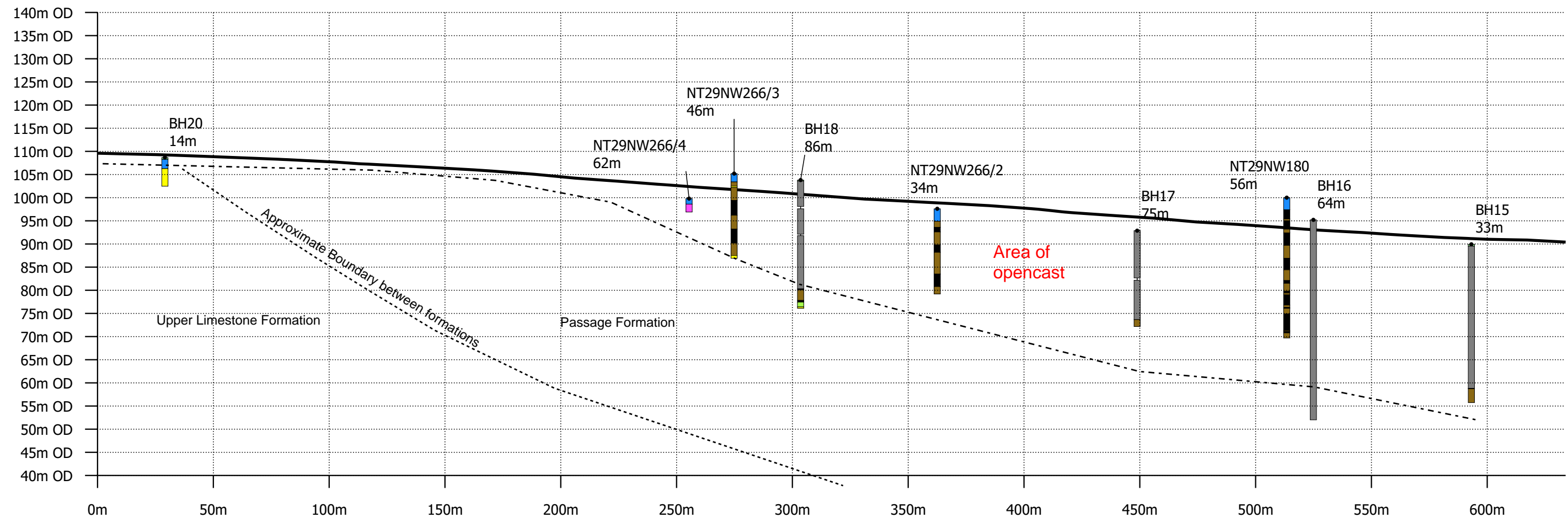


C

D



Legend

GeologyCode

- | | |
|---|---|
| Topsoil | Mudstone |
| Made Ground | Sandstone |
| Till | Basalt |
| Coal | Siltstone |

Surfaces

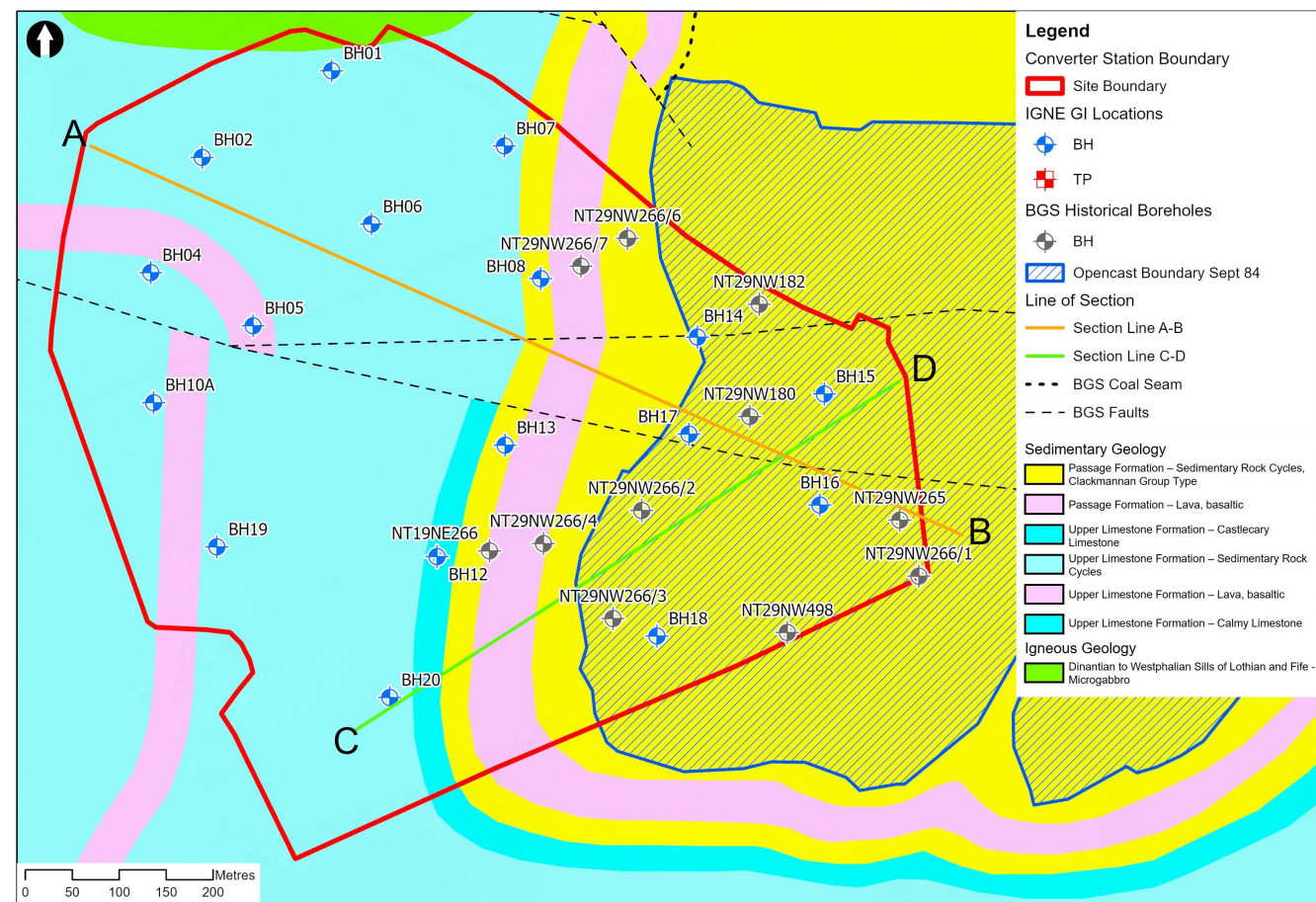
- Rockhead Profile

Location

C: 319819, 696924
 D: 320351, 697269

Scale: 1:1,800

Vertical exaggeration: 2x



Legend

Converter Station Boundary

Site Boundary

IGNE GI Locations

BH

TP

BGS Historical Boreholes

BH

Opencast Boundary Sept 84

Line of Section

Section Line A-B

Section Line C-D

BGS Coal Seam

BGS Faults

Sedimentary Geology

Passage Formation - Sedimentary Rock Cycles, Clackmannan Group Type

Passage Formation - Lava, basaltic

Upper Limestone Formation - Castlery Limestone

Upper Limestone Formation - Sedimentary Rock Cycles

Upper Limestone Formation - Lava, basaltic

Upper Limestone Formation - Calmy Limestone

Igneous Geology

Dinantian to Westphalian Sills of Lothian and Fife - Microgabbro

D. BGS Borehole Logs





(738) W: 13828-1 5000 3/26 M & G Ltd G 29

NT19NE / 266

SECTION OF N^o3 BORE, CHARLESTON.

In N^o14 field. 4 yds 2 ft S. from N dyke &
42 yds 2 ft E. from W. dyke.

Surface Level _____ O.D.

Communicated 1927 by The Life Coal Co Ltd

Date of boring or sinking _____ Borer _____

One-inch Map 40 Six-inch Map (County and Half-Quarter Sheet) FIFE 27 S.W., W.

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
Surface Boulders		5	6		5	6
Fely red		2		1	1	6
Pat red		4		1	5	6
Bands soft red		1	9	2	1	3
Fely red		2	9	2	4	
Pat band red		3		3	1	
Pat red	3	5		7		
Fely		1	2	7	4	2
Pat red	5	2	4	12	8	6
Fely sandy	1	2	3	13	5	9
Fely		1	9	14	1	6

(2854) Wt 7883-29 2000 10/23 M & G Ltd G 29

D SECTION OF **NT 29 NW / 180**
N° 4 BORE, Charleston (No. 690 Lockgelly)
 3 yards 2 feet E from W dyke, and
 77 yards 2 feet S from N dyke.

(Put down by Lockgelly Coal Co.) Surface Level _____ O.D.

Communicated May 1925 by The Life Coal Coy Ltd

Date of boring or sinking _____ Borer _____

One-inch Map 40 Six-inch Map (County and Half-Quarter Sheet) FIFE 27 S.W., W.

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
Surface boulders	1	2	6	1	2	6
" coal		2	6	1	5	
Loose metals & coal		4	3	2	3	3
Fireclay		1	3	2	4	6
Bands grey		5		3	3	6
coal			9	3	4	3
Fireclay		2	9	4	1	
coal		1	8	4	2	8
Bands light		3	6	5	2	
" grey		2	7	5	2	9
coal		1		5	3	9
Fireclay soft [Supposed WASTE]		5	6	6	3	3
" sandy		4		7	1	3
coal			4	7	1	7
Bands grey		5	5	8	1	
" hard		2	6	8	3	6
coal & Fireclay			6	8	4	
Fireclay sandy		3		9	1	
Bands dark		2		9	3	
Blues		2		9	5	
coal		1		10		
coal foul		1		10	1	
Fireclay sandy		2	3	10	3	3
Blues & Bands		3	3	11	6	
coal		1	3	11	1	9
Fireclay		1	6	11	3	3
coal foul & Brown		1		12	3	3
Bands grey		1	3	12	4	6

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
Forward				12	4	6
Fireclay		1	6	13		
Coal & Fireclay			9	13		9
to Fireclay sandy		3	10	13	4	7
Coal Lool			10	13	5	5
Bands, Fireclay, Coal		2	8	14	2	1
Coal		1	2	15	4	6
Fireclay			9	15	5	3
Coal			10	16		1
Shale		2	2	16	2	3
Shale softer			4	16	2	7
Fireclay dark.		1		16	3	7

(68/540) Wt. 6626/36 5000 0/41 M. & St., Ltd. G 68

NT29 NW D

~~541~~
265

SECTION ON No 1 Bore on Charleston R.A.1, Se./11/42

Surface Level _____ O.D.

Communicated 1944 by Borer for Ministry of Works (O.C.P.)

Date of boring or sinking May - June 1944 Borer Andrew Kyle Ltd.

One-inch Map 40 Six-inch Map (County and Half-Quarter Sheet) File 24 S.W.

Thickness.		Depth from Surface.	
Fathoms.	feet. ins.	Fathoms.	feet. ins.

	Surface soil	8	8
	Yellow clay & stones	9	1 5
	Bluish clay and large stones	9	2 2
	clay & large stones	5 10	1 2
	clay, blue, sandy, and stones	3	1 5
	Sand, clay & stones	4	2 3
burnt ironst. bed & flinty	Boulder	1	2 4
	clay & stones	4 4	3 2 4
	clay, with stones & whin boulders	5	4 1 4
	clay, with stones & sandst. boulders	3 8	4 5
	dk. coaly blaes	4	5 3
black smutty sediment obtd.	coaly blaes, with COAL ribs	4	5 3 4
	COAL	6	5 3 10
ground up: bright smalls with dull plias	COAL, with thin soft clay ply	4	5 4 5
Dark grey faky	Dark fireclay	1 4	5 5 9
Blackish grey faky: black carbon base	dk. coaly fireclay	3	6 2 9
Bright coal with some sooty layers	COAL; with thin clay ribs	4	6 3 4
Bright free and splinty	COAL	1 11	6 5 3
Dark fclay	COALY blaes	2	6 5 5
Clean, free, bright.	COAL	1	7 5

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
Grey & blue-grey; sandy ashy streaky base			8	7	0	5
Bright with dull plies			11	7	1	1
Grey & blue-grey; faky in part			1	7	2	
Streaky coarse fclay/silty congl			4	7	3	4
Hd. partly splint, 4/7 free coal below with dull splinty layers & fusain plies.			8	7	4	
			1	7	5	10
Light grey & rooty			4	8		5
			4	8	1	
Light grey, ground up.			5	8	1	5
Rooty, dark grey			5	8	1	10
Clayey grey black, thin roots.			1	8	3	
Soft and ground up.			4	9	1	
do. do. do. with large pyrites balls						
White, generally soft, dark films			3	9	3	
do. do. do. with rotten brassy rib			2	9	3	
Light blue grey, faky blaes & fakes with plant rootlets and debris			3	10		4
			6	10	1	1
Fine clean pale brown fclay			2	10	3	4
Dark clayey fakes with brown clay galls.			1	10	5	3
			9	11		
			4	11		4
Hd. coal with dk. fclay ribs			3	11		10
			1	11	2	1
Dark.			4	11	2	5
			10	11	3	3
Dark grey, light with green fly.			3	11	3	6
Bright free coal with durain and fusain plies.			2	12		2
			4	12		9
dk. faky			3	12	1	
light grey streaky 'ashy' type, hard			4	12	4	4

(68/2714) Wt. 12760/47 5000 12/86 M. & St., Ltd. 6 68.

NT29NW

D ^{2/4}

SECTION OF No 1 Bore on Lcharleston R.A. 1 / Sc. 11/42.

Six-inch Map (County and Quarter Sheet) Life 2Y 5.22.

265

~~S.M.~~

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
				12	1	7
<i>hd. shaly parrot 14" / dk. fl.</i>				12	2	7
<i>faky</i>		1		12	3	7
<i>dk. fky fl</i>		1		12	3	11
<i>soft clay, grey & tough</i>		4		12	3	11
<i>ashy brittle fl. sandy, very 1"</i>						
<i>grey brittle fl. 9" dk. brown, grey</i>						
<i>& hd. grey fl. generally fine</i>						
<i>brittle medium</i>		3	2	13	1	1
				13	1	4
		2	1	13	3	5
		7		13	4	
<i>parrot splint with coaly strains</i>		3		13	4	3
		3		13	4	6
		6		13	5	
		3		13	5	3
<i>hd. brittle f. clay, blue grey</i>		2	3	14	1	6
<i>Parrot splint with coaly strains</i>						
			10	14	2	4
		7		14	2	11
<i>Bright clean free gum seen: with some sooty ribs</i>		1	7	14	4	6
		6		14	5	
		9		14	5	9
<i>Bright coal with thin pyrites fky and vein: also one or two dull splinty parrot ribs about 1" in thickness</i>		4		15		1
		1	8	15	1	9
		10		15	2	7
<i>splinty parrot</i>		8		15	3	3
		8		15	3	11
<i>Rooty, sandy, f. clay nature</i>		1	1	15	5	
<i>Dk. grey faky f. clay, Stigmaria and rootlets</i>		1	7	16		7
<i>Dk. grey faky f. clay with coaly pieces.</i>		3		16		10
<i>Bright coal with dull bands and parrot partings</i>		1	5	16	2	3
<i>Dk. grey faky f. clay</i>		10		16	3	1
<i>Foul coal with f. clay pieces</i>		3		16	3	4

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
					16	3 4
Dk. grey faky f'clay			3		16	3 7
Dull splinty with dirt plies	}	COAL	4		16	3 11
		COAL	9		16	4 8
Black faky f'clay with coney stems.	COALY Blaes with					
	COAL joints	1	6		17	0 2
Brownish grey f'clay	F'clay, grey.	1	4		17	1 6
Dk. faky f'clay with thin ribs of coney	Dk. f'clay with coney ribs	1	10		17	3 4
Grey faky f'clay, dk. roots and occas. pyrites balls	f'clay, light & dark	2	8		18	
Dk. grey faky f'clay	f'clay, dk. with coney ribs	2	7		18	2 7
Light grey f'clay with black roots 1'3" / Dark grey f'clay 7"	}	Grey f'clay with coney joints	9		18	3 4
		do. do.	1	1	18	4 5
Dk. grey faky blaes with roots.	Dk. Blaes with coney joints.		11		18	5 4
Foul parrot with bright bands	COAL, foul		3		18	5 7
Bright gum seen / 6" light resinous parrot, full of megaspores	COAL		5		19	1 -
Dk. coney f'clay 4" / light grey f'clay 8"	Dk. f'clay, faky	1			19	2 -
Strong lt. grey faky sandy f'clay with black roots, 1'6" / fine lt. grey f'clay 8" / faky clayey sdst. 8" / lt. grey sandy f'clay with black roots, 1'8"	}	faky f'clay	4		19	2 4
		do. do. light	4	2	20	0 6
Grey f'clay with brownish yellow clay concretions	do. do. grey		1	6	20	2 -
Dk. grey faky blaes	Dk. Blaes.		1		20	3 -
Foul parrot, full of spores	COAL		4		20	3 4
Dk. grey faky f'clay	Dk. f'clay		5		20	3 9
Black lily f'clay, with coney stems	}	Dk. & grey f'clay with				
		COAL joint	4		20	4 1
Light brown faky f'clay, 1'6" / dk. brown faky f'clay with black roots, 2'8"	}	Grey faky f'clay	9		20	4 10
		Dark faky f'clay	3	5	21	2 3
Dk. faky blaes with plant stems	do. do.		10		21	3 1
Bright cherry COAL with dull splinty plies	COAL		9		21	3 10
Grey f'clay with black roots	Grey f'clay		6		21	4 4
Clean brownish f'clay 1'0" / coney f'clay 6" / brown f'clay with black roots, 1'0" / faky f'clay 3" / grey faky f'clay nature, 5"	}	do. do. with				
		COAL joints	3	2	22	1 6
Foul parrot with layers of megaspores	COAL		5		22	1 11
Light grey faky f'clay with black coney roots	}	Dk. & light f'clay				
		with coney joints.	9		22	2 8
Light grey clayey sdst. with black roots	Light grey f'clay		2	4	22	5 -
faky f'clay, black with carbonised roots and plant fragments	Dk. grey faky f'clay		3	5	23	2 5

(68/2714) Wt. 12760/47 5000 12/30 M. & St., Ltd. G 88.

