

Preliminary Environmental Information Report: Annex 1.1 – Borehole Logs (Part 3)

Date: July 2017







Environmental Impact Assessment

Preliminary Environmental Information Report

Volume 6

Annex 1.1 – Borehole Logs

Report Number: P6.6.1.1

Version: Final

Date: July 2017

This report is also downloadable from the Hornsea Project Three offshore wind farm website at: www.dongenergy.co.uk/hornseaproject3

DONG Energy Power (UK) Ltd.

5 Howick Place,

London, SW1P 1WG

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Front cover picture: Kite surfer near one of DONG Energy's UK offshore wind farms © DONG Energy Hornsea Project Three (UK) Ltd., 2016.

Liability

This report has been prepared by RPS, with all reasonable skill, care and diligence within the terms of their contract with DONG Energy Power (UK) Ltd.

Prepared by: RPS

Checked by: Tracey Siddle and Jennifer Brack

Accepted by: Sophie Banham

Approved by: Sophie Banham





British	dical	

Additional	Well	Information:
		ALLA UL ILLEGIZIULIO

Well Loss Data: Well Acidified No Flow Logs Other Geophysical Logs Fissure Information:	major inflows fromtototo	British Geological Survey
Aquifer Parameters: OBS 3 †? Analysis Type: DACOB I British Geological Survey Transmissivity: 233 m²/d Storage Coefficient: 3.32×10 Analysis Type: Transmissivity: Storage Coefficient:	Other Data:	British Geological Survey
Confidence: excellent Notes: Massive dolore initial a reduced Flaw meter us after No recovery readings of Test bl data unusable for	British Geological Survey very poor recorded for v musll yield to prevent we ofalling to pury inlet	British Geological Survey
British Geological Survey	British Geological Survey	Britist Geological Survey

DATA ACQUISITION SHEET

CSC/D/093

PIS

NRA region: ANGLIAN (NORWICH)

File Number: Purp test file 34/6 (11)

Pump Well Identification:

NRA id No: 34/6/D/218

BGS (WL) No: 7902 /95

NGR: TG 099 287

Elevation: c47m0)

Measuring Point:

D. G. WILLIAMS Site Name: RED POT FARM

Locality: WOOD DALLING

7902/95

Well details:

depth of pumping well: 61.0 m

diameter:

200mm

casing details: plain steet to 35 m

observation boreholes

number of obs bhs: 4

NA obs bh details:

Aquifer Details:

confined / unconfined

Aquifer Geology

CHAUK

If confined, confining layer: Boulder clay

from Aquifer Geology from to 30.0

Pumping Test Details:

date of test:

28 MARCH 1988

61.0

length of test: & Rower Survey

RWL:

PWL:

6.32mbgl 31.26mbgl at and of text

Q=1.88 C/s

pumping rate: Av. 1.96lls; 169 m³/d

(max 2.2l/s mins 1.3l/s)

