwal	er Shift (dd/mm/y 1/2814 1/2814	yyy) Casing o 8.60m 8.60m	Sta	marks ft of shift l of shift ft of shift l of Borehole

GEOTEC	DRITY CHNICAL					F	el: 02 ax: 0 vww.p	Geotec 1 46316 21 4638 riorityge	690 otechni					Logg	ed By VD ged By MS	R(hole No
-	t Name: rk to Ringask	vhhi					Pro P14	ject No 054	0.		Co	o-ords: 1711	125E - 6	7456N			e Type otary
Client:		ilauj					Date										icale
<u> </u>							08/0	4/2015	-10/04	2015	ĻĽ	evel: 102.4	9 mOD			1	:50
Well / Wat Backfill Strik	er San es Depth (m)	Type	& In Si	tu Test				Casing / Flush	Level (m AOD	Depth (m)	1		Stratum	Descrip	tion		Legend
	Depar(iii)	Type		Nesc	410			100.00%		. ()		Inspection pit d	ug to 1.20	m.			
	1.30	CPT	(501	or 95mm	n)	126		1.30	101.19	1.30	<u>,</u> L						<u> </u>
	1.30-2.30	100	0	0		_		0.00				Lithology: Mode Weathering: W fracture surface Fractures: Dipp rough fracture s 1.30m - 4.00	eathéred (is and mír ling 50-70 surfaces a	with mino for loss of degrees and close:	r orange oxid f strength. with undulatir	ation on	-2
	2.30-3.30	80	0	0													3
	3.30-4.20	100	29	0													-4
	4.20-5.20	97	10	0													-5
	5.20-6.10	97	44	0													-6
	6.10-7.60	100	80	0													7
	7.60-8.50	100	53	0													-8
	8.50-9.30	100	23	0								8.50m - 9.30					
	ter Depth (m)	TCR	SCR	RQD	Fractur	e spac		Casing			th			ned shee			
Groundy Struck	water: Rose to A			Comm ee shift d			Hole	le Infor Depth 30m .00m		lameter	r Cas	sing Diameter 131mm	Chise Depths to	(m)	Time (hhm	im)	Tool
Remarks	: Inspection pit	dug to	1.20m.	Hole ten	minate	ed at re	equire	d depth.		Shift	Data	a: Groundwate	r Shift(dd/mm/yy	yy) Casing di	epth Re	marks
Equipme	nt & Method	ds: De	elrabase	e 520							8.20m 8.20m 16.10m			38m 8m 38m		of shift t of shift of shift t of shift t of Borehole	

	RIOR	ITY NICAL					Tel: 02 Fax: 0	y Geotec 21 4631 21 4638 orlorityge	600 690					Log	ed By VD ged By	R	hole No
		lame:					Pro	ject No	D.						IMS		e Type
	•	to Ringask	iddy				Ι ΄	054			Co-	ords: 1711	125E - 6	7456N		R	otary
Clie	ent: R	RPS					Date 08/0	es: 4/2015	-10/04	2015	Lev	vel: 102.4	9 mOD				icale :50
Well/ Backfill	Water Strikes	Danib (m)		ary Co		Final		Casing /	Level	Depth (m)			Stratum	Descrip	otion		Legend
XXX		Depth (m)	TCR	SCR	RQD	Fractur 20mm r	min	11001	(III AOC	(111)	Ü	thology: Mode	erately we	ak, brown	/ red MUDS	TONE.	
		9.30-10.30	100	70	30	50mm 220mm					Tr.	/eathéing: W acture surface ractures: Dipp rugh fracture s	es and mir	nor loss o	f strenath.		-10
		10.30-11.20	100	94	61												-11
		11.20-12.10	100	79	0							10.10 11	SS No-	lata at			-12
		12.10-12.80	100	64	40							12.10m - 11.	bum: Non	Intact.			-13
		12.80-14.00	88	63	0												
		14.00-14.80	100	14	0												
		14.80-15.50	100	85	0												-15
		15.50-16.50	94	81	0												18
		16.50-17.00	100	40	0							16.50m - 17.	00m: Mos	tty non-in	tact.		
									85.49	17.00		E	End of Borel	hole at 17.0	00 m		17
	Water	Depth (m)	TCR	SCR	RQD	Fracture space	cing	Casing	Level	Depth	h						
Struc	indwa k	ater: Rose to Af			Comr ee shift		Hok	le Info e Depth 30m 7.00m		lameter		g Diameter 31mm	Chise Depths	(m)	Time (hhr	nm)	Tool
		inspection pit				rminated at r	equire	d depth.		Shift (Data:	Groundwate	er Shift (dd/mm/y 4/2015 4/2015	yyy) Casing o	tepth Re Star	marks t of shift of shift t of shift of shift

PRIOR GEOTECH					,	Tel: 02 Fax: 0	y Geotec 21 4631 21 4638 oriorityge	600 1690			Drilled By WD Logged By JMS	R(hole No C112	
Project N						Ι.	ject No	0.		Co-ords: 171252E	- 67418N		e Type	
	to Ringask	laay				Date	054		\dashv				otary	_
Client: R	(PS						4/2015	-03/04/	2015	Level: 116.63 mC	DD		:50	_
Well / Water Backfill Strikes		ples 8	& In Si				Casing /	Level	Depth	Strat	tum Description		Legend	
<	Depth (m)	Туре		Res	sults		100.00%	(m AOD	(m)	Open hole boring: Dri	lier described: Clay with		-0-0-0	\vdash
	1.00	СРТ			(10,13,17,9) 4,25 for 50m	m)	0.00			böulder content."			\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$.	-1
					114		2.60	114.03	2.60	Lithology: Moderately	weak SHALE with fine green 2.60m - 7.80m and Si	ained	7////	ŧ
	2.60-4.00	36	0	0						unit between 7.80m - weathered with minor fracture surfaces. Min fractured areas. Fract 0-15 degrees with pla dose spacing. Set 21	13.30m. Weathering: Sli coddation colouration on lors loss of strength appar tures: 2 sets. Set 1 is dip inar rough fracture surfac is dipping 50-70 degrees gh fracture surfaces and	ghtly ent on ping es and with		3
	4.00-5.00	95	90	0										5
	5.00-6.30	100	69	0										8
	6.30-7.80	94	88	11										7
	7.80-9.20	100	100	54										8
Water	Depth (m)	TCR	SCR	RQD	Fracture space	ing	Casing	Level	Depti		inued ned sheet		7///	1_
Groundwa				Comr ee shift		Hole	le Info	matio	n: ameter	Chi	iselling: ths (m) Time (hh to	mm)	Tool	
	Hole terminat							_	Shift I	Data: Groundwaler St 12.60m 12.10m 14.20m	nift (ddimm/yyyy) Casing 31 04:2015 2:50m 32 04:2015 2:50m 32 04:2015 2:50m 33 04:2015 2:50m	depth Re Star End Star End Star End	marks t of shift of shift t of shift of shift t of shift of Boreh	ole

PRIO GEOTEC						Tel: 02 Fax: 02 www.p	1 46316 21 4638 riorityge	690 otechnic			-	Drilled E WD Logged JMS		RC	nole No 112 12 of 3	
Project	Name: rk to Ringask	iddy				Proj P14	ject No) .		Co-ords: 171	252E - 67	7418N			tary	
Client:		liuuy				Date			\dashv						cale	_
Client.	Krs							-03/04/	2015	Level: 116.6	3 mOD			13	50	_
Well / Wate Backfill Strike	6		ary Co				Casing / Flush	Level (m AOD)	Depth (m)		Stratum	Description			Legend	
	9.20-10.50	100	SCR 84	42	Fractur	8			()	Lithology: Mode Sandstone unit unit between 7. weathered with fracture surface fractured areas 0-15 degrees w close spacing. planar to stepp spacing.	.80m - 13.3 minor oxid es. Minor lo s. Fractures with planar r Set 2 is dip	Om. Weather lation coloural ss of strength 2 sets. Set 1 rough fracture lping 50-70 de	ing: Slightly tion on n apparent of i is dipping e surfaces a egrees with	on Ind		10
	10.50-11.90	78	71	13	40mm r 150mm 680mm r	avg										1
	11.90-13.30	50	25	0						11.90m - 12. 13.00m - 13.						12
	13.30-14.80	100	93	31						13.90m - 14.	.00m: Non I	intact.				14
	14.80-16.30	100	100	69												15
	16.30-17.70	100	100	74												17
-	er Depth (m)	TCR	SCR	RQD	Fracture space	$\overline{}$	Casing		-		Continued					
Groundy Struck	Rose to Af	•	- S	ee shift		Hole		1%	ameter	Casing Diameter 131mm	Chisell Depths (to	m) Tin	ne (hhmm		Tool	
	: Hole terminat								Shift (Data: Groundwald : 12,60m 12,10m 14,20m	er Shift (d	kd/mm/yyyy) (2015 2015 2015 2015 2015 2015 2015	Casing dept 50m 50m 50m 50m 50m 50m	h Rer Start Star Star	narks of shift of shift of shift of shift of shift of shift	ole

	PRIOR OTECH	ITY INICAL					Tel: 02 Fax: 02	Geotec 1 46316 21 4638 riorityge	500 690				Log	ND ged By	R	hole No C112 et 3 of 3	
	-	Name:						ject No).		Co-ords: 171	252F - 6	7418N			е Туре	\neg
-		to Ringask	iddy				P14 Date			\dashv	00 0103. 171		7 1 1014			otary Scale	-
Clie	ent: R	(PS						4/2015	-03/04/	2015	Level: 116.6	3 mOD				:50	_
Well/ Backfil	Water Strikes	Depth (m)	Rota	SCR		Fractu	·e6	Casing / Flush	Level (m AOD	Depth (m)		Stratum	Descrip	otion		Legend	
		17.70-19.20	100	75	55						Lithology: Mode Sandstone unit unit between 7 weathered with fracture surface fractured areas 0-15 degrees v dose spacing.	t between 2 .80m - 13.3 minor oxt es. Minor i s. Fracture	2.60m - 7 30m. We dation co oss of str s: 2 sets.	7.80m and Slit eathering: Sligi blouration on rength appare . Set 1 is dipol	stone htty nt on na		19
		19.20-20.00	100	100	0						planar to stepp spacing.	ed rough f	racture s	urfaces and c	lose		
									96.63	20.00		End of Borel	noile at 20.0	00 m			20
																	-21
																	-22
																	-23
																	-24
																	-25
																26	
_	Water	Don't (m)	TCS	SCR	ROD	Fracture spa	rina	Omeles	Lavar	Danis							Ц
Struc	ındw	a aparting	ter S	ealed		nent	Hole	Casing le Infor Depth 60m	matio	n: lameter	Casing Diameter 131mm	Chisel Depths to	(m)	Time (hhm	ım)	Tool	
Rema	arks:	Hole terminat	ed at re	quired	depth.					Shift I	Data: Groundwat	er Shift(01/0	dd/mm/y 4/2015	yyy) Casing d	epth Re Sta	marks t of shift	\dashv
Equi	uipment & Methods: Deltabase 520										12.60m 12.60m 14.20m	13	2005	2.60 m 2.60 m 2.60 m 2.60 m 2.60 m		or shift t or shift or shift t or shift t or Boreh	ole

GEO	PRIOR OTECH						Tel: 0: Fax: 0 www.p	y Geotec 21 46310 21 4638 priorityge	600 690 eotechni			Drilled By DS Logged By JMS	R	nole No CO1 t1 of 2 e Type	-
	-	to Ringask	iddy					1054			Co-ords: 172453E -	65225N	l	otary	
Clie	ent: R	PS					Date 13/1	es: 1/2014	-14/11/	2014	Level: 83.93 mOD			cale 50	
Well / Backfill	Water Strikes	San	nples 8	& In Si	tu Tes	sting		Casing /	Level	Depth	Stratu	m Description		Legend	Г
		Depth (m)	Туре		Res	sutts		Flush 100.00%	(m AOD) (m)	Open hale boring. Drill	er encountered rock at 2	2.40m.		┝
	∇	1.50	СРТ	N=4:	2 (4,6/8	,10,10,14)		0.00			Blasted 0.30m to prove	rock.			1
		2.70	CPT 100	(25)	0	70		0.00	81.23	2.70	See 7.70m - 20.00m In description.	derval for detailed litholo	ogy		3
									80.23	3.70	Open hole boring, Drill Unable to progress hol Interval.	er encountered hard str e, blasted 3.70m 4.70m	ata.		4
		4.70-5.70	95	91	58				79.23	4.70	3.70m - 3.75m: Non See 7.70m - 20.00m In description.		ogy		-5
		5.70-6.70	95	85	77	•									6
									77.23	6.70	Unable to progress hol Interval.	er encountered hard str. e, blasted 6.70m 7.70m	ata.		-7
		7.70-8.70	90	83	24			7.70	76.23	7.70	Lithology: Moderately w SILTSTONE with mino Slightly weathered. Oxl along fracture surfaces Evidence of dissolution sets. Set 1 is dipping 6 undulating rough fractu closely spaced. Set 2 is	r quartz verns. Weather dation colouration preve . Apparent loss of stren In quartz veins. Fractur 0-70 degrees with plans re surfaces. Fractures s s dipping 5-15 degrees	ing: alent gth. re6: 2 ar and are with		8
333					<u></u>	25mm i 110mm					unduláting rough fractu		n		-
Grou Struc 2.00m	indwa k		TCR ter S		Comr		Но	Casing le Infor e Depth	rmatio Hole Di	lameter	Chis	elling: s (m) Time (hh	mm)	Tool	_
		Hole terminat	ed at 15		ee shift	udid.	. 1	7.70m 5.70m	13		131mm Data: Groundwater Shil		depth Ren	marks	
Equip	oment	& Method	ds: De	eltabase	e 520.				-		2.00m 1	(11/2004 2.70m (11/2014 2.70m (11/2014 2.70m (11/2014 2.70m	End Stan Stan End End End		