SECTION OF ^{Nº 1} Bore on Charleston R.A.1 / Sc/11/42 /
Six-inch Map (County and Quarter Sheet) ^{3/4} NT29NW 265

		Thickness.			Depth from Surface.		
		Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
					23	2	5
Dark <i>COALY</i> Fake	Dk. <i>COALY</i> F'clay	-	-	3	23	2	8
	not seen <i>COAL</i>	-	-	6	23	3	2
Dark fake F'clay	Dark F'clay	-	-	6	23	3	8
Light grey sandy, with <i>COALY</i> roots	{ Grey fake F'clay with <i>COAL</i> joints	-	-	8	23	4	4
light grey fake f'clay with small irony balls	{ Grey fake F'clay with ironst. nodules	-	-	2	24	1	1
do. do.	Grey fake F'clay	-	-	1	24	2	1
Dk. grey fake blues, mottled with patches of clay ironstone	Dk. Blues with ironst. nodules	-	-	2	24	4	10
Rough grey fake full of megaspores 1'0" / Dk fake Blues, 6" with pyritised plants	{ Dark Blues	-	-	1	25	-	4
Bright <i>COAL</i> with dull flies	<i>COAL</i>	-	-	1	25	1	6
Black <i>COALY</i> f'clay, with thin ribs of bright <i>COAL</i>	{ Dk. F'clay	-	-	4	25	1	10
	<i>COAL</i> & <i>COALY</i> F'clay	-	-	7	25	2	5
Grey fake f'clay 1'6" / dk grey rough takes with rootlets, 0'1"	{ Grey F'clay, fake	-	-	11	25	3	4
	do. do.	-	-	-	-	-	-
	with <i>COAL</i> traces	-	-	1	25	5	-
Dk. f'clay, almost black, pyritised plant stems	{ Dk. fake F'clay	-	-	7	25	5	7
	Dk. F'clay, brassy	-	-	2	26	1	8
Gum seen with fragments of bright fcc. <i>COAL</i> ; lower part strong <i>COALY</i> blues with flies of bright <i>COAL</i> , pyritous	<i>COAL</i>	-	-	1	26	2	10
light grey, lipy. with <i>Stigmaria</i>	Grey F'clay	-	-	9	26	3	7
Dk. fake blues, marly fracture, f'clay nature, rooty	Dk. Blues	-	-	1	26	4	8
<i>COALY</i> Fake	Brown shaly Blues, mottled.	-	-	6	26	5	2
	not seen <i>COAL</i>	-	-	2	27	1	3
(probably brown lateritic stone) not seen	<i>COAL</i> & fake ribs, mottled.	-	-	1	27	2	3
Gum seen: bright fcc <i>COAL</i> , clean	{ <i>COAL</i>	-	-	4	27	2	7
about 3" Gas <i>COAL</i> at base seen	<i>COAL</i> with thin fake rib	-	-	6	27	3	1
	<i>COAL</i>	-	-	2	27	5	2
Dk. grey fake f'clay, <i>COALY</i> top.	Dk. F'clay with <i>COAL</i> ribs	-	-	4	27	5	10
Dk. grey f'clay with roots: lighter towards base	Dk. F'clay	-	-	1	28	1	6
light grey clean soft lipy f'clay	Grey F'clay diff. faultly	-	-	1	28	2	10

		Thickness.			Depth from Surface.		
		Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
					28	2	10
COALY f'clay, slightly fatty bands	COALY f'clay		5		28	3	3
Dull, solid fusain, no bright bands	COAL		3		28	3	6
COALY f'clay, passing down into greenish & yellowish mottled lateritic looking fatty f'clay	COALY f'clay		3		28	3	9
	Grey f'clay		1	9	28	5	6
do. do. do with C.B.I. nodules up to 2" across	do. do. with ironst. balls		1		29		6
Dk grey fakes, roots, marly fracture	Grey f'clay		1		29	1	6
Black rooty f'clay, pyritous	COALY f'clay		2		29	1	8
Gum of bright free COAL seen, with fragments of strong COAL, and parting of COALY fakes	COAL		1	5	29	3	1
Dk grey f'clay, rooty, COALY top	Dk. f'clay		1		29	3	2
Grey fatty f'clay, rough	Dk grey f'clay		8		29	3	10
Light grey fatty f'clay, irony towards base / COALY f'clay 1"	Grey f'clay		2	2	30		
Gum and frags. of bright clean free COAL seen	COAL		1	6	30	1	6
Strong irony parrot seen	COAL, hd. & dirty		6		30	2	
	Fakeo with COAL ribs		7		30	2	7
Bright COAL, jointy	COAL		1	3	30	3	10
Parrotly fakes	Fakeo with COAL joints		3		30	4	1
Gum and fragments of bright free jointy COAL seen	COAL		1	11	31		
Irony parrotly fake	Dk Fakeo with COAL ribs		4		31		4
Gum and some strong clean COAL seen	COAL		1	11	31	2	3
Dk grey fatty f'clay & roots	Dk. f'clay		1	4	31	3	7
Bright free COAL	COAL		1		31	4	7
Strong parrotly shale, with frags. of pyritised plants	Parrotly Blas (or shale)		1		31	5	7
	do. do.		10		32		5
Dk grey rooty fatty blas	Blas		7		32		
Dk. grey fakes, poorly bedded, occasional COALY roots	Grey Blas with COALY joints		2		32	3	
Grey fatty blas, rooty	Grey Blas, broken		3		33		
Light grey lipy clay	Light grey f'clay		1	2	33	1	2
Strong irony clay 1'0"/soft grey f'clay, crumbly, 4"	Strong Blas, broken, with kinge ribs		1	4	33	2	6
Strong fatty f'clay, welded to COAL	Grey f'clay		5		33	2	11
Foul COAL	COAL		7		33	3	6
Dk. grey f'clay with COALY plies	COALY f'clay with COAL joints		4	7	33	5	1
Bright free COAL	COAL with 1" foul ribs		6		33	5	7

(68/2714) Wt. 12760/47 5000 12/35 M. & St., Ltd. G 68.

SECTION OF *Nº 1 Bore on Charleston R.A. 1 / Se / 11 / 42*

Six-inch Map (County and Quarter Sheet) *Top 2Y S.W. / NT29NW*

D 4/4

541
265

	Thickness.			Depth from Surface.		
	Fathoms.	feet.	ins.	Fathoms.	feet.	ins.
Strong COAL with ankerite joints	COAL	1		33	5	7
Dk. rooty blasy f'clay	COALY Blaso		7	34	1	2
COALY Fake	COAL and Blaso		2	34	1	4
Dk. fakey f'clay, 1'0" / dk. rooty fakes, 4"	Grey fakey f'clay	2		34	3	4
light grey soft f'clay, 8"	COAL, fone		8	34	4	
only gum seen	COAL, fone		8	34	4	
light brownish grey f'clay, lipy	Grey fakey f'clay		6	34	4	6
very soft.	Grey f'clay	1	1	35	4	7
Whin, very weathered, 1'0" / greenish grey ashy f'clay fakes with thin black rootlets? / greenish whin, platy jointed	Grey Fakeo, burnt	2	7	36	1	2
Grey whin, weathering yellowish	hd. grey King's Slat.		9	36	1	11
Greenish whin, soft, weathered	Grey f'clay, with soft ply, burnt	1	8	36	3	7
Greenish medium grained	Blue Whin, soft, with spar	1	5	36	5	
not seen	Grey f'clay, burnt		9	36	5	9
Pide greenish, becoming stronger and darker below with spar and jasper along the joints	Whin, with spar	1	3	37	1	
	do. do.		3	37	4	
				<u>37</u>	<u>4</u>	



NT29NW/265
No. 1 D.D.

Comm: 10/5/44.
End: 29/6/44.

351
Form S6/P/1

MINISTRY OF WORKS

Sheet No. 1
D 5

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. 80/11/2 Site Charleston Contractor A. J. & Co.
 Grid Position (X+42)(6+51) Rig. No. RA. 1 Actual Drilling Time 350 hours.
 Ground Level + 327.30' O.D. Delays Moving 40 hours.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
1. Top Soil	0' 08"	0' 08"		
2. Clay, yellow & stones	0' 09"	1' 05"		
3. Clay, bluish & large stones	0' 09"	2' 02"		
4. Clay & stones	5' 10"	8' 00"		
5. Clay, sandy, blue, & stones	3' 00"	11' 00"		
6. Sand, clay & stones	4' 00"	15' 00"		
7. Boulder, burnt ironstone	1' 00"	16' 00"		
8. Clay & stones	4' 04"	20' 04"		
9. Clay, stones & boulders	8' 08"	29' 00"	298.30'	
10. Mass, coaly, dark	4' 00"	33' 00"		
11. Mass, coaly, with coal ribs.	0' 04"	33' 04"		
12. COAL.....	0' 06"	33' 10"		
13. COAL, with thin soft plies	0' 07"	34' 05"	292.88'	
14. Fireclay, dark	1' 04"	35' 09"		
15. Fireclay, coaly	3' 00"	38' 09"		
16. Coal with thin coal ribs	0' 07"	39' 04"		
17. Coal with thin coal ribs	1' 11"	41' 05"		
18. Mass, coaly	0' 02"	41' 05"		
Section of Coal Seam				
19. COAL.....	1' 00"	42' 05"	284.88'	
20. Fireclay, grey	0' 08"	43' 01"		
21. COAL.....	0' 11"	44' 00"	283.30'	
22. Fireclay, faky, light & dark	1' 00"	45' 00"		
23. COAL, foil	0' 04"	45' 04"		
24. COAL.....	2' 06"	47' 10"		
25. COAL, with thin grey fireclay rib	0' 07"	48' 05"	278.88'	
Stems out below Coal				
26. Fireclay, grey with thin coaly rib.	0' 07"	49' 00"	(Contd.)	

SHEP 6568 W.L. 54637/508 P. D.M. 1/44 D. & Co.

No. 1 D.N. (Contd.)

Sheet No. 2.

MINISTRY OF WORKS

541 Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42 Site Charleston Contractor A. Kyle, Ltd.
Grid Position (X = 42)(Y = 51) Rig No. RA. 1 Actual Drilling Time.....
Ground Level 327.30' Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Already recorded	49' 00"	49' 00"		
27. Fireclay	0' 05"	49' 05"		
28. Fireclay, dark	0' 05"	49' 10"		
29. Sandstone	1' 02"	51' 00"		
30. Sandstone, with feakey plies	4' 00"	55' 00"		
31. Sandstone, grey, with irony & brassy rib	2' 00"	57' 00"		
32. Sandstone, grey	3' 07"	60' 07"		
33. Sandstone, grey with irony rib.	0' 06"	61' 01"		
34. Blace, feakey, dark	2' 06"	63' 07"		
35. Blace, marly, light	1' 08"	65' 05"		
36. Blace, dark, with coal rib.	0' 09"	66' 00"		
37. COAL.....	0' 07"	66' 07"	260.72'	
38. Fireclay, coaly	0' 03"	66' 10"		
39. COAL, with foul coal ribs	1' 03"	68' 01"	259.22'	
40. Fireclay, grey	0' 08"	68' 09"		
41. COAL.....	0' 10"	69' 03"	258.05'	
42. Fireclay, grey	0' 03"	69' 06"		
43. COAL.....	2' 08"	72' 02"		
44. COAL, with soft grey l/c. jts.	0' 07"	72' 09"	254.55'	
45. Fireclay, grey	0' 03"	73' 00"		
46. Fireclay, dark with light mottled rib. Strata out below Coal	0' 07"	73' 07"		
47. Fireclay, dark	2' 00"	75' 07"	(Contd.)	



No. 1 D.D. (Contd.)

Sheet No. 3.

MINISTRY OF WORKS

Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42. Site Charleston. Contractor A. Kyle, Ltd.,
Grid Position (X + 42)(6 + 51) Rig. No. RA.1 Actual Drilling Time.....
Ground Level + 327.30' O.D. Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Ready recorded	75' 07"	75' 07"		
48. Fireclay, grey, soft	0' 04"	75' 11"		
49. Blaes, f'koy, dark with irony ribs.)	3' 02"	79' 01"		
50. COAL.....	0' 03"	79' 04"		
51. COAL, soft	2' 01"	81' 05"	245.30'	
52. COAL, harder	0' 07"	82' 00"		
53. Blaes, coaly, strong	0' 03"	82' 03"		
54. Fireclay, dark grey, with coaly joints)	0' 03"	82' 06"		
55. Fakes, dark	0' 06"	83' 00"		
56. COAL.....	0' 03"	83' 03"		
57. Blaes, dark	2' 03"	85' 06"		
58. COAL, foul with coal jts.)	0' 10"	86' 04"		
59. Blaes, dark	0' 07"	86' 11"		
60. COAL, inferior	1' 07"	88' 06"	238.80'	
61. Blaes, dark	0' 06"	89' 00"		
COAL.....	0' 09"	89' 09"		
Section of Coal Seam				
63. COAL, brassy ribs	0' 04"	90' 01"		
64. COAL, with thin brassy jts.)	1' 03"	91' 09"		
65. COAL.....	0' 10"	92' 07"	234.72'	
66. Fakes, coaly	0' 08"	93' 03"		
67. COAL, foul	0' 08"	93' 11"	233.59'	
68. Fakes, dark & light	2' 08"	96' 07"		
69. Fakes, dark & light with coal joints)	0' 03"	96' 10"		
Strata cut below Coal				
70. COAL.....	1' 05"	98' 03"	229.65'	(Contd.)

SLIDE 6368 Wt 61557/202/P 20 M 1/44 D. & Co.



No. 1 D.D. (Contd.)

Sheet No. 4.

MINISTRY OF WORKS

Form Se/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42. Site Charleston Contractor A. Kyle, Ltd.,
Grid Position (X + 42)(6 + 51) Rig. No. RA. 1 Actual Drilling Time.....
Ground Level + 527.30' O.D. Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Already recorded	98' 03"	98' 03"		
71. shales, dark with coal joints.	0' 10"	99' 01"		
72. COAL.....	0' 03"	99' 04"		
73. Shales, grey	0' 03"	99' 07"		
74. COAL.....	1' 01"	100' 08"		
75. Shales, coaly, with coal jts.	1' 06"	102' 02"		
76. Fireclay, grey	1' 04"	103' 06"		
77. Fireclay, dark, with coal ribs.	1' 10"	105' 04"		
78. Fireclay, light & dark	2' 08"	108' 00"		
79. Fireclay, dark with coal ribs.	2' 07"	110' 07"		
80. Fireclay, grey, with coal jts.	1' 10"	112' 05"		
81. Shales, dark, with coal jts.	0' 11"	113' 04"		
82. COAL, foul	1' 08"	115' 00"		
83. Fireclay, fakey, dark section of Coal Seam	1' 09"	116' 09"		
84. Fireclay, fakey	0' 04"	116' 04"		
85. Fireclay, fakey, light	4' 02"	120' 06"		
86. Fireclay, fakey, grey	1' 06"	122' 00"		
87. Shales, dark	1' 00"	123' 00"		
88. COAL.....	0' 04"	123' 04"		
89. Fireclay, dark	0' 05"	123' 09"		
90. Fireclay, dark & grey with coal joints.	0' 04"	124' 01"		
91. Fireclay, fakey, grey	0' 09"	124' 10"	(Contd.)	



