# Appendix D BGS Borehole Records

NZ 37 SW/36

SECTION OF Murton Village - Low Farm Borehole.

(Murton 86 S.E. No.10.)

Surface Level 191.75 A.O.D. NZ 3295 7086

Cores examined at Single Box R.H.Price.

Borer Boyles Bros. Data of having or sinking 4 95 3

Dat	e of boring or sinking 1953 Borer Boyles	Bros.					_
One	e-inch Map 15 Six-inch Map (County and Half-Quarter	Sheet)_No	thumbe	rler	a n.86 SI	S	
		Th	ickness.		Depth from	m Suri	ace.
British Ge	ological Survey	() Fathoms	. leet.	ins.	Fathoms.	feet.	ins.
	NZ 37 5W/36	1					
	Open hole. Boulder olay. PAGE NO.		Ì		1	3	6
	Open hole. Broken sandstone.			6	1	4	0
	Light grey, brown weathering fine to medium flaggy				British Geologica	Survey	
	sendstone, much plant debris on partings.	25-6	2 3	6	. 4	1	6
	COAL (1' 10" recovered) METAL.	18-4	2	7	4	4	1
	Grey fireclay, shaly, ironst one nodules, many plant	31-5	3	4	- 5	1	5
	Grey planty mudstone, Neuropteris, etc.	32-7	1	2	5	2	7
	Black carbonaceous shale, much fusian.	32-4	drivin ver	4	5	2	11
	Grey sandy shaly fireclay.	33-4		5	5	.3	4
	Grey earthy, rubbly, ganisteroid sandstone, ironstone		3	8	- 6	1	0
	Grey banded earthy sandstone and siltstone, many pl	ants. 38-2	1	2	6	2	2
	Dark grey sandy madstone, some irony nodules, few				British Geologica	Survey	
	Naiadites sp. irony at base	49-11 1	5	9	8	1	11
	COAL. F&	51-3	. 1	4	8	3	3
	Grey sandy micaceous fireclay.	51-6		3	8	3	6
British Ge	Grey early micaceous ganasteroid sandstone.	53-0	Brüsh Ged	ogical S 6	<sup>7789</sup> 8	5	0
	Dark grey rooty sandy madstone passing down into	9					
	mudstone with sandstone partings into go						
	Ganisteroid micaceous sandstone.	56-10	3	10	9 .	2	10
	Dark grey siltstone with sandstone laminae, plant	151			British Geologica	al Survey	
	debris, partings of mudstone at base.	60-1	3	3	10	0	1
	Dark grey sandstone with swirls & infillings of ire	one					
	sandstone, Mussels at base, pourly presen			8	: 10		9
British Ge	Black very sandy micaceous shale with thin irony sa		British Geo	logical Si	vey		
	intercalations, much plant debris, occasion						
			. 3	7	10		4
	fish scales, massel fragments, and Spive	l l	,	6	10		100
	Sandstone, irony micaceous, with partings of black	PHATE.		°	10	4	100
	British Geological Survey British Geological Survey	11	1	1	British Geologica	Survey	1 1

		7	hickn	685,		Depth from	n Suri	ace.	122
Brillish Geological Survey	British Geological Survay	Fatho	ms.	feet.	ins.	Fathoms.	feet	ins.	, -
	2 74.24 F	,					1	1	1
Dark grey midstone, well p	reservedthough scarce								
mussels, fow Sp	ivorbis.			3	0	11	1	10	
Grey siltstone with interc	alations of sandstone.	gical Survi	y.	. 2	5	. 11	Brit <b>4</b>	eolo <b>3</b> ca	Burvey
Grey mudstone, few fragmen	tary mussels near base,					100			
mudstone, fr	agmentary at top.		_	3	0	12	1	3	
Grey siltstone with sandst		31. 0	1	0	3	13	1	6	
Slumped gray siltstones wi	much plant debris. th mandstone intercalati	ons,		2	6	British Geol <b>d 3</b> ii S	u - y <b>4</b>	0	
Light grey medium planty f				1	0	13	5	0	
Grey mudstone & sandy muds	one, very occasional								12
ironstone 1	pands.		1.	3	3	15.	2	3	
Grey banded very sandy mad	stone. British Geor	egical Surve			3	15	2	6	Sumary
Grey mudstone, occasional		0							
occasional r	masels at 16-1-0.		1	0	6	16	3	0	_
Black shale.	18 v * , * ,				2	. 16	3	2	
COAL.	٠,٠	)		1	0	16	4	2	
Dark shale (? cannel - not	Brillish Geological Survey  • xamined)	}			6	entish Geological S	4	8	
COAL.		{			2	16	4	10	
Dark shale.	BOS REGISTRATION NO.	{			1	1,6	4	11	
COAL.	NZ 37 SW / 36	· {	SEAK		6	16	5	5	
British Geological Survey  Black fireclay.	British Geo	egical Surv	TARD S	P	7	17	British	Beologica O	Survey
Black carbonacecus shale wi	th coal streaks.	{	A		3	17	0	3	
Black carbonaceous shale.	ν 8	{		ľ	10	17	1.	1	
Grey mudstone, few ironston	a hands were nleat week	{							_
British Geological Survey COmpression	structures and pyrites	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				British Geological S	ulvey	_	
500 11 (BUTTO-00100) AND COMM	n veins ankerite.	3	1	. 2	6	18	3	7	
COAL.	3 OC O	,		2	7	19	0	2	
Brown-grey fireclay.				1	3	.19	1	5	
Grey very sandy rubbly fire		raical Surve		2	4	19	3 Bottsh	9 seologica	Burvey
Grey argillaceous sandstone	, few rootlets.		•	1	8	19	5	5	
Dark grey very sandy mudsto	50					27			
	andstone, plant debris.			4	11	.20	. 4	4	
Grey madstone, few plant re	mains.			3	3	21	1	7	
Black midstone, occasional	traces of mussels.	72		3	5	antish Geografical S	5	0	
Irony earthy micaceous sand	stone, planty.	·		100	6	21	5	6	
Grey slickensided fireclay.				2	4	22	1	10	
Green-grey firecley mudston	e,ironstone nodules.	8 2		2	2	22 .	4	0	
British Geological Survey	, British Geo	egical Surve	'n				British	Beologica	Survey

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SECTION OF Murton Village borehole.

2.

Six-inch Map (County and Quarter Sheet) Northumberland. N.86 St	B			-	/	
8G\$ REGIS	Thickne	88.		Depth from	n Surf	ace.
Brought forward NZ 37 SW		eet.	ins.	22	feet:	ins.
PAGE NO	3					
Grey argillaceous sandstone with shale bands. British Geological Survey	0	3	0	Brit 23 010	dical Sur	0
Grey planty mudstone with coaly films.	• .	4	3	23	5	3
Carbonaceous shale with coal streaks (Shaly coal 4*)			4	23	5.	7.
Grey fireclay, very planty at top, shaly at base.		3	1	24	2	8
Gray very planty siltatone, & ironatone nodules, plants	1	3	Geol O	af Survey 25	5.	8
Grey banded fine argillaceous wispy sandstone.	1	5	6	27	5	2
Grey banded argillaceous sandstone, few musselss.		5	10	28	5	0
Grey blooky samly mudstone, few ecattered mussels .		1	0	29	0	0
Grey very sandy siltatone, occasional musicals, sandstone				British Geolo	eical Sun	97
laminas, ironatone bands, also bends of madstone.	- 1	1	6	30	1.	6
Grey to dark grey mudstone, ironstone bands, thin sandy		-				
laminas, mussels throughout, scattered at top,						
British Geologic abundant on some bedding planes at base.	100	. 1 Entist	Geologi	31 at Survey	2	10
Black planty sandy micaceous shale with massels and		İ				
Spivorbis, sp. ironstone nodules.  pyritic.	= -		8	31	3	6
Dark grey mudstone, irony, scattered massels and Spivorbis	190-10	1	4	31	4	10
COAL }	193-1	2	3	32	1	1
Fireclay - black cannelly shale, pyritous at base.	193-4		10	British Geolo	rical Sun	11
COAL	. 195-10	1	11	32	3	10
Fireclay - grey, shaly, sandy at base.	197-10	2	0	32	5	10
Grey argillaceous sandstone, rooty.	198-6	o	8	33	0	6
Grey sandy mudstone, rooty, with ironstone nodules.	199-0	British	Geologii 6	Survey 33	1	0
Grey very sandy madstone, rooty and with sandstone laminas	1.200-4	1	4	33	2	4
debris.  Dark grey madstone, rooty, ironatone nodules, much plant	202-8	2	4	. 33	4	. 8
Grey hard sandy madstone, rooty, few ironstone nodules.	203-11	1	. 3	- 33	5	11
Alternating bands of grey shaly flaggy sendstone, much				British Geolo	gical Surv	έγ
plant debris on dark micaceous partings, and thin bands of very sandy mudstone.	207-10	3	11	34	3	10
Grey to dark gery very sandy madstone, some plant debris.	2.0¶−11	2	1	34	5	11
Grey flaggy wispy ankeritic micaceous flaggy sandstone.	210-8	7	9	35	0	. 8
Grey very sandy madstone, plant debris and thin partings		British	Geologio	i Survey		
of shaly flaggy sandstone.	212-8	2	. 0	35	2	8
Dark grey mudstone, large ironstone nodules, occasional				a 0		
poorly preserved mussels.	217-4	4	8	36	1	4
British Geological Survey British Geological Survey				British Geolo	gical Sun	Tr.