		For Institute use only Licence No.			For Institute use only Licence No.
• • • •	RECORD OF WELL	E7 34 11 9 49,9	· · · · · · · · · · · · · · · · · · ·	RECORD OF WELL	E7/34/11/9/499
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		11 71506		At	11 7/10/
1	Town or Village BOOTO.A	14 11600	+	Town or Village BODTO.N	1606
	County NORFONK		8	County NORFONK	
*				County	Ta12/92
XACT SITE	Six Inch National Grid sheet and reference	10237. 2235Tq.125m410000	ical Survey EXACT SITE	British Geological Survey Six inch National Crid sheet and reference	Colonic 2 3 7 2235 Tq. 12 Stills Geological Survey
OF WELL.	FOR BOOTEN FARMS LTD			For BOOTEN FARMS LTD	
9	State whether owner, tenant, builder, contractor, cons-	ultant, etc.: ONNER	.5.4		onsultant, etc.: ロルルモ.R
8	Address (if different from above) OXNEAC	D. HOUSE, OXNERD, NORWICH	4.		AD HOUSE, OXNERD, NORWICH.
			×4		
British Geologic	Level of ground surface above sea level (O,D,)	ft (arinsh Geologidar survey ·····	.m) Brillish Geological S	Level of ground surface above sea level (O.D.)	ft (. British Geological Suppeym)
*DELETE	If well top is not at ground level state how far above: below:	•ft (m) *DELETE		ve:* ow:
AS	SHAFTft (m); diameter	ft (m);	AS	SHAFTft (m); diamete	
ECESSARY	HEADINGS (please attach details—dimensions and d		NECESSARY	HEADINGS (please attach details—dimensions an	
	BORE. 250ft (76: 2m); diam	teter: at top?in (n	m);		ameter: at top!in (mm);
4	at bottomin (mm) British Geological Survey	Seological Survey British Geolo	gical Survey	at bottom: in (mm	
	Full details of permanent lining tubes (position, le			\$150 CONTROL OF STATE	length, inner and outer diameters, plain slotted etc.):
8	LINED WITH 12" DIA . TUB	ES70129. Ft			DBES TO 109 CH
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			me .		.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
British Geologica	1 Survey British Geological Survey	Brillsh Geological Survey	· · · · ·	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
a resistant de la companya de la com	Water struck at depths of			Water struck at depths of	ft (m) below well top
ſ	Rest level of waterft (m) above below	well top. Suction at ft (· m)	Rest level of waterft (m) about	ove* well top. Suction at ft (m)
TEST	Yield onhours'* test pumping at	galls per (ins* TEST	Yield onhours'* test pumping at	galls per (
NDITIONS	depression toft (m) below		ours conditions	depression toft (m) belo	w well top. Recovery to rest level in mins* hours
26	Capacity of pumpg.p.h. (l.			Capacity of pumpg.p.h. (1/s)
L	Date of measurements		L	British Geological Survey Date of measurements. British	Geological Survey British Geological Survey
	DESCRIPTION OF PERMANENT PUMPING EQU		ſ	DESCRIPTION OF PERMANENT PUMPING E	QUIPMENT:
NORMAL	Make and/or type			Make and/or type	Motive power
NDITIONS	below well top. Amount pumped		74	Capacitygalls (m³) per h	our. Suction at ft (m)
8	sconsumptiongalls (* 550000000000000000000000000000000000		CONDITIONS	below well top. Amount pumped	galls (m³) per day. Estimated
British Geologia	Well made by T. W. PAGE & San L		British Geologica	galls (Geological Survey	
31	ADDITIONAL NOTES ANALYSIS (please attack			Well made by	LTO. Date of sinking.
	* ***			ADDITIONAL NOTES ANALYSIS (please at	tach copy if available)
LOG OF	Drillers log attachel	Received from	NATURE - 1	Drillers lag attachel	Provinced Courts
STRATA	**	AWA		0	Received from
OVERLEAF	British Geological Survey British G	Date 19 (Shipsh Geolo Observation well	OVERLEAF	British Geological Survey British	Geological Survey Date 19(8 Shi Geological Survey
		Recorder	****		Observation well
		ER log			ER log
STITUTE OF	GEOLOGICAL SCIENCES	1" map	Institute of	GEOLOGICAL SCIENCES	Site marked on 1" map
XHIBITION I	ROAD	(use symbol)	Hydrogeolo		6" map—Grid Sheet
ONDON SW British Geologica	7 2DE al Survey British Geological Survey	Copy to EA SE British Geological Survey	LONDON SW		Copy to SEE Supply
1	IGS 2494 10 000 7/79	Date	Mark and the second of the sec	is transferrence of the control of t	

ute use only Licence No. E7 34 11 9 49 9	British Gedlagical S		e only Licence No. 34 11 9 499
2235. Tq.125mbr.geological Survey ONNER SE, OXNETO, NORMICH.	EXACT SITE OF WELL	Six-inch National Grid sheet and reference	35. Tq. 125th Geological Survey NER OXNERD, NORMICH.
ft (eninsh spealogidal bunkerm)ft (m) ft (m);	British Geological S *DELETE AS	Level of ground surface above sea level (O.D.) If well top is not at ground level state how far above:* SHAFT	ft (m)
and outer diameters, plain slotted etc.): 109. [-4	NECESSARY	HEADINGS (please attach details—dimensions and directions) BORE 25.0ft (m); diameter: at top	British Geological Survey outer diameters, plain slotted etc.):
British Geological Survey	British Geological S TEST CONDITIONS	Water struck at depths of	n at
Motive power	NORMAL CONDITIONS British Geologica	DESCRIPTION OF PERMANENT PUMPING EQUIPMENT: Make and/or type	ft (m)m³) per day. Estimated British Geological Survey f sinking
Received from Date 19 (S 8 Sijish Geological Survey Observation well Recorder ER log Site marked on 1" map 6" map—Grid Sheet (use symbol) Copy to EA SE	Hydrogeolo Exhibition R	LOAD	Received from Date 19 (R) Set Geological Survey Observation well. Recorder ER log Site marked on 1" map 6" map—Grid Sheet (use symbol)
British Geological Survey Date	London SW7	2DE British Geological Survey S 2494 10 000 7/79	Copy to End September SE

LICENCE NO. E7/34/1/6/409791

T. W. PAGE & SON LTD.

Water Supply Engineers and Artesian Well Borers Welding and General Engineers

BUXTON ROAD FRETTENHAM NORWICH, NR12 7NQ

Anglian Water Authority, Norfolk & Suffolk Rivers Division, Yare House, 62/64 Thorpe Road, Norwich.