No. 1 B.D. (Contd.)

Sheet No. 5

MINISTRY OF WORKS

Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42. Site Charleston. Contractor A. Kyle, Ltd.,
Grid Position (X+42)(6+51) Rig. No. RA.1 Actual Drilling Time.....
Ground Level + 327.70' O.D. Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
91. Slightly recorded	124' 10"	124' 10"		
92. Fireclay, fekey, dk.	4' 03"	129' 01"		
93. COAL.....	0' 09"	129' 10"		
94. Fireclay, grey	0' 06"	130' 04"		
95. " " with coal joints.	1' 00"	131' 04"		
96. Fireclay, grey	2' 02"	133' 06"		
97. COAL.....	0' 05"	133' 11"		
98. Fireclay, dk. & light with coal jts.	0' 09"	134' 08"		
99. Fireclay, light grey	2' 04"	137' 00"		
100. Fireclay, fly., grey dk.	3' 05"	140' 05"		
101. Fireclay, coaly, dk.	0' 05"	140' 08"		
102. COAL.....	0' 06"	141' 02"		
103. Fireclay, dk.	0' 06"	141' 08"		
104. Fireclay, fly, grey with coal joints.	0' 08"	142' 04"		
105. P/c., fly., grey, with ironstone nodules.	2' 09"	145' 01"		
106. P/c. fly., grey	1' 00"	146' 01"		
107. Blacc dk. with ironst. nodules.	2' 09"	148' 10"		
108. Blacc dk.	1' 06"	150' 04"		
109. COAL.....	1' 02"	151' 06"		
110. Fireclay, dk.	0' 04"	151' 10"		
111. COAL & Coaly P/c.	0' 07"	152' 05"		
112. P/c. fly., grey	0' 11"	153' 04"		
113. P/c. fly., with coal traccs.	1' 08"	155' 00"		
Strata out below Cont				
114. P/c. fly., dk.	0' 07"	155' 07"	(Contd.,)	

SI/PE 6268 W1 6582/26/P 20 M 1/4 D & Co.

No. 1 D.D. (Contd.) Sheet No. 6

MINISTRY OF WORKS Su1 Form Se/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42. Site Charleston Contractor A. Kyle, Ltd.,
 (X42)(6+51) RA. 1
 Grid Position + 327.30' O.D. Rig. No. RA. 1 Actual Drilling Time
 Ground Level + 327.30' O.D. Delays

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Already recorded	155' 07"	155' 07"		
115. f/c., fky., dk., brassy.	2' 01"	157' 08"		
116. COAL.....	1' 02"	158' 10"		
117. f/c. grey	0' 09"	159' 07"		
118. Blaes, dk.,	1' 01"	160' 08"		
119. Blaes, shaley, brown mottled.	0' 06"	161' 02"		
120. COAL.....	2' 01"	163' 03"		
121. COAL, with fakey ribs mottled.	1' 00"	164' 03"		
122. COAL.....	0' 04"	164' 07"		
123. Coal, with thin fake ribs.	0' 06"	165' 01"		
124. COAL.....	2' 01"	167' 02"		
125. Dk. fireclay with coal ribs.	0' 08"	167' 10"		
126. Fireclay, dark	1' 08"	169' 06"		
127. f/c. soft, grey & faulty	0' 08"	170' 02"		
128. re clay, grey	0' 08"	170' 10"		
129. Fireclay, coaly	0' 05"	171' 03"		Handwritten signature
130. COAL.....	0' 03"	171' 06"		
131. Fireclay, coaly	0' 03"	171' 09"		
132. Fireclay, grey	1' 09"	173' 06"		
133. Fireclay, grey, with ironstone balls.	1' 00"	174' 06"		
134. Fireclay, grey	1' 00"	175' 06"		
135. Fireclay, coaly	0' 02"	175' 08"		
136. COAL.....	1' 05"	177' 01"	(Contd.)	Handwritten signature

Strata cut below Coal

SHEET 6248 W1 20587/208/P 23 M 1944 D. & Co.



No. 1 B.P. (Contd.) Sheet No. 7.

MINISTRY OF WORKS Form S/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. 80/11/22. Site Charleston. Contractor A. Nyle, Ltd.

Grid Position (X + 42)(6 + 51) Rig. No. RA. 1 Actual Drilling Time.....

Ground Level + 327.30' Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
only recorded	177' 01"	177' 01"		
137. Fireclay, dk.	0' 01"	177' 02"		
138. Fireclay, dk. grey	0' 03"	177' 10"		
139. Fireclay, grey	2' 02"	180' 00"		
140. COAL (brown water)	1' 06"	181' 06"		
141. COAL, hard & dirty	0' 06"	182' 00"		
142. Sand, with coal ribs	0' 07"	182' 07"		
143. COAL.....	1' 05"	183' 10"		
144. Sand, with coal joints	0' 03"	184' 01"		
145. COAL.....	0' 03"	184' 04"		
146. COAL (black water)	1' 04"	185' 08"		
147. COAL.....	0' 04"	185' 00"		
148. Sand dk. with coal ribs.	0' 04"	186' 04"		
149. COAL.....	1' 11"	188' 03"		
150. Fireclay, dk.	1' 04"	189' 07"		
151. COAL.....	1' 00"	190' 07"		
152. Barrotty black or shale	1' 10"	192' 05"	134.9	The Westfield shale
Section of Coal Seam				
153. Mass, black	0' 07"	193' 00"		<i>Handwritten signature</i>
154. Mass, grey with coal joints.	2' 00"	195' 00"		
155. Mass, grey, broken	3' 00"	198' 00"		<i>Handwritten signature</i>
156. Fireclay, light grey	1' 02"	199' 02"		
157. Mass, strong, broken, with single ribs.	1' 04"	200' 06"		
158. Fireclay, grey	0' 05"	200' 11"		
Strata cut below Coal				
159. COAL.....	0' 07"	201' 06" (Contd.)		

SHP/C. 6368 W.E. 60287/206/P 20 M 144 D. & Co.



No. 1 D.D. (Contd.)

Sheet No. 8.

MINISTRY OF WORKS

Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42. Site Charleston. Contractor A. Kyle, Ltd.
Grid Position (X + 42)(6 + 51) Rig No. MA. 1 Actual Drilling Time.....
Ground Level + 327.30' Delays.....

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Already recorded	201' 06"	201' 06"		
160. Fireclay, coaly with coal joints.	1' 07"	203' 01"		
161. COAL, with foul coal ribs.	0' 06"	203' 07"		
162. COAL.....	1' 00"	204' 07"		
163. Blues, coaly	0' 07"	205' 02"		
164. Coal & Blues.	0' 02"	205' 04"		
165. Fireclay, faky & grey	2' 00"	207' 04"		
166. COAL, foul	0' 03"	208' 00"		
167. Fireclay, faky, grey	0' 06"	208' 06"		
168. Fireclay, grey	6' 01"	214' 07"		
169. Fakon, grey, burnt.	2' 07"	217' 02"		
170. Sandstone, kingle, hard grey.	0' 09"	217' 11"		
171. Fireclay, grey, burnt with soft plics.	1' 06"	219' 07"		
172. Blue whin, soft & spar.	1' 05"	221' 00"		
173. Fireclay, grey, burnt. - Section of Coal Seam	0' 09"	221' 09"		
174. Thin, with spar.	1' 03"	223' 00"		
175. do. do. do.	3' 00"	226' 00" 37" 4' 0"		Finished. Moved to No. 51 D.D. Westfield.
Strata cut below Coal				

SIREF 0368 W1 42257203/D 20 M 144 D & Co.



NT 29 NW /
266 / 1

Borehole No. 51.

53'3"

Comm: 26/9/44.
Term: 18/10/44.

542

MINISTRY OF WORKS

Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

S.D

Serial No. Sc/11/42.. Site CHARLESTON The Mineral Boring & Contractor Mining Co. Ltd.
Grid Position (4+18)(X+66) Rig. No. RK. III Actual Drilling Time 69 1/2 hrs.
Ground Level 334.0 Delays: Rained off 9 1/2 hrs.
Delays: Awaiting Labour 13 hrs.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
1. Soil & Clay	7' 3"	7' 3"		
2. Boulder Clay	10' 6"	17' 9"	316.25	
3. Fireclay	1' 6"	19' 3"		
4. COAL.....	3' 6"	22' 9"		
5. Blaes	0' 5"	23' 2"		
6. COAL.....	1' 3"	24' 5"		
7. Blaes	0' 9"	25' 2"		
8. COAL.....	2' 5"	27' 7"		
9. Fireclay	0' 6"	28' 1"		
10. COAL.....	1' 7"	29' 8"	304.3	
11. Fireclay	2' 4"	32' 0"		
12. Sandstone	3' 0"	35' 0"		
13. Faikes	1' 5"	36' 5"		
14. (Hard) Fireclay	1' 3"	37' 8"		
15. Blaes	0' 3"	37' 11"		
16. Sandstone	3' 1"	41' 0"		
17. Blaes	0' 3"	41' 3"		
18. Sandstone	2' 0"	43' 3"		
19. Faikes	2' 6"	45' 9"		
20. Sandstone Section of Coal Seam	2' 0"	47' 9"		
21. Faiky Blaes	2' 9"	50' 6"		
22. Blaes	1' 3"	51' 9"		
23. Faikes	1' 6"	53' 3"		Finished.
Strata cut below Coal				

J. Pilem
A.P.O.



NT 29 NW /
266/3

Borehole No. 53

60'

Comm: 17/10/44
Fini: 24/10/44

544

MINISTRY OF WORKS

Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/43

Site CHARLESTON

Contractor The Mineral Boring & Mining Co. Ltd.

Grid Position (S+56) (N+24)

Rig. No. KK. 11

Actual Drilling Time 38 hrs.

Ground Level 345.0

Delays: moving 1 hr.

Delays: rain 12 hrs.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
1. Soil & Clay	6' 00"	6' 00"		
2. Fairly Blaes	3' 00"	9' 00"		
3. (Soft) Sandstone	0' 10"	9' 10"		
4. Fairly Blaes	7' 02"	17' 02"		
5. Fireclay	2' 00"	19' 02"		
6. Coal & Blaes	2' 00"	21' 00"		
7. (Brown) COAL.....	8' 06"	29' 06"	315.5	
8. Fireclay	0' 06"	30' 00"		
9. Fireclay & S/stone ribs	3' 00"	33' 00"		
10. Fairly Blaes	0' 06"	33' 06"		
11. Fireclay	1' 00"	34' 06"		
12. Fireclay & S/stone ribs	5' 00"	39' 06"		
13. Coaly Blaes	1' 00"	40' 06"		
14. COAL.....	7' 04"	47' 10"	295.75	
15. Coaly Blaes	1' 05"	48' 15"		
16. Fairly Blaes	7' 09"	55' 24"		
17. Fireclay	1' 10"	56' 34"		
18. (Fairly) Sandstone	1' 02"	57' 36"		Finished.
Section of Coal Seam				
Strata cut below Coal				



NT29 NW /
266 / 4

Comm: 25/10/44.
Fini: 26/10/44. *Sus*

Borehole No. 54. 9' 8"

S Form Sc/P/1

MINISTRY OF WORKS

DIRECTORATE OF OPENCAST COAL PRODUCTION

Sc/11/42. CHARLSTON. The Mineral Boring & Mining Co. Ltd.

Serial No..... Site..... Contractor.....

Grid Position (8+67)(L+60) Rig. No. RK II Actual Drilling Time 14 hrs.

Ground Level 327.5 Delays Moving 2 hrs.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Soil & Clay	4' 0"	4' 0"	323.5	
Whinstone	5' 8"	9' 8"	317.8	Finished on Whinstone.
Section of Coal Seam				
Strata cut below Coal				

William
A.P.

SRPE 6368 Wt 55687/208/P 20 M 1/44 D. & Co.



NT29 NW /
266 / 6

Borehole No. 56. 11. Comm: 28/10/44. 547
 Fini: 30/10/44. Form Sc/P/1

MINISTRY OF WORKS
DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/14/42. Site CHARLESTON. Contractor The Mineral Boring & Drilling Co. Ltd.
 Grid Position (17+85) (P+28) Rig. No. RR. 11 Actual Drilling Time 3 hrs.
 Ground Level 279.7 Delays MOVING 2 hrs.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
1' 1" & Clay Decomposed Whinstone Whinstone	6' 0"	6' 0"	273.7	Finished on Whinstone.
	1' 3"	7' 3"	268.7	
	3' 9"	11' 0"		
Section of Coal Seam				
Strata cut below Coal				

J. Wilson
A.P.O.

SRPE 6368 Wt 55587/208/P 20 M 1/44 D. & Co.



NT29NW /
266 /7

Borehole No. 57.

40'3"

Comm: 30/10/44.
Fini: 3/11/44.

548

MINISTRY OF WORKS

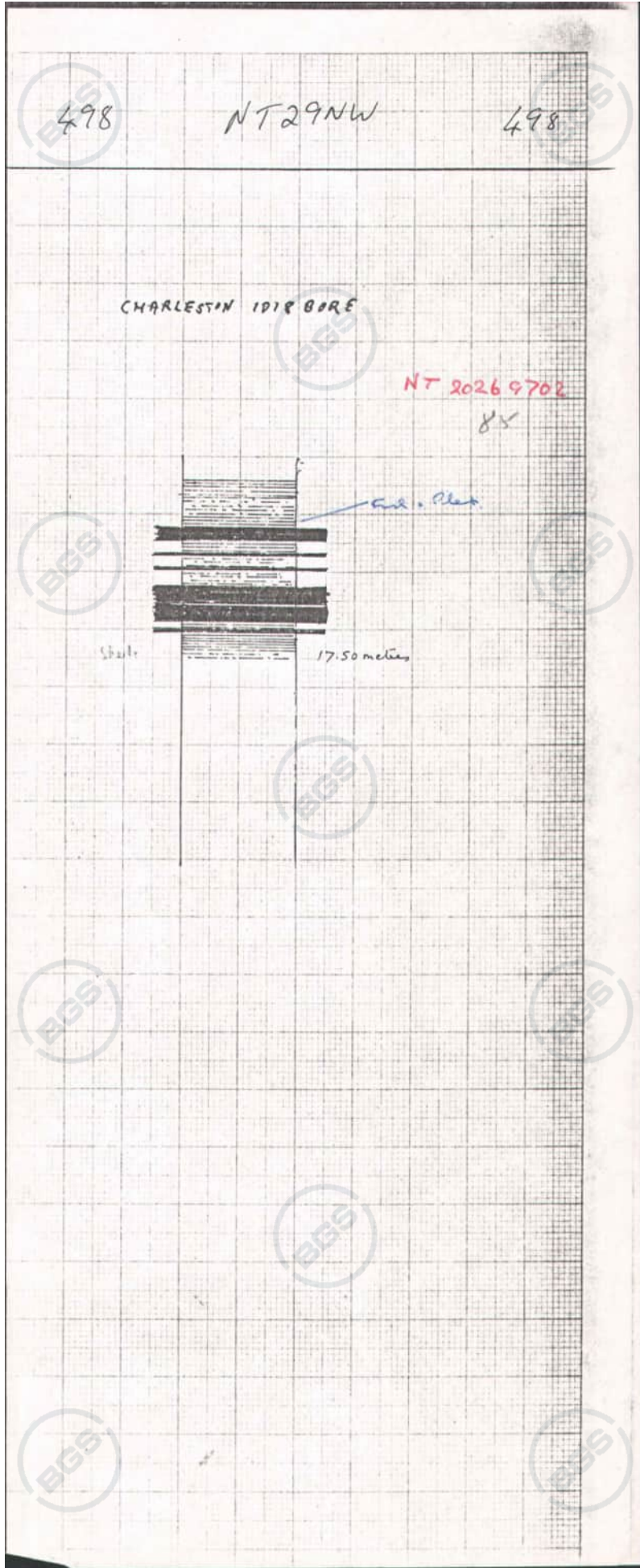
Form Sc/P/1

DIRECTORATE OF OPENCAST COAL PRODUCTION

Serial No. Sc/11/42 Site. CHARFSTON Contractor. The Mineral Boring & Mining Co. Ltd.
Grid Position. (18,40)(R+10) Rig. No. 152 Actual Drilling Time. 27 1/2 hrs.
Ground Level. 280.3 Delays. Casing 6 hrs.; moving 1/2 hr.