Project Name	GEOTE	IORITY ECHNICAL					Tel: 02 Fax: 0 www.p	y Geotec 21 46316 21 4638 priorityge	600 690 otechni				Drilled By DS Logged By JMS	R	hole No	
Dates									D.		Co-ords: 17	2453E - 6	35225N	1		- 1
Visite Depth (m) TOR SOR ROD Procure searce Depth Society Depth Depth TOR SOR ROD Procure searce Depth TOR	N28 C	ork to Ringask	iddy							\rightarrow				+		-1
Visible Depth (m) TOR SOR ROD Fracture souths Factor	Client	t: RPS							-14/11/	2014	Level: 83.9	93 mOD		1		- 1
South Strike Depth m TOR SOR ROD Produce Plumh m AOO (m) Strike Depth m TOR SOR ROD Produce Plumh m AOO (m) Spacing.	Well/Wa	ater	Rota	arv Co	rina			Т								_
8.70-9.70 96 79 65 74 59 430mm max	BackfillStr	1kes				Fractur	e6	Flush		(m)		Stratum	Description		Legend	- 1
Water Depth (m) TCR SCR RQD Fracture spacing Casing Level Depth		9.70-10.70 10.70-11.70 11.70-12.70	95 98 95	79 95 70	65							15.00m: Puŋ	ple red Mudstone.			-11
Water Depth (m) TCR SCR RQD Fracture spacing Casing Level Depth																14
Groundwater: Struck Rose to After Sealed Comment 2.00m - See shift data. Hole Information: Hole Depth Hole Diameter Casing Diameter Depths (m) Time (hhmm) Tool 15.70m 13.1 13.1mm Remarks: Hole terminated at 15.70m. Shift Data: Groundwater Shift (didimm/yyyy) Casing depth Remarks 11/1/2004 2.70m End of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift of shift 12.11/2014 2.70m Shift 12.									68.23	15.70		End of Borel	hole at 15.70 m			
Groundwater: Struck Rose to After Sealed Comment 2.00m - See shift data. Hole Information: Hole Depth Hole Diameter Casing Diameter Depths (m) Time (hhmm) Tool 15.70m 13.1 13.1mm Remarks: Hole terminated at 15.70m. Shift Data: Groundwater Shift (dd/mm/yyyy) Casing depth Remarks 11/11/2004 2.70m End of shift 12/11/2014 2.70m Shift of shift 12/11/2014 2.70m Shift of shift 12/11/2014 2.70m Shift of shift 14/11/2014 2.70m Shift 14/						l				1						
- 11/1/2014 2.70m End of shift - 12/1/2014 2.70m Sign of shift - 12/1/2014 2.70m Sign of shift	Ground	dwater: Rose to Af	er S	ealed	Comr	nent	Hole	le Info	matio Hole Di	n: lameter	Casing Diamete	er Depths	(m) Time (h	hmm)	Tool	
Equipment & Methods: Deltabase 520. 200m 201/2014 270m Start of shift 200m 301/2014 270m Start of shift 200m 301/2014 270m 301					e 520.				_	Shift (2.00m	ater Shift ((dd/mm/yyyy) Casing	g depth Re	marks for shift for shift for shift for shift for shift	

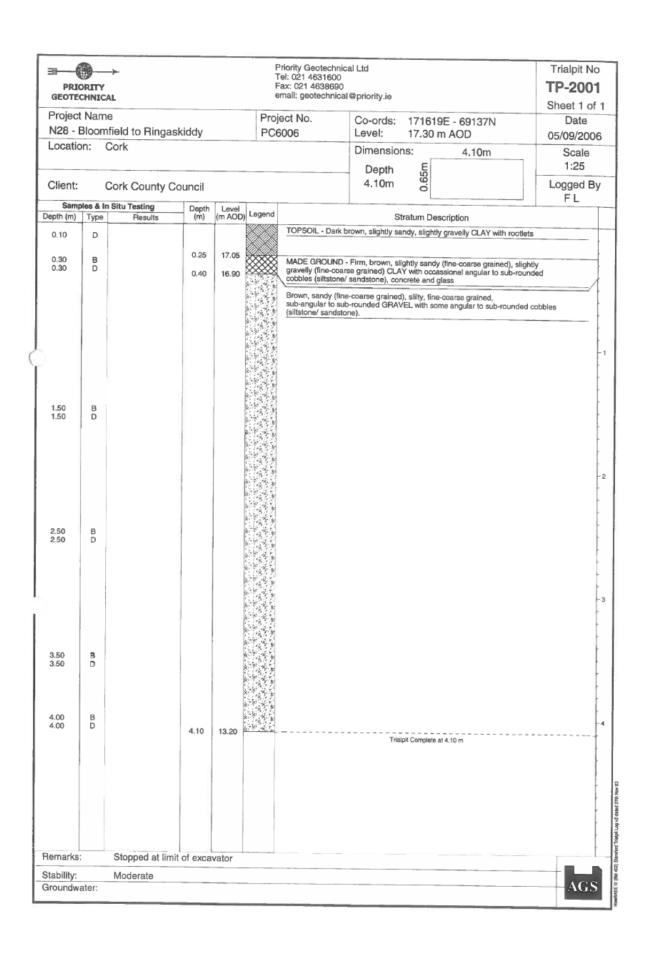
GEC		NICAL					Tel: 02 Fax: 0 www.p	y Geoteo 21 46316 21 4638 priorityge	500 690 otechni				Logg	ed By IS Jed By	R	hole No
		lame: to Ringask	riddy					ject No 054	0.		Co-ords: 17246	32E - 65	5028N			e Type otary
	nt: R		duuy				Date			\neg						Scale
Oile							17/1	1/2014	-20/11	/2014	Level: 77.93 m	nOD			1	:50
Well/ Backfill	Water Strikes	San Depth (m)	nples &	& In Si	tu Tes Res			Casing / Flush	Level (m AOD	Depth (m)	s	tratum I	Descript	tion		Legend
		1.50	СРТ	N=3		9,10,11)		0.00	76.43	1.50	Open hole boring. CLAY. Open hole boring.					
	Ξ	3.00	СРТ	(251	br Omm)		0.00			Open rice boring.	, ormer (esu 1060	. aoudey C	ion.	
		4.00	CPT	(251	or Omm) 60		4.00	73.93	4.00						-0-0-0
		4.00-5.00	98	98	25			0.00	70.30		Lithology: Modera bed of Silistone at weathered with m and minor loss of is dipping 5-15 de rough fracture sur Set 2 dipping 60 o rough fracture sur	ninor oxid I strength egrees wi maces an degrees vi maces wi	ation on: Fracture th planar od mediur with plana	fracture surf es: 2 Sets, S r and undula m fracture s ar and stepp ar and stepp	aces set 1 ting pacing.	-5
		5.00-6.00	96	76	66						4.00-7.00m Sit		Intact.			6
		6.00-7.00	95	85	70											7
		7.00-8.00	94	94	30						7.30-7.50m Mo	ostly non	Intact.			-8
		8.00-9.00	100	100	80											
HHHH.	Water	Depth (m)	TCR	SCR	RQD	Fracture spa	cina	Casing	Level	Depti		Continued	ned sheet			
Grou Struc 3.00n 3.20n	ndwa k	ater: Rose to At	fler S				Hok	le Infor	matio Hole D	n:		Chisell Depths (m)	Time (hhr	nm)	Tool
		Hole terminat			520					Shift I	Data: Groundwater	17/11	kl/mm/yy 2814 2814	yy) Casing o 0.00m 4.00m 4.00m 16.50m	Sta	marks rt of Borehole I of Shift rt of Shift I of Borehole

	PRIOR	ITY NICAL				1	Tel: 02 Fax: 0	y Geotec 21 4631 21 4638 oriorityge	600 690					Log	led By DS ged By JM	R	hole No	1
	•	lame:						ject No	D.		Cox	ords: 172	482E - 6			Ho	le Type	-
		to Ringask	iddy				P14	054		\dashv	-	// d3. 1/2	1022 - 0	7002014			otary Scale	-
Che	ent: R	PS						1/2014	-20/11/	2014	Lev	el: 77.93	mOD				:50	_
	Water Strikes	Depth (m)		SCR		Fractur		Casing /	Level (m AOD	Depth (m)			Stratum	Descrip	otion		Legend	١
		Deput (m)	TUR	SUR	RQD	Fracui	eto .		(1117100	, ,,	Ut	hology: Mode	erately we	ak, purple	e red MUDST athering: Sligi	ONE with		٦
		9.00-10.00	92	60	0						we	athered with d minor loss	minor ox of strengt	dation on h. Fractu	fracture surf res: 2 Sets. S	aces et 1		١
						130mm					ro. Se	ugh fracture : t 2 dipping 6	surfaces a O degrees	ind medic with plan	ar and undula um fracture s nar and stepp	pacing.		10
						100mm 1000mm					rox	ugh fracture : 10.00-10.15	m Mostly r	vith close non intact	spacing.			1
		10.00-11.00	100	96	68													1
																	-	11
		11.00-12.00	98	72	0													1
																		1
																		12
		12.00-13.00	95	86	60													1
																		13
		13.00-14.00	96	96	36													١
		1																14
		14.00-15.00	100	100	100													1
		14.00-15.00	100	100	100													١
		,				-												15
		15.00-16.00	100	85	35													1
																		16
HHH									61.43	16.50	-		End of Bore	hole at 16.5	50 m			1
l																	[,	17
	Water	Depth (m)	TCR	SCR	RQD	Fracture space	cing	Casing	Level	Deptr	1							Ⅎ
Struc		Rose to Af		ealed	Comr	nent		le Info			Casing	g Diameter	Chise Depths	(m)	Time (hhn	nm)	Tool	
3:28	m	: :		Ξ			16	00m 5.50m	13	5	13	31mm	1	0				
Rema	arks:	Hole terminat	ed at 16	5.50m					1	Shift [Data:	Groundwate	er Shift	(dd/mm/v	yyy) Casing o	lepth Re	emanks	-
												3.88m	17/	1/3814	9.88m 4.88m	Starca	rt of Boreho l of shift nt of shift l of Borehol	e
Equip	pmen	t & Method	is: De	eltabase	e 520						4.00m	20/1	1/2014	16.50m	End	of Borehol	1	

GEO.		NICAL				1	Tel: 02 Fax: 0 www.p	21 4631 21 4638 priorityge	690 eotechnic			Drilled By DS Logged By JM	Borehole No RC03 Sheet 1 of 3
		lame: to Ringask	iddy				Ι.	ject No 1054	0.	Co-ords: 172594E		- 64735N	Hole Type Rotary
	nt: R		,				Date	25:		\neg	Level: 63.42 mOD		Scale
Well / N	Mafar	Sam	nnles i	& In Sit	hı Tas	tina	21/1		-22/11/2		1		1:50
BackfillS		Depth (m)			Res				Level (m AOD)	Depth (m)	Strati	ım Description	Legend
		1.50	СРТ	N=31	1 (6,8/8	,9,10,4)		0.00	61.92	1.50	Open hale boring. Dril CLAY.	sandy	
	∇							0.00	60.42	3.00	Open hale boring. Dril	ler described: Bauiders.	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	V	4.00	СРТ	/25 6	or Omm			0.00	60.42	3.00	Open hole boring. Dri	ier described: Weathere	ed rock.
		4.00-5.00	100	70	39	36mm r 120mm 1000mm 103	avq	4.00	59.42	4.00	SILTSTONE with min coarsening downward carbonaceous faminal weathered, with appar meters and minor oxic surfaces. Fractures: degrees with undulatir	strong, light grey brown or calcite veins. Sequen to fine Sandstone. San Jons. Weathering: Sligh ent loss of strength in u alton colouration on fra Sets. Set 1 dipping 0-1 og rough fracture surfac	idstone has thy pper cture 0 les and
		5.00-6.00	97	74	11						planar fracture surface 4.00-4.20m Non Int	act	ganu
		6.00-7.00	98	88	21						7.00-7.10m Non Int		7
		7.00-8.00	93	82	57						7.00-7.10H Non in	s.i	8
		8.00-9.00	94	94	67								
	Water	Depth (m)	TCR	SCR	RQD	Fracture space	ing	Casing	Level	Depth		ued next sheet	
Grour Struck 3.00m		iter: Rose to Af 3.50m 20n		ealed	Comn	nent	Hok		rmation Hole Di	ameter		selling: hs (m) Time (hh to	imm) Tool
		Hole terminat			520					Shift (Data: Groundwater Sh 3.00m 3.50m 2	rt (dd/mm/yyyy) Casing 1/11/2814 9.88m	depth Remarks Start of shift End of shift

GE0 Proj	ject N	NICAL lame:				T F	rei: 02 Fax: 02 vww.p	ority Geotechnical Ltd. 021 4631600 021 4638690 w.prioritygeotechnical.le			Drilled By DS Logged By JM Co-ords: 172594E - 64735N		DS Logged By JM	Borehole No RC03 Sheet 2 of 3 Hole Type		_
-	Cork	to Ringask PS	iddy				P14 Date	:s:					770014	Rotary Scale		-
Well/			Rota	ary Co	ring		21/11/2014-22/1 Casing / Leve			2014 Depth		evel: 63.42 mOD		1:50 Legend		\vdash
Backfill	Strikes.	Depth (m)	TCR	SCR	RQD	Fractur	es	Flush	(m AOD)		'	Stratum	Description		Legenu	LI
		9.00-10.00	88	88	39						SILTSTONE with coarsening down carbonaceous ia weathered, with a meters and mino surfaces. Fractu degrees with und	h minor on nward to flaminations apparent in or oxidation ures: 2 Security of the contractions of the contraction of the contra	ng, light grey brown allotie verins. Sequen ine Sandstone. San s. Weathering: Sligh loss of strength in up or colouration on tract ts. Set 1 dipping 0-10 ough fracture surface poing with undulating th close spacing.	dstone had ty oper cture 0 es and		10
		10.00-11.00	99	86	0						pianar fracture s	urraces w	ith close spacing.			-11
	11.00-12.00 100 80 20										11.80-12.00 N	Mostly non	Intact			12
	1	12.00-13.00	97	74	0	,					12.40-12.50m	n Non Intac	at .			-13
	1	13.00-14.00	100	86	26											-14
		14.00-15.00	98	98	88											15
		15.00-16.00	97	90	90											
		16.00-17.00	98	82	82						16.00-20.00 F					0
		17.00-18.00	100	100	100						16.85-17.00m	i Non Intak	X.			17
HIIII					<u> </u>	<u> </u>			<u> </u>	L		Continued	ned sheet			Ł
Grou	Water Depth (m) TCR SCR RQD Fracture spacing Casing L Groundwater: Struck Rose to After Sealed Comment Hole Inform. Hole Depth Hole 3.00m 20min -									n:	· I	Chisell Depths (ling: (m) Time (hh	mm)	Tool	
	Remarks: Hole terminated at 20.00m Equipment & Methods: Deltabase 520								_	Shift I	Data: Groundwater 3,00m 3,50m		ddmm/yyyy) Casing 1/2814 9,88m 4,88m		marks t of shift of shift	

m -	-@	→						Geotec		Ltd.			Drilled By	Bore	hole No	
	PRIOR					F	Fax: 02	21 4638 riorityge	690	ical le			DS Logged By	R	C03	- 1
GEO	DTECH	NICAL								ival.ie			JM	-	t3of3	_
	-	Name:						ject No	D.	- 1	Co-ords: 172	594E - 6	4735N	1	e Type	- 1
		to Ringasi	kiddy				P14							_	otary	-l
Clie	ent: R	RPS					Date 21/1	:s: 1/2014	-22/11/	2014	Level: 63.42 mOD			1	50	- 1
Well/ Backfill	Water Strikes	Depth (m)	Rota	ary Co		Fractur	_	Casing /	Level (m AOD	Depth (m)		Stratum Description			Legend	$\lceil floor$
		Departing	TOIL	JUIN	TVQD	Tracus	CO			(-7	Lithology: Mod	erately stro	ong, light grey brown calcite veins. Sequer	neo le		Ħ
		18.00-19.00	93	93	60						coarsening do carbonaceous weathered, wit meters and mi	wnward to lamination h apparent nor oxidation	cardite verns, seque fine Sandstone, Sar is, Weathering; Silgi t loss of strength in u on colouration on fra ets, Set 1 dipping 0-	ndstone ha htty ipper icture	•	-19
		19.00-20.00	100	100	100						degrees with u medium spacin	ndulating ng. Set 2 d	rough fracture surfac Ipping with undulatir with close spacing.	ces and		
			\vdash			-			43.42	20.00		End of Borel	nole at 20.00 m			20
																-21
																-22
																23
																-24
																25
																-26
																H
\vdash	Water	Depth (m)	TCR	SCR	RQD	Fracture space	ing	Casing	Level	Deoft	1					Ц
Grou Struc 3.00r	indwa		ofter S				Hole	e Info	matio	n: lameter	Casing Diameter 131mm	Chise Depths to	(m) Time (h)	hmm)	Tool	
		Hole termina								Shift I	Data: Groundwat 3.00m 3.50m		dd/mm/yyyy) Casing 1/2014 9:00m 4:00m		marks t of shift of shift	
Equip	pmen	t & Metho	ds: D	eltabase	520											