May 19th, 1976

GEB/MG

Dear Sirs,

Borehole Log: Booton Farms, Booton

Further to my discussion with Mr.Ashford regarding the bore sunk at the above, we have pleasure in forwarding details of same, as requested:-

Total depth of bore 250 ft. Diameter 12" Lined with 12" dia. tubes to 109 ft.

	Details of strata	Depths	in feet
sh Geological Survey	Top soil	1	British Geol
(-576 }	Brown clay	5	ft.
+ Till . /	Brown sand	45	ft.
7 house tolt	Sand and stones	9	ft.
1 house 1	Grey clay	10	ft.
(Stones	9	ft.
,	Chalk	163	ft.
uch K.		250	ft.
-100 British Geo	logical Survey British Geological S	urvey	
-16ky	We trust these details meet with your	requirements	3.

We trust these details meet with your requirements.

93.84

Yours faithfully, T.W.PAGE & SON LTD.

British Geol G. E. Brooke.

V.A.T. Registered No. 105 6983 60

ANGLIAN WATER AUTHORITY - NORPOLK AND SUFFOLK RIVER DIVISION

	T	A D-A	P.O. Box 50, 1912
	K.A. Buckley.	Our Ref.	Norwich.
	B.Sc. Tech, C.Eng., M.I.C.E., M.I.W.E.S.	Your Ref.	NR1 1BR
	Divisional Engineer	rour mer.	TIGHT BUTTE
	ntimer monace,	S2	- 7 DEC198 Z
Brit	The Director,	British Geological Survey	British Geological St
	Institute of Geological Exhibition Road, South Kensington, London. S.W.7	Sciences,	
		cation of new wells an	
Geological Survey	for we	ter under the Water Re	sources Act, 1963 ogical Survey
	Licence Number E7: 34:	11 : 6 : 409: dated	the 3/1/77
	Consent under Section 2	dated	the 5/3/76.
	has been issued to	Booton Hama	±d.
Brit	tish Geological Survey	Oknead House	* British Geological St
	***	Oxnead	•••••
	••••	Norwich	
Geological Survey	authorising the constm	action of a new well/bo	orehole at British Geological Survey
	Nat. Grid Ref: 7.5.237.	,235 Depth. 250	ft/M Diameterins/
	by the contractors Mess	5.5	e 4 800
59		Buxton F	oad
Brit	tish Geological Survey	British Cological Suivey Trettach	British Geclogical St.
	4)		

: Geological Survey British Geological 1415h 67 01/11 606

LICENCE NO. E7/34/1/6/409

TELEPHONE: NORWICH 898071 N.G.R. TG 1237 2235

T. W. PAGE & SON LTD.

ish Geological Survey DIRECTORS: T. W. PAGE British Geological Survey

British Geological Survey

Water Supply Engineers and Artesian Well Borers Welding and General Engineers

BUXTON ROAD FRETTENHAM NORWICH, NR12 7NQ

Anglian Water Authority,
Norfolk & Suffolk Rivers Division,
Yare House,
62/64 Thorpe Road,
Norwich.

May 19th, 1976 British Geological Survey

GEB/MG

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Borehole Log: Booton Farms, Booton

Further to my discussion with Mr.Ashford regarding the bore sunk at the above, we have pleasure in forwarding details of same, as requested:-

Total depth of bore 250 ft.
Diameter 12"
Lined with 12" dia. tubes to 109 ft.

	Details of strata	Depths :			
sh Geological Survey	Top soil	vey 1	ft.	gical Survi	ey
1-5+9 Til	Brown clay	5	ft.		
	Brown sand	45	ft.	AC 12.	150
Phoweste	Y Sand and stones	9	ft.		
\$ 50.000	Grey clay	10	ft.		
(Stones	9	ft.		
UCHK	Chalk	163	ft.		
2-1-1		250	ft.		
echi.				9	

We trust these details meet with your requirements.

PP. FB 9.3.84

Yours faithfully, T.W.PAGE & SON LTD.