Strata	Thickness in feet	Progressive Depth in feet	Elevations Reduced to O.D.	Remarks
Sl & Clay	3' 9"	3' 9"	276.55	Finished.
Coal	3' 6"	7' 3"	273.05	
(Fairly) Blues	4' 9"	12' 0"		
Fireclay	9' 0"	21' 0"		
Fireclay & S'stone ribs	18' 6"	39' 6"		
Hard fireclay	0' 9"	40' 3"	240.05	
Section of Coal Seam				
Strata cut below Coal				

J. Wilson
1/20



E. IGNE GI (2024) Logs

RAEBURN

DRILLING & GEOTECHNICAL LTD

Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

Engineer: Scottish Power Energy Networks

APPENDIX B
SITE WORKS



Boring

The standard method of boring in soil for ground investigation is known as the cable tool method. It uses various tools worked on a wire cable, typically a shell in non-cohesive soils such as sand and gravel, and a clay cutter in cohesive soils such as clay. Very dense soils, boulders or other hard obstructions are disturbed or broken up by chiselling and the fragments removed with the shell. Where the ground conditions require, the borehole is lined with driven steel casings of such sizes that the bottom of the borehole is not less than 125mm diameter.

Where there are constraints upon access, alternative methods of soft ground boring are available. However, each has limitations that need to be taken into account when assessing their suitability and the ground conditions inferred from their results.

Rotary Drilling

Rotary drilling is employed to extend ground investigation beyond the practical limit of cable tool boring in hard formations, commonly rock. Core drilling is used to obtain continuous intact samples of the formation and is generally undertaken with double tube swivel type core barrels fitted with tungsten or diamond bits as appropriate to formation type and hardness. Open-hole rotary drilling using tricone rock roller bits or tungsten insert drag bits, or down-the-hole hammers, is carried out where more limited information is sufficient, strata identification being made from cuttings only. Open-hole rotary drilling methods may also be employed for fast penetration of soils where detailed sampling is not required, prior to coring at depth. Air or water is the flushing medium normally used with rotary drilling methods. Where the ground conditions require, the borehole is lined with inserted or drilled-in casing. Rotary percussion allows dynamic sampling within soils.

Sonic Drilling

Sonic drilling is employed as an alternative boring method for soft ground and rock. The sonic rig operates much like any conventional top-drive rotary rig. The main difference is that a sonic drill rig has a specially designed hydraulically powered drill head or oscillator which produces adjustable high frequency vibratory forces. Sonic samples are extruded direct to plastic liner bags or semi-rigid plastic liners for rapid inspection. Bulk and small disturbed samples are then taken from the plastic liner bags.

Trial Pits

Trial pits are excavated by hand or machine for a number of purposes such as avoiding services, exposing foundations or obtaining a better view of shallow ground conditions.

Samples and In-situ Tests

Tube samples of cohesive soils are generally taken with a 100mm internal diameter open drive sampler known as a U100, with an area ratio of 30%. The sampler is driven into the soil at the bottom of the borehole by a sliding hammer. After a sample is taken, the drive head and cutting shoe are unscrewed from the sample tube and any wet or disturbed soil removed from either end. The sample tube is then sealed with wax and fitted with plastic end caps.

A range of more specialised equipment, e.g. thin walled open drive sampler (UT100), piston or foil samplers, may be used to obtain higher quality samples in conditions where conventional open drive sampling is impracticable or unsatisfactory. The UT100 sampler is specifically utilised to obtain class 1 samples of cohesive soils as required under BS EN1997-2.

Disturbed samples are taken from the boring tools or trial pits at regular intervals. The samples are sealed in airtight containers. Bulk samples are large disturbed samples from the boring tools, or from trial pits, generally where tube samples are unavailable.

The Standard Penetration Test, SPT, in accordance with BS EN ISO 22476-3, determines the resistance of soil to the penetration of a split barrel sampler. A 50mm diameter split barrel sampler is driven 450mm into the soil using a 63.5kg hammer with a 760mm drop, and the penetration resistance, the "N" value, is expressed as the number of blows required to achieve 300mm penetration below an initial penetration of 150mm, the seating drive, through any disturbed soil at the bottom of the borehole.

In coarse soils, the Cone Penetration Test (CPT) is conducted in the same manner as the SPT but using a 50mm diameter 60 degree apex solid cone point to replace the split barrel sampler.

Peat Probing

Generally, peat probing is carried out using a Mackintosh Probe. The probe is pushed through the peat until resistance is met then the depth at which this occurred is recorded.

Groundwater

Borehole water levels are recorded, together with the depths at which seepages or inflows of groundwater are detected and the observations noted on the borehole or trial pit records. These observations may not give an accurate indication of groundwater conditions, for the following reasons:

- The trial pit or borehole is rarely left standing at the relevant depth for sufficient time for the water level to reach equilibrium.
- A permeable stratum may have been sealed off by the borehole casing.
- It may have been necessary to add water to the borehole to facilitate progress.
- There may be seasonal, tidal or other effects at the site.

A more accurate record of groundwater behaviour may be obtained from standpipes or standpipe piezometers.

Gases

Determination and measurement of gases in the ground, commonly in relation to landfills, may be made directly from the ground surface, where a hole is formed by driving a solid and rigid steel spike to depths normally in the range 1.0 to 1.5m. Gas emissions are analysed using an appropriate portable analyser. However, research has shown that the small sample hole size and smearing effects can give a false negative result.

Where more accurate or longer term measurement of emissions is required, gas monitoring standpipes are installed in boreholes.

SOIL SAMPLES

U (X) General purpose tube sample; X No of blows to drive sampler

Piston Piston sample

NOTE: Tube samples are 100mm diameter unless otherwise specified in the remarks. Suffix 'a' indicates sample not recovered; suffix 'b' indicates full penetration of sampler not obtained; suffix 'c' indicates full penetration of sampler but limited recovery

D/J/T/V Small Disturbed/Jar/Tub/Vial sample

B/LB Bag/Large Bag sample

UT (X) Thin walled push in sampler (type OS-T/W); X No of blows to drive sampler

ET Sample appropriate for geochemical analyses (tub)

CORE RECOVERY AND ROCK QUALITY

C Core Sample

TCR Total Core Recovery: The total core recovered expressed as a percentage of the core run length

SCR Solid Core Recovery: The core recovered as solid cylinders expressed as a percentage of the core run length

RQD Rock Quality Designation: The core recovered as solid cylinders of length 100mm or more expressed as a percentage of core run length.

RO-S/RO-R Rotary Open Hole Drilling through Soil / Rotary Open Hole Drilling through Rock

FI Fracture Index: The number of discontinuities expressed as fractures per metre

Flush "Depth" indicates depth down to which recorded "Returns" relate

NI Non Intact

NR No Recovery (assumed)

GROUND-WATER

W Water Sample

∇ Ground-water encountered

∇ Depth to which ground-water rose

∇ Ground-water cut off by the casing

WS Water Sample from Standpipe

IN SITU AND FIELD TESTS

SPT=X a/b (pen) Standard penetration test (split barrel sampler(SPT)or cone (CPT)); X is the penetration (N) value;

or CPT=X a/b (pen) 'a' is blow/75mm for seating drive; 'b' is blows/75mm for test drive; (pen) is test drive penetration if less than 300mm.

CBR California bearing ratio test

MCV Moisture condition value test

K Permeability test

HP Hand penetrometer test

FV Field vane test

HV Hand vane test (I = Initial, R = Residual)

ID Density test

PID Photo Ionisation Detector (ppm)

LEGENDS

Material legends are in accordance with ISO 710-1 and 710-2

before a description indicates that it is based on the Driller's record.

INSTALLATIONS (BACKFILL)



Concrete



Bentonite



Spoil



Bentonite/cement grout



Sand



Solid pipe



Gravel



Slotted pipe



Porous element



Wooden plug



Asphalt

DIMENSIONS

All dimensions in metres unless otherwise stated.


ROTARY DRILLING SIZES

Letter	Nominal Diameter (mm)	
	Borehole	Core
Standard		
N	76	54
H	100	76
P	121	92
S	146	113
Non-standard		
412	108	75

Other casing and borehole diameter sizes are available and may be used where required. Details will be on the individual BH logs.

Exploration Point	Co-ordinates		Ground Level (mO.D.)	Method	Figure No	Installation	Remarks
	Easting (m)	Northing (m)					
BH01	319774.9	697617.6	83.55	IP+CP	B1		
BH02	319636.7	697525.6	84.22	IP+CP+RC	B2	1	
BH03	319423.0	697408.6	82.73	IP+CP	B3		
BH04	319582.0	697402.9	85.09	IP+CP+RO+RC	B4		
BH05	319691.1	697346.5	88.30	IP+CP+RC	B5	1	
BH06	319817.0	697454.6	86.94	IP+CP	B6	1	
BH07	319958.7	697537.7	85.46	IP+CP+RC	B7		
BH07A	319957.9	697538.3	85.43	IP+CP	B8		
BH07B	319956.9	697539.4	85.42	IP+CP	B9		
BH08	319997.3	697396.6	87.86	IP+CP	B10	1	
BH09	319829.8	697283.5	90.83	IP+CP	B11		
BH10	319585.0	697266.4	88.06	IP+CP	B12		
BH10A	319585.2	697264.8	88.09	IP+CP	B13		
BH11	319499.9	697194.1	90.83	IP+CP	B14		
BH12	319887.0	697101.0	100.50	IP+RO+RC	B15	1	
BH13	319959.5	697219.5	93.46	IP+CP+RO+RC	B16	1	
BH14	320164.4	697334.4	89.06	IP+SB+SC	B17	1	
BH15	320299.5	697273.9	89.93	IP+SB+SC	B18		
BH16	320294.7	697155.8	95.21	IP+SB+SC	B19	1	
BH17	320155.2	697231.2	92.87	IP+SB	B20	1	
BH18	320121.2	697016.4	103.80	IP+SB+SC	B21		
BH19	319652.5	697111.3	98.99	IP+CP	B22		
BH20	319836.5	696951.1	108.67	IP+CP+RC	B23		
TP04	319650.5	697596.8	83.13	TP	B24		
TP05	319591.7	697561.4	82.94	TP	B25		Soakaway
TP06	319825.4	697596.8	83.76	TP	B26		
TP07	319542.8	697477.6	83.21	TP	B27		
TP08	319389.3	697457.5	82.54	TP	B28		
TP09	319766.5	697518.4	85.60	TP	B29		
TP10	319777.2	697448.8	87.05	TP	B30		
TP11	319360.4	697395.2	82.68	TP	B31		
TP12	319664.1	697421.4	86.60	TP	B32		
TP13	319998.2	697510.2	85.74	TP	B33		Trench
TP13A	320009.2	697489.8	86.06	TP	B34		Trench
TP13B	320011.1	697484.8	86.16	TP	B35		Trench
TP14	319906.1	697451.0	87.22	TP	B36		Soakaway
TP15	319517.6	697317.9	84.78	TP	B37		
TP16	319459.9	697281.2	84.95	TP	B38		
TP17	320098.7	697443.1	86.95	TP	B39		Trench

Style: SCHEDULE OF BH & TP File: P:\GINTW\PROJECTS\26667\GPJ Printed: 06/11/2024 14:15:14 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Originator	Title:			Fig No:
FMR	SCHEDULE OF SITE WORKS			B0
Chk & App	Status			Sheet 1 of 2
CJH	Final			

Exploration Point	Co-ordinates		Ground Level (mO.D.)	Method	Figure No	Installation	Remarks
	Easting (m)	Northing (m)					
TP17A	320094.7	697452.4	86.76	TP	B40		Trench
TP17B	320076.7	697470.4	86.30	TP	B41		Trench
TP18	319781.1	697343.7	88.94	TP	B42		
TP19	319892.9	697337.5	89.42	TP	B43		
TP20	319660.2	697269.1	89.68	TP	B44		
TP21	319504.8	697164.0	93.29	TP	B45		
TP22	320091.7	697363.6	88.20	TP	B46		Soakaway, Trench
TP22A	320099.3	697361.2	88.28	TP	B47		Trench
TP23	320013.1	697270.8	91.51	TP	B48		Trench
TP23A	320024.4	697263.2	91.75	TP	B49		Trench
TP23B	320040.1	697252.2	92.23	TP	B50		Trench
TP24	319833.4	697201.3	93.75	TP	B51		
TP25	319693.6	697164.7	94.77	TP	B52		
TP26	319604.9	697092.6	100.24	TP	B53		
TP27	320272.3	697301.3	89.42	TP	B54		
TP28	320100.0	697262.3	91.53	TP	B55		Trench
TP28A	320102.2	697257.4	91.84	TP	B56		Trench
TP29	320012.0	697134.2	98.01	TP	B57		Trench
TP29A	320057.0	697147.9	97.47	TP	B58		Trench
TP29B	320025.6	697132.9	97.94	TP	B59		Trench
TP29C	320035.1	697132.1	98.18	TP	B60		Trench
TP30	319849.6	697076.5	101.86	TP	B61		
TP31	319729.7	697028.6	106.03	TP	B62		
TP32	320273.4	697176.3	94.30	TP	B63		
TP33	320154.6	697100.2	99.26	TP	B64		
TP34	320312.4	697083.8	98.86	TP	B65		
TP35	319996.0	696961.2	107.30	TP	B66		Trench
TP35A	320011.7	696968.0	106.61	TP	B67		Trench
TP35B	320012.0	696966.9	106.65	TP	B68		Trench
TP36	319801.6	696873.7	109.55	TP	B69		

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Originator FMR	Title: SCHEDULE OF SITE WORKS		Fig No: B0
Chk & App CJH	Status Final		Sheet 2 of 2



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
Engineer: Scottish Power Energy Networks

Borehole No. BH01

Inspection Pit to 1.20m
Cable Percussion to 4.50m
Rotary Core Drilling to 7.70m

Location: E 319774.9
N 697617.6

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result										
6/8 2024							83.55			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D, ES						83.25	0.30	MADE GROUND (brown slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				
	1.00	ES												
	1.20	D	1.20	SPT=13 2.3/4.3.3.3				1.20	82.30	1.25				
	1.70	B, D								Soft mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and siltstone. Cobbles are subangular and subrounded of predominantly sandstone				
	2.00	ES												
	2.20	UT100(30)					2.20							
	2.70	B, D												
	3.00	D, ES												
	3.20	D	3.20	SPT=43 7.7/8.10.12.13				3.20	80.35	3.20				
	3.70	B												
	4.00	D												
	4.20	D	4.20	SPT=50 9.16/20.30(100)				4.20	79.30	4.25				
	06/08	4.50	D					4.20	78.85	4.70	Grey fine to coarse grained SANDSTONE recovered as sandy fine to coarse angular and subangular gravel		2.80m Dry	
			4.70	38	38	0			78.45	5.10	0.15m recovery of medium strong thickly laminated off white fine and medium grained SANDSTONE with thin to thick laminations of grey siltstone. Partially weathered evident as orange staining on upper surface. Fractures are 20° undulating and rough. Likely loss within weathered mudstone and siltstone			
			5.10	100	54	0			78.23	5.32	Weak to moderately weak laminated grey sandy SILTSTONE. Distinctly weathered becoming partially weathered evident with loss of strength and structure, becoming less with depth. Non-intact to 5.20m. Below 5.20m two fracture sets. No. 1: very close 15° to 20° undulating and rough bedding. No. 2: very closely spaced 45° planar and rough			
			5.32	100	91	50					Medium strong medium bedded, locally thickly laminated fine and medium grained off white SANDSTONE with occasional bands of muddy laminae. Partially weathered evident as loss of strength and structure in muddy laminae. Fractures are medium spaced 30° to 40° undulating and rough bedding			
			6.20	100	90	70					.....from 5.62m to 5.75m: thick undulating laminations of black coal.....from 5.65m to 5.70m: thick laminations of dark brownish grey mudstone		
			7.20	100	70	20			76.35	7.20	Weak pale grey matrix supported CONGLOMERATE. Matrix is pale grey coarse grained sandstone. Clasts are predominantly fine and medium angular grey and brownish grey siltstone. Partially weathered evident as loss of strength close to fracture surfaces. Fractures are closely spaced 45° undulating and rough			
12/08							4.70	75.85	7.70	END OF BOREHOLE		Dry	7.70	