NZ 37 SW/36 PAGE NO. 4	Thickn	1		Depth from	Vels Canh	tudical Sun	124	
PAGE NO. 4	1	feet.	ins.		feet.	ins.	T	
	217-4	-	-				<del> </del>	
- January 1	217-6		2	36	1	6		
	2	10.0		-		0.51		
Band - black shale.	217-7		1	36	1	7		
COAL British Geological Survey	2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	al Surve	2	36	1	9	British Geological	Survey
Black carbonaceous rooty shale.	218-3		6	36	2	3		
COAL.	2.18-5		2	36	2	5		
Black slickensided fireclay.	21910	1	. 5	36	_ 3	10		
COAL Ceological Survey British Geologic	221-4	1	6	36	(sh) <b>5</b> ,	ogica <b>k</b> ur		
Dark grey sandy fireclay, shaly towards the	) ທ	2	6	37	1	10		
Black carbonaceous rooty shale.	} ×	4.000	1	37	1	11		
2	\$		2	-	2	1	*	
COAL	5	Y	Ī	.37				
Band - black shale.	224-2 British Geologi	al Surve	1	37	2	2	Eritish Geological	Survey
COAL.	225-1		11	37	. 3	1	21 340	
Grey fireclay, ironstone nodules, very same	<b>dy</b> 227-5	2	4	.37	. 5	5	in the	
Grey sandy mudstone, ironstone nodules, roo	<b>ty.</b> 232 - 11	5.	6	38	4	11		
Light grey fine wispy flaggy sandstone,								
Grey-sandy midstone, ironstone-nodules with thin bands of darker grey shaly and	Survey			Br	lish Geo	ogical Sun	Ì	
argillaceous sandstone, some plant remains	238-6	5	7	. 39	. 4	6		
Light grey fine to medium flaggy sandstone		1	1	,,			120	
	and the l	,		40		. 0	Lost oir	onla+
with a thin shaly parting.  British Geological Survey	2+3-0 British Geologi	al Surve	٩	410	3	U	at 39-5-	
Light grey massive current bedded medium sandstone with very occasional	0 0		3				2 * .	1 2 2
micaceous planty partings.	251-0 1	2	9	41	5	0		
Light grey medium flaggy sandstone, much partings.	1		- 1				8.4.	
plant debris on black micaceous	258-5 1	1	.5	. 43	0	5	5 5	
Grey medium flaggy sandstone much large	Survey			Br	tish Geo	ogical Sun	· v	
plant debris, ankeritic cement.	259-11	1	6	43	1	11		
Black mudstone, abundant mussels.	26-0-3		4	43	3	3		
Grey sandy midstone, few plant remains.		1	3	43	3	6	1 3	191 2
cement		al Surve	2	43	3	8	entish Geological	
Brown-grey medium flaggy sandstone, ankerit debri	5.					-	The second second	
Grey mudstone with sandy partings and plean sandstone.	.263-0	1	4	43	5	0		
Brown-grey ankerite cemented very flaggy	263-7		7	43	5	7		
Grey very sandy madstone with siltstone	ar .			80 P.				
Brillsh Geological Survey bands and plant debris.	265-0	1	5	44	tish Geo	egical <b>O</b> r	dy .	
Brown-grey medium flaggy ankerite comented								
X		İ	. 1				48 1	
flaggy sandstone.	265-,3		3	44	_1	3	2.0	San in
Dark grey sandy mudstone, few plant remain	18. 265-9		.6	44	1	9	a <sup>le</sup>	

NZ 37 SW/ 36

3.

SECTION OF Murton Village borehole.

Six-inch Map (County and Quarter Sheet) Northumberland. N 86 S.E.

	Thiel	mess.		Depth fro	m Surf	ace.
Brought forward.	245-9	feet.	ins.	44	feet.	ins.
Dark grey madstone, few bands of ironstone, pyritous in			es.	British Geoli	nical Sur	907
immediate roof of coal.	267-5	1.	8	. 44	3	5
COAL ) BGS REGISTRATION NO.	· 267-4		6	44	3	11
CANNEL COAL NZ 37 SW 136	268-9		10	. 44	4	9
COAL h Geological Survey	269-6	British	0e0 <b>9</b> 3	el Survey 44	5	6
Shale band LOW MAIN.	269-8	8	2	. 44	5	8
COAL	270-7		11	45	0	7
Dark grey to grey fireclay, slickensided, ironstone nodules						
British Geological Survey		5	5	46 British Geoli	o ical Sun	0
<ul> <li>Hard brown-ish -grey ankeritic mudstone with rootlets.</li> </ul>			10	46	0	10
Greenish grey siltstone with sandy bands, few plant remain		3	6	46	4	4
Grey to dark grey sandy siltstone occasional much plant	3.			g =		
debris, thin ankeritic bands.  British Geological Survey		1	8	47	0	0
Grey often greenish siltstone, occasional sandy bands,				1		v x
occasional plant debris.		4	6	47	4	6
Alternating bands of grey siltstone, plant debris, ironstone			14.		-	
nodules, and thin slumped sandstone bands.	a h 2	3	11	48	2	5
Grey fireclay with ironstone nodules, sandy at base.		2	10	British Geoli 48	5	3
Grey medium flaggy sandstone, micacecus, some plant debris.			5	48	5	8
Alternations of dark grey siltstone, occasional plant remain	ns,					
and thin slumped sandstone bands.		1	11	49	1	7
Greenish grey siltstone, thin sendy bands, very occasional		British	Geologic	Survey		
plants, (fireclay-like texture)		3.	5	49	5	0
Dark grey very sandy siltstone, much plant debris.		1	6	50	0	6
Dark grey madatone, sandy bands towards base, few ironstone						
nodules, Neuropteris and well preserved plants.		3	5	British Geof	g cal Sun 3	11
Grey to light grey medium flaggy sandstone, some Calamites						
and plant debris.		2	0	50	5	10
Dark grey sandy mudstone with thin more sandy bands, well						
British Geological Survey preserved plants.		British	5	Survey 51	1	4
Light grey medium sandstone, much ankeritic cement,		1			2	
dark occasional/micaceous planty partings.		4	0	51	5	4
Light grey medium flaggy sandstone, very micaceous parting	. 1	0	8	53	0	0
British Geological Survey  British Geological Survey				British Geol	og bal Sum	oly

(68/4029) Wt. 74179/81 1000 2/49 M. & St., Ltd. @ 68

British Geological Survey British Geologic	Thick	ness.		Depth fro	m Surf	face.	136
than government to the second		feet.	ins.		feet.	ins.	. 5 0 0 200
Light grey medium massive sandstone, very flaggy locally at 54-1-0, ankeri	io			BGS NZ PA	37 5	STRAT	12
cemented bends, large mica flake	British Geolog	n at Surve				٠.	ritish Geological Survey
on partings.Coaly films at base	2	5	3	55	5	3	a
COAL		1	3	56	0	6	
Grey fireclay.	PLESSEY_	2	0	56	2	6	
COAL shaly any British Gastoglis	HUTTON		6	56	nish <b>3</b> -o	ogil <b>O</b> Surv	
Grey shalf fireclay few ironstone nodules.			4	56	3	4	
COAL			1	56	3	5	5
Black carbonaceous shale.			3	5,6	3	8	
Black oarbonacecus fireclay.	British Geolog	utal Surve	11	. 56	4.	.7	ritish Geological Survey
Grey-green very slickensided shaly firecla	, ,				100		1 -
with ironstone nodules.		1	8	57	0	3	u 200
Green-grey mudstone, few rootlets. more		-		E.	- 2		egio j
sandy towards base.  British Geological Survey  British Geologic	( Survey	3	9	. 57	ritish Geo	. O ogical Surv	y
Grey siltstone, occasional more sandy band	,			× 341			e.
and plant debris.		. 5	6	. 58	3	6	
Dark grey mudstone, well preserved plants,							8 8
few ironatone bands.	British Ganlov	2	6	59	0	. 0	ritish Godinniral Suman
Grey argillaceous wispy flaggy sandstone.	Diam's Cons		11	59	0	11	Si
Grey siltstone with current bedded wispy f	ne	t.		:	~		
sandstone partings, occasional slump structures, partings of mudstone. Calamites.	2	. 5	3	62	0	2	
Grey medium sandstone, some flaggy bands,	al Survey				etish Ged	logical Surv	w - '.
uneven base.			9	62	0	11	
Grey blocky siltstone with wispy sandstone							8
slumps, eroded top.			6	62	1	. 5	F
Grey siltstone with thin wispy sandstone	British Geolog	ca <b>2</b> urv	5	62	3	10	British Geologicál Survey
Light grey banded wispy flaggy sandstone w dark grey shaly partings,	ith .						
uneven base.		3	9	63	1	7	
Grey miltatone with alumped mandatone wisp ourrent bedding laminae at mandamone top, eroded top.	al Survey		11	63	sh <b>2</b>	logli <b>6</b> Sun	gy
Dark grey sandy mudstone with very							
laminae. occasional wispy sandatome		2	3	63	4	9	
Dark grey sandy madstone with sandstone wi	sps.	1	,0	63	5	9	
British Geological Survey	British Geolog	ical Surve	n'				antish Geological Survey

NZ 31 SW/ 36

SECTION OF Murton Village borehole.

Six-inch Map (County and Quarter Sheet) Northumberland N. 86 SE.