British GeG. E. Brooke.

RIV. TO N No. 2

19 MAY 1976

1. 62 WK/16

1. 72 / AW

Registered in England at 35 Exchange Street, Norwich. Registered No. 756534

V.A.T. Registered No. 105 6983 60

British Geological Survey

British Geological Surve

ritish Geological Survey



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ritish Geological Surve

British Geological Survey

NGRC BOREHOLE RECORDS ADJUSTMENT FORM

QUARTER SHEET British Geological Survey BH REGISTRATION N	TAIZSW British Geological Survey UMBER 5-34	• Fritish Geological Survey
British Geological Survey RECORD	British Geological Survey S ENTERED AND HELD BY WALLIN	British Geological Survey
British Geological Survey	British Geological Survey	British Geclogical Survey
British Geological Survey	British Geological Survey	British Geological Survey

BH REGISTRATION NUMBER(S)

British Geological Survey

British Geological Survey

British Geological Survey

147/72 The Grove, Booton (formerly War Department). (? Filled in) Tq 1226 2162 Surface +140. Bore 4 in. Lining tubes: 134%. R.W.L. +124. Yield 600 g.p.h. (test). Fake, May 1941. Boulder Clay ... Sand and Grave1... 53 58% Boulder Clay ... 26 152% 1'6" TOP SOIL 4'0" BOUDER CLAY 52 BRICK BARTH 10 0

LOAM SAND LIGHT GREY CUAY FINE LIGHT GREY SAWD SAND AND GRAVEL 6" 55' 6" LIGHT BROWN SAND LAND AND SHINGLE 0 GREY CLAY BOULDER CLAY BLUE CLAY 50 SOFT CHALL (TUBED 152 10 HARD CHALL

9	RECORD OF WELL (S) OR BORE)
al S	Ar Searchlight To. R.E. British derivates
	Town or Village Booton.
	County Nortock Six-inch quarter sheet 38 56/60.
	For Mr Wan Office. TG12/53
	Exact site of well 700 yes SSW of Church. British Geological Survey Attach a tracing from a map, or a sketch-map, if possible.
	Level of ground surface above sea-level (O.D.) + 140 feet.
	Is well-top at ground level? If not, state how far above ;feet.
	Shaftft., diameterft. Details of headings
al 3	Urvey British Geological Survey British Geological Survey
	Boreft.; diameter of bore: at topins.; at bottomins. Lengths, diameters, perforations, etc., of lining tubes
	Zengere, dameters, periorations, etc., or ming tubes.
	Water struck at depths, below well-top, of (feet)
	British Geological Survey British Geological Survey British Geological Survey hours'
	TEST DETAILS Rest-level of water 16 below well-top. Suction at 11. Yield on days'
	Month May pumping 6 0 gallons per 6 max. capacity of pump g.p.h.),
2000000	Year 1941 with depression of feet. Recovery to in hours.
	Rest-level of water in (month), (year), ft. above well-top.
a) s	Highest ,, in (month), (year), ft. above below ,,
	WORKING Towest in (month) (year) ft above
į	Conditions Suction atft. Rate of pumpinggalls, perforhours per day.
	mins
100	with average depression of ft. Recovery to in hours Geological Survey British Geological Survey
	Quality of water (attach copy of analysis if available)
	Well made by W. & G. Fahe, howich Date of well hay 194,
	Information from
al S	Sile worked at by Sile pointed out by Sam worker.
	Described.
38	Surface , well tipe + 140.
	Sied on Newfork 35 SE/W.
	Visited Bolongs to The Grove Boston Sike of Love inclicate
	British Geological Survey Jamworket slightly Geologicath of ak gue British Geological Survey
	which is beside the former buildings. No trace of bore now -? filled in . Like not altered.
	LOG OF STRATA OVERLEAF.
al 8	GEOLOGICAL SURVEY AND MUSEUM, On 6" Map. On 6" Map.
	SOUTH KENSINGTON, LONDON, S.W.7. May 147 147

(17208) Wt.42901/0877 10,000 2/41 A.& E.W.Ltd. Gp.686

GEOLOGICAL CLASSIFICATEDNIVEY Boulder(lag) Sand and Gravel File Sand String Sa	If measurements start below ground surface, state how far	14485123	iches	10 18 43 55 58	Enches Survey 6 6 6 6 Survey 7 7	eological Survey
British Geological Survey	British Geological Survey		Britis	h Geologica S	Burvey	
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British Geological Survey	British Geological Survey		Briti	h Geological S	Burvey	
British Geological Survey	British Geological Survey				'British (eological Sulvey
British Geological Survey	British Geological Survey		Britis	h Geological S	Burvey	S. Harris Africa