GEOTEC					To Fa	riority Geotechnica el: 021 4631600 ax: 021 4638690 mail: geotechnical			Trialpit TP-20 Sheet 1)13
Project						ect No.		80E - 64896N	Dat	
		ield to Ringa	skiddy		PC6	006	Level: 47.52	m AOD	10/10/2	2006
Locatio	n: C	ork					Dimensions:	1.90m	Sca	
							Depth 등		1:25	5
Client:	С	ork County C	council				Depth 5 2.70m 7		Logged	
									PR	
Samp Depth (m)	Type	Situ Testing Results	Depth (m)	Level (m AOD)	Legend		Stratum D	escription		
,,,,	.,,,,,					Grass over tarmac	- old road			-
			0.10	47.42		FILL - Light beige.	clavev, sandy (fine-coars	se grained), fine to coarse		
			0.30	47.22	****	grained, angular Gi	RAVEL	e grained), fine to coarse		
						FILL - Soft , slightly cobbles	sandy , slightly gravelly	CLAY, with occassional		-
0.50 50-0.70	CBR	5				coppies				- 1
50-0.70	B D									1
										1
										-
										1
										İ
										1
1.50 1.50	B									1
1.50										ł
										I
				F						
										+
										1
										t
										[
										1
2.70	В		0.70	44.00						ŀ
2.70	D		2.70	44.82			Trialpit Comple	te at 2.70 m		t
										1
										-
										ł
										1
										1
										-
										+
										1
										1
										1
										-
										+
										1
										1
										[
										1
										+
										-
emarks			7m becau	se of bu	ried pipe	e. In situ CBR at	0.5m: 5%			
stability:		Good							1	GS
iroundw	ater:	Water at 1.0m	1, rose 15	cm after	20 mins	· .				(10)

PRIORI GEOTECHI				Ŧ	Priority Geotechnica Fel: 021 4631600 Fax: 021 4638690 email: geotechnical		Trialpit N TP-201 Sheet 1 o	6
Project N				Proj	ect No.	Co-ords: 172907E - 64467N	Date	-
	omfield to Ringa	skiddy		PC6	6006	Level: 26.87 m AOD	08/09/200	06
Location:	Cork					Dimensions: 1.90m	Scale 1:25	
Client:	Cork County (Council				Depth 59 3.60m 6	Logged E	Зу
	& In Situ Testing /pe Results	Depth (m)	Level (m AOD)	_egend		Stratum Description		T
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, , , , , , , , , , , , , , , , , , ,				TOPSOIL -Dark bri gravelly (fine-coars roots/rootlets	own, slightly sandy (fine-coarse grained), slightle grained, sub-rounded) CLAY with numerous	tly	+
0.40-0.60 0.40-0.60	В	0.20	26.67		Firm purple brown.	slightly mottled yellow/orange, sandy (fine-coavelly (fine-coarse grained, sub-angular to Y	315 8	1
	B	1.30	25.57		Purple brown, silty angular to sub-ang	sandy (fine-coarse grained), fine to coarse gra ular GRAVEL, with occassional cobbles	ined	
	300	2.20	24.67		Stiff light brown, ye slightly gravelly (fin	llowish, slightly sandy (fine-medium grained), e-coarse grained, sub-rounded) CLAY with rar	e cobbles	-2
.30-3.50 E		3.59 3.60	23.28		LIMESTONE	Trialipit Complete at 3.60 m		-3
								-4
Remarks:	Stopped on p	resumed I	imestone	bedro	ck.			
Stability:	Good				Vater strike at 3.5		AGS	Ç

3 — 3 —		Priority Geotechnic Tel: 021 4631600	al Ltd	Trialpit No
PRIORITY		Fax: 021 4638690		TP-2020
GEOTECHNICAL		email: geotechnical	@priority.le	Sheet 1 of 1
Project Name		roject No.	Co-ords: 175075E - 64028N	Date
N28 - Bloomfield to Ringa Location: Cork	askiddy P	C6006	Level: 38.29 m AOD	06/10/2006
Location. Cork			Dimensions: 3.50m	Scale 1:25
			Depth 5 4.00m 1	
Client: Cork County	Council		4.00m	Logged By M H
Samples & In Situ Testing Depth (m) Type Results	Depth Level (m AOD) Leger	nd	Stratum Description	
0.50 CBR 3 0.50-0.80 B 0.50-0.80 D 1.50-1.80 B 1.50-1.80 D	0.40 37.89	TOPSOIL - soft br		d, 1
2.80-2.90 B 2.80-2.90 D	2.80 35.49	Brown, slightly gra- fine grained SANE	velly (fine-coarse grained, sub-rounded) predominant b, with rare cobbles	y -3
3.80-4.00 B 3.80-4.00 D	3.80 34.49 XXXX XXXX 4.00 34.29 XXXX	grained, sub-angu	dominantly fine grained), slightly gravelly (fine-coarse lar to sub-rounded) SILT. Trialpit Complete at 4.00 m	Constitution of Constitution o
Remarks: In situ CBR a Stability: Groundwater:	at 0.5m: 3%.			AGS

=	∂ ——					riority Geotechnic el: 021 4631600	cal Ltd		Trialpit No
PRIO					F	ax: 021 4638690 mail: geotechnica	I a priority io		TP-2021
GEOTEC							Te priority.ie		Sheet 1 of
Project		Little Discount				ect No.		97E - 63979N	Date
N28 - B		ld to Ringask	iddy		PC6	6006		8 m AOD	13/10/2006
Location	n: Co	rk 					Dimensions:	4.00m	Scale 1:25
Client:		rk County Co					4.20m 9		Logged By P R
	Type	tu Testing Results	Depth (m)	Level (m AOD)	Legend		Stratum D	escription	
						TOPSOIL Firm, b gravelly (fine-coar occassional cobbi	rown, slightly sandy (fine- rse grained sub-angular to les	coarse grained), slightly sub-rounded) CLAY with	
			0.30	36.48		Firm, brown, sligh (fine-coarse grain	tly sandy (fine-coarse gra	ined), slightly gravelly) CLAY with occassional cobble	0
						(iiiio coaiso giaiii	od ungdial to sub-angular) CENT WILL OCCUSSIONAL COODIE	3
0.30-1.50	В								
30-1.80	D								
			4.00	24.00					
			1.80	34.98	====	Soft, brown / light	brown, slightly sandy, slig sub-angular) CLAY with	htly gravelly (fine-coarse	
1.80-2.30	В					granied angular (c	Sub-angular) CLAT WILL	occassional cobbies	
1.80-2.30	D								
2.30-2.80 2.30-2.80	B		2.50	34.28		Firm, brown purpl	e, slightly sandy (fine-coa	rse grained), gravelly inded) CLAY, with occassional	
2.00-2.00						siltstone cobbles	ed sub-angular to sub-rou	inded) CLAT, with occassional	
			2.80	33.98		Brown / Light-pur	ole, slightly sandy (fine-co	arse grained), gravelly	
						(fine-coarse grain weathered rock	ed sub-angular to sub-rou	nded) CLAY, with possible blad	K
1									
					====				
					===				
4.00									
4.00	D				===				
			4.20	32.58			Trialpit Comple	de at 4.20 m	
							глара Сопра	rese no -NEW III	
2.0									
		Stopped at 4.2r	n becau	se exca	vator ge	tting stuck			
Remarks:				0000		9			

	%	→				riority Geotechnic	al Ltd		Trialpit N
GEOTEC	DRITY				F	el: 021 4631600 ax: 021 4638690	0-1-1-1		TP-202
	CHNICA	L				mail: geotechnical	e priority.ie		Sheet 1 of
Project						ect No.		76180E - 64118N	Date
	_	ield to Ringask	iddy		PC6	6006		3.40 m AOD	06/10/200
Locatio	on: C	Cork					Dimensions: Depth	3.20m	Scale 1:25
Client:		Cork County Co		1.10				1.1	Logged B MH
Samp Depth (m)		Situ Testing Results	Depth (m)	Level (m AOD)	Legend		Stratu	m Description	
			0.20	46.20		sub-angular to sub	prounded) CLAY, with		
0.50 0.50-0.70 0.50-0.70	CBR B D	11				Soft to firm, brown grained, angular to	, slightly sandy, sligh o subrounded) CLAY,	tly gravelly (fine-coarse with cobbles	
1.50-1.70 1.50-1.70	BD		1.80	44.60		Possible weathere gravelly (fine-coar	od bedrock - beige, wi se grained, sub-angu	ith iron staining, slightly sandy, lar to subrounded) CLAY	
2.30-2.40 2.30-2.40	BD		3.10	43.30		Possibleweatherecoarse, subangule	d rock recovered as li r to subrounded).	ight brown clayey GRAVEL (fine to	
3.90	В		4.00 4.10	42.40 42.30		Assumed siltstone		omplete at 4.10 m	

GEOTECHNICAL email: geolechnical @ priority, ie Project Name N28 - Bloomfield to Ringaskiddy Location: Cork Cork Cient: Cork County Council Samples & In Situ Testing Depth (n) Type Results 0.30 1.88 0.30		Trialpit I
N28 - Bloomfield to Ringaskiddy	5	Sheet 1
Client: Cork County Council Samples & In Situ Testing Depth (m) Type Results 0.30 1.86 1.86		Date
Client: Cork County Council Samples & In Situ Testing Depth (m) Type Results 0.30 1.86	1	12/09/20
Depth (m) Type Results Depth (m) (m AOD) Legend Stratum Description		Scale 1:25
Depth (m) Type Results (m) (m AOD) Legend Stratum Description 0.10 D 0.30 1.86	l.	Logged F L
0.10 D 0.30 1.86		
1.40 B	th	
1.40 B X X X X	ssional	
2.40 B 2.50 -0.34 XXXX		
Remarks: Stpped due to instability		

≡ PRIORITY		Tel: 021 - Fax: 021	eotechnical Ltd. 4631600 4638690 vritygeotechnical.ie		Trial Pit No TP01
GEOTECHNICAL					Sheet 1 of 1
Project Name:		Project No	I		Date
N28 Cork to Ringaskiddy		P14054		m AOD	26/06/2014
Location: Ringaskiddy, 0	Co. Cork.		Dimensions: Depth 8	3.00m	Scale 1:25
Client: RPS			2.60m 8		Logged By DMC
Samples & In S Water Depth (m) Type	Results (m AOD)	Depth (m)	Stratum I	Description	Legend
0.50-1.00 B 0.50-1.00 D	13.80	0.30 Medi fine t	DE GROUND) Topsoil. um dense, brown, silty very sandy Go coarse. Gravel is fine to medium, um dense to dense, light brown, silte lis fine to coarse, subangular. Pist content decreases with depth. PisRAVEL with high cobble content. Trial pit complete	y sandy GRAVEL. Sand is fine to	o coarse.
Water Depth (m) Type Stability: Good Plant: JCB Backfill: Arisings	Results Level	Depth	Groundwater:		
Remarks: Trial pit terminate	ed due to obstruction.		I		

■		Priority Geo Tel: 021 463	technical Ltd.		1	Pit No
PRIORITY		Fax: 021 46	38690		T	2 02
GEOTECHNICAL		www.priority	/geotechnical.ie		She	et 1 of 1
Project Name:		Project No.	Co-ords: 17768	1E - 63846N	0	ate
N28 Cork to Ringaskiddy		P14054	Level: 13.31	m AOD	26/0	6/2014
Location: Ringaskiddy, Co. Cork.			Dimensions:	3.00m	1	cale
			Depth & 8		1	:25
Client: RPS			2.30m 8			ged By MC
Samples & In Situ Testing Water Depth (m) Type Results	Level D (m AOD)	epth (m)	Stratum [Description		Legend
0.50-1.00 B 0.50-1.00 D 1.50-2.00 B 1.50-2.00 D	11.21	Medium content. subangu	dense to dense brown, slightly s Sand is fine to coarse. Gravel is alar. Cobbles are subrounded, 60 Trial pit complete	bles are angular, 60-150mm di		-3
Water Depth (m) Type Results	Level D	epth				
Stability: Good Plant: JCB Backfill: Arisings Remarks: Trial pit terminated due to obstru		1	Groundwater:			

=		\rightarrow				Priority Geotechnical Ltd. Tel: 021 4631600					Trial Pit No TP03	
	PRIORIT					Fax: 021 4638690 www.prioritygeotecl	hnical.ie					1
					Des	in at Na	On ander			_	eet 1 of 1 Date	4
	ject Nan Cork to R		ch/		- 1	oject No. 1054	Co-ords: 177775E - 63903N Level: 13.10 m AOD			26/06/2014		1
					1 14004		Dimension		4.00m			┨
Loc	cation:	Ringask	iddy, Co. Cork.				Depth		4.5511		1:25	
Clie	ent: RPS	3					4.50m	1.00m			gged By	1
10/-4-	Death (as)		& In Situ Testing	Level	Depth (m)		Str	atum [Description		Legend	1
Water	0.50-1.00 0.50-1.00 1.50-2.00 1.50-2.00	B D	Results	12.80	(m) 0.30	to subrounded,	ghtly sandy gravel Gravel is fine to co 50-100mm dia.	ly SILT	with low cobble content. Saubangular. Cobbles are sub			-1
	2.50-3.00 2.50-3.00	B D		10.00	3.10	Possible weather sandy silty GRA		udstone	e recovered as: brown/green	ı, laminated		-3
	3.50-4.00 3.50-4.00	B D										
	4.00-4.50	В		8.60	4.50							600
18/-4-	Danith (=)	Trees	Dec.#5	\vdash			Trial pit	complete	kd at 4.50 m		$+ \overline{1}$	45.54
Stabi Plant Back	Depth (m) ility: Goo t: JCB cfill: Arisi arks: Tri	od ings	Results minated at required o	Level	Depth	Grou	ındwater:					Authority (1) (2) (4) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4