Six-inch Map (County and Quarter Sheet) Northumber	TERM N. Ob SE						
	BGS REGISTRA	A STATE OF THE PARTY	ickness.		Depth from	a Surf	ace.
Brought forward		36	feet.	ins.	63	feet.	ins.
	PAGE - NO.	/					
Light greenish grey hard medium sandstone.	British Geological Survey	1		11	Bri <b>64</b> -eolo	0	8
Dark grey siltstone with thin bands of wispy	flaggy						
sandstone, slumpastruotu	res.		5	11	65	0	7
Light grey, often greenish. medium to fine f	laggy '						
Brilish Geological Survey sandstone, large pellst	of ironstone		British	Geologia	al Survey		
at 65-0-11, many shale pe	llets at top.		2	8	65	3	3
Grey siltstone, thin sandstone partings at b	ase,				35.		
disseminated plant frage	ents.		4	2	66	1	5
Grey fine argillaceous sandstone, dark micac	eous pertings	•			British Geolo	rical Sun	ey
some coaly plant debris.	¥			3	66	1	8
Grey very sandy siltstone with balls and slu	mps of						
sandstone, some comminute	d plant debri	B. 1	0	7	67	2	3
Light grey fine wispy very flaggy sandstone,	some irony be		. 3 British	9 Geologia	68 ii Survey	0	0
Light grey fine flaggy sandstone, dark very			2	4	68	2	4
Light grey fine sandstone, many shale pellet	s			11	68	3	3
Light grey fine flaggy sandstone.			. 3	. 2	69	0	5
Grey argillaceous sandstone, ironstone nodule	s & plant deb ellets at top			10	69	1	3
Greenish grey medium sandstone shale & some				9	69	2	0
Grey siltstone with thin sendstone wisps and	slumps.	о н	1	0	69	3	0
Light grey to grey, medium to fine flaggy sa				6	- 69	3	6
Grey blocky siltstone with small blebs of al	umped wispy						
Brillish Geological Survey  Brillish Geological Survey  Brillish Geological Survey  Brillish Geological Survey	uted plant de	bris.	5	Geologia 7	70 To	3	1
Grey blocky siltstone with thin sandstone la	minae, plant						
debris, thin band with	slumps near b	aso.	3	6	71	0	7
Light grey medium sandstone with shale pelle	ts in top foo	ŧ,					£
ourrent-bedding laminae dip stee top portion. Dark micaceous part		0			British Geolo	gical Surv	9
ankeritic cemented bands.	bas		2	2	71	2	9
Light grey medium flaggy sandstone, small iro			4	9	72	1	6
Dark grey siltstone, sandy wisps near base, pl	ant debris.		3	11	72	.5	5
Light grey fine to medium sandstone, flaggy i	n part, and		British	Geologia	I Survey		
with small shale pellets.	1 N		2	0	73	1	5
Light grey medium sandstone with abundant la pellets (banded siltstone bands of argillaceous san	) and thin		3.	1	73 .	4	6
British Geological Survey	British Geological Survey		1		British Geolo	gical Surv	ey.

(68/4029) Wt. 74179/81 1000 2/40 M. & St., LAd. @ 68	0						
	Thickn	085.		Depth from	n Suri	ace.	128
British Geological Survey British Geologic	(Summy	feet.	ins.		feet.	ins.	
$L_{12}$ ht grey greeniah medium sandstone with small soft ironstone pellets.			6			0	
and the second s		4	0	74	3	U	
Light grey medium sandstone, many ironsto	GO British Geologic	al Surve		}			ritish Geological Survey
pellets.		4	9	75	1	9	
Light grey, greenish medium sandstone, fo	<b>.</b>						
soft clay ironstone pellets.	1	11	9	76	3	6	
White medium to coarse sandstone, kaolinit	10,		12	, Br	tish Geo	ogical Surv	
much commission plant debris.			5	76	3	11	
Greenish light grey medium to fine sandstone with irony bands full of plant debris.		1	4	76	5	3	2
Light grey to white medium to coarse	- British Seologi	al Rrimo	BG	S REGIST	RATI	DN NO.	rillsh Gastonical Sumay
sandstone, large mica flakes,			N	Z 37 SW	13	\$	
much coaly plant debris, especially in the top foot,				PAGE NO.	8	-	
some shale pellets at base.	1	1	3	. 78	0	6	
Derk grey sandy midstone, more sandy British Geologic	Survey		0	Br	ish Geo	ogical Surv	
towards base, with rootlets.		2	9	78	3	3	
Grey fine to medium ganisteroid sandstone	•		9	78	4	0	
Dark grey siltstone, passing down into very sandy mudstone, some plant remains.		2	6	79	0	6	
Brownish light grey medium wispy flaggy	British Geologi	al Surve	5	79	0	11	ritish Geological Survey
remains.  Dark grey very sandy mudstone, few plant.		2	5	79	3	4	
Dark grey-brown-grey fireclay with thin shale parting near top, slicks; sided ironstone nodules at ba	ı- •••	4	, o	80	1		9
British Geological Survey  Greenish-grey fireclay-like mudstone with	Survey	•		Br	lish Geo	ogical Surv	ý o
bands of sandstone, few rootle	s.		8	80	2	0	15
Grey aandy mudstone, fireclay-like.		5	2	. 81,	1	2	92%
fireclay texture Dark grey to black slickensided mudstone,	•	2	3	81	3	5	
COAL British Geological Survey	British Geologi	al Surve	4	81	3	9	ntish Geological Survey
nodule Grey very shaly fireclay, incipient ironst		1.	0	81	4	9	
Grey fine wispy flaggy sandstone.			9	81	5	6	
Grey very sandy mudstone, few rootlets.		1	2	82	0,	8	
Grey midstone.	d Survey	1	.9	. 82 <sup>8</sup>	2	ogl <b>es</b> i Surv	y
Dark grey mudstone, ironstone nodules & pla	nts	1	0.	82	3	5	
COAL.			2	82	3	. 7	
	180						

Grey very sandy rubbly argillaceous ganisteroid sandstone.

NL 37 SW/ 36,29

SECTION OF Murton Village borehole. 19 Northumberland N 86 SE Six-inch Map (County and Quarter Sheet) Thickness Depth from Surface. feet. ins Brought forward Grey to light grey fine to medium wispy flaggy sandstone. occasional bands containing dark planty micaceous partings. 2 83 0 Dark grey mudstone, sandy at top, very few rootlets, few small ironstone nodules. 8 .3 83 4 Dark grey midstone, black at base, few small missels at top, mussels abundant at base. 2 6 84 0 Black shale with ankeritic bands, also thin sandstone parting, ostracods Spivorbis sp. and some mussel fragments at base. 84 1 COAL BGS REGISTRATION NO. 84 1 BEAUMONT NZ 37 SW126 Band - black shale 84 10 PAGE NO. COAL 7 2 RI. Grey fireclay. RJ. 4 Grey rooty rubbly argillaceous sandstone. 84 5 Light grey fine to medium flaggy sandstone, wispy at base, thin shale partings, some plant debris on partings. 2 86 1 10 Grey to dark grey sandy mudstone passing down into sandy siltstone, with plants. 2 86 3 Dark grey mudstone with occasional sandy bands. n 86 2 COAL 86 Brown-grey slickensided firsolay. 2 87 10 Greenish grey slickensided fireclay-midstone. 3 9 87 7 Grey shaly flaggy sandstone, wispy, ankeritic cement at top. 2 88 11 Alternating bands of grey wispy flaggy sandstone and grey 5 89 0 0 siltstone, sandstone predominant towards base. Brown-grey medium sandstone, ankeritic cement. 11 89 11 Light grey medium massive current bedded sandstone, ankeritic gemented bands, coaly plant stems near base. 0 90 1 COAL 2 90 7 Black fireclay with coaly partings. 8 90 2 Grey, very sandy shaly fireclay passing down into rooty argillaceous sandstone. 2 0 90 3 Dark grey rooty siltstone, sandy bands at base. 7 90 5 10 Rooty wispy flaggy sandstone, ankeritic bands. 0 3 91