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 3.00m.
 The Penetration Tests were carried out using Trip Hammer AB02.
 SPT at 4.50m: SPT>50: 25(5)/50(10)

Hole Diam.	To Depth	
	Boring	Casing
200	4.50	4.20
125	7.70	4.70

Driller DP	Originator BA	Ground-water				Water Added		Chiselling			Flush				Returns	Type	From (m)	To (m)	Fig No:
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	From (m)	To (m)							
		3.00	2.80	20.00				4.25	4.50	1:00	100	AirWM	4.70	7.70				B1	
Chk & App FMR	Status FINAL																		



Sheet 1 of 1
Scale 1:50

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Location: E 319636.7
 N 697525.6

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
8/8 2024	0.00	WS						84.22		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)	[Cross-hatched pattern]			
	0.50	B, D, ES, ET						83.72	0.50	MADE GROUND (brown slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				0.50
	1.00	ES						83.02	1.20	MADE GROUND (medium dense dark grey sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with cobbles. Locally becoming slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)				1.00
	1.20	D	1.20	SPT=20	2.3/5.4.5.6									
	1.70	B, D												
	2.00	ES												
	2.20	D	2.20	SPT=27	4.4/5.7.7.8					2.20				
	2.70	B, D												
	3.00	ES												
	3.20	D	3.20	SPT=24	5.6/6.5.6.7					3.20				1.85m
3.70	B, D										1.85m			
4.20	D	4.20	SPT=50	15.10/6.6.8.30 (225)					4.20					
								79.62	4.60	....below 4.20m: dense				
			TCR	SCR	RQD	FI		79.42	4.80	# Weathered DOLERITE				
		4.80	100	83	0					Medium strong dark grey DOLERITE with phenocrysts (up to 2mm diameter) and three sets of pinkish white veins. No. 1: from 4.80m to 5.40m subvertical up to 12mm thick, causing subvertical fractures. No 2: widely spaced planar at 10° and up to 2mm thick. No. 3: randomly orientated up to 0.5mm thick. Partially weathered evident as loss of strength and structure along veins. Three fracture sets. No. 1: subvertical undulating and rough, with veins. No. 2: close to medium spaced 10° to 15° undulating and rough joints. No. 3: medium spaced 45° to 60° undulating and rough		2.80m	5.00	
		5.70	100	28	0			78.52	5.70	Moderately weak and weak mottled dark grey with green patches in places DOLERITE with occasional polished surfaces and dark grey phenocrysts (up to 1mm diameter). Distinctly weathered with mottling and significant loss of strength. Non intact				
		6.50	100	97	0			77.72	6.50	Weak and very weak dark grey mottled with green and occasional purple banded DOLERITE with dark phenocrysts (up to 1mm diameter) and occasional randomly orientated 0.5mm thick pale pinkish white veins. Distinctly weathered with significant loss of strength, structure and green and purple staining. Three fracture sets. No. 1: medium spaced 20° to 30° undulating and smooth with loss of strength and structure along edges. No. 2: medium spaced 45° rough and undulating. No. 3: Single fracture 70° to 90° undulating and rough				
13/08								4.80	76.42	7.80				7.80

Remarks:

Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 2.00m.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 5.00m.
 SPT at 4.80m: SPT>50: 25(5)/50(0)

Hole Diam.	To Depth	
	Boring	Casing
200	7.80	4.60

Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				Returns	Type	From (m)	To (m)
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	From (m)	To (m)						
					1.85			3.95	4.20	1:00	100	AirWM	4.80	7.80				
Chk & App FMR	Status FINAL							4.60	4.80	1:00								



Fig No: B2
 Sheet 1 of 1
 Scale 1:50

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667_GPJ44 (0) 1698 710999 Printed: 08/11/2024 12:21:10 Raeburn Drilling and Geotechnical, Whistlerberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
Engineer: Scottish Power Energy Networks

Borehole No. BH04

Inspection Pit to Cable Percussion to Rotary Core Drilling to 1.20m
7.00m
10.00m

Location: E 319582.0
N 697402.9

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
15/8 2024							85.09			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D, ES					84.59	0.50		MADE GROUND (brown slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				
	1.00	ES					84.09	1.00		MADE GROUND (medium dense and dense grey locally dark grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with cobbles. Cobbles are angular to subrounded of sandstone and mudstone)				
	1.20	D	1.20	SPT=16	4.5/5.4/3.4				1.20					
	1.70	B, D												
	2.00	ES												
	2.20	D	2.20	SPT=19	2.3/3.4/6.6				2.20					
	2.70	B, D												
	3.00	ES												
	3.20	D	3.20	SPT=41	3.3/7.8/12.14				3.20					
	3.70	B, D								....below 3.70m: cobbles becoming more abundant and with pockets of slightly gravelly sandy clay				
	4.20	D	4.20	SPT=26	1.2/4.6/7.9				4.20					
	4.70	B, D												
	5.20	D	5.20	SPT>50	5.7/9.7.34 (150)				5.20					
15/08	5.70	B, D						79.59	5.50	Greyish brown slightly gravelly sandy CLAY of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, dolerite and mudstone. Cobbles are subangular and subrounded of sandstone and dolerite		3.70m		
	6.20	D	6.20	SPT=28	3.4/4.4.5.15				6.20				2.75m	
				TCR	SCR	RQD	FI	78.44	6.65	Grey fine to coarse grained SANDSTONE recovered as sandy fine to coarse angular and subangular gravel				
16/08	7.00	D	7.00	100	97	0		78.09	7.00	Very weak locally extremely weak dark grey MUDSTONE. Partially weathered evident as loss of structure on fracture surfaces. Three fracture sets. No.1: medium to closely spaced, 35°, stepped and rough bedding fractures. No.2: widely spaced, subhorizontal, undulose and rough joints. No.3: medium to closely spaced, 55°, stepped and smooth joints from 7.10m to 7.15m: weathered to gravel from 8.00m to 8.40m: highly fractured from 8.50m to 9.00m: weathered to clay from 9.20m to 9.25m: weathered to gravel				Dry
19/08								7.00	75.09	10.00				10.00

Remarks: # Description based on Driller's log.
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
Ground-water was not observed to enter the borehole.
The Penetration Tests were carried out using Trip Hammer AB02.
SPT at 7.00m: SPT>50: 25(5)/50(10)

END OF BOREHOLE

Hole Diam.	To Depth	
	Boring	Casing
200	7.00	6.20
125	10.00	7.00

Driller DP, GMo	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
								3.70	4.20	1:00	100	AirWM	7.00	10.00
								5.50	5.75	1:00				
								6.65	7.00	1:00				



Fig No:
B4
Sheet 1 of 1
Scale 1:50

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667_GPJ44 (0)1698 710999 Printed: 06/11/2024 12:21:21 Raeburn Drilling and Geotechnical, Whistlerry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Location: E 319691.1
 N 697346.5

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
6/8 2024	0.00	WS					88.30		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)	[Cross-hatched pattern]	Dry	[Scale]	[Symbol]	0.50
	0.50	B, D, ES					87.80	0.50	MADE GROUND (brown very gravelly very silty fine to coarse sand with cobbles and pockets of slightly gravelly sandy clay. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)					
	1.00	ES					87.10	1.20	MADE GROUND (friable dark grey slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, coal and mudstone. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)					
	1.20	D	1.20	SPT=30	3.6 / 7.6, 8.9			1.20						
	1.70	B, D					86.60	1.70	MADE GROUND (medium dense grey very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with cobbles. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)					
	2.00	ES												
	2.20	D	2.20	SPT=23	5.4 / 5.6, 5.7			2.20						
	2.70	B, D												
	3.00	ES												
	3.20	D	3.20	SPT=10	4.5 / 4.3, 2.1			3.20						
06/08	3.70	B, D												
	4.20	D	4.20	SPT=9	2.3 / 1.2, 3.3			4.20	....at 4.20m: locally loose				
	4.70	B, D												
	5.20	D	5.20	SPT=13	3.4 / 5.3, 3.2			5.20	....from 5.30m to 6.25m: predominantly coarse angular and subangular sandstone gravel				
	5.70	B, D												
	6.20	D	6.20	SPT=9	5.1 / 1.3, 2.3			6.20						
	6.70	B, D												
	7.20	D	7.20	SPT=48	6.9 / 10.10, 15.13			7.20						
	8.00	D	8.00	TCR	SCR	RQD	FI	7.20						
	07/08	8.00	D	8.00	100	0	0	NI	80.45	7.85	Light brown fine to coarse grained SANDSTONE recovered as sandy fine and medium angular gravel		2.50m	
			8.25	100	95	18		80.30	8.00	Dark grey MUDSTONE recovered destructured as firm dark grey clay. Evidence of laminations towards base.		2.50m		
										Moderately weak becoming medium strong with depth pale grey with bands with thick laminations of dark grey fine and medium grained SANDSTONE. Distinctly weathered evident as loss of strength, occasional orange discolouration at some fractures and destructuring along some fractures. Three fracture sets. No. 1: close and medium spaced 5° to 20° undulating and rough bedding fractures. No 2: medium spaced 43° to 60° undulating and rough joints with some destructuring and penetrative orange staining where joints cross bedding fractures. No. 3: widely spaced 70° undulating rough occasionally sand lined (up to 15mm thick) joints				
			9.50	100	93	17								

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not encountered.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 11.00m.
 SPT at 8.00m: SPT>50: 25(5)/50(5)

Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				Returns	Type	From (m)	To (m)	Fig No:
		Struck	Rose To	Time (min)	Cut Off	From	To	From	To	hh:mm	From (m)	To (m)							
		2.90	2.55	20.00				5.80	6.20	1:00	100	AirWM	8.00	11.00				B5	
Chk & App FMR	Status FINAL							7.85	8.00	1:00								Sheet 1 of 2	
																		Scale 1:50	

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RAEBURN

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH05

Engineer: Scottish Power Energy Networks

Inspection Pit to 1.20m
Cable Percussion to 8.00m
Rotary Core Drilling to 11.00m

Location: E 319691.1
N 697346.5

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
14/08			9.50			11	8.00	77.30	11.00	END OF BOREHOLE				11.00

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not encountered.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 11.00m.
 SPT at 8.00m: SPT>50: 25(5)/50(5)

Hole Diam.	To Depth	
	Boring	Casing
200	8.00	8.00
125	11.00	

Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
								5.80	6.20	1:00	100	AirWM	8.00	11.00
								7.85	8.00	1:00				

Driller DP
 Chk & App FMR

Originator JD/FR
 Status FINAL



Fig No:
B5
 Sheet 2 of 2
 Scale 1:50

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Location: E 319817.0
 N 697454.6

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill				
	Depth	Type	Depth	Result							Symbol	Depth			
16/8 2024	0.00	WS				86.94		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)		Dry					
	0.50	B, D, ES, ET				86.44	0.50	MADE GROUND (brown slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				0.50			
	1.00	ES													
	1.20	D	1.20	SPT=20 2.3/5.4.5.6		1.20									
	1.70	B, D													
	2.00	ES													
	2.20	D	2.20	SPT=20 2.4/5.6.5.4		2.20	85.34	1.60			MADE GROUND (grey locally black slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)				
	2.70	B, D													
	3.00	ES													
	3.20	D	3.20	SPT=22 4.17/8.5.4.5		3.20									
	3.70	B, D													
	4.20	D	4.20	SPT=30 4.5/6.6.8.10		4.20									
4.70	B, D														
5.20	D	5.20	SPT=29 5.6/7.7.7.8		5.20	81.54	5.40	MADE GROUND (greyish brown slightly gravelly sandy clay of low plasticity with cobbles. Locally becoming gravelly very clayey sand. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, dolerite and coal. Cobbles are subangular and subrounded of sandstone and dolerite)							
5.70	B, D														
6.20	D	6.20	SPT=50 6.4/4.6.4.0 (155)		6.20	80.44	6.50	Medium dense greyish brown very clayey fine to coarse SAND and fine to coarse subangular to rounded GRAVEL of various lithologies including sandstone, dolerite and mudstone. Cobbles are subangular and subrounded of sandstone and dolerite							
6.50					6.50	80.34	6.60	Dark grey DOLERITE. Distinctly weathered recovered as fine angular gravel		3.70m		6.50			
19/08	6.60	D	6.60	SPT>50 25 (5)/50 (5)	6.60			END OF BOREHOLE				6.60			

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 6.50m.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 6.50m.

Driller DP	Originator JD	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B6 Sheet 1 of 1 Scale 1:50
		Struck 6.50	Rose To 4.95	Time(min) 20.00	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL							3.85	4.10	1:00						
								6.50	6.60	1:00						



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH07

Engineer: Scottish Power Energy Networks

Inspection Pit to 1.20m
Cable Percussion to 1.50m
Rotary Core Drilling to 4.50m

Location: E 319958.7
N 697537.7

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted Bort Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill		
	Depth	Type	Depth	Result										Symbol	Depth
2/8 2024	0.40 0.50	B, D ES						85.46		Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse					
	1.00	ES	1.20	SPT>50 25 (60/50 (0))				1.20	85.06	0.40	Brown slightly gravelly sandy CLAY of intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal			1.00	
02/08			1.50	TCR	SCR	RQD	FI	1.20	83.96	1.50	Weak and very weak, locally moderately weak dark grey mottled with green and occasional purple banded DOLERITE with dark phenocrysts (up to 1mm diameter) and occasional randomly orientated 0.5mm thick pale pinkish white veins. Distinctly weathered with significant loss of strength, structure and green and orange staining. Highly fractured with three fracture sets. No. 1: medium spaced 20° to 30° undulating and smooth with loss of strength and structure along edges. No. 2: medium spaced 45° to 50° rough and undulating often dark orange staining. No. 3: evidence of 70° to 90° undulating and rough recovered non intact where intersects other fractures	Dry			
				100	85	0									
				2.20	100	0	0								
				2.60	100	90	22								
				3.20	100	90	0								
				3.75	60	0	0								
				4.00	100	74	40	NI/NR							
22/08								1.50	80.96	4.50	....from 3.75m to 4.00m: 0.15m non intact recovery			
END OF BOREHOLE													0.60m		4.50

Remarks:
Description based on Driller's log.
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
Ground-water was not encountered.
The Penetration Tests were carried out using Trip Hammer AB02.

Hole Diam.	To Depth	
	Boring	Casing
200	1.50	1.50
101	4.50	

Driller DP, SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
								1.20	1.50	1:00	100	Water	1.50	4.50
Chk & App FMR	Status FINAL													



Fig No:
B7
Sheet 1 of 1
Scale 1:50

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Location: E 319997.3
 N 697396.6

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
30/7 2024	0.00	WS				87.86		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)	[Cross-hatch pattern]	Dry	[Symbol]	0.50
	0.50 0.60	ES B, D					87.36 0.50	MADE GROUND (brown slightly gravelly sandy clay of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				
30/07	1.00	ES				86.66	1.20	MADE GROUND (friable dark grey fine to coarse sand and fine to coarse angular to subrounded gravel of various lithologies including sandstone, mudstone and coal with cobbles and pockets of slightly gravelly sandy clay. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)	[Cross-hatch pattern]	Dry	[Symbol]	1.00
	1.20	D	1.20	SPT=34 4.5/7.8.10.9	1.20							
	1.70	B, D										
	2.00	ES										
	2.20	D	2.20	SPT=17 3.4/4.3.5.5	2.20							
	2.70	B, D										
31/07	3.00	ES				84.61	3.25	# Soft brown peaty CLAY	[Cross-hatch pattern]	Dry	[Symbol]	1.00
	3.20	D	3.20	SPT=38 3.2/1.12.13.12	3.20	84.46	3.40					
	3.70	B, D										
	4.20	D	4.20	SPT=48 5.7/11.12.13.12	4.20							
						83.06	4.80	Dark brown slightly gravelly clayey fine to coarse GRAVEL with cobbles. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, siltstone and mudstone. Cobbles are subangular and subrounded of sandstone	[Cross-hatch pattern]	Dry	[Symbol]	1.00
						82.86	5.00	Dark grey MUDSTONE, distinctly weathered recovered as fine and medium angular gravel				
	5.00	D	5.00	SPT>50 25 (9)/50 (10)	4.70			END OF BOREHOLE		4.15m		5.00

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 5.00m.