				1	Priority Geotechnica	al I tri		Slit Trench I	No
) -			7	Tel: 021 4631600	ai Liu			
PRIOR GEOTECH					Fax: 021 4638690 email: geotechnical	@priority.ie		ST-6023	
Project N				Dro	ject No.	0		Sheet 1 of	1
		Ringaskiddy			6006	Co-ords: 1787 Level: 2.96	91E - 64334N m AOD	Date 30/09/200	
Location		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1.0	-	Dimensions:	9.70m	Scale	-
							5.70111	1:25	
Client:	Cork Co	ounty Council				Depth 59.		Logged B	у
Samples	s & In Situ Test	ing Depth	Level					GOC	
Depth (m) T		sults (m)	(m AOD) 2.94	Legend		Stratum [Description		
		0.11	2.85		Spray and chip Cl-804				1
		0.88	2.08		Hardcore / roadfill		Y with cobbles and some rock		-1
1.20 1.20	B D	1.40	1.56			Slit Trench Com	plete at 1.40 m		
									-2
									The chart Totals I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that the chart Total I as a distinct that Total I as
Remarks:				-					
Groundwate	er:							AGS	

_									CEAT	ronah N	la.
3-	- (1) -	\rightarrow				Priority Geotechnica Fel: 021 4631600	I Ltd.			rench N	ю
	PRIORIT				F	Fax: 021 4638690 www.prioritygeotech	nical le		S	Γ01	
GE	OTECHNI	CAL				www.prioritygeotecn	ilicalile		Shee	t1of1	
Pro	ject Nam	e:			Pro	ject No.	Co-ords: 178453E - 63771N		Date		
N28	Cork to F	Ringaskid	idy		P14	054	Level: 22.6	9 m AOD	05/06/2014		
Loc	ation:	Ringaski	ddy, Co. Cork.				Dimensions:	11.55m	1	icale	
<u> </u>							Depth	E	1:25		
Clie	ent: RP	s			Depth & 2.50m 0.75					ged By	
		Campiae P	In Situ Testing							MC	_
Water Strikes	Depth (m)	Type	Results	Level (m AOD)	Depth (m)		Stratum	Description		Legend	
				22.57	0.12		O) Bituminous surfaci	-			Γ
				22.07	0.12	(MADE GROUNI	D) Clause 804 sub-ba	se.		*****	ł
					0.40						ł
				22.29	0.40	(MADE GROUND) FIII described as si	ightly sandy gravelly Silt with high is fine to coarse, angular to suba	cobble	****	I
						Cobbles are ang	ular, Ilmestone, 60-15	Omm dia.	igua.		H
	0.50-1.00	В			*****	H					
	0.50-1.00	D								*****	t
				21.69	1.00	Day bears alle		all Old T. Conding Son in conse		XXXX	1
							ntiy sandy silgntiy gra coarse, subangular.	velly SILT. Sand is fine to coarse.		8-X-X-X-X	ł
										KARJO R	H
										* * * * * *	i
				21.19	1.50			11.11.5		X X X 30 X	H
							Sift Trench Co	mplete at 1.50 m			H
											ŀ
											i
											-2
											H
											H
											ŀ
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Remarks: See detailed section for utility plan.

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N28 Cork to Ringaskiddy	P14054	Level: 26.31 m AOD	05/06/2014
Location: Ringaskiddy, Co. Cork.		Dimensions: 15.10m	Scale 1:25
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Vater trikes	Depth (m)	Samples & Type	In Situ Testing Results	Level (m AOD)	Depth (m)		Stratum D	escription		Legend
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				26.19	0.12	(MADE GROUND content. Sand is Cobbles are ang) Fill described as sligh fne to coarse. Gravel is Mar, limestone, 60-150n	dy sandy gravelly Silt with high fine to coarse, angular to suba nm dia.		
				25.91	0.40	SHALE.				*****
- 1	0.50-0.60	В								
	0.40-1.00 0.40-1.00	B								
				24.81	1.50		Silt Trench Comp	lete at 1.50 m		
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Remarks: See detailed section for utility plan.



APPENDIX 11B: GEOPHYSICAL SURVEY



APEX Geoservices Ltd. Geophysical & Geological Consultants

FINAL REPORT

ON THE

GEOPHYSICAL SURVEY

FOR THE

N28 BLOOMFIELD TO RINGASKIDDY,

Co. Cork

FOR

PRIORITY GEOTECHNICAL LTD & CORK CO. CO..

Kilanerin Gorey Co. Wexford

Tel. 01-2940057 Mobile: 087-9365000 Fax: 01-2940756 Email: info@apexgeoservices.ie

PRIVATE AND CONFIDENTIAL

THE FINDINGS OF THIS REPORT ARE THE RESULT OF A GEOPHYSICAL SURVEY USING NON-INVASIVE SURVEY TECHNIQUES CARRIED OUT AT THE GROUND SURFACE. INTERPRETATIONS CONTAINED IN THIS REPORT ARE DERIVED FROM A KNOWLEDGE OF THE GROUND CONDITIONS, THE GEOPHYSICAL RESPONSES OF GROUND MATERIALS AND THE EXPERIENCE OF THE AUTHOR. APEX GEOSERVICES LTD. HAS PREPARED THIS REPORT IN LINE WITH BEST CURRENT PRACTICE AND WITH ALL REASONABLE SKILL, CARE AND DILIGENCE IN CONSIDERATION OF THE LIMITS IMPOSED BY THE SURVEY TECHNIQUES USED AND THE RESOURCES DEVOTED TO IT BY AGREEMENT WITH THE CLIENT. THE INTERPRETATIVE BASIS OF THE CONCLUSIONS CONTAINED IN THIS REPORT.

PROJECT NUMBER	AGL06184					
Author	CHECKED	REPORT STATUS	DATE			
YVONNE O'CONNELL P.GEO., M.Sc (GEOPHYSICS)	EurGeol, Peter O'Connor P.Geo., M.Sc (GEOPHYSICS), DIP EIA MGT.	FINAL	14 [™] FEBRUARY 2007			

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1. INTRODUCTION

APEX Geoservices Ltd. was requested by Priority Geotechnical Ltd., on behalf of Cork County Council, to carry out a geophysical survey as part of the ground investigation for the N28 Bloomfield to Ringaskiddy, Co. Cork.

1.1 Survey Methodology

- Microgravity surveying to outline any negative density anomalies indicative of karstification and cavity development.
- 2D Resistivity profiling at selected locations to further indicate lateral and vertical overburden variations, the bedrock profile and to delineate areas of irregular bedrock topography and resistivity that indicate possible karstification and cavities.
- Seismic refraction to assist in profiling bedrock and estimating rock excavatability.
- Ground Penetrating Radar (GPR) profiles were recorded using a high frequency (1.5 GHz) antenna to determine asphalt layer thickness and to locate shallow services.

1.2 Site Background

The survey was carried out along the proposed route at the locations specified by the client as follows:

- Ch.40-340m on the Shannonpark Northbound Diverge at Ch.6+300-6+600m Microgravity and 2D Resistivity (Map 2A – Section 1)
- Ch.8+100-8+400m Microgravity and 2D Resistivity (Map 2B Section 2)
- Ch.10+600-11+560m Microgravity and 2D Resistivity with Seismics from Ch.10+600-10+800m. (Map 2C – Section 3)
- Ch.11935-12085 Microgravity and 2D Resistivity. (Map 2D Section 4)
- Ch.0-600m on Link Road Seismics with Microgravity and 2D Resistivity from Ch.0-200m. (Map 2D – Section 5 & 6)
- Ch.400-2400m Ground Penetrating Radar. (Map 2E & Map 2F Appendix II)
- At proposed Roundabout on Link Road at Ch. 13000m Ground Penetrating Radar. (Map 2G– Appendix II)

The geological map for the area (Geology of South Cork, Sheet 25, GSI Bedrock Series 1:100,00) indicates that the five survey areas are underlain by the Cuskiny Member of the Kinsale Formation, comprising flaser-bedded sandstone and mudstone and Waulsortian Limestone which is known to be prone to karstification. The Waulsortian Limestones underlying Section 1 to the north form part of the Cloyne Syncline while the Kinsale Formation Cuskiny Member forms the Ringaskiddy Anticline. Both formations are extensively faulted in a NNW-SSE direction.

2. INTERPRETED RESULTS

2D Resistivity Survey: 2D Resistivity surveying involves the recording of a large number of resistivity readings along a profile in order to map lateral and vertical changes in material types. The recorded resistivity readings are inverted using specialized software to obtain a 2D depth model of the resistivities. An interpretation of the depth model is then made based on typical geophysical responses of ground materials, geological maps, observed site information, available ground investigation data and the experience of the author (Sections 1, 2, 3, 4 and 6).

The resistivity data have generally been interpreted as follows:

Resistivity (Ohm-m)	Interpretation	
50 - 260	Sandy Gravelly Clay/Silt or Boulder Clay	
260 - 800	Silty/Clayey Sand and/or Gravel	
50 - 260	Weathered Sandstone/Limestone	
260 - 800	Weathered Mudstone/Shale	
50 - 260	Mudstone/Shale	
260 - 800	Sandstone/Limestone	

Microgravity Survey: Microgravity surveying involves the measurement of the Earth's Gravitational Field at fixed survey locations along the earth's surface. At each location the elevation and time of each reading is taken and accurately recorded. Corrections are then applied to the recorded data to eliminate effects of local and regional factors including; topography, elevation, tidal effects, latitude and density of the underlying material, which have varying influences on the measured microgravity value.

The recorded data were processed to eliminate earth tide, elevation and location (latitude) effects. The resulting Bouguer microgravity data are plotted on Sections 1, 2, 3, 4 and 6. Variations in the microgravity readings will reflect any anomalous density variations in the underlying geology. These density changes can be caused by features such as air, water or sediment filled cavities, or variations in the nature of the subsurface material and bedrock or in the bedrock topography. The presence of these features results in anomalous depressions in the microgravity field.

Seismic Survey: Seismic surveying measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. The recorded readings are interpreted using specialized software to obtain a 2D depth model of velocity layers. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities. An interpretation of the depth model is then made based on typical geophysical responses of ground materials, geological maps, observed site information, available ground investigation data and the experience of the author (Section 3 and 5).

GPR survey: GPR involves the measurement of the amplitude versus traveltime of a high frequency pulse of electromagnetic energy from the ground surface to a subsurface layer or body and back. Partial reflections of the electromagnetic pulse occur at the boundaries of materials with different geoelectric properties. A recording time from 0 to 20 ns was used. The distance along each profile was recorded in the GPR record header by the odometer. Depth penetration was of the order of 1.0 – 1.5 m bgl. Each profile was adjusted to its correct length to account for odometer error and converted to depth using an asphalt velocity of 14 cm/ns. The interpreted asphalt thickness has been annotated on each profile (Appendix II).

3.1 Section 1 - 2D Resistivity & Microgravity

300m of 2D Resistivity profiles (R6-R7) and microgravity were recorded from Ch.40-340m on the Shannonpark Northbound Diverge from approx. Ch.6+300-6+600m (Map 2a, Section 1).

The geological map for the area indicates that this section is underlain by Cuskiny Member flaserbedded sandstone and mudstone from 0-180m and by Waulsortian Limestone from 180-320m.

The resistivity data have been interpreted as indicating shallow rock comprising sandstone/ mudistone/shale to the west of the section and Waulsortian limestone to the east (Interpreted Sections: Section 1). In addition, weathered rock has been interpreted to the west of the profile. No very high resistivity values indicative of air-filled cavities were recorded. No very high resistivity values indicative of air-filled cavities were recorded.

The microgravity values for this section lie within a range of 369 microGals and generally decrease from decrease from Ch.0-320m (from W-E). A significant decrease in microgravity values was recorded from Ch.100-250m (approx. 260 microGals). It is likely that this decrease is related to faulting between the Cuskinny sandstone/ mudstone/shale to the west and Waulsortian limestone to the east and would be rated medium to high in terms of possible underlying cavitation.

An additional minor decrease in microgravity values was recorded from Ch.260-320m. It is likely that this decrease is related to a gradual increase in overburden thickness and would be rated low in terms of possible underlying cavitation.

3.2 Section 2 - 2D Resistivity & Microgravity

300m of 2D Resistivity profiles (R9-R10) and microgravity were recorded from Ch.8+100-8+400m (Map. 2b. Section 2).

The geological map for the area indicates that this section is undertain by Cuskiny Member flaserbedded sandstone and mudstone from Ch.8100-8125m and by Waulsortian Limestone from Ch.8125-8400m

The resistivity data have been interpreted as indicating sandy gravelly clay/silt and clayey/silty sand/gravel overlying Waulsortian limestone. No very high resistivity values indicative of air-filled cavities were recorded (Interpreted Sections: Section 2).

The microgravity values for this section lie within a range of 261 microGals and generally decrease from Ch.8100-8400m (from NW-SE). A number of minor decreases in microgravity values (from 40 to 70 microGals) have been recorded from Ch.8230-8290m and from Ch.8290-8330m. It is likely that these decreases are related to localised bedrock depressions and would be rated low in terms of possible underlying cavitation.

3.3 Section 3 – 2D Resistivity, Microgravity & Seismics

960m of 2D Resistivity profiles (R4, R5, R8, R1T, RT2 & R3T) and microgravity were recorded from Ch.10600-11560m and 200m of Seismic profiles (S11-S14, S1T & S2T) were recorded from Ch.10600-10800m (Map 2c, Sections 3a, 3b and 3c). 2D Resistivity profiles R1T, RT2 & R3T, Seismic profiles S1T & S2T and 150m of microgravity were recorded during the trial survey carried out in August 2006 in order to determine the preferred survey techniques for the main geophysical investigation.

The geological map for the area indicates that this section is underlain by Cuskinny Member flaserbedded sandstone and mudstone from Ch.0-500m and by Waulsortian Limestone from Ch.500-

The combined 2D-resistivity, microgravity and seismic data have been interpreted on the following basis:

Layer	Velocity Range (m/s)	Resistivity Range (Ohm-m)	Interpretation	Estimated Stiffness/ Rock Quality	Estimated Excavatability
1	333-870	50-260	Sandy Gravelly Clay/Silt	Soft-Firm	Diggable
		260-800	Silty/Clayey Sand and/or Gravel	Loose-Med. Dense	
2	1159-1500	50 - 260	Boulder Clay	Stiff	Diggable
3	690-1500	50-800	Completely to Highly Weathered Rock	Poor	Rippable
4	1435-1683	50-800	Moderately Weathered Rock	Fair	Marginally Rippable-
5	2225-3609	50-260	Moderately to slightly weathered Mudstone/Shale	Fair-Good	Break/Blast
		260-800	Moderately to slightly weathered Sandstone or Moderately to slightly weathered/karstifled Limestone		

The geophysical data in conjunction with the borehole data have been interpreted as indicating sandstone/mudstone/shale to the NW of this section, from Ch.10+600-10+830m. The resistivity data have been interpreted as indicating a change in bedrock lithology across R3 (Trial) to Waulsortian Limestone. Overburden thickness increases from CH.10830-11050m with up to 23m of stiff boulder clay interpreted.