No. 1975 of 1986  No. 1986 188. (C)  Grey to dark grey rooty silectone.  Rooty wispy flaggy sandstone, ankeritio bands.  Grey sandy silectone.  Light grey wispy flaggy sandstone.  Light grey medium ganisteroid massive sandstone.  Light grey medium ganisteroid massive sandstone.  Light grey medium ganisteroid sandstone,  Grey sandy micaceous midstone, cocasional roots.  Light grey medium sandstone, some large roots and the colly films base, free though sometimes  Large rootlets.  Light grey to sendium sandstone, greating into argillaceous sandstone at base, free though sometimes  Large rootlets.  Light grey to sendium sandstone, some large roots, coaly plant debris, large mice flakes.  COAL.  Rrown-grey to black slickensided fireolay.  COAL.  Grey sandy silestone, many roots and  Grey argillaceous sandstone with bands of grey sandy silestone, many roots and  Grey to light grey medium of fire sandstone, plant remains.  Light grey medium of fire sandstone, plant remains.  Light grey medium sandstone, grey medium of fire grey medium of fire sandstone, plant remains.  Light grey medium sandstone, some calculations of plants.  Alternating bands of light grey very flaggy silettone and sandy midstone.  Light grey medium sandstone and sandy midstone, free plant remains.  Light grey medium sandstone, cocasional very silettone and sandy midstone.  Light grey medium sandstone, cocasional very silettone and sandy midstone.  Light grey medium sandstone.  Light grey medium sandstone.  Light grey medium sandstone.  Light grey medium sandstone.  Li	(68/4029) Wt. 76179/81 1000 2/40 M. & St., IAA. 8 68	h'						1
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Grey sandy siltstone, many roots and Grey argillacecus sandstone with bands of grey mudatone and siltstone, plant remains.  Grey to light grey medium to fine sandstone, flaggy at top, dark micaceous partings, some Calamites & plants.  Alternating bands of light grey very flaggy wispy sandstone and grey siltstone and sandy mudatone few plant remains.  1 0 8 97 1 2 00	COAL	B		6	.94	3	8	
Grey argillaceous sandstone with bands of grey mulatone and siltstone, plant remains.  Grey to light grey medium to fine sandstone, flaggy at top, dark micaceous partings, some Calamites & plants.  Alternating bands of light grey very flaggy wispy sandstone and grey siltstone and sandy mudstone few plant remains.	Grey hard very sandy fireclay.		1	4	94	5	0	
grey mudatone and siltatone, plant remains.  Grey to light grey medium to fine sandstone, flaggy at top,dark micaccous partings,some Calamites & plants.  Alternating bands of light grey very flaggy wispy sandstone and grey siltatone and sandy mudatone few plant remains.  1 0 8 97 1 2 of	Grey sandy siltstone, many roots and	British Geologi	al Surve	6	95	0	6	ritish Geological Survey
plant remains.  4 5 95 4 11  Grey to light grey medium to fine sandstone, flaggy at top,dark micaceous partings,some Calamites & Plants.  Alternating bands of light grey very flaggy wispy sandstone and grey siltstone and sandy madatone, few plant remains.  1 0 8 97 1 2 of								
flaggy at top, dark micaceous partings, some Calenttes & plants.  1 7 96 0 6  Alternating bands of light grey very flaggy wisny sandstone and grey siltstone and sandy madstone few plant remains.  1 0 8 97 1 2 or			4	5	<b>9</b> 5	4	11	,
partings, some Calamites & plants.  1 7 96 0 6  Alternating bands of light grey very flaggy wispy sandstone and grey siltstone and sandy mudstone few plant remains.  1 0 8 97 1 2 of				٠.				
wispy sandstone and grey siltstone and sandy mudstone few plant remains.			1	7	96	0	egi <b>6</b> Surv	
siltstone and sandy madstone few plant remains.	Alternating bands of light grey very flagg							
few plant remains. 1 0 8 97 1 2 or						я.	-	
British Geological Survey British Geological Survey	few plant remains.	1.1	0	8	97	1	2	or
	British Geological Survey	British Geologi	al Surve					ritish Geological Survey

NZ 37 SW/ 36, 31

SECTION OF Murton Village borehole.

Six-inch Map (County and Quarter Sheet) Northumberland N.86 SE.

Six-inch Map (County and Quart	er Sheet) Northumberland N.86 Sh	•		=			
		Thick			Depth from		
	Brought forward		feet.	ins.	97	feet.	ins. 2
Derk grey mudstone; planty	, thin bands of siltstone and				British Geolo	gical Sur	ey
argilla	occus sandstone.		- 3	10	97	5	0
COAL	}		2	4	98	1	4
Grey slickensided fireclay	TOP BUSTY. NZ 37 SW		10	10	98	2	2
COALsh Geológical Survey	British Geological Survey . PAGE NO.	u	British	Geo. <b>5</b> ,	e Survey 98	2	7
Brown-grey slickensided fir	reclay.		1	7	· 98	4	2
Grey sandy siltstone with	ends of argillaceous sandstone	. 11					
rooty	at top, some irony nodules.		2	10	99	1	0
Alternating bands of grey sands sands	to light grey wispy flaggy tone and grey rubbly argillaceoutone, ironstone nodules, and fe				British Geolo	ercal Surv	ky
parti	ngs of dark grey mudstone with	plants. 1	0	10	100	1	10
Light grey medium wispy fl finel; at ba	aggy sandstone with some dark y flaggy bands, shale pellets se.		British	11 Geologia	100	2	9 .
cemen	s, flaggy in part, ankerite ted bands, much plant debris ttom 5".		3	2	100	5	11
Dark grey to black mudston	s, plants abundant at base. few rootlets.		1	8	101	1	7
	one with partings of siltstone,		1	11	101	3	6
Black carbonaceous shale,				1	101	3	7
Dark grey mudstone, large	fireclay-like. ironstone nodules, slickensided			6	101	4	1
Light grey very wispy flag	gy sandstone, rooty		1	1	101	5	2
Black carbonaceous shale,s	pyritic at top. ome ironstone nodules, shale yes	У	1	2	102	0	4
Black slickensided firecla	<b>Y•</b> British Geological Survey		British 1	11	102	2	3
Dark grey rubbly argillace	ous sandstone, rooty.			7	102	2	10
Light grey medium flaggy s	pertings andstone,ganisteroid with shaly		1	2	102	4	0
Light grey medium current	bedded sandstone, coarse locall	<b>.</b>					
at 622 ft. occas	ional micaceous partings.	1	4	0	104°eolo	2 n	0
Light grey medium to coars locally with gri	e ourrent-bedded sandstone, . tty partings, kaolinitio, base.	3	1	0	107	3	0
Light grey fine to medium			. 5	0	108	2	0
Coarse sandstone, ground s			81114	eol <b>8</b>	Surve <b>1</b> 09	0	8
Superior State Control of the Contro	to coarse grit, kaolinitic.		5	0	109	5	8
Dark grey mudstone parting		Ì		1	109	5	9
	e grit, much plant debris and ironstone pellets.		4	9	110	4	6 3
British Geological Survey	British Geological Survey				British Geolo	igli al Surv	4

7.

Murton Village borehole. SECTION OF

37 SW/36

Six-inch Map (County and Quarter Sheet) Northumberland N.86 SE. Depth from Surface. Thickness. feet ins Brought forward Shalv grey fireclay, sandy and micaceous at base. Grey to light grey medium ganisteroid sandstone, very micaceous and rubbly at top, massive at base. Light grey medium sandstone, massive at top, flaggy and wispy at base shale pellets at 118-2-0 Dark grey sandy mudstone (not all recovered) Light grey to grey fine wispy flaggy sandstone. BGS REGISTRATION NO. COAL NZ 37 SW/36 Black fireclay. PAGE NO Brown fireclay with pimply bands. Grey banded fine flaggy sandstone with argillaceous sandstone partings, rooty structures & small slumps. Dark grey sandy rooty mudstone, thin sandstone bands at base, ironstone nodules. Grey to light grey fine wispy flaggy sandstone. Dark grey hard sandy micaceous rooty mudstone. Light grey fine wispy flaggy sandstone, thin partings of dark grey mudstone. Some slump structures. Dark grey very sandy mudstone. L Light grey fine wispy flaggy sandstone. Dark grey mudstone. Light grey fine to medium sandstone, thin madstone parting at top associated with slump structures in flaggy sandstone, then more massive current bedded sandstone with dark micaceous partings. Some plant debris(foot, bands with ankeritic cement, plant stems & coaly films in bottom 2 Black shale, fissile at top, few fish scales, slickensided at base. COAL VICTORIA. Brown hard sandy fireclay. Light grey fine flaggy ganisteroid sandstone. Light grey fine wispy flaggy sandstone. Light grey medium to coarse current bedded sandstone, locally with dark miceceous partings. 

	*	Thicks	1088.		Depth from	a Burf	ace.	134
	British Geological Survey British Geologic	feet. ins. feet. ins.						
	Light grey medium narrent bedded sandstone							
	frequent dark micaceous partings.	4	5	3	1 35	0	5	
	Light grey coarse kaplinitic sandstone,	. British Carlog	2	5	138	2	10	ritish Geological Survey
	Black slickensided shale.	101		1	138	2	11	
	Light grey medium massive sandstone	150	5	11	1 39	2	10	
tori	Grey very sandy shaly mudstone.			4	1 39	3	2	- 4
	Light grey medium to coarse kaolinitic,	Survey				Jsh Geo	ogical Survi	
	current bedded sandstone.	1	3	6	. 141	0	8	ř
	es.			65	REGISTRAT	10#	NO. "	
		_			37 SW 13	6		
	British Geological Survey	British Geologi	tal Surve	PAC	E NO. /	<b>*</b>	•	ritish Geological Survey
	×				, "	50.0		. •
	4 ,	- *				2 4		a.
					9			10 27
	British Geological Survey British Geologic	( Survey	9		· Br	lish Geo	ogical Surv	y
		-						
							100 100	
	-							
	British Geological Survey	British Geolog	cal Surve		,			iritish Geological Survey
	d							
							ne.	
					76			
	British Geological Survey British Geologi	H Survey	1		Bi	tish Ged	ogical Surv	
Č.								
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					¢			
	British Geological Survey	British Geolog	cal Surve	y				British Geological Survey
						-		
	British Geological Survey British Geolog	e survey	•	Ser.	. 8	tish Ge	ogical Sun	
	" · · · · · · · · · · · · · · · · · · ·	20	2 8	5 200	0 0 0		555	
	a da a a a		2555		8 8 8			
	-	1	- 1	- 11	1			