Hole Diam.	To Depth	
	Boring	Casing
200	5.00	4.80

Driller DP/JMcC	Originator JD	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B10 Sheet 1 of 1 Scale 1:50
Chk & App FMR	Status FINAL	Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
						4.80	5.00			0:00						

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

Borehole No. BH10A

Inspection Pit to Cable Percussion to 1.20m
 6.40m

Location: E 319585.2
 N 697264.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill
	Depth	Type	Depth	Result								Symbol	Depth
12/8 2024						88.09		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)			
						87.69	0.40	MADE GROUND (brown slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)			
						86.84	1.25	MADE GROUND (dark grey and grey very sandy very clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)			
	2.70	B, D									
	3.00	ES									
	3.20	D	3.20	SPT=28 2.4/5.8/7.8		3.20					
12/08	3.70	B, D				3.70		....from 3.70m to 5.65m: driller notes sandstone boulders		Dry	
	4.20	D	4.20	SPT=21 8.6/5.4/4.8		4.20					
	4.70	B, D									
	5.20	D	5.20	SPT=34 4.8/7.8/9.10		5.20					
	5.70	B, D									
	6.20	D	6.20	SPT>50 25 (50)/50 (10)		6.20	81.84 6.25	Brownish grey SILTSTONE. Distinctly weathered recovered as fine and medium angular gravel	x x		
13/05	6.40	D	6.40	SPT>50 25 (5)/50 (5)		6.40	81.69 6.40	Grey fine to coarse grained SANDSTONE recovered as sandy fine and medium gravel	.....	Dry	6.40
END OF BOREHOLE											

Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. Ground-water was not observed to enter the borehole. The Penetration Tests were carried out using Trip Hammer AB02.	Hole Diam.	To Depth	
	200	Boring	Casing
		6.40	6.20

Driller DP	Originator BA	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B13 Sheet 1 of 1 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL							6.25	6.40	1:00						

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Location: E 319887.0
 N 697101.0

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
26/7 2024	0.40 0.50	B, D ES					100.50			Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse				
	1.00 1.20	D, ES D	1.20	SPT=16	3.5/5.4.4.3			1.20	99.40	1.10	Mottled greyish brown and orange slightly gravelly sandy CLAY of intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of sandstone, siltstone and mudstone. Cobbles are subangular and subrounded of sandstone			0.50 1.00
	1.70 2.00 2.20	B, D ES D	2.20	SPT>50	8.3/4.26.20(155)			2.20	98.80	1.70	...from 1.70m to 2.50m: occasional pockets of soft greyish brown clay Brown gravelly very clayey fine to coarse SAND with cobbles and pockets of slightly gravelly sandy clay. Gravel is fine to coarse, subangular to rounded of sandstone. Cobbles are subangular and subrounded of sandstone			
	2.70 3.00 3.20	B, D ES D	3.20	SPT>50	6.10/11.16.23(150)			3.20	97.00	3.50	Light grey fine to coarse grained SANDSTONE. Distinctly weathered recovered as sandy fine and medium angular and subangular gravel			
25/07 30/07			3.65	SPT>50	25(0/50(0))			3.20 3.80	96.50	4.00	Extremely weak locally moderately weak dark brown fine to coarse grained SANDSTONE. Poorly cemented. Distinctly weathered evident locally as destructuring to sand. Two fracture sets. No.1: medium spaced, 25 to 35°, undulose and rough joints. No.2: medium to closely spaced, sub-horizontal, planar, undulose and rough bedding fractures		Dry Dry	
			4.00	TCR	79	SCR	61	RQD	20	FI	NR			
											>20			
											8			
			5.40		80		50		15		NI			
											10			
											>20			
			6.90		0		0		0		NI			
			7.10		100		75		0		12			
			7.30		100		75		45		NI			
											10			
											11			
			8.10		100		67		0		NI			
			8.40		69		41		27		>20			
											NR			
											NI			
											9			
											NI			
											7			

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 15.90m.

Hole Diam.	To Depth	
	Boring	Casing
200	4.00	4.00
125	15.90	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
DP, GMO	JD										100	Air	3.65	3.80
											100	AirWM	3.80	15.90
Chk & App	Status													
FMR	FINAL													

Fig No:
B15
 Sheet 1 of 2
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH12

Engineer: Scottish Power Energy Networks

Inspection Pit to 1.20m
Cable Percussion to 3.65m
Rotary Open Hole to 4.00m
Rotary Core Drilling to 15.90m

Location: E 319887.0
N 697101.0

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste Multidrill PL G

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
			9.90	53	28	9	6	100.50		undulose and rough bedding fractures....from 9.65m to 9.75m: non intact				
							20	90.10	10.40	Moderately weak off white fine to medium grained SANDSTONE with local bands of coarse grains. Poorly cemented. Partially weathered, locally distinctly weathered evident as loss of structure on fracture surfaces and locally destructuring to sand. Three fracture sets. No.1: medium spaced, 15°, undulose and rough bedding fractures. No.2: medium spaced, subvertical, discontinuous, undulose and rough joints. No.3: widely spaced, 30°, stepped and rough joints....from 10.50m to 10.70: no recovery				
							NR							
							10							
							NI							
							>20							
			11.40	100	71	25	NR			....from 11.60m to 11.75m: extremely weak pink clayey band. with penetrative orange staining (up to 12mm) at base				
							10							
							19							
			12.90	0	0	0				# NO RECOVERY sandstone soft				
							NR							
			14.40	67	50	43								
							NI							
							4			Moderately weak off white fine to medium grained SANDSTONE. Poorly cemented. Partially weathered evident as loss of structure on fracture surfaces and locally destructuring to sand. Fractures are. No.1: medium spaced, 15°, undulose and rough bedding fractures				
								85.50	15.00					
								15.90	84.60	15.90		Dry	15.90	
END OF BOREHOLE														

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 15.90m.

Hole Diam.	To Depth	
	Boring	Casing
200	4.00	4.00
125	15.90	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
DP, GMO	JD										100	Air	3.65	3.80
Chk & App	Status										100	AirWM	3.80	15.90
FMR	FINAL													



Fig No:
B15
 Sheet 2 of 2
 Scale 1:50

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Location: E 319959.5
 N 697219.5

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
26/7 2024							93.46			MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.40 0.50	B, D ES						93.06	0.40	MADE GROUND (brown slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of various lithologies including sandstone, mudstone and coal)				0.50
26/07	1.00 1.20	D, ES D	1.20	SPT=14	7.3 / 2.4.4.4			1.20 1.20	1.20			Dry		1.00
	1.70 2.00 2.20	B, D ES D	2.20	SPT=16	1.2 / 3.4.4.5			2.20	2.20	MADE GROUND (medium dense grey gravelly clayey fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, coal and mudstone)				
	2.70 3.00 3.20	B, D ES D	3.20	SPT=29	3.4 / 4.6.9.10			3.20	3.20	MADE GROUND (greyish brown slightly gravelly sandy clay with cobbles. Sand if fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of predominantly sandstone)				
	3.70 4.20 4.70 5.20	B, D D B, D D	4.20	SPT=28	4.5 / 6.6.7.9			4.20	4.20	MADE GROUND (medium dense brown gravelly very clayey predominantly fine and medium sand with frequent pockets of slightly gravelly sandy clay of low plasticity. Gravel is fine to coarse subangular and subrounded of sandstone) from 4.25m: no pockets of clay below 5.20m: dense				
29/07 30/07							5.70 5.70	5.70 5.90	5.70 5.90	# SANDSTONE		Dry Dry		
			5.90	TCR	95	89	38			Medium strong banded off white fine and medium grained SANDSTONE with bands of thickly cross laminated and occasional thin layers of coarse sandstone. Partially weathered evident as reddish or orange staining in some laminations and bands and loss of strength in occasional bands, recovered as sand and gravel. Two fracture sets. No. 1: medium and close spaced 10° to 20° undulating and rough bedding fractures. No. 2: medium to wide spaced 45° to 60° undulating and rough joints....from 6.47m to 6.52m: non intact, recovered as sand and gravel				
			7.40		99	96	47			....from 7.73m to 7.79m: non intact, recovered as sand and gravel with red and yellow staining				
01/08							5.90	84.56	8.90	END OF BOREHOLE		Dry		8.90

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.
 A 50mm diameter perforated standpipe was installed to a depth of 8.90m.

Hole Diam.	To Depth	
	Boring	Casing
200	5.90	5.90
125	8.90	

Driller	Originator BA/FR	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B16 Sheet 1 of 1 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
								5.70	5.75	1:00	100	AirWM	5.75	5.90		
Chk & App FMR	Status FINAL															

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667_GPJ44 (0)1698 710999 Printed: 06/11/2024 12:22:26 Raeburn Drilling and Geotechnical, Whistlerry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com

Location: E 320164.4
 N 697334.4

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
21/8 2024	0.50	B, D, ES				89.06		MADE GROUND (dark brown gravelly very clayey fine to coarse sand with cobbles. Gravel is fine to coarse subangular and subrounded gravel of brick and mudstone)				0.50
	1.00	B, D, ES										1.00
	1.20	B, D, D	1.20	SPT=20 3.4/4.4.6.6	1.20							
	1.60	D				87.46	1.60					
	1.95	B										
	2.20	D				86.86	2.20	MADE GROUND (light greyish brown slightly silty fine to coarse sand and fine to coarse gravel of mudstone and occasional coal)				
	2.70	B, D	2.70	SPT=19 2.4/3.4.5.7	2.70			MADE GROUND (medium dense blackish grey very sandy silty fine to coarse angular to subrounded gravel of coal. Sand is fine to coarse)				
	3.45	B										
	3.70	D										
	4.20	B, D	4.20	SPT=28 5.5/6.6.8.8	4.20							
	4.95	B										
	5.20	D										
	5.40	D										
	5.70	B, D	5.70	SPT=38 4.6/6.6.14.12	5.70	83.66	5.40	MADE GROUND (stiff mottled orange dark grey slightly sandy slightly gravelly clay. Sand is fine to coarse. Gravel is fine to medium subangular and subrounded of mudstone and coal)				
	5.90	D				83.16	5.90					
	6.25	D						MADE GROUND (dense grey slightly silty sandy fine to coarse subangular and subrounded gravel of mudstone and mudstone. Sand is fine to coarse)				
	6.45	B				82.81	6.25					
	7.10	D						MADE GROUND (dark brown slightly gravelly clayey fine to coarse sand. Gravel is fine to coarse subangular and subrounded of coal and sandstone) at 6.70m: subrounded and rounded cobbles of mudstone....at 6.90m: subrounded and rounded cobbles of mudstone				
21/08	7.20	B, D, D	7.20	SPT>50 5.10/18.27.5 (155)	7.20	81.86	7.20	MADE GROUND (very soft light grey sandy clay. Sand is fine to coarse)		3.10m		
	7.80	D				81.26	7.80			2.65m		
	7.95	B						MADE GROUND (light grey slightly silty sandy fine to coarse angular to subrounded gravel of mudstone. Sand is fine to coarse)				
	8.05	D				81.01	8.05					
	8.70	B	8.70	SPT=50 6.6/12.12.14.12	8.70			MADE GROUND (dense dark brown slightly clayey sandy fine to coarse subangular and subrounded gravel of coal and mudstone. Sand is fine to coarse)				
	9.45	B, D				79.61	9.45					
								MADE GROUND (stiff to very stiff dark greyish brown sandy clay. Sand is fine to coarse)				10.00

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	11.70	11.70
101	17.80	

Driller SMcL	Originator RB	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	11.70
Chk & App FMR	Status FINAL													

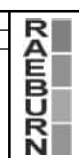


Fig No:
B17
 Sheet 1 of 2
 Scale 1:50

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Location: E 320299.5
 N 697273.9

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
29/7 2024						89.93		MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				
	0.50	B, D, ES				89.53	0.40	MADE GROUND (brown slightly gravelly sandy clay of intermediate plasticity. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and coal)				0.50
29/07	1.00	B, D, ES			1.20	88.73	1.20			Dry		
	1.20	B, D	1.20	SPT>50 4.9/18.17.15 (220)	1.20							
	1.50	D						MADE GROUND (medium dense grey very sandy clayey fine to coarse angular to subrounded gravel of various lithologies including sandstone, coal and mudstone with cobbles. Cobbles are angular to subrounded of sandstone and mudstone)				
	2.20	B										
	2.50	D										
	2.70	D	2.70	SPT=10 3.3/2.3.2.3	2.70							
	3.20	B										
	3.50	D				86.43	3.50	....from 3.50m to 3.80m: locally light brown				
	4.20	B, D	4.20	SPT=10 2.2/2.2.3.3	4.20			MADE GROUND (dark grey and grey slightly gravelly sandy clay with cobbles locally becoming very sandy very clayey fine to coarse gravel. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of various lithologies including sandstone, mudstone and coal)				
	4.50	D										
	5.20	B										
	5.50	D										
	5.70	B, D	5.70	SPT>50 14.11 (95)/23.27 (145)	5.70							
	6.50	B, D						....from 6.50m to 7.20m: large sandstone boulder				
	7.20		7.20	SPT>50 25 (5)/50 (0)	7.20			....from 7.20m to 8.00m: no recovery. Switched to barrell and washed away material				
	8.00	D				81.93	8.00					
	8.50	B, D				81.73	8.20	MADE GROUND (greyish brown fine to coarse sand and fine to coarse angular and subangular gravel of predominantly mudstone and coal) ....not enough material for B sample at 8.00-8.20m				
	8.70	D	8.70	SPT>50 4.5/4.14.18 (164)	8.70			MADE GROUND (firm locally stiff greyish brown slightly gravelly sandy clay with cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal. Cobbles are angular to subrounded of sandstone and mudstone. Boulders are subangular and subrounded of sandstone) ....8.90m to 9.50m: locally soft				
	9.50	B, D										

Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.	Hole Diam.	To Depth	
	125 120	Boring	Casing
		8.60 34.20	32.70

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B18 Sheet 1 of 4 Scale 1:50
Chk & App FMR	Status FINAL	Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
											100	Water	1.20	32.70		

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

BH15

Inspection Pit to 1.20m
 Sonic Boring to 7.20m
 Sonic Coring to 8.70m
 Sonic Boring to 32.70m
 Sonic Coring to 34.20m

Location: E 320299.5
 N 697273.9

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD) 89.93	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
	10.20	D	10.20	SPT=14 2.3/3.3.4.4	10.20							
	10.70	B, D										
	11.70	B, D, D	11.70	SPT=14 3.4/2.4.4.4	11.70	78.23	11.70	....below 11.50m to 11.70m: locally black MADE GROUND (firm locally soft grey slightly gravelly sandy clay with cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of predominantly mudstone and occasional sandstone. Cobbles are angular and subangular of mudstone and sandstone. Boulders are subangular of sandstone)				
	12.70	B, D										
	13.20	D	13.20	SPT=13 4.4/4.3.3.3	13.20							
	13.70	B, D										
30/07	14.70	B, D, D	14.70	SPT=15 3.3/2.3.5.5	14.70					5.60m		
	15.70	B, D								14.40m		
	16.20	D	16.20	SPT=17 2.3/3.4.3.7	16.20							
	16.70	B, D										
	17.70	B, D, D	17.70	SPT=12 2.3/2.3.3.4	17.70							
	18.70	B, D										
	19.20	D	19.20	SPT=12 2.2/2.3.4.3	19.20							
	19.70	B, D						....below 19.90m: becoming stiff				

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
125	8.60	32.70
120	34.20	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	32.70
Chk & App FMR	Status FINAL													



Fig No:
B18
 Sheet 2 of 4
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

BH15

Inspection Pit to Sonic Boring to 1.20m
 Sonic Coring to 7.20m
 Sonic Boring to 8.70m
 Sonic Coring to 32.70m
 Sonic Boring to 34.20m

Location: E 320299.5
 N 697273.9

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD) 89.93	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
	20.70	B, D, D	20.70	SPT=32 3.6 / 7.7.9.9	20.70							
	21.70	B, D					....below 21.60m: becoming very stiff					
	22.20	D	22.20	SPT=41 4.10 / 12.12.8.9	22.20		....from 22.20m to 22.60m: locally soft					
	22.70	B, D										
	23.50	B, D				66.53	23.40	MADE GROUND (dense black sandy locally slightly clayey fine to coarse angular and subangular gravel of mudstone and coal. Sand is fine to coarse)				
	23.70	D	23.70	SPT=37 6.8 / 10.9.9.9	23.70							
	24.50	B, D										
	25.20	D	25.20	SPT=7 1.2 / 1.2.2.2	25.20		....below 25.20m: loose					
	25.60	B, D					....below 25.80m: cobbles. Cobbles are angular and subangular of mudstone and coal					
	26.60	B, D										
	26.70	D	26.70	SPT=8 2.2 / 2.3.2.1	26.70		....below 27.00m: becoming clayey					
	27.10	D										
	28.10	B, D				62.23	27.70	MADE GROUND (stiff grey and dark grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of mudstone, sandstone and coal. Cobbles are angular and subangular of mudstone and sandstone)				
31/07	28.20	D	28.20	SPT>50 10.12 / 13.12.17.8 (260)	28.20					14.10m		
	28.20	D			28.20					12.05m		
	29.10	B, D										
	29.70	D	29.70	SPT=21 4.4 / 6.6.5.4	29.70							