A large zone of possible karstic weathering of the bedrock has been interpreted on profile R1(Trial) between Ch. 10+980 and 11+050m. The data shows low bedrock resistivity and relatively low seismic velocities coinciding with an anomalous decrease in microgravity values of the scale of approx. 100 microGal. A surface depression was noted on the map to the NE of the proposed route ac. Ch.11+180m.

No very high resistivity values indicative of air-filled cavities were recorded across this survey area.

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Very thick (>30m) low resistivity boulder clay or saturated sediments were recorded in the tidal flats surrounding Profile R5. The bedrock level shallows significantly from Ch.11+320m through to Ch.11+560m. The The geological map for the area indicates that this section is underlain by Cuskinny Member flaser-bedded sandstone and mudstone however, the high bedrock restivities have been interpreted as indicating that this area remains underlain by Waulsortian Limestone.

The microgravity values for this section lie within a range of 1006 microGals and generally decrease from Ch.10+600-11+560m (from NW-SE). A number of small to medium decreases in microgravity values (from 50 to 130 microGals) have been recorded as follows:

No.	Ch. from	Ch. to	Amplitude	Possible Source	Cavitation Risk
1	10630	10670	65	Sandstone/mudstone area- possibly related to increased weathering of rock	Low
2	10690	10740	90	Sandstone/mudstone area—possibly related to increased weathering of rock	Low
3	10850	10890	60	Limestone area – possible bedrock depression	Medium
4	10890	10950	70	Limestone area – possible bedrock depression	Medium
5	10980	11050	65	Over possible zone of possible karstic limestone	High
6	11190	11230	50	Limestone area – possible bedrock depression	Medium
7	11250	11330	130	Limestone area – possible bedrock depression	Medium
8	11380	11440	60	Limestone area – over shallow bedrock depression	Low

3.4 Section 4 - 2D Resistivity & Microgravity

150m of 2D Resistivity profiles (R3) and microgravity were recorded from Ch.11+935-12+085m (Map 2d, Section 4).

The geological map for the area indicates that this section is underlain by Waulsortian Limestone lying parallel to a geological boundary with the Cuskinny Member.

The resistivity data in conjunction with the microgravity data have been interpreted as indicating generally sandy gravelly clay/silt.

The microgravity values for this section lie within a range of 109 microGals and increase from Ch.11+950-12+100m (from W-E). Although the geological map indicates underlying Waulsortian Limestone, the low amplitude decrease in microgravity values to the west of the section is not likely to reflect highly karstified low resistivity limestone and therefore this low resistivity material has been interpreted as mudstone/shale. This decrease to the west may be associated with the change in lithology and would be rated low in terms of possible underlying cavitation.

No very high resistivity values indicative of air-filled cavities were recorded.

- 1.3 Report Outline

 ↑ The survey results are discussed in Part 2.

 ↑ Recommendations are made in Part 3.

 ↑ The locations of the geophysical readings are shown on Map 1.

 ↑ The interpreted Microgravity, 2D-resistivity and Seismic data are shown on Sections 1-5.

 ↑ The geophysical methodology is discussed in Appendix I.

 ↑ The interpreted GPR Profiles are plotted in Appendix II.

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3.5 Section 5 - Seismics

600m of Seismic profiles (S1-S10) were recorded from Ch.0-600m from the Loughbeg Roundabout at circa Ch. 12+000m (Map 2d, Interpreted Sections: Section 5).

The geological map for the area indicates that this section is underlain by Cuskinny Member flaserbedded sandstone and mudstone from 0-500m and by Waulsortian Limestone from 500-600m.

Three velocity layers have been interpreted from the seismic data as follows (Section 5):

Layer	Velocity range (m/s)	Average Velocity (m/s)	Thickness range (m)	Average Thickness (m)	Interpretation	Estimated Stiffness/ Rock Quality	Estimated Excavatability
1	385-1000	645	0.6-4.7	1.6	Overburden	Firm-Stiff or Medium dense-Dense	Diggable
2	1000-2138	1471	0.3-11.1	4.5	Highly-Slightly Weathered Rock	Fair-Good	Rippable or Break/Blast
3	2271-4627	3094			Slightly weathered-Fresh Rock	Good	Break/Blast

Recorded Layer 1 velocities range from 385-1000m/s with an average velocity of 645m/s. In conjunction with the borehole data, the recorded velocities have been interpreted as indicating firm to stiff sandy gravelly clay/silt and medium dense to dense clayey/silty sand and/or gravel which should be diggable. Layer 1 ranges in thickness from 0.6 to 4.7m with an average thickness of 1.6m.

Layer 2 velocities range from 1000 to 2138 m/s with an average velocity of 1471 m/s, and has been interpreted, in conjunction with boreholes BH1056, BH1057 and BH1058 as indicating highly to slightly weathered rock. This layer has been interpreted up to 11.1m thick with an average thickness of 4.5 m. Layer 3 is likely to be rippable to marginally rippable where the recorded velocities are less than 1800 m/s (i.e. Layer 3 is likely to be rippable where velocities are <1500m/s on spreads S2, S3, S4, S5, S8 and S9 and marginally rippable where velocities range from 1500-1800m/s — S6 and S7). However, where the recorded velocities exceed 1800 m/s (i.e. S1 and S10) excavation of this layer is likely to require breaking.

Layer 3 has been interpreted as indicating slightly weathered to fresh rock with an average velocity of 3094m/s which indicates that excavation of this layer will require breaking/blasting. Velocities are lowest between S5 and S8 (from Ch.255-475m).

3.6 Section 6 – 2D Resistivity & Microgravity

200m of 2D Resistivity profiles (R1 & R2) and microgravity were recorded from Ch.0-200m from the Loughbeg Roundabout at circa Ch. 12+000m (Map 2d, Interpreted Sections: Section 6).

The geological map for the area indicates that this section is underlain by Cuskiny Member flaserbedded sandstone and mudstone.

The resistivity data in conjunction with the overlapping seismic data have been interpreted as indicating shallow weathered rock undertain by fresh rock comprising low resistivity mudstone/shale and higher resistivity probable sandstone. No very high resistivity values indicative of air-filled cavities were recorded.

The microgravity values for this section lie within a range of 282 microGals and decrease from 0-200m (from S-N). This gradual decrease may be associated with an increase in weathering or weathered layer thickness to the north and would be rated low in terms of possible underlying cavitation.

3.7 Section 7 - Ground Penetrating Radar

4km of GPR profiles were recorded from Ch.400-2+400m. A local chainage has been used by to illustrate the profile locations (Maps 2e and 2f, Appendix II).

A total of 35 profiles were recorded. A typical asphalt velocity of 14 cm/ns has been used to convert the two-way traveltime. 36 pavement core logs were supplied by the client and have been drawn on to the interpreted profiles.

The interpreted surface base has been annotated (red) on each profile. The surface thickness varies from generally around 0.3m to 0.4m. A reflection from the base of the binder is visible on most profiles at a depth of approx. 1m bgl. This reflection (blue) has been marked on each profile. Some additional layering also occurs within the surface and binder. These reflections (pink) have been marked, where interpreted, on each profile.

A change in surface thickness is evident at the bridge locations at Ch. 625-675m and Ch.2+200-2+240m and at the slip road at Ch.1345-1375m. The surface and binder thicknesses are relatively constant across the areas surveyed with location undulations occasionally present.

3.8 Section 8 - Ground Penetrating Radar

Approx. 600m of GPR profiles were recorded across the proposed roundabout at Ch.800m on the Link Road at Ch. 13+000 (Map 2g, Appendix II).

A total of 7 profiles were recorded. A typical asphalt velocity of 14 cm/ns has been used to convert the two-way traveltime. 6 pavement core logs were supplied by the client and have been drawn on to the interpreted profiles.

The interpreted surface base has been annotated (red) on each profile. The surface thickness varies from 0.1m to 0.2m thick averaging at 0.15m. A reflection from the beneath the surface assumed to be from the bottom of the sub-base, is visible on most profiles at depths ranging from 0.2m to 0.4m bgl. This reflection (blue) has also been marked on each profile. Some additional layering also occurs below the interpreted bottom of the sub-base. These reflections (pink) have been marked, where interpreted, on each profile.

The surface thickness is relatively constant across the areas surveyed while the sub-base thickness undulates and cannot be determined in places.

A possible service has been interpreted at 37m on Profile 1-2.

3. CONCLUSIONS AND RECOMMENDATIONS

The geophysical survey has successfully outlined variations in overburden thickness, lateral variations in overburden type, bedrock profile, rock quality, variations in bedrock lithology and zones of possible karstification.

Boreholes are recommended at a number of survey locations to further investigate the zones of possible karstification as follows:

- On Section 1 a significant decrease in microgravity values was recorded centred at Ch.175m on the slip road from approx. Ch.6+300-6+600m and would be rated medium to high in terms of possible underlying cavitation.
- On Section 3 small to medium decreases were recorded centered at Chainages 11+870m, 10+910m, 11+015m, 11+210m and 11+280m and would be rated medium to high in terms of possible underlying cavitation.
- On Section 4 to investigate the bedrock lithology.

Drilling and pitting is recommended along Section 5 to confirm the composition and excavatability of Layer 2 material as indicated by the geophysical survey.

If any bedrock excavation is proposed a detailed assessment of excavatability should be carried out combining the results of the geophysical survey, rotary core drilling, strength testing, and trial excavation pits using a high powered excavator.

The geophysical interpretation should be reviewed based on the findings of any further direct investigation.