(68/4029) Wt, 74179/81 1000 2/49 M. & St., Ltd. @ 68

### WINDOW SAMPLE RECORD

Project:				Shirem	oor Floo	d Relief	Scheme, Nor	th Tynesid	le			Exp	loratory Hole						
Client:		-		GIV NO	-		Location:			-		-	WC 00						
		umbrian	Water	r Limite	d		Britis	E:43214	2.089 N:570	746.787			British Geological						
Method & Equip	Dynami	ic Sampli	ng us	ing a PC	Tracke	r S110		Ground Leve	66.325		Date: 17/10/200	Sheet:	l of l						
SAMPL	ES & TE	STS						STRAT.	A				, ja						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			Г	DESCRIPT	ION		Instrume						
				66.075	27. 27.	(0.25)0.2	(1) TOP						×						
0.40-0.60	Jt			65.575	-0-	(0.50) 0.7	Firm lig angular	nt brown ve and consist	ery sandy gra s of sandston	avelly CLA ne.	Y. Gravel i	s fine to co	to coarse  to coarse  to coarse  firesh Geston  British Geston at Si						
0.80-1.00	J2			1	0	-			slightly sand			ivel is fine	to coarse						
1.20-1.65 1.20-2.10 1.20 1.50	SJ3 U4	N17 (37)			_ o_ o_ _ o_		suoangu	ar and con	isists of sand	stone and c	oai.		8						
2.00 2.10-2.55	SJ5	(48) N21			- o-	(2.35)	Dress												
2.10-3.10 2.50	illos@Jleibli	(55)	1		<u> </u>		princ												
3.00 3.10-3.55 3.10-4.10	SJ7 U8	(28) N16	Ţ	63.225	0	(0.30)3.4	Brown s	lightly clay	vey gravelly	SAND. Gra	vel is fine :	subangular	and						
3.50		(97)			- ō	(0.75)	Firm gre	y sandy gr of sandstor	avelly CLAY	. Gravel is	fine to coa	rse subang	ular and						
4.00 4.10-4.55 4.10-5.10	SJ9 J10	(88) N36		62.175 62.025	0	4.1	Brown g	ravelly SA	ND. Gravel	is fine angu	alar and con	sists of co	al and						
4.50		(100+)		1	==	(0.60)	(1) Firm	stiff grey g	gravelly CLA	Y with san	nd bands.		' &						
				61.425	<u></u>	4,9							X						
5.10-5.30	SJ11	50 for		61.025		(0.40)	(Recove	ak grey Mi red as sligh	UDSTONE only grantly sandy grantly	avelly clay	weathered.		8						
		75mm					Window	sample co	mplete at 5.3	30m BGL.									
E	irtish Geol	gical Surve					Britis	h Geological	Survey				British Geological						
eological Survi						Brilish Geo	Agical Survey				British G	aological Sur	vny						
	Boring Pr	ogress an	d Wat	ter Obser				Chisellin		Water	Added								
Date		Depth	-	asing	Casing Dia	Water Depth	From	То	Hours	From	То		REMARKS						
17/10/2006 17/10/2006	Intiish Geol	0.00 5.30	1	0.00			Britis	n Geologica	Survey			(2) Inspe drilling (3) Blow	ription derived fi laily report. ection pit dug prior s recorded every om 1.20m BGL r strike at 3.00m British Geological						
All dim	ensions in	n metres		$\perp$	For e	xplanation	n of symbols see Key She	and	Ch Sm/	ecked by:	Logg N. Do	ed by:	Contract 1						

### WINDOW SAMPLE RECORD

Status:-FINAL

Project:			- 8	Shirem	oor Floo	d Relief S	cheme, Nor	th Tynesic	ie			Exp	loratory Ho	le No
Client:	North	umbrian \	Water	Limite	d	ľ	ocation: Britis	h Geologica	3.194 N:570	1922 027		1	WS-09	ical Surv
Method & Equip	ment: Dynami	ic Samplir	ng usi	ng a PC	Tracke	r S100			64.692		Date: 17/10/2006	Sheet:	1 of 1	
SAMPL	ES & TE	STS						STRAT	Α					16
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			I	DESCRIPT	ION			Instrument Backfill
			- 13	64.392	V 21	(0.30)	(l) TOP	SOIL.						$\bowtie$
0.40-0.60 UV	п				ō	Fritish Geole	Stiff bro of sands	wn sandy a tone.	gravelly CLA	Y. Gravel	is fine subang	ular and	consists	$\bowtie$
0.80-1.00	J2				0	(0.90)								$\bowtie$
1.20-1.65 1.20-2.10	SJ3	N15 (78)		63.492	9.7	1.20	Stiff bro	wn slightly	sandy grave	lly CLAY.	Gravel is fine	e to coar	se	$\bowtie$
1.20		(102)			- 0-		subangu	iar and cor	isists of sand	stone and c	oai.			$\bowtie$
2.00 2.10-2.55	SJ5	(38) N20			_ ō	(1.85)							British Geolog	$\bowtie$
2.10-3.10	hat <b>us</b> ado	(75)		1	_ 0_									
				61.642		3.05								₩
3.00 3.10-3.55 3.10-3.90	SJ7 U8	(90) N28		01.012			complete	ely weathe	red.	medium gr	ained SANDS	STONE		$\bowtie$
3.50		(100+)				(0.95)	(Recove	red as grav	relly sand).					$\bowtie$
3.90-4.00	SJ9	73 for 150mm*		60.692		4.00 British Geole	WE-J		omplete at 4.0	no DCI	British Geol	water C		$\bowtie$
B coological Survey	tish Geolo	gical Survey				Riffish Geold	Bras gical Survey	ih Geologica	l Survey		British Geol	ogical Sur	British Geolog	cal Surw
-	Boring Pr	ogress and	Wate	er Obser	vations		1	Chisellin	p	Water	Added		GENERAL	
Date		Depth		sing	Casing Dia	Water Depth	From	To	Hours	From	To		REMARK	S
17/10/2006 17/10/2006	rilish Geok	0.00 4.00		.00	Die .	Lapel		n Geologica	Sureey			drilling.	ription derive laily report. ection pit dug is recorded ev orn 1.20m BC	prior to ery H.
	ensions in		_		For e	xplanation	of symbols ee Key Shee	and		ecked by:	Logged N. Doni	i by:	Contra 3454	

Client:

#### **ALLIED EXPLORATION & GEOTECHNICS LIMITED**

WINDOW	CAMDIE	RECORD
VV 1   V 1 / V / VV	SAVIELE	RECURD

Shiremoor Flood Relief Scheme, North Tyneside

FINAL 15/12/2006 Exploratory Hole No

Client:	North	umbrian '	Wate	r Limite	d		Location: WS-10 British Geological Surgers Av. 570002 242	al Surv
Method & Equip	ment: Dynam	ic Samplii	ng us	ing a PO	Tracke	r S 100	E:432233.999 N:570883.263  Ground Level (m(AOD)):   Date:	
SAMPLI	ES & TE	STS		T			STRATA	à.,
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Instrument/ Backfill
0.00-0.40	JI			61.960	0	(0.30)	Soft dark brown sandy slightly gravelly CLAY. Gravel is fine subangular and consists of sandstone.	$\otimes$
0.40-1.00 (va)	В2				_o	utish Geol	Stiff brown slightly sandy gravelly CLAY. Gravel is fine to coarse subangular and consists of sandstone and coal.	$\overset{\times}{\otimes}$
1.10-2.10 1.20	U3	(43)			<u></u>	(2.10)		$\overset{\times}{\otimes}$
1.50		(85)			- o.			❈
2.00 2.10-2.55 2.10-3.10 Brit	SJ4 U5	(24) N15		59.860	<u> </u>	2.4	40 British Geological Survey British Geological	$\otimes$
2.50		(46)			_ o_		Firm brown slightly sandy gravelly CLAY. Gravel is fine to coarse subangular and consists of sandstone and coal.	$ \otimes $
3.00 3.10-3.55 3.10-4.10	SJ6 U7	(28) N11			- Q.	(1.55)		$\overset{\otimes}{\otimes}$
3,50		(57)			-0-			$\bowtie$
1.00 1.10-4.55 (ve)	SJ8 U9	(57) N36		58.310	000	3.9 tish Geol	Yellow brown clayey SAND and GRAVEL. Gravel is fine to coarse	$\overset{\times\!\!\!\!\times}{\!$
4.50		(78)			0000	-		❈
5.00 5.10-5.55 5.10-6.10	C10 U11	(70) N39			000			❈
5.50		(34)			000			$\overset{\otimes}{\otimes}$
6.00 Brit 6.10-6.55 6.10-7.10	C12 U13	(16) N6			000	(4.05)	British Geological Survey British Geologic	$\overset{\times}{\otimes}$
6.50		(60)			0000	Ė		$\overset{\sim}{\sim}$
7.00 7.10-7.55 7.10-8.00	C14 U15	(27) N8			000			$\otimes$
7.50		(100+)			200			$\overset{\times}{\otimes}$
logical Survey				54,260	000	Tush (1-8.0	Window sample complete at 8.00m BGL.	XX
E	Boring Pr	rogress and	Wa	ter Obse			Chiselling Water Added GENERAL	
Date	_	Depth	C	asing	Casing Dia	Water Depth	From 10 Hours From 10	
7/10/2006 7/10/2006		0.00 8.00					(1) Inspection pit dug r drilling (2) Blows recorded eve 0.50m from 1.20m BGi	ry
Bin	ish Geolo	gical Survey					British Geological Burvey British Geologica	al Sun
All dime	nsions in			П	For e	xplanatio reviations	on of symbols and Checked by: Logged by: Contracts see Key Sheets N. Donnison 34541	