<u>.</u>	RECORD OF WELL (SHAFT OR BORE)
ં	eritish Geological Sulvey British Geological Survey British Geological Survey
	Town or Village Booton, 14 nts. & S.E. of Faken in
	CountySix-inch quarter sheet
	For Mr
irvey	Exact site of well British Geological Survey Strillish Geological Survey Attach a tracing from a map, or a sketch map, if possible.
	Level of ground surface above sea-level (O.D.) /360 feet.
	Is well-top at ground level? If not, state how far above ;feet.
	Shaftft., diameterft. Details of headings
	British Geological Survey British Geological Survey British Geological Survey
	Bore/53_ft.; diameter of bore: at topins.; at bottomins. Lengths, diameters, perforations, etc., of lining tubes/34\frac{1}{2} \times
	Water struck at depths, below well-top, of (feet)
ivey	British Geological Survey British Geological Survey British Geological Survey
	Test Details Rest-level of water 16 ft. above below well-top. Suction at ft. Yield on days
	Month pumping 570 gallons per Low (max. capacity of pump g.p.h.
	Year with depression offeet. Recovery to inhours.
	Rest-level of water in (month), (year), ft. above well-top.
	above
	highest ,, imonth), year), below "
	WORKING CONDITIONS Lowest ,, in (month), (year), ft. above below ,,
	Suction atft. Rate of pumpinggalls. perforhours per day,
	with average depression of ft. Recovery to in mins. British Geological Survey British Geological Survey British Geological Survey
ey	with average depression of ft. Recovery to in hours British Geological Survey Quality of water (attuch copy of analysis if available)
	Well made by Date of well ? 1941. Information from Garrison Engineer, Holt, per it with Grac Falyer, R.E.
	Information from Garrison Engineer, Holt, per it W. H. Gracfalyen, R.E.
	British Geological Survey ADDITIONAL NOTES. British Geological Survey British Geological Survey British Geological Survey
vey	3ritish Geological Survey British Geological Survey British Geological Survey
	w:
	LOC OF STRATA OVERLEAF
	LOG OF STRATA OVERLEAF.
	Brillish Geological Sun Geological Survey and Museum, South Kensington, London, S.W.7. Date G.S.M. Office File No. I* N.S. Map No. 1* O.S.

For Survey see only		1 - 2 - 2 - 2 - 2	Conn. N. C.				
	NATURE OF STRATA	Титс	KNESS	DE	РТН		
GEOLOGICAL CLASSIFICATION	If measurements start below	A STATE OF THE PARTY OF THE PAR	Inches	Feet	Inches		
OLKSON TOWN	ground surface, state how far	ļ					
Boulder	Tropsoil		6				
Boulder { Clay }				/4			
* 55 【	Bricharth	1 4	0	5	6	E	
	British Geological Survey British Geological Survey	4	.6	10	O British (aological Súrvey	
Sandard	hight gray clay	8	0	18	0		
Gravel { 53 }	hight gray wand	25	0	43	٥		
, John 1		12	6	55	6		
	hight from sand		1.5	12 3 3 3 4 5 5 5		- 84½	
B Olish Geol meal S	survey Sand and Color Spring S	3	O Bri	59 ish Geologie	6 HSurvey —	81 ½ - 322	
Bouldar Scharg	Gray clay	3	6	62	0	+78	
26	Blue clay	2-	6	84	6	+55-2	
uck {	Soft chies	40	0	/24	6		
946	Janus Chalk British Geological Survey British Geological Survey	28	1	152			
	British Geological Survey British Geological Surve	у		- 2	- British	sologica) Súrvey	
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	British Geological Survey British Geological Surve				DHUSII	eological. Survey	
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		And Change to a					
	British Geological Survey	y (1975)			- British	Solngical Survey.	
	14/2 :-1-1*						
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	FRINGE WINGAM						
Design to the second of the second of the second		(Leeding Local Control	Committee Co. 18 Land		A11 - 141	F1 (F4) 1 (2) (1) 2 (1) 2 (1) 2 (2)	
	British Geological Survey British Geological Surve	y			British	Geological Survey	

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 7

at Moraton Estate.

For Mr. J.V. Berney.

TGHSW/112

O/No. 2374 Boring Completed on 12.11.62.