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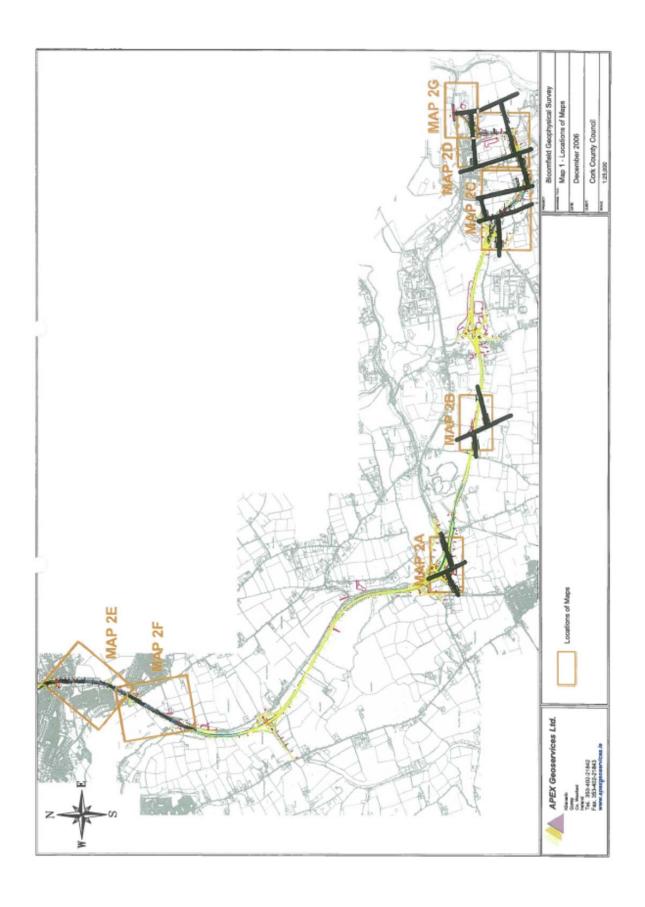
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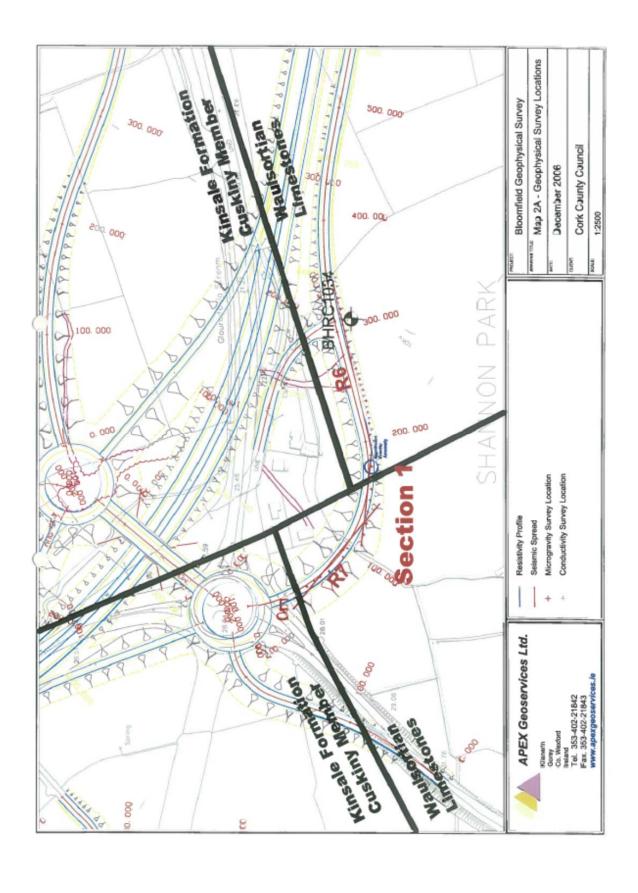
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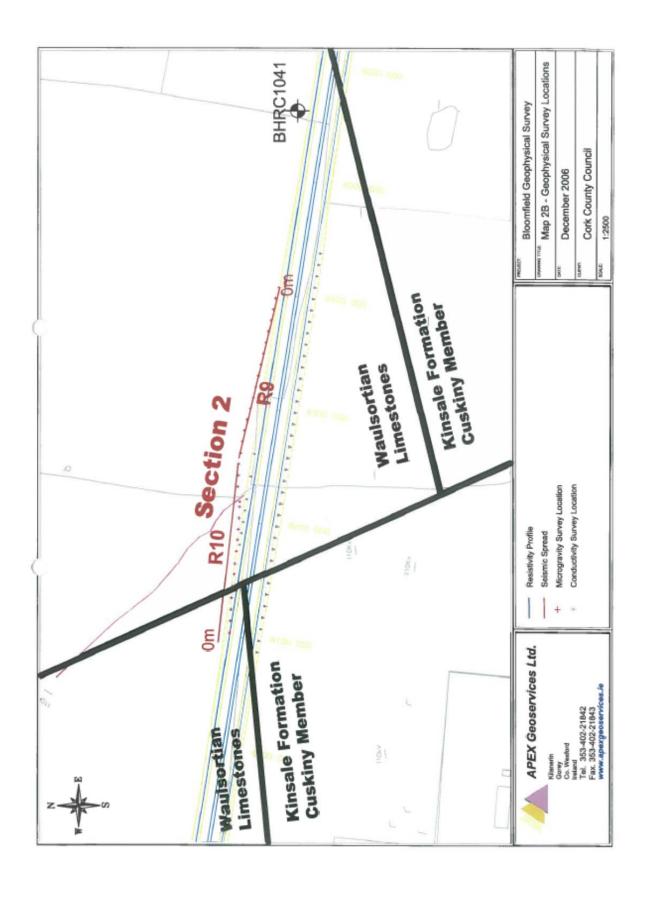
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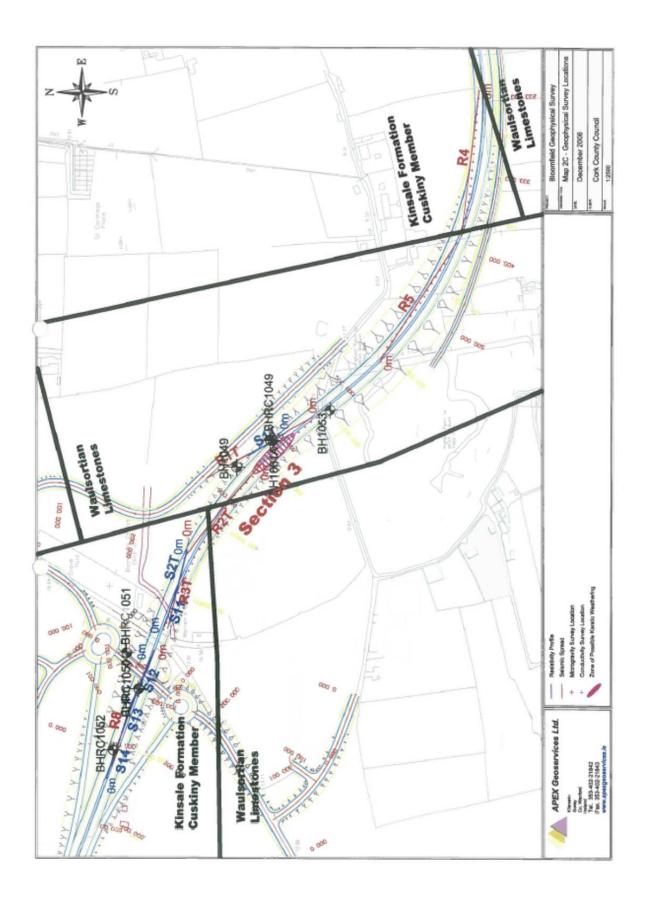
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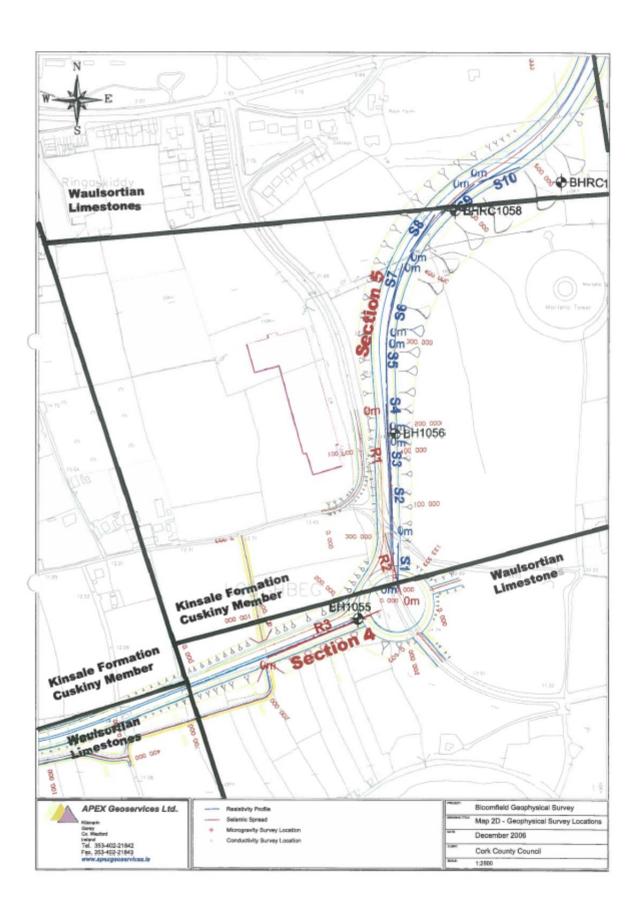
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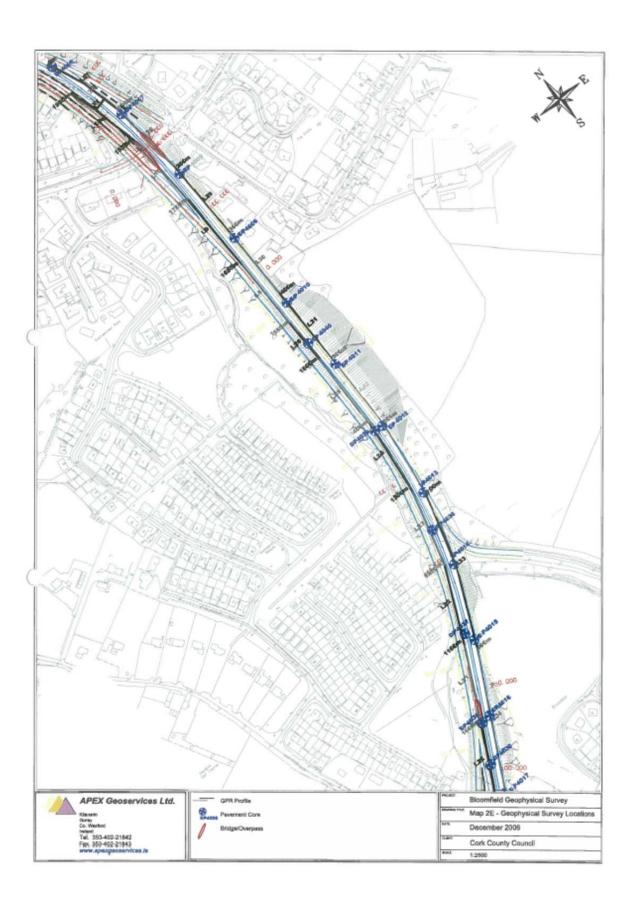