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
125	8.60	32.70
120	34.20	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	32.70
Chk & App FMR	Status FINAL													



Fig No:
B18
 Sheet 3 of 4
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

BH15

Inspection Pit to 1.20m
 Sonic Boring to 7.20m
 Sonic Coring to 8.70m
 Sonic Boring to 32.70m
 Sonic Coring to 34.20m

Location: E 320299.5
 N 697273.9

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result										Symbol	Depth
	30.10	B, D						89.93						
	31.10	D, D	31.20	SPT>50	25 (45/50 (35))				31.20	58.83	31.10	Weathered COAL recovered as stiff friable black slightly gravelly sandy clay. Sand is fine to coarse Extremely weak and very weak dark grey MUDSTONE recovered as silty gravelly clay with cobbles		
	31.20	B, D								58.73	31.20			
	31.50	D												
	32.20	B												
	32.50	D												
				TCR	SCR	RQD	FI		57.23	32.70	Very weak dark grey MUDSTONE recovered as fine to coarse angular to subrounded gravel with cobbles. Weathering evident as destructuring to gravel and loss of structure on fracture surfaces			
			32.70	70	0	0								
							NI							
01/08								32.70	55.73	34.20	END OF BOREHOLE		9.85m	34.20

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
125	8.60	32.70
120	34.20	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	32.70
Chk & App	Status													
FMR	FINAL													



Fig No:
B18
 Sheet 4 of 4
 Scale 1:50

Style: BOREHOLE NEW File: P:\GINTWP\PROJECTS\26667_GPJ\44 (0)1698 710999 Printed: 06/11/2024 12:22:57 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH16

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to Sonic Coring to 1.20m 35.70m 42.20m

Location: E 320294.7 N 697155.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
7/8 2024	0.50	B, D, ES				95.21		MADE GROUND (light brown slightly silty slightly gravelly sandy clay. Gravel is fine to coarse subangular to rounded of mudstone)				0.50
	1.00	B, D, ES										1.00
	1.20	D	1.20	SPT=25 6.4/4.6.6.9	1.20	94.01	1.20	MADE GROUND (firm dark brown very gravelly very clayey fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of mudstone and mudstone. Cobbles are angular to subrounded of mudstone)				
	1.40	D										
	1.50	B										
	2.70	D, D	2.70	SPT=2 2.2/1.1.0.0			2.70					
	2.80	B					92.21	3.00				
	4.20	D	4.20	SPT=50 3.4/18.8.4.20 (290)	4.20		4.20	MADE GROUND (dense dark brown very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of sandstone with cobbles. Cobbles are angular to subrounded of sandstone)				
	4.50	B, D										
	5.70	D, D	5.70	SPT=37 4.4/6.8.12.11	5.70		5.70					
	5.80	B										
	6.52	ES										
	6.72	D										
	6.80	B										
	7.20	B, D	7.20	SPT>50 3.10/22.19.9 (205)	7.20	88.01	7.20	MADE GROUND (soft to firm grey slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone and mudstone)				
	7.95	B, D						.... at 7.80m: becoming stiff				
	8.60	D					86.71	8.50	.... at 8.30m: becoming very stiff			
	8.70	B, D	8.70	SPT=24 4.4/5.5.5.9	8.70	86.51	8.70	MADE GROUND (dark grey slightly silty sandy fine to coarse subangular and subrounded gravel of sandstone, mudstone and brick with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone and mudstone)				
	9.45	B, D						MADE GROUND (medium dense dark grey very gravelly very clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of coal and mudstone)				
							85.36	9.85				
								MADE GROUND (soft to firm dark grey slightly sandy slightly gravelly)				10.00

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 2.70m.
 No ground-water observations are recorded below 2.70m due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
 Estimates of strength based on visual assessment of sonic bags only.
 SPT at 1.70m: 6.6/5.7.7.12
 SPT at 4.70m: 6.6/5.7.7.12

Hole Diam.	To Depth	
	Boring	Casing
120	35.70	41.70
101	43.20	

Driller	Originator	Ground-water			Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA									100	Water	1.20	42.20
Chk & App	Status												
FMR	FINAL												



Fig No:
B19
 Sheet 1 of 5
 Scale 1:50

Style: BOREHOLE NEW File: P:\GINT\PROJECTS\26667_GPJ\44 (0) 1698 710999 Printed: 06/11/2024 12:23:16 Raeburn Drilling and Geotechnical, Whistleberry Rd, Hamilton ML3 0HP Tel: 01698-711177 E-mail: enquiries@raeburndrilling.com



Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

BH16

Inspection Pit to 1.20m
 Sonic Boring to 35.70m
 Sonic Coring to 42.20m

Location: E 320294.7
 N 697155.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
07/08	10.20	B	10.20	SPT=39 3.3/7.8.10.14	10.20	95.21		clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone and brick)		6.20m		
	10.95	B, D								6.95m		
	11.70	B	11.70	SPT=42 5.9/12.15.8.7	11.70							
	12.45	B, D				83.01	12.20	MADE GROUND (medium dense grey slightly clayey slightly gravelly sand. Gravel is fine to coarse angular to subrounded of mudstone) ...below 12.80m: With cobbles. Cobbles are angular to subrounded of shale.				
	13.20	D	13.20	SPT=25 4.3/6.4.5.10	13.20							
	14.10	B, D										
	14.60	D				80.51	14.70	MADE GROUND (soft dark brown slightly sandy slightly gravelly clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of sandstone and mudstone) ...at 15.50m: firm				
	14.70	B, D, D	14.70	SPT=28 5.4/5.8.8.7	14.70							
	15.45	B										
	15.80	D				79.31	15.90					
	16.20	B, D, D	16.20	SPT=37 2.4/7.7.9.14	16.20			MADE GROUND (soft dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of mudstone)				
	16.95	B				78.41	16.80					
	17.30	D						MADE GROUND (light grey fine to coarse sand and fine to coarse angular to subrounded gravel of sandstone and mudstone)				
	17.70	B, D	17.70	SPT=50 13.12 (95)/50 (30)	17.70							
	19.20	B	19.20	SPT=17 3.3/3.4.4.6	19.20			MADE GROUND (medium dense dark brown slightly sandy slightly clayey fine to coarse subangular to subrounded gravel of mudstone and mudstone. Sand is fine to coarse)				
	19.60	D				76.11	19.10					

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 2.70m.
 No ground-water observations are recorded below 2.70m due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
 Estimates of strength based on visual assessment of sonic bags only.
 SPT at 4.70m: SPT=31 6.6/5.7.7.12

Hole Diam.	To Depth	
	Boring	Casing
120	35.70	41.70
101	43.20	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	42.20
Chk & App	Status													
FMR	FINAL													



Fig No:
B19
 Sheet 2 of 5
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH16

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to 1.20m
Sonic Boring to 35.70m
Sonic Coring to 42.20m

Location: E 320294.7
N 697155.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
	19.95	B				95.21	20.10					
	20.50	D				75.11	20.10	MADE GROUND (dark grey very clayey fine to coarse sand and fine to coarse angular to subrounded gravel of mudstone)				
	20.70	B, D	20.70	SPT=30 6.9/9.7.7.7	20.70	74.51	20.70	MADE GROUND (soft dark grey slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of mudstone.				
	20.90	D										
	21.45	B				73.81	21.40					
	21.50	D				73.66	21.55	MADE GROUND (yellowish grey slightly silty fine to coarse sand)				
								MADE GROUND (dark reddish brown fine to coarse angular to subrounded gravel of sandstone with cobbles. Cobbles are angular and subangular of sandstone)				
	22.20	B, D, D	22.20	SPT=15 3.4/3.3.4.5	22.20	72.91	22.30	MADE GROUND (soft to firm dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of siltstone and sandstone)				
	22.40	D										
	22.95	B										
08/08	23.60	D	23.70	SPT=14 3.3/3.3.3.5	23.70	70.81	24.40	MADE GROUND (dark brown slightly clayey sandy fine to coarse angular to subrounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone and siltstone)		4.65m		
	23.70	B								19.10m		
	23.80	D										
	24.45	B				70.01	25.20	MADE GROUND (medium dense dark brown very gravelly very clayey fine to coarse sand. Gravel is fine to coarse angular to subrounded of sandstone)				
	25.20	B, D, D	25.20	SPT=18 4.4/3.4.4.7	25.20							
	25.40	D										
	25.95	B										
	26.10	D										
	26.70	B, D	26.70	SPT=25 7.11/5.5.6.9	26.70							
	27.45	B										
	27.90	D				67.31	27.90	MADE GROUND (medium dense bluish grey fine to coarse angular to subrounded gravel of mudstone with cobbles. Cobbles are subangular to rounded of mudstone)				
	28.20	B, D	28.20	SPT=19 5.8/6.4.4.5	28.20							
	28.90	D				66.31	28.90	MADE GROUND (stiff to very stiff sandy clay. Sand is fine to coarse)				
	28.95	B										
	29.35	D				65.86	29.35	MADE GROUND (bluish brown fine to coarse sand and fine to coarse subangular to subrounded gravel of mudstone and sandstone with cobbles. Cobbles are angular to subrounded of mudstone)				
09/08	29.70	B, D, D	29.70	SPT=16 2.3/5.4.3.4	29.70	65.51	29.70	MADE GROUND (firm dark brown slightly gravelly sandy clay of intermediate plasticity locally becoming medium dense and dense)		4.60m		
										6.40m		

Remarks:

Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 2.70m.
 No ground-water observations are recorded below 2.70m due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	35.70	41.70
101	43.20	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	42.20
Chk & App	Status													
FMR	FINAL													



Fig No:
B19
Sheet 3 of 5
Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH16

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to 1.20m
Sonic Boring to 35.70m
Sonic Coring to 42.20m

Location: E 320294.7
N 697155.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD) 95.21	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
	30.40 30.45	D B						gravelly very clayey sand. Sand is fine to coarse. Gravel is predominantly fine and medium angular to subrounded of mudstone) at 30.40m: stiff				
	31.20 31.40	B, D, D D	31.20	SPT=26 3.3/6.6/7.7	31.20		.... at 31.20m: firm....at 31.40m: stiff					
	31.95 32.20	B D					....at 32.20m: soft					
	32.50 32.70	D B, D, D	32.70	SPT=31 4.5/7.7/8.9	32.70		....at 32.50m: stiff at 32.70m: firm					
	33.40 33.45	D B					.... at 33.40m: stiff					
	33.90 34.20	D B, D, D	34.20	SPT=28 4.4/6.6/5.11	34.20	61.31 33.90	MADE GROUND (medium dense dark grey fine to coarse sand and fine to coarse subangular to subrounded gravel of coal mudstone and mudstone)					
	34.50 34.60	D D				60.61 34.60	MADE GROUND (firm dark grey slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of mudstone)					
	34.95 35.50	B D										
	35.70 37.20	B, D, D B, D, D	35.70	SPT>50 6.13/13.18.19 (210)	35.70							
12/08	37.20 37.95 38.10	B, D, D B D				58.01 37.20	MADE GROUND (soft dark grey slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of mudstone and sandstone)			7.40m		
	37.95 38.10	B D										
	38.70 39.50	D, D D	38.70	SPT>50 11.14 (105)/31.14.5 (155)	38.70		....at 38.70m: stiff at 39.50m: yellowish brown subangular to rounded cobbles of sandstone			17.00m		

Remarks:
Description based on Driller's log.
An inspection pit was excavated by hand to a depth of 1.20m to clear services.
Ground-water was encountered at a depth of 2.70m.
No ground-water observations are recorded below 2.70m due to the use of water flush.
The Penetration Tests were carried out using Trip Hammer RD54.
A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
Estimates of strength based on visual assessment of sonic bags only.
SPT at 4.70m - SPT=31 - 6.6/5.7/7.12

Hole Diam.	To Depth	
	Boring	Casing
120	35.70	41.70
101	43.20	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	42.20
Chk & App FMR	Status FINAL													



Fig No:
B19
Sheet 4 of 5
Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH16

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to Sonic Coring to 1.20m 35.70m 42.20m

Location: E 320294.7 N 697155.8

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
	40.20	B, D												
	40.95	B												
	41.70	B, D												
	41.90	D												
			TCR	SCR	RQD	FI		53.51	41.70					
			41.70	100	0	0				MADE GROUND (dense bluish black fine to coarse angular to subrounded gravel of mudstone and coal with cobbles. Cobbles are angular to subrounded of coal and mudstone)				
13/08							41.70	52.01	43.20	END OF BOREHOLE		7.80m		43.20

Remarks:

Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was encountered at a depth of 2.70m.
 No ground-water observations are recorded below 2.70m due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 10.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	35.70	41.70
101	43.20	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	42.20
Chk & App FMR	Status FINAL													



Fig No:
B19
 Sheet 5 of 5
 Scale 1:50

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Location: E 320155.2
 N 697231.2

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
2/8 2024	0.50	B, D, ES				92.87		MADE GROUND (reddish grey gravelly very clayey fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of sandstone and mudstone with cobbles. Cobbles are angular to subrounded of mudstone and sandstone)				0.50
	1.00	B, D, ES										
	1.20	B, D, D	1.20	SPT=10 2.3/3.3.2.2	1.20							
	1.60	D				91.27	1.60					
	1.95	B						MADE GROUND (soft to firm dark grey slightly gravelly sandy clay of low plasticity. Gravel is fine to coarse angular to subrounded of mudstone and sandstone. Sand is fine to coarse)				
	2.70	B, D	2.70	SPT=8 2.2/3.2.2.1	2.70	90.17	2.70					
	3.45	B										
	4.20	B, D	4.20	SPT=5 4.3/2.0.0.3	4.20	88.37	4.50					
	4.50	D				88.07	4.80					
	4.80	D				88.02	4.85					
	4.95	B						MADE GROUND (soft dark grey slightly gravelly sandy clay of intermediate plasticity with cobbles. Gravel is fine to coarse subangular and subrounded of sandstone and mudstone. Sand is fine to coarse. Cobbles are subangular to rounded of mudstone)				
	5.00	D						MADE GROUND (blueish grey subrounded and rounded cobble of mudstone)				
	5.70	B, D	5.70	SPT=48 2.4/12.15.10.11	5.70			MADE GROUND (dense grey clayey fine to coarse sand and fine to coarse angular to subrounded gravel of mudstone, coal and mudstone. Cobbles are angular to subrounded of mudstone and coal)				
	6.45	B				86.27	6.60					
	6.60	D						MADE GROUND (blueish grey slightly sandy fine to coarse subangular to rounded gravel of mudstone and coal. Sand is fine to coarse)				
02/08	7.20	B, D	7.20	SPT=47 3.4/7.10.14.16	7.20	85.67	7.20			Dry		
	7.45	D				85.42	7.45					
	7.95	B						MADE GROUND (dense light greyish brown slightly sandy clayey fine to coarse subangular to rounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of mudstone)				
	8.70		8.70	SPT>50 6.6/28.22 (85)	8.70	84.17	8.70					9.00
								MADE GROUND (stiff dark bluish grey slightly sandy gravelly clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithologies including sandstone, mudstone and coal)				

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 15.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	19.20	19.20
125	20.70	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	19.20
Chk & App FMR	Status FINAL													



Fig No:
B20
 Sheet 1 of 3
 Scale 1:50

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Location: E 320155.2
 N 697231.2