### WINDOW SAMPLE RECORD

												Date:-	15/12/200	6
Project:				Shirem	oor Floo	d Relief S	cheme, Nor	th Tynesic	ie			Expl	oratory H	ole No
Client:	North	umbrian '	Wate	r Limite	ed .	I	ocation:		10000000			1	WS-11	
		gicipstiff	···········	· Zmille			Briti	D:43228	34.264 N:570	958.794			British Geolo	gical Su
Method & Equipe	Dynami	ic Samplii	ng us	ing a PO	C Tracke	r S100		Ground Levi	el (m(AOD)): 61.509		Date: 17/10/2006	Sheet:	1 of 2	
SAMPLE	S & TE	STS						STRAT	`A					-8
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)				DESCRIPT	ION			Instrument/ Backfill
0.10-0.40	11		-	61.109	0	(0.40)	Soft bro coarse s	wn slightly ubangular	sandy slight and consists	tly gravelly of sandston	CLAY. Grav	el is fine	to	$\otimes$
ological Survey				01.109		emish Geole	Stiff bro	wn slightly	y sandy grave	elly CLAY.	Gravel is fin	e to coars	ie'	₩
					- 0-		Javange	na and cor	isists of saile	intone una e	oui.			$\otimes$
1.10-2.10	U2				- 0	ŧ l								$\otimes$
1.20	-	(54)		1	0									$\otimes$
1.50		(60)				(2.30)								$\otimes$
2.00						E								$\bowtie$
2.00 2.10-2.55 2.10-3.10	SJ3 U4	(54) N11		1	0 '		Britis							X
2.50		(85)		1	===									$\otimes$
		(6.7)		58.809	0	2.70	Yellow	gravelly Sa	AND. Gravel	is fine to m	edium suban	gular to		₩
3.00		(39) N10		-	0	-	subroun	ded and co	nsists of san	dstone.	Gravel is fin		e /	₩
3.10-3.55 3.10-4.10	SJ5 U6	N10				ŧ l	subangu	lar and cor	nsists of sand	Istone and li	mestone.			$\otimes$
3.50		(63)			-0,									$\otimes$
					0									$\bowtie$
4.00 cal Survey	S17	(24) N19				ritish Geole	igical Survey				British Geo	logical Sun	тту	$\otimes$
4.10-4.55 4.10-5.10	SJ7 U8	MIA			0									$\bowtie$
4.50		(26)				F								$\otimes$
						Ė l								$\otimes$
5.00 5.10-5.55	SJ9 U10	(27) N9		1	0	ŧ								$\otimes$
5.10-6.10	010					(5.00)								$\otimes$
0.30		(31)			0	ŧ l								$\otimes$
6,00 Br	ish Geold	gical Surve			6-	- 1	Britis	sh Geologica	I Survey				British Geolo	X
6.10-6.55 6.10-7.10	SJ11 U12	(28) N12				[ ]								$\otimes$
6.50		(47)		1	0									$\otimes$
				1										X
7.00	SJ13	(41) N19			0									$\otimes$
7.10-7.55 7.10-8.10	U14	N19		1	0-									$\otimes$
7.50		(82)		1										$\otimes$
ological Survey				53.609		7.90	gical Survey				British Geo	rogical Sun	/iiy	
В	oring Pr	ogress and	Wa	ter Obse				Chisellin	g	Water	Added		GENERA	
Date		Depth	C	ssing	Casing Dia	Water Depth	From	То	Hours	From	То		REMARK	
7/10/2006		0.00										drilling.	ction pit dug s recorded e om 1.20m B	
i	nsh Geol	ogical Survey					Britis	n Geologica	Survey				British Geolo	gical S
All dime	nsions ir			$\vdash$	For e	xplanation	of symbols see Key She	and	Ch Ch	necked by:	Logged N. Don	i by:	Contr 345	act No
3	1.30			l	800	eviation's	ac Key She		V	4M	14. 19011			

### WINDOW SAMPLE RECORD

												b		
Project:			Sh	iremo	or Floo	d Relief S	cheme, Nor	th Tynesic	le			Exp	loratory Ho	le No
Client:							Location:					1	WS-11	
	Northu	imbrian	water L	ımıted			Britis	E:43228	4.264 N:570				British Geolog	ical Surv
Method & Equipe	ent: Dynamic	Sampli	ng using	a PC	Tracke	r S100		Ground Leve	61.509		Date: 17/10/2006	Sheet:	2 of 2	
SAMPLE	S & TES	TS						STRAT	A					9-
Depth	Type No	Test Result	A RITE	educed Level	Legend	Depth (Thick- ness)			1	DESCRIPTI	ON			Instrument/ Backfill
8.00 8.10-8.20	S15	(100+) 5 for	53	3 309		(0.30)	Weak gr	ey MUDS	TONE mode	rately to hig	hly weather	ed.		$\otimes\!\!\!\otimes$
eological Survey		75mm				irilish Geold	Window	sample co	se subanguli mplete at 8.	20m BGL.	British Geol	ogical Sun	vey.	
Bo	ish Geoldy	rical Survei					Britis	h Geological	Survey				British Geolog	cal Sürve
eological Survey					1	enlish Geold	gicei Survey				British Geol	ogical Sun	vey	
Bri	ish Geolog	rical Surves					Britis	h Geological	Survey				Brilish Geolog	cal Surve
Seplogical Survey						rilish Geold	gical Survey				British Geol	ogical Sun	vey	
-	oring Pro		_			1 100		Chisellin		Water			GENERAL REMARK	L
17/10/2006	+	8.20	Casing		Casing Dia	Water Depth	From	То	Hours	From	То	drilling. (2) Blow	ection pit dug es recorded ev om 1,20m BC	prior to
Ent	lish Geolog	ical Survey					Britis	Geological	Survey				British Geolog	ical Surve
All dimer	nsions in	metres	$\vdash$		For e	xplanation reviations	of symbols see Key Shee	and ets	San Ch	necked by:	Logge N. Don	d by: nison	Contra 3454	ct No.

### WINDOW SAMPLE RECORD

_		_
Status:-		
	FINAL	
200000		

1					Shirem	oor Floo	d Relief	Scheme, Nor	th Tynesic	e			Exploratory	noie No
	Client:	North	umbrian	Wate	r Limite	d		Location:				7220	WS-1	2
	Method & Equip		gical Surve					Britis	E 43232 Ground Leve	6.172 N:571	021.429	Date:	Sheet:	logical Surve
	memou a equip	Dynam	ic Sampl	ng us	ing a PC	Tracke	r S100		OT SEED LEVY	59.753		18/10/2006	l of l	
-	SAMPLI	ES & TE	STS						STRAT	A				78-
	Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			1	DESCRIPT	ION		Instrument/ Backfill
1	0.00-0.45	Jl				<u> </u>	(0.45)	Soft bro	wn slightly ubangular	sandy slight	lly gravelly of sandston	CLAY, Grav	el is fine to	<b>***</b>
G	eological Survey				59,303	0	0.4	Stiff bro	wn slightly	sandy grave	elly CLAY	Gravel is fin	e to coarse	-
						o	-	Subangu	im to migu	in and consi	ists of saire	atolic.		<b>***</b>
	1.10-2.10 1.20	U2	(26)				£							
	1.50		(31)			<u> </u>	Ę							
j	2.00 2.10-2.55	SJ3	(39) N16			===	Ė							<b>***</b>
	2.10-3.10 Bri 2.50	ish <b>U4</b> olo	(104)			9	ŧ	Britis	h Geological				British Geo	
	200					0	(4.85)							
-	3.00 3.10-3.55 3.10-4.10	C5 U6	(47) N26			0								
	3.50		(50)			<u>.</u>	ł.							
0	4.00 4.10-4.55	SJ7 U8	(14) N9			0	eilish Geol	cgical Survey				British Geol	ogical Survey	
	4.10-5.10	U8	(27)			- ē-	Ė							
1						_=	Ł							
ĺ	5.00 5.10-5.30	SJ9	(100+) 33 for 150mm		54.453		5.3	Window	sample co	mplete at 5.3	30m BGL.			
	Br	nish Geolo	gical Surve					Britis	h Geological	Survey			British Geo	logical Survey
-														
G	eological Survey						ritish Geol	ogical Survey				British Geol	ogical Survey	
i	E	Boring Pr	ogress an	d Wa	er Obser	vations		$\perp$	Chisellin	2	Water	Added	GENER	Δ1
	Date		Depth	-	ssing	Casing Dia	Water Depth	From	To	Hours	From	To	REMAR	KS
	18/10/2006 18/10/2006		0.00 5.30										(1) Inspection pit d drilling. (2) Blows recorded 0.50m from 1.20m	
		ilish Geol	gical Surve					Britis	e Geological	Survey			British Geo	logical Surve
0														
1		ensions in icale 1:50				For e	xplanatio	n of symbols see Key She	and ets		ecked by:	Logged N. Don		tract No. 154DD
										7	+100			