O.D. Level 1220 1427

Boring lined to a Depth of 17'6"

Diameter 74

Bound flued to a Debru of TA O		*.	. –	lainec	1 228 221	* (17.20) 5.51		
BORING FOREMAN'S STRATA RECORD	THIC	KNESS	DE	PTH	1 14 14 1	VATER O	BSERVATI	OMS
	Ft	Ins	Ft	Ins	Date	Time	W.S.	SWL
Sand & stones.	5	0	5	0				
Sand & gravel.	7	6	12	6				
Mottled clay.	1	0	13	6	is.	, , <u>, ,</u> , ,	Nil.	
British Geological Survey Sond•	4	0	17	6	, British	Geological Su	ivey	
Seological Survey British Geological Survey	6 p (5 p p h)	en Supe			British	Seological Su	scripe of Casal	
70	OTAL D	EPTH	17	6		-	6	2 2

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

2 Bulk samples taken.

Disturbed Jar Samples Taken at - 2', 7', 12', 17'6".

Water Samples Taken XXXX/NO Standard Penetration Tests Carried Out

From

To

Blows

British Ge**From**Survey

To

Blows

From

To

Blows

Boring Foreman's Remarks

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 5 at Moraton Estate

For Mr. J.V. Berney.

TZ+11SW/114

O/No. 2374 Boring Completed on 2.11.62.

O.D. Level

1271 1330

Boring lined to a Depth of 231011

Diameter

BOTAINS IIII-C	THIC	NESS DEPTH		WATER OBSERVATIONS				
BORING FOREMAN'S STRATA RECORD	Fritiph Ge		Ft	Ins	Date	Time	W.5 .5	eelogi s Wyt inyey
Loamy sand. Brown clay.	5 2	0	5 7	0	1.11. 62.		12'0	
Sand & gravel. British Geological Survey Loamy sand.	10 14	0	17 22		Bri	iển Geologic	al S úrveý	
Chalk.	5	0	27	0				
	Gni Sh ote	ilo untai Su					British G	g Sglogi Striken,
British Geological Survey British Geological Su	TOTAL	DEPTH	2	7	o	tish Geologica	ar 51 (Vey	

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

Disturbed Jar Samples Taken at - 31, 616", 716", 1216", 181, 271.

Two bulk samples taken. British Geological Survey

Water Samples Taken XX56/NO Standard Penetration Tests Carried Out

> From From

Blows To Blows To

Blows

Boring Foreman's Remarks

FOR LE GRAND ADSCO LIMITED

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 6

at Moraton Estate.

For Mr. J.V. Berney.

O/No. 2374 Boring Completed on 7.11.62.

TOUS W/115

Boring lined to a Depth of 15"0"

O.D. Level

1282 1327

Diameter 7±11

BORING FOREMAN'S STRATA RECORD	THIC	KNESS	DE	PTH	P. Style	WATER C	BSERVAT	IONS
	Ft	Ins	Ft	Ins	Date	Time	W.s.	SWL
Sand & stones.	2	0	2	0				
Sand.	1.4	. 0	16	0				
ពីកែហ្មីនិធ្លា និយាមម	a g [×] e s	228 8			• British G	ological Surve		
Andrew Andrew September 1990 and 1990 Andrew September 1990 and 19	(se llearair	(Survey					ikish Gewag	al Survey
		, August				х ,	a ^{ree}	*
glegfital-Sulvey Břítišh Géological Survéy		į		62	British G	eological Súry	ý	9
	OTAL D	EDTU	16	. 0	r:		24. 87.7 8	ř
	OTAL D	WT 111					Ĭ.	160

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

Disturbed Jar Samples Taken at - 1', 6', 11', 16'.

Water Samples Taken XXXXIII

Standard Penetration Tests Carried Out

To From Blows Blows From Blows From

Boring Foreman's Remarks

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 4 at Moraton Estate. For Mr. J.V. Berney.

1278 1311

O/No. 2374 Boring Completed on 5.11.62.

O.D. Level

Boring lined to a Depth of 28 10"

Diameter

	BORING FOREMAN'S STRATA RECORD	THICKNESS DEPTH			WATER OBSHINATIONS				
	BORING CALL	Ft	line	Pt	Ina	Date	Time	W.S.	SWL
	Sand & stones.	2	0	2	0				
	Sand.	26	0	28	0			Nil.	
	British Okoledica, British Okole					B _i Maji	palegrap o	light.	
							•		ra Main (1917) Printys (1918)
									in and and a significant of the
	Para Para Para Para Para Para Para Para	a Geolog	uar Suive 171					British Çeyler	ica Supey
		17.0			1			1	- i
Britis	Brillish Beoragical Survey					British	Geological St	rey '	N.
	T	I OTAL I	DEPTH	28	0	+			
		# 15 2 - 12 - 12 - 12	St. Section		1.	1	1.		