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
	10.20	B, D	10.20	SPT=12	2.4 / 4.2, 3.3			10.20	82.67	10.20	No recovery			
	10.80	D						82.17	10.70					
	10.85	D						82.02	10.85		MADE GROUND (light brown slightly clayey slightly gravelly fine to coarse sand. Gravel is fine to medium subrounded and rounded of mudstone)			
	10.95	B						81.47	11.40		MADE GROUND (firm to stiff mottled yellow light brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to medium of mudstone)			
	11.40	D						81.17	11.70		MADE GROUND (light greyish brown sandy fine to coarse angular to rounded gravel of sandstone with cobbles. Cobbles are subangular to rounded of sandstone)			
	11.70	B, D, D, D	11.70	SPT=14	3.5 / 4.3, 4.3			11.70			MADE GROUND (medium dense yellowish brown slightly clayey sandy fine to coarse angular to subrounded gravel of mudstone and sandstone. Sand is fine to coarse)			
	12.45	B						80.27	12.60		MADE GROUND (medium dense light grey gravelly fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of sandstone. Cobbles are angular to subrounded of sandstone)			
	12.60	D												
	13.20	B, D	13.20	SPT=17	3.4 / 4.3, 4.6			13.20						
	13.70	D						79.17	13.70		MADE GROUND (light grey slightly clayey gravelly fine to coarse sand with cobbles. Gravel is fine to coarse angular to subrounded of sandstone and brick. Cobbles are angular to subrounded of sandstone)			
	13.95	B												
	14.30	D						78.57	14.30		MADE GROUND (medium dense dark grey slightly clayey sandy fine to coarse angular to subrounded gravel of mudstone and mudstone. Sand is fine to coarse)			
	14.70	B	14.70	SPT=22	4.7 / 6.6, 6.4			14.70						
	14.90	D												
	15.25	D						77.62	15.25		MADE GROUND (soft dark grey slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of sandstone and mudstone)			
	15.45	B												
	15.80	D						77.07	15.80		MADE GROUND (dark brown slightly gravelly clayey fine to coarse sand. Gravel is fine to coarse subangular to rounded of mudstone)			
	16.20	B, D, D	16.20	SPT=23	3.3 / 6.6, 7.4			16.20			MADE GROUND (firm dark brown slightly gravelly sandy clay. Sand is fine to coarse. Gravel is fine to coarse subangular and subrounded of mudstone)			
	16.60	D						76.27	16.60		MADE GROUND (blackish grey sandy fine to coarse angular to subrounded gravel of mudstone with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of coal)			
	16.95	B												
05/08	17.70	B, D	17.70	SPT>50	25 (70)/50 (40)			17.70	75.02	17.85			16.20m	
	17.85	D									MADE GROUND (blackish grey gravelly fine to coarse sand.		12.20m	
	18.30	D						74.57	18.30		MADE GROUND (blackish grey sandy fine to coarse angular to subrounded gravel of mudstone and coal with cobbles. Sand is fine to coarse. Cobbles are angular to subrounded of coal)			
	18.45	B												
					TCR	SCR	RQD	FI	73.67	19.20				
			19.20		66	27	10				Extremely weak dark grey MUDSTONE. Partially weathered evident as slight loss of structure on fracture surfaces. Two fracture sets. No.1: closely spaced, 55°, stepped and rough bedding fractures. No.2: widely spaced, 35°, stepped and rough joint			

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 15.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	19.20	19.20
125	20.70	

Driller	Originator	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
SMcL	BA										100	Water	1.20	19.20
Chk & App	Status													
FMR	FINAL													

Fig No:
B20
 Sheet 2 of 3
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

BH17

Inspection Pit to 1.20m
 Sonic Boring to 19.20m
 Sonic Coring to 20.70m

Location: E 320155.2
 N 697231.2

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result									Symbol	Depth
06/08			19.20			>20	19.20	72.17	20.70	END OF BOREHOLE		10.90m		20.70

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 A 50mm diameter perforated standpipe was installed to a depth of 15.00m.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	19.20	19.20
125	20.70	

Driller SMcL	Originator BA	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	19.20
Chk & App FMR	Status FINAL													



Fig No:
 B20
 Sheet 3 of 3
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH18

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to 1.20m
Sonic Coring to 22.20m
27.70m

Location: E 320121.2
N 697016.4

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill	
	Depth	Type	Depth	Result							Symbol	Depth
15/8 2024						103.80						
						103.60	0.20	MADE GROUND (brown sandy clayey topsoil with frequent rootlets. Sand is fine to coarse)				0.50
	0.50	B, D, ES						MADE GROUND (brown slightly gravelly sandy clay of low plasticity. Sand is fine to coarse. Gravel is fine to coarse subangular to rounded of various lithologies including sandstone, mudstone and coal)				
	1.00	B, D, ES										
	1.20	D	1.20	SPT=10 2.2/2.3.2.3	1.20			MADE GROUND (medium dense dark grey locally black very clayey fine to coarse sand and fine to coarse angular and subangular gravel of mudstone and occasional coal with cobbles. Cobbles are angular and subangular of mudstone)				
	1.50	D										
	2.12	D										
	2.20	B										
	2.50	D										
	3.20	B										
	3.50	D										
	3.70	B										
	4.20	D	4.20	SPT=6 2.3/2.1.1.2	4.20			MADE GROUND (loose grey very sandy clayey predominantly coarse angular to subrounded gravel of sandstone, mudstone and coal with cobbles. Sand is fine to coarse. Cobbles are angular and subangular of sandstone and occasional mudstone)				
	4.50	D										
	4.70	B										
	5.50	D										
	5.70	D	5.70	SPT=8 1.2/1.2.2.3	5.70			MADE GROUND (firm locally soft grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone, mudstone and coal. Cobbles are angular to subrounded of sandstone and mudstone)				
	6.20	B										
6.50	D											
7.20	B, D	7.20	SPT=14 3.4/4.4.3.3	7.20			MADE GROUND (firm locally soft grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone, mudstone and coal. Cobbles are angular to subrounded of sandstone and mudstone)					
7.50	D						....from 7.20m to 8.20m: locally medium dense sandy clayey gravel					
8.20	B						....from 8.20m: becoming stiff					
8.50	D											
8.70	D	8.70	SPT=24 4.4/5.6.6.7	8.70								
9.20	B											
9.50	D											

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	25.20	25.20
101	27.70	

Driller SMcL	Originator RJB	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	25.20
Chk & App FMR	Status FINAL													



Fig No:
B21
 Sheet 1 of 3
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks

BH18

Engineer: Scottish Power Energy Networks

Inspection Pit to Sonic Boring to 1.20m
Sonic Boring to 22.20m
Sonic Coring to 27.70m

Location: E 320121.2
N 697016.4

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill
	Depth	Type	Depth	Result								Symbol	Depth
						103.80					
	10.20	B, D	10.20	SPT=18 6.6/5.5.4.4							
	10.50	D									
						92.60	11.20				
	11.20	B						MADE GROUND (stiff black slightly sandy gravelly clay. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of coal and occasional mudstone)			
	11.50	D				92.10	11.70				
	11.70	D	11.70	SPT=22 5.6/5.4.6.7				# NO RECOVERY			
						91.80	12.00				
	12.20	B						MADE GROUND (firm locally stiff grey and dark grey slightly gravelly sandy clay with cobbles. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of sandstone and mudstone. Cobbles are subangular and subrounded of sandstone and mudstone)			
	12.50	D									
	13.20	D	13.20	SPT=14 8.7/4.3.4.3			13.20				
	13.50	D									
	14.50	B, D						....from 14.40m to 14.70m: locally black			
	14.70	D	14.70	SPT=16 7.6/4.2.6.4			14.70	....from 14.70m to 15.10m: locally medium dense gravelly clayey fine to coarse sand			
	15.00	B, D									
						88.10	15.70				
	16.00	B, D						MADE GROUND (medium dense grey sandy clayey fine to coarse angular to subrounded gravel of mudstone, sandstone and coal with cobbles. Cobbles are subangular and subrounded of sandstone and mudstone)		5.20m	
15/08	16.20	D	16.20	SPT=11 6.1/0.5.3.3			16.20			5.30m	
	16.70	B, D									
						86.80	17.00				
	17.70	B, D, D	17.70	SPT=31 4.6/6.7.8.10			17.70	MADE GROUND (stiff grey and dark grey locally black slightly gravelly sandy clay with cobbles and boulders. Sand is fine to coarse. Gravel is fine to coarse angular and subangular of mudstone, sandstone and coal. Cobbles and boulders are angular and subangular of mudstone and sandstone)			
	18.70	B, D									
	19.20	D	19.20	SPT>50 8.12/19.31 (100)			19.20				
	19.70	B, D									

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 No ground-water observations are recorded due to the use of water flush.
 The Penetration Tests were carried out using Trip Hammer RD54.
 Estimates of strength based on visual assessment of sonic bags only.

Hole Diam.	To Depth	
	Boring	Casing
120	25.20	25.20
101	27.70	

Driller SMcL	Originator RJB	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
											100	Water	1.20	25.20
Chk & App FMR	Status FINAL													



Fig No:
B21
 Sheet 2 of 3
 Scale 1:50

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Location: E 320121.2
 N 697016.4

Orientation: Vertical

Equipment: Hand Tools, Track Mounted Boart Longyear LS250 Mini Sonic; T2-101 Core Barrel; Water Flush

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill
	Depth	Type	Depth	Result									
	20.70	B, D, D	20.70	SPT>50	6.6 / 7.12.14.17 (232)				20.70	from 20.80m to 21.10m: soft		
	21.70	B, D						82.20	21.60	MADE GROUND (grey and black slightly silty fine to coarse angular and subangular gravel of mudstone)			
	22.20	B, D								....from 22.20m to 23.70m: attempted to core thinking rockhead, however boulder with poor recovery		
	23.50	D						80.30	23.50	Very weak black vitreous COAL			
16/08	23.70	B, D						80.10	23.70	Extremely weak dark grey MUDSTONE recovered as gravelly slightly silty clay locally slightly silty fine to coarse angular gravel.		3.60m	
	24.70	B, D										4.40m	
				TCR	SCR	RQD	FI						
			25.20	60	34	0		78.60	25.20	Very weak and weak grey, becoming darker towards base thinly laminated MUDSTONE. Distinctly weathered becoming partially weathered with depth, evident as loss of strength and structure in layers. Fractures are very closely spaced subhorizontal undulating and rough			
			26.00	43	29	0		77.80	26.00	Very weak becoming weak brownish grey SILTSTONE/FIRECLAY with evidence of plant remains. Destructured recovered as clay. Two fracture sets. No. 1: closely spaced subhorizontal stepped and rough. No. 2: closely spaced 45° stepped and rough			
			26.35	100	66	0		77.45	26.35	Very weak becoming weak brownish grey SILTSTONE/FIRECLAY with evidence of plant remains. Destructured recovered as clay. Two fracture sets. No. 1: closely spaced subhorizontal stepped and rough. No. 2: closely spaced 45° stepped and rough			
			26.85	100	80	31		76.95	26.85	....below 26.65m: becoming weak and distinctly weathered evident as significant loss of strength		
			27.40	100	100	33	NI	76.40	27.40	Moderately weak locally weak grey sandy SILTSTONE. Partially weathered evident as loss of strength at fractures. Two fracture sets No 1: closely spaced subhorizontal to 10° undulating and smooth. No. 2: medium spaced 45° stepped and rough			
19/08							9	27.70	76.10	27.70from 27.30m to 27.40m: non intact		8.75m
										Moderately weak grey fine and medium grained SANDSTONE. Partially weathered evident as orange staining becoming less with depth. Fractures are close and medium spaced 10° planar and rough			
										END OF BOREHOLE			

Remarks: # Description based on Driller's log. An inspection pit was excavated by hand to a depth of 1.20m to clear services. No ground-water observations are recorded due to the use of water flush. The Penetration Tests were carried out using Trip Hammer RD54. Estimates of strength based on visual assessment of sonic bags only.	Hole Diam.	To Depth	
		Boring	Casing
	120 101	25.20 27.70	25.20

Driller SMcL	Originator RJB	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B21 Sheet 3 of 3 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
Chk & App FMR	Status FINAL										100	Water	1.20	25.20		

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
 Engineer: Scottish Power Energy Networks

Borehole No. BH19

Inspection Pit to 1.20m
 Cable Percussion to 3.50m

Location: E 319652.5
 N 697111.3

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000

Progress	Samples		Tests		Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill
	Depth	Type	Depth	Result								Symbol	Depth
21/8 2024						98.99		Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse			
	0.50	B, D, ES				98.49	0.50	Mottled greyish brown and orange slightly gravelly sandy CLAY of intermediate plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and basalt. Cobbles are subangular and subrounded of mudstone, sandstone and basalt			
	1.00	ES				97.74	1.25				
	1.20	D	1.20	SPT=13 2.2/3.3.4.3	1.20						
	1.70	B, D									
	2.00	ES									
	2.20	D	2.20	SPT=33 15.9/8.7.8.10	2.20			....from 2.20m: cobbles. Significantly weathered subangular and subrounded cobbles of sandstone, shale and basalt		
	2.70	B, D									
	3.00	ES									
	3.20	D	3.20	SPT>50 8.15/20.30(100)	3.20	95.74	3.25				
21/08	3.50	D	3.50	SPT>50 25(5)/50(10)	3.50	95.49	3.50	Dark grey BASALT. Distinctly weathered recovered as fine and medium angular gravel		Dry	3.50
END OF BOREHOLE											

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.

Hole Diam.	To Depth	
	Boring	Casing
200	3.50	3.20

Driller DP	Originator RJB	Ground-water				Water Added		Chiselling			Flush			
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)
								3.25	3.50	1:00				
Chk & App FMR	Status FINAL													



Fig No: B22
 Sheet 1 of 1
 Scale 1:50

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Site: EASTERN GREEN LINK 4 – HVDC CONVERTER STATION

Contract No: 26667

Client: Scottish Power Energy Networks
Engineer: Scottish Power Energy Networks

BH20

Inspection Pit to 1.20m
Cable Percussion to 3.15m
Rotary Core Drilling to 6.20m

Location: E 319836.5
N 696951.1

Orientation: Vertical

Equipment: Hand Tools, Track Mounted (Morooka) Dando 2000, Track Mounted (Morooka) Fraste ML MAX

Progress	Samples		Tests				Casing Depth	Level (mOD)	Depth	Description of Strata	Legend	Water Depth	Backfill		
	Depth	Type	Depth	Result									Symbol	Depth	
14/8 2024							108.67			Brown sandy clayey TOPSOIL with frequent rootlets. Sand is fine to coarse				0.40	
	0.50	B, D, ES					108.27	0.40		Mottled orange brown and grey slightly gravelly sandy CLAY of low plasticity with cobbles. Sand is fine to coarse. Gravel is fine to coarse, subangular to rounded of various lithologies including sandstone, mudstone and coal. Cobbles are subangular and subrounded of sandstone					
	1.00	ES					107.37	1.30							
	1.20	D	1.20	SPT=15 2.3/3.4.4.4			1.20								
	1.70	B, D													
	2.00	ES													
	2.20	D	2.20	SPT=22 4.4/6.7.4.5			2.20				Medium dense brown and pinkish brown very silty gravelly predominantly medium and coarse SAND with frequent pockets of mottled grey and red clay. Gravel is fine and medium angular and subangular of sandstone				
	2.70	B, D								Weathered pinkish brown fine to coarse SANDSTONE recovered as fine to coarse angular and subangular gravel					
	3.15	D	3.15	TCR	SCR	RQD	FI	3.00	105.47	3.20					
			3.20	100	100	80	8	3.00					Dry		
14/08			3.75	100	50	0	NI			Medium weak and moderately strong thinly bedded and thickly laminated off white with pink and yellow staining in thick laminated layers fine to coarse grained SANDSTONE. Sandstone grades in beds from coarse grained to fine and medium grained. Coarse grained is poorly cemented. Distinctly weathered evident as penetrative staining and loss of strength, destructured to sand in places. Two fracture sets. No. 1: medium spaced 15° to 45° undulating and planar and rough with bedding. No. 2: widely spaced subvertical undulating and rough....from 3.75m to 3.90m: non intact....from 4.02m to 4.08m: destructured to sand at fracture....at 4.30m: off white sand filling fracture, up to 15mm thick from 4.70m to 4.81m: no recovery from 5.43m to 5.50m: pale orange sand filled fracture, up to 6mm thick....at 5.80m: off white sand filled fracture, up to 8mm thick....from 5.98m to 6.02m: off white and pale orange sand filled fracture, up to 40mm thick					
			3.90	100	100	92	8								
			4.02	100	0	0	NI								
			4.08	100	100	66	8								
			4.70	0	0	0	NR								
			4.87	100	92	64									
							6								
15/08							3.20	102.47	6.20	END OF BOREHOLE				6.20	

Remarks:
 # Description based on Driller's log.
 An inspection pit was excavated by hand to a depth of 1.20m to clear services.
 Ground-water was not observed to enter the borehole.
 The Penetration Tests were carried out using Trip Hammer AB02.

Hole Diam.	To Depth	
	Boring	Casing
200	3.15	3.20
125	3.20	

Driller DP	Originator JD/FR	Ground-water				Water Added		Chiselling			Flush				RAEBURN	Fig No: B23 Sheet 1 of 1 Scale 1:50
		Struck	Rose To	Time(min)	Cut Off	From	To	From	To	hh:mm	Returns	Type	From (m)	To (m)		
								3.00	3.15	1:00	100	AirWM	3.15	6.20		
Chk & App FMR	Status FINAL															

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