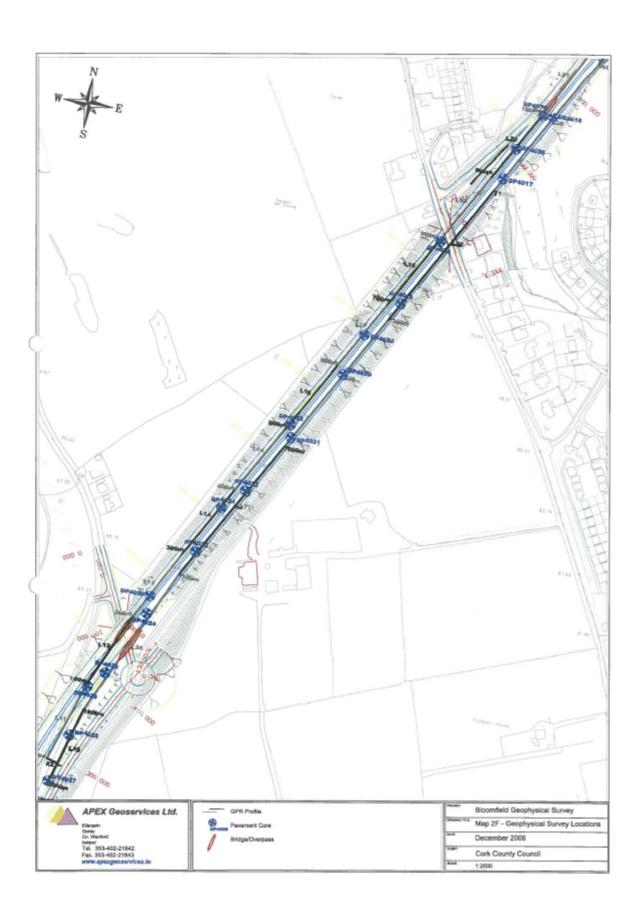


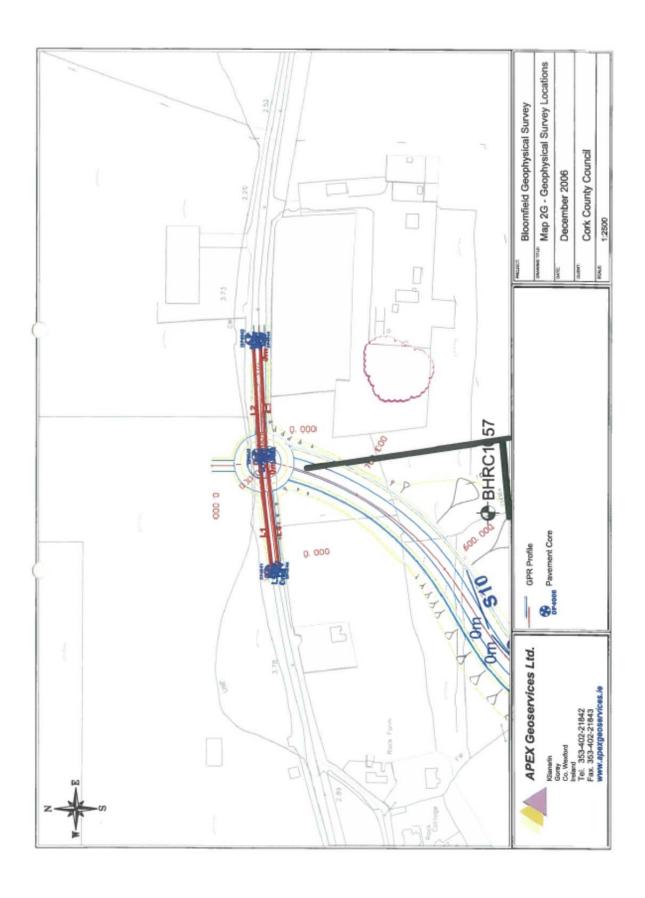




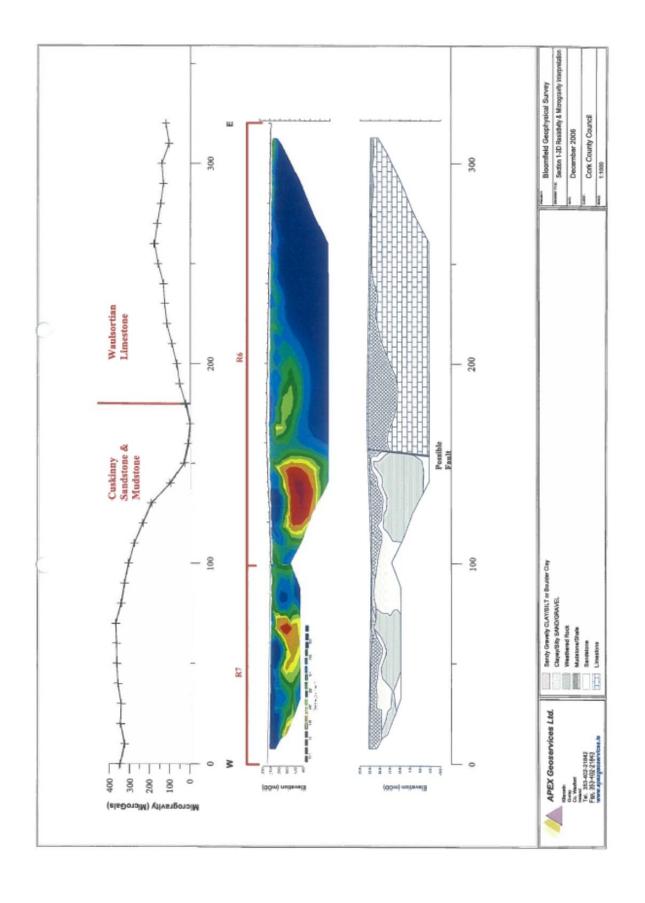


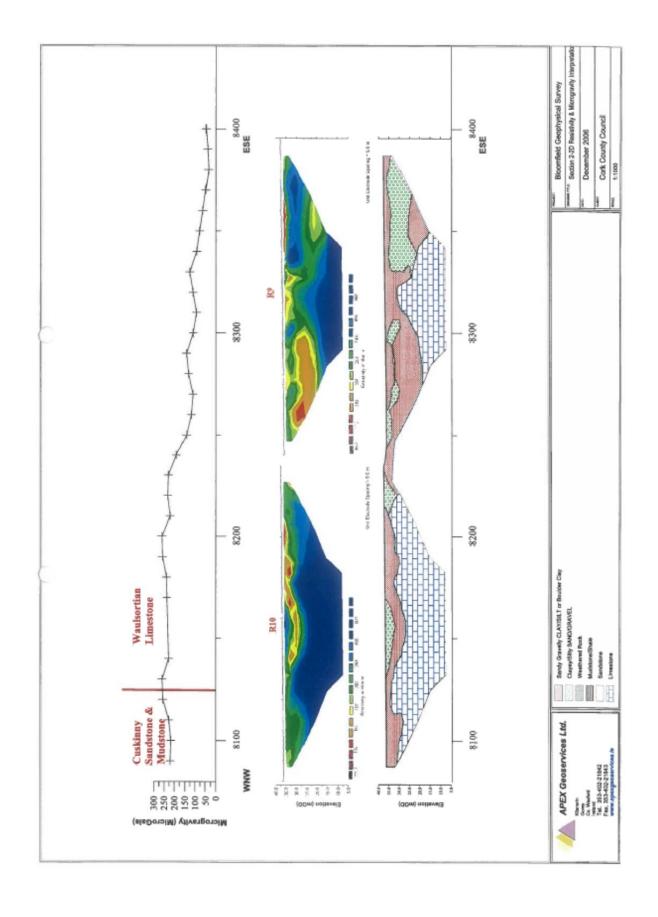


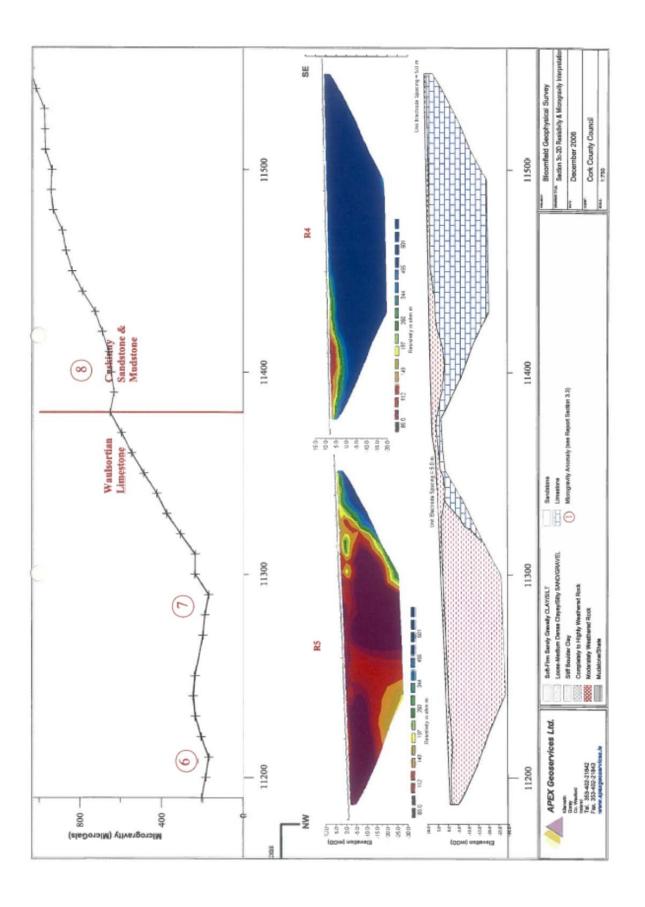


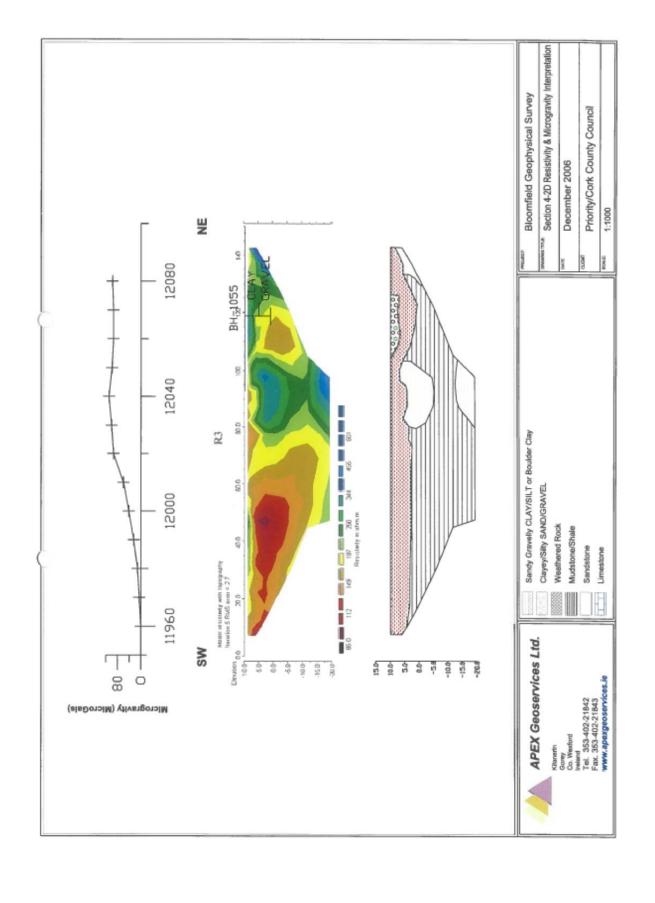


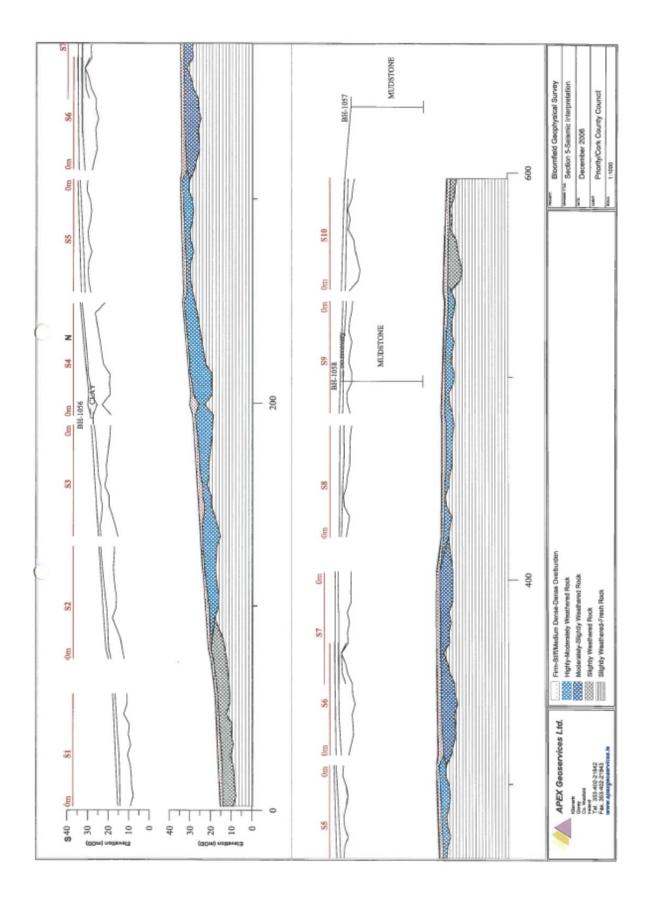
INTERPRETED SECTIONS

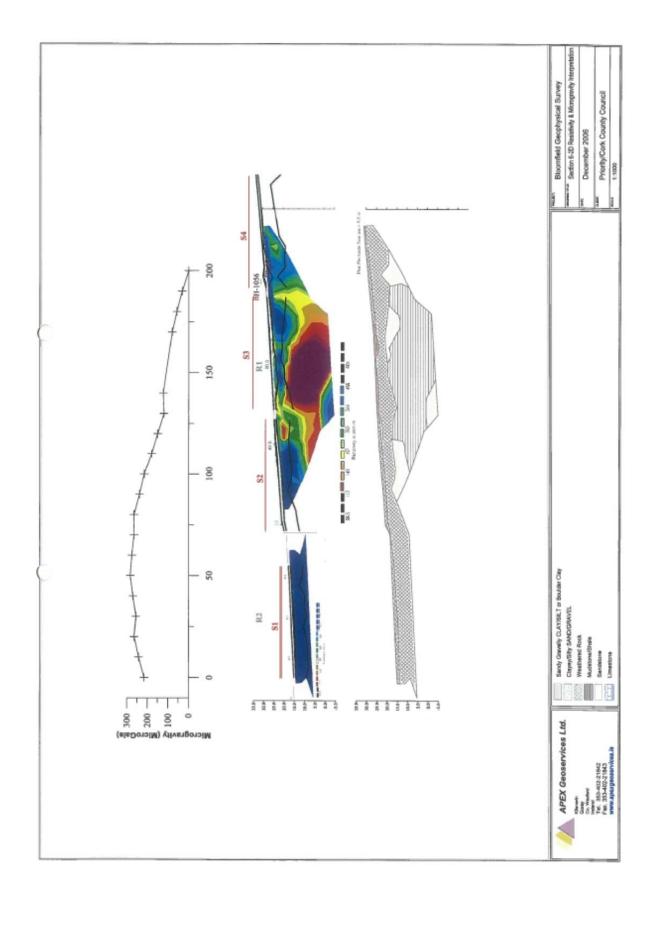












APPENDIX I GEOPHYSICAL METHODLOGY

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1.3	Seismic Refraction Profiling
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Methods Used

M1.

M1. Methods Used

Microgravity

This method involves the measurement of the Earth's Gravitational Field at fixed survey locations along the earth's surface. At each location the elevation and time of each reading is taken and accurately recorded. Corrections are then applied to the recorded data to eliminate effects of local and regional factors including; topography, elevation, tidal effects, latitude and density of the underlying material, which have varying influences on measured microgravity value. When these factors have been corrected in the data, the resulting variations in the recorded gravity readings will reflect any anomalous density variations in the underlying geology.

These density changes can be caused by features such as air, water or sediment filled cavities, or variations in the nature of the subsurface material and bedrock or in the bedrock topography.

2D-Resistivity Profiling

This surveying technique also makes use of the Wenner resistivity array. The 2D-resistivity profiling method records a large number of resistivity readings in order to map lateral and vertical changes in material types. The 2D-resistivity profiling method involves the use of up to 62 electrodes connected to a resistivity meter, using computer software to control the process of data collection and storage.

Seismic Refraction Profiling

This method measures the velocity of refracted seismic waves through the overburden and rock material and allows an assessment of the thickness and quality of the materials present to be made. Stiffer and stronger materials usually have higher seismic velocities while soft, loose or fractured materials have lower velocities. Readings are taken using geophones connected via multi-core cable to a seismograph.

Ground Penetrating Radar

Ground Probing Radar (GPR) involves the measurement of the amplitude versus traveltime (Two-Way-Time in Nanoseconds [ns]) of a high frequency pulse of electromagnetic energy from the ground surface to a subsurface layer or body and back. These pulses are transmitted with a high repetition rate as the antenna is towed along the ground and the reflected pulses build up a picture of the subsurface structure. Partial reflections of the electromagnetic pulse occur at the boundaries of materials with different geoelectric properties. .

To convert the measured Two-Way-Time into a depth an electromagnetic velocity has to be estimated for the material below a surveyed profile, and the following formula is used:

Depth [m] = Velocity [cm/ns] * Two-Way-Time [ns] * 0.005

The penetration of the GPR signal depends on the nature of the sub-surface material, Clay-rich and water saturated soils have a lower penetration than gravelly and dry soils. Signal penetration and resolution limits are also governed by the centre frequency of the transmitted electromagnetic pulse. High frequencies give good resolution and shallow penetration. Lower frequencies give lower resolution and deeper penetration.

M2. **Equipment Used**

2.1 Microgravity

0

The survey was carried out using a Scrintrex CG-3 Gravity Meter. This meter is sensitive to small changes in gravity and single readings can be obtained with a precision of 1 microGal. The location and elevation of each microgravity survey station were recorded. A Sokkisha B2A Level with tripod and staff was used to record all station elevations. Vertical accuracy is of the order of +/- 10mm.

2D-Resistivity Profiling

The 2D Resistivity profiles were recorded using a Tigre resistivity meter, imaging software, two 32 takeout multicore cables and 64 stainless steel electrodes. The recorded data was processed and viewed immediately after the survey.

2.3 Seismic Refraction Profiling

The seismic spreads were recorded using a Ras-24 high resolution 24 channel digital seismograph with geophone spacings of 5m. The source of the seismic waves was a sledgehammer.

Ground Penetrating Radar

The radar survey was carried out using a GSSI SIR-2000, with a 1.5GHz antenna with built-in odometer.

M3. Field Procedure

3.1 Microgravity

Microgravity readings were recorded at 10m intervals. Two successive 1 min readings were taken. Where the difference between successive readings was greater than 10 microGal a third reading was taken. A base station was located in the survey grid with base station readings recorded at the start and end of the survey to correct for instrument and tidal drift. At each survey location notes were taken of the times, coordinates and instrument readings. Functional checks were carried out to check the meter was operating correctly.

3.2 2D-Resistivity Profiling

Three profiles were recorded on the 29th August 2006 and 10 profiles were recorded between the 28th November and the 1st December 2006. The 2D-Resistivity profiles consisted of up to 32 electrodes at 5m spacings. Resistances were measured for expanding arrays. 2 cycles were recorded to 3% repeatability. Saline solution was added around electrodes in areas of high contact resistance. Local conditions and variations were recorded. QC inversion of each profile was carried out before removal of electrodes.

3.3 Seismic Refraction Profiling

Three seismic spreads were recorded on the 29th August and fourteen seismic spreads were recorded between the 28th November and the 1st December 2006. Each seismic spread consisted of 12 collinear geophones at a spacing of 5m. Records from up to five different positions were taken on each spread (2 x off-end, 2 x end, 1 x middle) to ensure optimum coverage of all refractors. Ongoing estimation of refractor velocities was carried out to monitor refractor type and depth.

3.4 Ground Penetrating Radar

The profiles were recorded in December 2006. The position of each profile was surveyed to give Irish National Grid Co-ordinates by a Trimble RTK 4700 system.

Notes were taken of any surface features that were likely to interfere with the recorded GPR signal. A total of 69 profiles were recorded – 27 were test profiles and 42 were recorded for interpretation. A recording time from 0 to 20 ns was used. The distance along each profile was recorded in the GPR record header by the odometer.

The data was recorded on the hard disk in the operating console and later transferred to a computer for processing and printing. Depth penetration was of the order of 1.5 m bgl.

M4. Data Processing

4.1 Microgravity

A number of corrections were made to the recorded microgravity data in order to obtain the Bouguer Gravity, as follows:

- 1. gravity reading corrected for drift
- 2. addition of the free air correction = 308.6 * (Elevation at Station Elevation at Base)
- subtraction of the latitude correction = 0.8108 * Sin (2*latitude) * (Northing at Station Northing at Base)
- 4. subtraction of the Bouguer correction = 41.92 * 2.67 * (Elevation at Station Elevation at Base)

No terrain corrections were applied. All corrections were calculated in microGals when distances and elevations were entered in metres.

4.2 2D-Resistivity Profiling

The field readings were stored in computer files and inverted using the RES2DINV package (Campus Geophysical Instruments, 1997) with up to 5 iterations of the measured data carried out for each profile to obtain a 2D-Depth model of the resistivities.

The inverted 2D-Resistivity models and corresponding interpreted geology are displayed on the Sections 1 to 6. The chainage is indicated along the horizontal axis of the profile and the depth below ground level is indicated on the vertical axis. All profiles have been contoured using the same contour intervals and colour codes.

It is important to note that the data displayed on the 2D-Resistivity profiles is real physical data however interpretation of the geophysical results is required to transform the resistivities directly into geological layers.

4.3 Seismic Refraction Profiling

First break picking in digital format was carried out using the FIRSTPIX software program to construct traveltime plots for each spread. Velocity phases were selected from these plots using the GREMIX software program and were used to calculate the thickness of individual velocity units. Topographic data were input. Material types were assigned and estimation made of material properties, cross-referenced to the 2D Resistivity and borehole data. The processed seismic data and corresponding interpreted geology are displayed on Sections 3 and 5.

Approximate errors for velocities are estimated to be +/- 10%. Errors for the calculated layer thicknesses are of the order of +/-20%. Possible errors due to the "hidden layer" and "velocity inversion" effects may also occur (Soske, 1959).