### BOREHOLE RECORD

FINAL
Date: 15/12/2006

Project:				Shirem	oor Floo	d Relief S	Scheme, Nort	h Tynesic	de			Exploratory Ho	le No
Client:	North	umbrian	Water	Limite	d		Location:	-	- M-1 - 2			BH-23	
Bri		gical Survey	and	Limite			British	E:43227	72.599 N:571	376.327		British Geolog	ical Sun
Method & Equip able Percussi	ment: on Rotar	y Coring	using	a Pilco	n Wayfa	rer 1500/	Atlas Copco	Ground Lev	el (m(AOD)): 56.525		Date: 11/10/2006	Sheet: 1 of 2	
SAMPLI	ES & TE	STS						STRAT	A				9
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			1	DESCRIPTI	ON		nstrument Backfill
0.10	л			56.225	77	(0.30)	Soft brov	n slightly	sandy CLA	Y with many	y roots and ro	otlets.	$\overline{x}$
eological Survey					ō	allish Geold	Stiff brow cobbles, limestone	vn slightly Gravel is c. Cobbles	y sandy sligh fine to coarse s are subroun	tly gravelly subangular ded and con	CLAY with of and consists sist of sandst	occasional of sandstone and one.	$\overset{\otimes}{\otimes}$
1.00	B2												$\otimes$
1.50-1.95	U3	(94)			- 6. 6.								$\otimes$
2.00 Br	J4 rish Geolo	gical Surve			9 - 9-		British	Geological	Survey			British Geolog	▓
2.50-2.95	SB5	N20			6 6								$\overset{\times}{\overset{\times}{\overset{\times}{\overset{\times}{\overset{\times}{\overset{\times}{\overset{\times}{\overset{\times}$
3.50	U6				- 0. - 0. - 0.								$\overset{\otimes}{\otimes}$
4.00-4.45	37	(76)			- o-	(7,69)	gical Survey				British Geold	ogical Survey	₩
4.50-4.95	SB8	NI5			6 - 6 - 6 - 6								
6.00-6.45 Bri	ish Geolo U9	gical Surver (100)			6 6- 6-		between	Geological c.6.00 and	d 6.45m BGL	very stif	r	British Geolog	
					0 - 0 - 0 - 0								
eological Survey				48.625	र दे	(0.10)	gical Survey				British Geold	ogical Survey	$\boxtimes$
	Boring Pr	ogress an	T-	-		Water		Chisellin		Water		GENERAI REMARK	
Date 11/10/2006		Depth 0.00	Cas	ing 00	Casing Dia	Depth	7.90	To 8.00	Hours 1.00	0.00	To 8.00	(1) Inspection pit dug	
11/10/2006	itish Geol	8.00 gical Survey	8.		200mm	dry		Geological		***************************************		drilling. British Geolog	ical Su
All dime	ensions in icale 1:50	metres	_		For e	xplanation	of symbols a see Key Shee	nd ts		ecked by:	Logged N. Donnisor	by: Contra a/l. Ujjan 3454	ct No.

# 4

### ALLIED EXPLORATION & GEOTECHNICS LIMITED

### BOREHOLE RECORD

Shiremoor Flood Relief Scheme, North Tyneside

FINAL
Date: 15/12/2006

Exploratory Hole No

N British (	orthumbria	n Wate	Limite	d		British	E:432272	599 N:571	376.327		BH-23 British Geolo	gical Surv
Method & Equipment: Cable Percussion R	otary Cori	ng usinį	a Pilco	n Wayfa	rer 1500/		Ground Level (	n(AOD)): 56.525		Date: 11/10/2006	Sheet: 2 of 2	
SAMPLES &	TESTS	T					STRATA					] ž_
Depth T	pe Test lo Result	Water	Reduced Level	Legend	Depth (Thick- ness)			D	ESCRIPTI	ON		Instrument/ Backfill
8.06 CE	11 100 for 71mm		48,525		8.00 erilish Geole	(Recovere	e/siltstone B ed as subrou implete at 8	inded cobbl	les). - continued	by rotary di	rilling rogues Survey	
British (	Seological Sun	wey				British	Geological S	лугу			Braish Geolo	gical Surv
Geological Survey					intish Geole	gical Survey				British Geo	logical Survey	
Br <b>á</b> ish (	eológical Sun	Web'				British	Geological S	лугу			Braish Geolo	olcal Surv
Geological Survey	g Progress a	and Wat	Ohoo		kilish Geolo	gical Survey	Chinallina		Water		logical Survey	
Date	Depth	-	sing Sing	Casing Dia	Water Depth	From	Chiselling	Hours	From	To	GENERA REMARK	L
€ntish (	Seobgical Sur	vey			i i i i i i i i i i i i i i i i i i i	British	Geologica S	urvey			(1) Inspection pit dug drilling British Geolo	
All dimensio Scale	ns in metres 1:50			For e:	xplanation eviations s	of symbols as see Key Sheet	nd s	She	cked by:	Logge N. Donniso	d by: Contra n/I, Ujjan 345-	ict No.

ROTARY CONTINUATION	Status:-	FINAL
	Date:-	15/12/2006

Project: Client:	,	Northumb	rian Wat			od Relief Sch	eme, North	Tyneside				atory Hole
		Geological?	nan wat	er Limite	·u		British Q	:432272.599	N:571376.327		Br	rish Geologic
Method & E able Perc			ring usin	ng a Pilco	n Wayf	arer 1500/Atl	as Copco	und Level (m(AC	(D)): 6.525	Date: 11/10/2006	Sheet:	l of 5
PI	N DET	AILS	_					TD A TA				-
1	TCR	(SPT)			Depth			STRATA	RIPTION			
Depth	(SCR)	Fracture Index	Red'cd Level	Legend	(Thick-	Discontinu	itias	Detail	7	Main		-
8.00	RQD 70	NR	48.525	100	ness) 8.00		possible zo			olete at 8.00m	BGL - cont	inued by
eological t	(40) 09 urvey	NI			- -(0.60) -	recovery. British Geologic			rotary drilling			
		12	47.925		8.60		closely spa		Moderately	strong very thi	nly and thin	ilv .
1		N1 20			1	8.65-8.73m	al planar disc non-intact.		bedded yello	w brown dolo	mitic LIME	STONE
- 1		NI 15		ᄔ		8.73-8.78m	very closel al undulating	y spaced	moderately	weathered.		F.
1		NI 10			-	discontinuit	ies.					E
9.20		Geological t	LITWAY	士士	-		non-intact.	cedical Survey	1		Br	tish Geologi
7.20	100	NI		1		subhorizont	al undulating					
1	(32)		i i			discontinuit	ies. non-intact.					
						8.97-9.20m	closely spa	iced				E
9.70						rough disco	al planar and	undulating	1			E
2.10	100					9.20-10.20n	non-intac	t.				K
	(45)											t
		1			-							t
ological S	urvey					British Geologic	al Survey			British Geo	logical Survey	t
1		10				10.20-10.60	m closely s	spaced	1			E
				1			al undulating open discon-					E
				$\pm$	(3.90)	and medium	open discon	illiulities.				Ł
1		NI		$\perp$	(3.90)	10.60-10.85	m non-inta	ct.				E
		2350		45	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						E
į		12		5		10.85-10.95	m closely	spaced				E
	British	Geol <b>Ni</b> cal	urvey	H		subhorizont	al undulating	rough and	1		Br	tish Geologic
					-	10.95-11.14	n discontinui m non-inta	ties.	1			E
1		12				11.14-11.50	m closely	spaced				F.
				-		subhorizont rough and n	al planar to un redium open	ndulating				E.
		NI				discontinuit	ies.		1			F.
11.60	96	NR NR					m non-inta m possible		1			Į.
1	(65) 46	NI				recovery.						į.
ological S	urvey			H		11.70-12.00	m non-inta	ict.				
and a grown of						and the second difference of the second differ				Samuel Dell	- June Contra	
Drilling	Progres	s and Wat	er Observ	vations								GENERAL
Date			Depth		Casing	Core Dia	Strike	ater   Standing	Type	Returns		REMARKS
31/10/20	06		8.00	8	0.00			3.30			(1) Inspecti drilling.	on pit dug pr
	British	Geological	Burvey				British G	e logical Survey			Br	itish Geologic
All	dimension Scale	ons in met	res	$T^{L}$	For abb	explanation of previations see	symbols and Key Sheets		Checked by:	Logge N. Donniso	d by: n/I. Ujjan	Contract 3454D

S roject:				]	ROT	TARY	CONTINUA	TION	FINAL Date:- 15/12/2006
roject:				Shiren	noor Flo	od Relief Sch	eme, North Tyneside		Exploratory Hole
lient:	British	Northumb	rian Wat	er Limite	ed	Loc	British ©E:432272:599	N-571276 227	BH-23 British Geological
ethod & I	Equipment cussion l	Rotary Co	ring usin	g a Pilce	on Wayf	arer 1500/Atl	Ground Level (m(AC	(00)): Date: 16.525 11/10/2006	Sheet: 2 of 5
RU	JN DET	AILS					STRATA		
Depth	TCR (SCR)	(SPT) Fracture	Red'cd Level	Legend	Depth (Thick-			CRIPTION	
	RQD	Index 12	Devel	-	ness)	Discontinu	m closely spaced	(As sheet 1 of 5)	
					ŧ l	subhorizonta	al to subvertical undulating tedium open to open	Moderately strong very the	inly and thinly
logical S	urvey	NI		1		infilled with	fine gravel discontinuities	moderately weathered.	omitic LIMESTONE
			44.025	中	12.50	12.25-12.50	m non-intact.		1/2
		5	44.022	× × ×	12.30	12.50-14.00	m medium and	Moderately strong and str	ong thinly bedded
				× × × × × × × × × × × × × × × × × × ×		subhorizonta open and oc	closely spaced al planar rough medium casionally open ies infilled with fine gravel	grey calcareous SILTSTC slightly to moderately we	DNE (calcisilitite) athered.
	British	Geological (	urvey	**************************************			British Geological Survey		British Geolog
14.10	urvey 86	NI		× × × × × × × × × × × × × × × × × × ×	- 1	14.00-14.25	m Sur non-intact.	British Ge	ological Survey
	(72) 21	8		* * * * * * * * * * * * * * * * * * *		spaced subh	m closely and medium orizontal planar smooth to ough medium open and tinuities.		
	British	Geological t	urvey	X X X X X X X X X X X X	-		British Geological Survey		British Geolog
		18		× × × × × × × × × × × × × × × × × × ×		subhorizont rough medit discontinuiti with fine gra	m very closely spaced al planar and undulating am open and open ies occasionally infilled avel and coarse sand.		
ilogical s	urvay			× × × × × ×		British Geologic	al Survey	British Ge	ological Survey
Orilling	Progres	s and Wat	er Observ	ations					GENERAL
Date	+		Depth	+	Casing	Core Dia	Strike Standing	Type Returns	REMARKS  (1) Inspection pit dug pridrilling.
	British	Geological	Survey				British Ge-logical Survey		British Geological

Checked by:

## ROTARY CONTINUATION

							Date:- 15/12/2006			
Project:	Exploratory Hole No									
Client:	thumbrian Wate	or I institud	Locat	ion:			BH-23			
	logical Survey	a Limited		British ©E:432272.599 1	N:571376.327		British Geolog	rical Si		
dethod & Equipment: ble Percussion Rota	ary Coring using	g a Pilcon Wayf	arer 1500/Atla	s Copco Ground Level (m(AOI	D)): 5.525	Date: 11/10/2006	Sheet: 3 of 5			
RUN DETAIL	.s			STRATA				2		
Depth (SCR) Fr	SPT) Red'cd	Depth	71.5	The state of the s						
	ndex Level	Legend (Thick- ness)	l Main							
16:60 55 (35) 0 Bross Seel	NR  15  NI 13  13  Indicate turvey	(7.90)	16.60-16.80m closely space and undulatin discontinuitie 16.80-16.85m 16.85-17.30m closely space and undulatin open disconti	0-16.80m closely and very ly spaced subhorizontal planar indulating rough medium open			TONE (calcisilitite)			
ological Survey	NR	* * * * * * * * * * * * * * * * * * *	17.70-18.80m recovery.	a possible zone of no	Ordan Gealogical Survey					
18.60 (12) (12) 12 British peol	NI logical Survey	* * * * * * * * * * * * * * * * * * *	18.80-19.45п	a non-intact.  Brash Geological Survey			British Geolog			
19.60 100 (90) 20 ological Survey	10	× × ×   × × × × × × × × × × × × × × × ×	subhorizontal			British Geol	logical Survey			
Drilling Progress an	nd Water Observ						GENERA	1		
Date	Depth	Casing	Casing Core Dia Water mm Strike Standing			Returns	REMARK			
British Geol	logical survey			British Ge-logical Survey	Туре		(1) Inspection pit dug drilling.			
All dimensions Scale 1:2		For e	explanation of s	symbols and Key Sheets	Checked by:	Loggeo N. Donniso	d by: Contra			

Ğ					RO1	TARY	CO	NTINUA	TION		FINA Date:- 15/12/200			
Project:				Shiren	noor Flo	od Relief Sc	heme, No	rth Tyneside			Exploratory H	ole No		
Client:	,	Northumb	rian Wat	er Limit	ed	Lo	cation:				BH-23	3		
Method &	Equipmen	seological S	unvey	-	-			E:432272.599 Ground Level (m(A	(OD)):	Date:	Sheet:	ical Surv		
			oring usir	g a Pilo	on Wayt	arer 1500/A	tlas Copo		56.525	11/10/2006	4 of 5	,		
_	RUN DETAILS  TCR (SPT)				Depth			STRATA	CRIPTION			Instrument		
Depth	(SCR) RQD	Fracture Index	Red'cd Level	Legend		Discontin	Discontinuities Detail			Main				
ological S			36.125	* * * * * * * * * * * * * * * * * * *	20.40	krilish Geologia	cal Survey		(As sheet 3 of Moderately grey calcare slightly to m					
20.60	100 (65) 30	NI		* * * * * * * * * * * * * * * * * * *		20.70-20.9	0m non	-intact.	Moderately strong thinly laminated dark grey SILTSTONE moderately to slightly weathered.					
21.10	British	NI NI seological S	urvey	* * * * * * * * * * * * * * * * * * *		21.10-21.5 occasionall	tal planar rough dis 0m non 5m clos ly medium	smooth to continuities. -intact. ely and spaced			British Geolog			
olog <b>22,10</b>		NI I8		* * * * * * * * * * * * * * * * * * *	(2.90)	subhorizon discontinui 21.55-21.6 21.62-21.8 closely spa	ties. 2m non 7m very ced subho and plana en discon	smooth to rough -intact. y closely and rizontal r rough tight and tinuities.						
olon <b>(22.10</b>	90 (52) 21	35 NI 10		**************************************		closely spa undulating medium op 22.25-22.3 22.30-22.7	ced subho and plana en discon 0m non 5m clos	r rough tight and tinuities. -intact.			logical Survey			
	British	Reological S	sinvey	X X X X X X X X X X X X X X X X X X X			Om non Britis Om very	h Geological Survey	0	British Geolog				
23,60	85 (38) 12	NI 15 NI	33.225	* * *	23.30	23.10-23.30mvry closely spaced subhorizontal planar to undulating rough medium open and open discontinuities. 23.30-23.40m non-intact. 23.40-23.48mclosely and very closely spaced subhorizontal undulating rough discontinuities. 23.48-24.10m non-intact.			Moderately thinly bedde moderately	ed red MUDS	aminated to very TONE slightly to			
ological S	rvey					iritish Geologia		maei		British Geo	logical Survey			
	Progres	s and Wat									GENERA			
Date			Depth		Casing	Core Dia mm	Strike	Water s Standing	Type	h Returns	REMARI (1) Inspection pit duy drilling.			
	British (	Seological S	cirvey				Britis	ih Geological Survey			British Geolog	pical Surv		
All	All dimensions in metres Scale 1:25				For	explanation of	of symbols e Key She	and	Checked by: Logged by: Contract No. Donnison/I. Ujjan 3454DD					

#### ROTARY CONTINUATION

C				,			COI	1111011	11011		Date:-	15/12/2006				
Project:				Shirem	noor Flo	od Relief S	cheme, Nor	th Tyneside			Explora	tory Hole	No			
Client:	British	Northumb Geological	rian Wat	er Limite	ed	- 1	ocation:	E-432272.599	N: 571376 327		B	H-23				
Method & able Pere	Equipment cussion	: Rotary Co	ring usir	ng a Pilco	on Wayı	farer 1500/	Atlas Copco	Ground Level (m(AC	(6.525)):	Date: 11/10/2006	Sheet:	of 5				
RU	UN DET	AILS						STRATA					Instrument/ Backfull			
Depth	TCR (SCR)	(SPT) Fracture	Red'cd	, ,	Depth			DESC	CRIPTION							
Берш	RQD	Index	Level	Legend	(Thick- ness)	Discont	inuities	Detail		Main						
Seological S	urvey	NI 12 NR			(0.80)	subhorizo discontine 24.30-24. 24.48-24. subhorizo discontine	48m non- 70m close ntal planar r uities.	ough intact.	(As sheet 4 Moderately thinly bedd moderately	weak thinly lar	minated to ve	ry to				
25 10	British	Geological	31.42:		25.10			h Geological Survey		omplete at 25.10		//	//   Sur			
enlogical s	зигуву					Brillish Geold	igical Survey			British Geo	logical Survey					
	British	Geological	Survey				Britis	h Geological Survey			Brit	ish Geological				
Geological 3	Survey					British Geold	gical Survey			British Geo	logical Survey					
	Progres	s and Wat				Core Dia		Water	Flu		G	ENERAL EMARKS				
Date			Depth		Casing	mm	Strike	Standing	Type	Returns			****			
31/10/20		Geological	25.10 Survey		0.00	92mm	Britis	20.60	Air	100%	(1) Inspection drilling.	n pit dug prid				
All	dimensio Scale	ons in metr	es	T	For	explanation previations	of symbols see Key Shee	and its	Checked by	Logged N. Donnison	i by: n/l. Ujjan	Contract N 3454DE				

#### DUNELM DRILLING CO.

#### **BOREHOLE RECORD**

Contract No. C6097

Client GREENER WHITEHOUSE

Ground Level Location CAULDWELL AVE - MONKSEATON

ROBEHOLE No. POTARY BHI Date SEPT. 1993

Depth	Thick- ness	Legend	British Geological Survey  Description of Strata	Type of Sample	C kN/m <sup>2</sup>	M %	ø	Density Kg/m <sup>3</sup>	
30.0	A.10	.00	TOPSOIL						
	3.80	0	DARK BROWN STONY CLAY						
4.50	0.60	0	SCANCE / BROWN SAND SANDSTONE BOWLDER		British Geo	ogical Survi			
0.30	5.20	N. 500	DORK BROWN . CREY						
0.90 11. 20	0.50	uver)	DARK GREY SANDSTONE			E	ritish Ge	logical Sun	ey .
16.00	4.70		HARD CREY SHALE						
16-30	8-30 Z-30		epey sometime						
CO-OO	0.20		HARD GREY SHALE LIARO DARK GREY SHALE		British Ged	ogical Survi	Y		
21.65	0.90		COOL CREY SHALE						
24.00		:1:1:	HOPO CREY SHALE					elogical Sum	
26-00			HAPO CIPEY SHALE				man oc	ingical sun	
30-00			HASE CLES SHALE						
urvęy			NO WOCKINGS		British Geo	ogical Surv	y		
			NO CAVITIES						
			CASED TO 10.30 M.						
British (	eological S	krvey	British Geological Survey			ł	ntish Ge	ological Surf	97