4.4 Ground Penetrating Radar

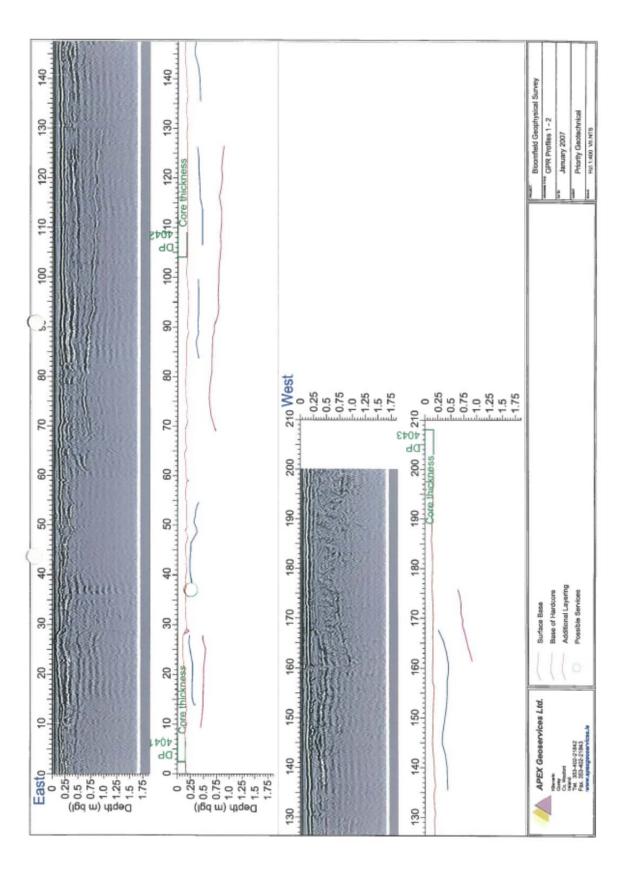
The recorded profiles were input into the RADAN software package. Each profile was adjusted to its correct length to account for odometer error and converted to depth using an asphalt velocity of 15 cm/ns. The depth and horizontal axes are graduated in metres. The interpreted asphalt thickness has been annotated on each plotted profile (Appendix II) and their locations are also shown on Maps 2e and 2f.

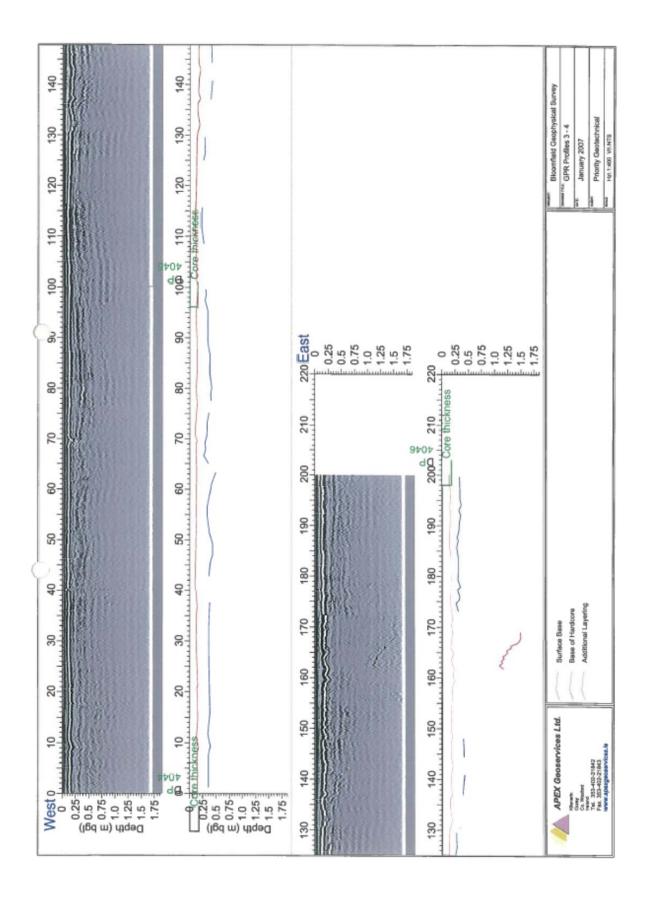
Note: The GPR anomalies were picked on-screen in the Autocad software packages. The on-screen resolution of the profiles is much greater than the resolution of the printed profiles,

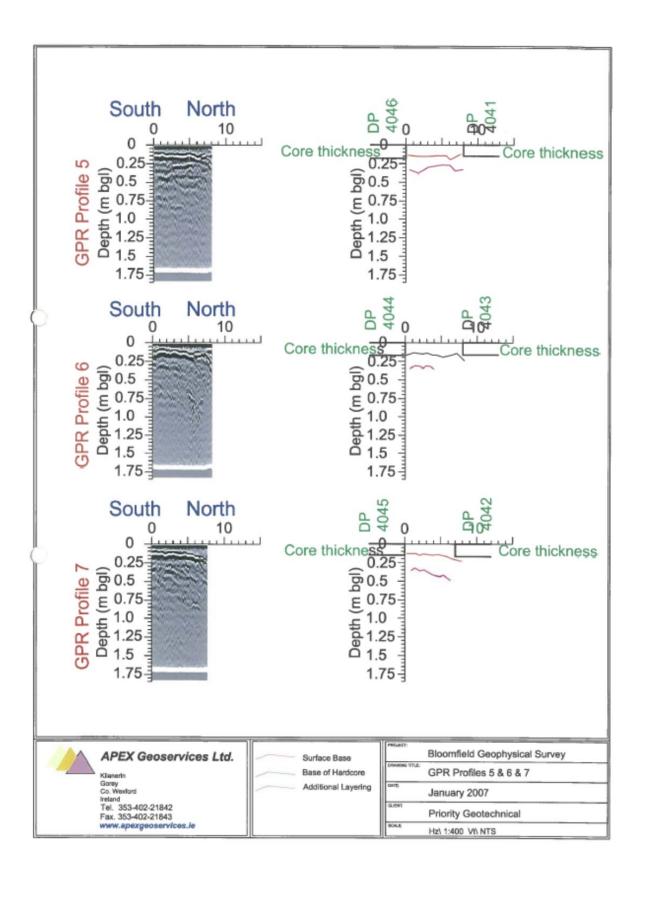
APPENDIX II INTERPRETED GPR PROFILES

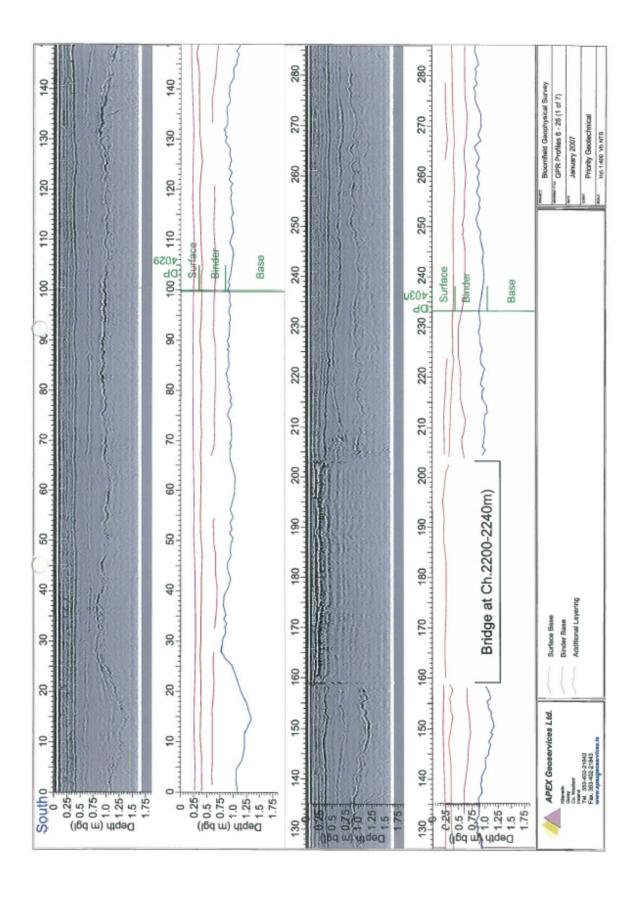
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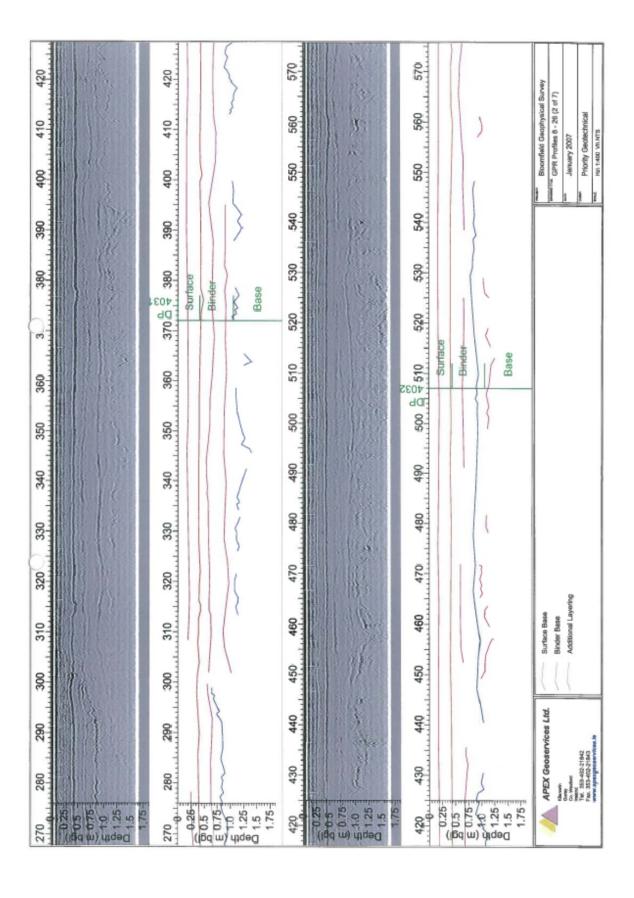
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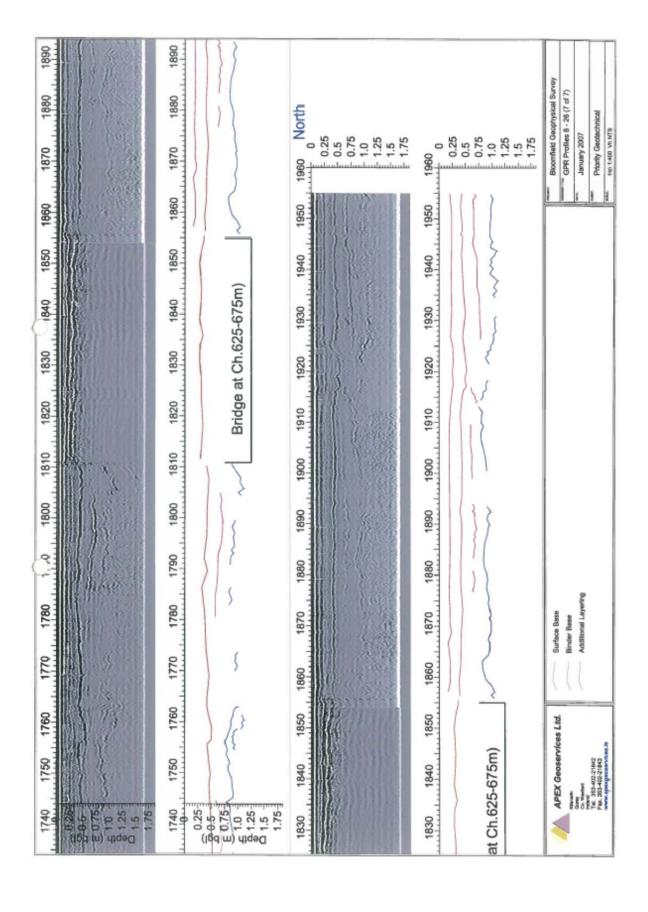


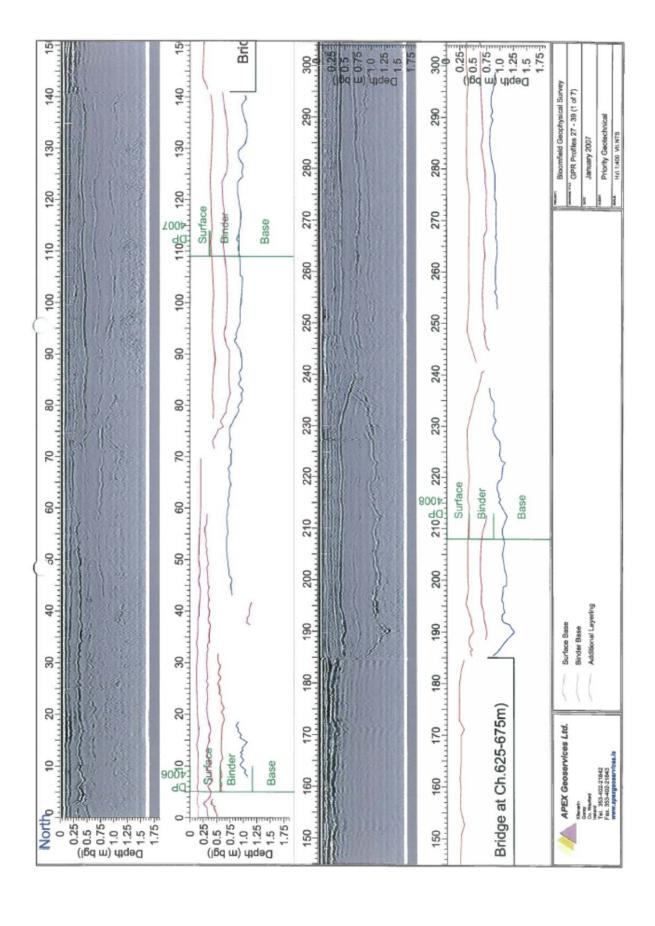
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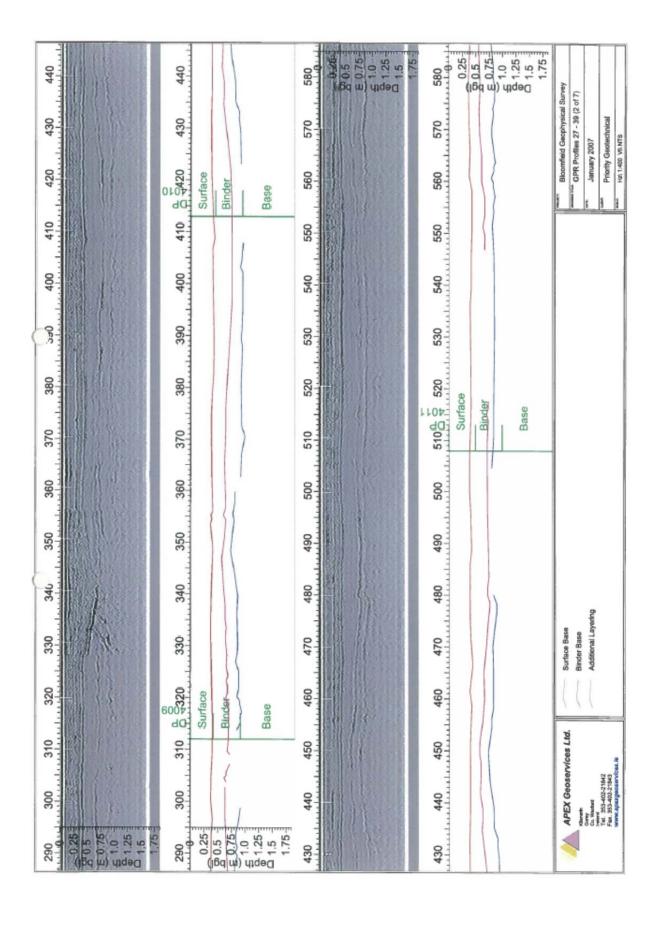
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