SAMPLING DETAILS

Lab Location No.

Blows

Blows

Blows

Undisturbed Core Samples Taken at

Disturbed Jar Samples Taken at - 1', 6', 11', 16', 21', 26'.

Water Samples Taken XXXX/NO Standard Penetration Tests Carried Out

> From From From

Boring Foreman's Remarks

FOR LE GRAND APISCO LIMITED



Anglian Water Region, NRA

TGHEW 99 128-133

* * GEORGE STOW & CO LTD * *

Code: AW016

Reading Road - Henley-on-Thames - RG9 1DX

BOREHOLE RECORD

TGIISW

Borehole No: RW 1

Date completed:

24-09 90 logical Survey

All depths to be measured below Ground Level

Client: N.R.A. Anglian Region

Exact Site: RW 1 - Ringland (NGR: TG 128 133)

Ground Level (O.D.):m

Depth of Bore: 65 m Diameter: At Top 450 mm. Bottom 300 mm

Details of Permanent Lining Tubes

Diame	ter	Leng	gth	Inser	ted								
E	British Geologic	al Survey				Britis	h Geological Survey					British Geal	
450	mm	15.5	m	Plain		m	Slotted	Top A	t o	. 5	m	A.G.L.	
300	mm	8	m	17		m	n	11	1.	3	m	B.G.L.	
300	mm		m	44	36	m	IE	11	2	1	m	B.G.L.	
300	mm	8	m	11		m	27	71	5	7	m	B.G.L.	
		of Wate					- 1870 - 474,00000	10 m	128	27 55	U-281	or sense isoset	
Yield	on to	est 18	h	ours Brit	rumping	ey	48 litre	s/sec	Da	te:	22	2-09-90 I Survey	
Pumpi	ng Wat	ter Leve	el:	23	m belo	wc	G.L.						
Time	of Re	covery:	•	• • • • • •		• •			•••		•	•••	
_	•											2.0	

GEOLOGICAL CLASSIFICATION	STRATA RECORD NATURE OF STRATA	THICKNESS METRES	DEPTH METRES
	light brown sand & stones		3
	light brown sand & stones	2	2
and cover	SAND & CHALK	2	4
	-CLAY / CHALK with flints	2	6
Seological Survey	brown number CHATM with flints	2 ritish Geological	Survey 8
uppo-Challe	creamy soft CHALK	7	15
• •	soft CHALK with flints	24	39
	firm CHALK with flints	26	65

17/4/91

British Ge

RECEIVED N.GD.C. DATE: - 5 NOV 1990

Anglian Water Eastern L.S.

* * GEORGE STOW & CO LTD * *

Code: AW016

Reading Road - Henley-on-Thames - RG9 1DX

BOREHOLE RECORD

TGUSW

Borehole No: RW 1

Date completed: 24-09-90

All depths to be measured below Ground Level

Client: N.R.A. Anglian Region

Exact Site: RW 1 - Ringland (NGR: TG 128 133)

Ground Level (O.D.):m

Depth of Bore: 65 m Diameter: At Top 450 mm. Bottom 300 mm

Details of Permanent Lining Tubes

Diameter Length Inserted 450 mm 15.5 m Plain m Slotted Top At 0.5 m A.G.L. 300 mm " 13 m B.G. Landonical Survey 300 mm 21 m B.G.L. 300 57 m B.G.L.

Rest Level of Water below Ground Level: 18.10 m

Yield on test 18 hours Pumping: 48 litres/sec Date:22-09-90

Pumping Water Level: 23 m below G.L.

Time of Recovery:

	STRATA RECORD		
GEOLOGICAL CLASSIFICATION	NATURE OF STRATA British Geological Survey	THICKNESS METRES	DEPTH METRES
	light brown sand & stones	2	2
	SAND & CHALK	2	4
	CLAY / CHALK with flints	2	6
	brown puggy CHALK with flints	2	8
	creamy soft CHALK	7	15
	soft CHALK with flints	24	39
odical Survey	firm CHALK with flints	26 itish Geologica	Surv 65

900066

TGIISW 100 128-133

TG W/2128

* * GEORGE STOW & CO LTD *

Code: AW017

Reading Road - Henley-on-Thames - RG9 1DX

Tgusw

BOREHOLE RECORD

Borehole No: RW 2

Diameter

British Geolog

Date completed:

4 Entro 9 Englos Survey

All depths to be measured below Ground Level

Client: N.R.A. Anglian Region

Exact Site: RW 2 - Ringland (NGR: TG 128 133)

Ground Level (O.D.): c30m m

Depth of Bore: 65 m Diameter: At Top 450 mm. Bottom 300 mm

Details of Permanent Lining Tubes

Langth Incorted

Drame	cer	rend	tru Tusei	Leu						
British	Geological St	irvey		British	Geo	logical Survey				British Geological
450	mm	20.5	m Plain		m	Slotted	Top At	0.5	m	A.G.L.
300	mm	8	m "		m	71	21	17	m	B.G.L.
300	mm		m 11	36	m	11	rt	25	m	B.G.L.
300	mm	4	m "		m	11	37	61	m	B.G.L.
t/										
Rest	Level	of Wate	r below	Ground	L	evel: 18	.86 m			
Yield	on to	est 8	hours	Pumping	:	55 litre	es/sec Britis	Date	al Su	4-09-90 Vey
Pumpi	ng Wa	ter Leve	22.13	l m belo	W	G.L.				
Time	of Re	covery:								

Remarks: Prior to acidising gave 8.6 l/sec with 5m drawdown.

GEOLOGICAL CLASSIFICATION	STRATA RECORD NATURE OF STRATA	THICKNESS	DEPTH METRES
"Glaval loam	brown sandy soil	2	2
and Marl" - possibly Norwich Brickenth	brown clay	4	6
Brickewh	grey-brown sandy CLAY	4	10
British Geological Survey	nuggy MMADK affints at base	Brils@Geological Survey	20
Uppe Chalk	CHALK with flints	45	65

Following acidising gave 55 l/sec with 3.25m drawdown.

Jam 17/4/91

2002

RECEIVED N.GD.C.
DATE \$ 5 NOV 1999
SIG: Values

Eastern L.S. Anglian Water. Region, NRA

TGIISW 100 128-133

الع ساحد

* * GEORGE STOW & CO LTD * :

Code: AW017

Reading Road - Henley-on-Thames - RG9 1DX

BOREHOLE RECORD

Tgusw

Borehole No: RW 2

Diamotor

Date completed:

4^{Brittoh} Seologo al Survey

British Geological Surve

All depths to be measured below Ground Level

Client: N.R.A. Anglian Region

Exact Site: RW 2 - Ringland (NGR: TG 128 133)

Langth Incorted

Ground Level (O.D.): c30m.m

Depth of Bore: 65 m Diameter: At Top 450 mm. Bottom 300 mm

Details of Permanent Lining Tubes

рташе	cer	rend	باو	I THEET	Leu						
British	Geological Survey				Britis	h Geo	logical Survey				British Geologic
450	mm	20.5	m	Plain		m	Slotted	Top At	0.5	m	A.G.L.
300	mm	8	m	71		m	23	25	17	m	B.G.L.
300	mm		m	11	36	m	st	It	25	m	B.G.L.
300	mm	4	m	21		m	71	11	61	m	B.G.L.

Rest Level of Water below Ground Level: 18.86 m

Yield on test 8 hours Pumping: 55 litres/sec Date: 4-09-90

Pumping Water Level: 22.11 m below G.L.

Time of Recovery:

Remarks: Prior to acidising gave 8.6 l/sec with 5m drawdown. Following acidising gave 55 l/sec with 3.25m drawdown.

GEOLOGICAL CLASSIFICATION	STRATA RECORD NATURE OF STRATA	THICKNESS	DEPTH METRES
"Glacial loan and Mar!" - possibly Norwich Brickeuth	brown sandy soil brown clay	2	2 6 10
British Geological Sures Uppe Chalk	grey-brown sandy CLAY puggy CHALK, flints at base CHALK with flints	Br1s0Geological Survey	===

Jan 17/4/91

2002

RECEIVED NISD.C.
DATELES NOV 1999
SIG: 1/Janes

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ELDWORK BY: " " 200mm casing to 1.40m				SAMPLING/ IN SITU TE							DATES 17/5/82 ESTING LAB TESTING							SHEE)F											
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British Geological Survey

British Geological Survey

TG 10 NE 49 1644 0581

Burnthouse Lane, Hethersett

Surface level (+ 41.0 m) + 134 ft Water struck at (+ 35.6 m) + 117 ft Wirth B 1, 8 inch diam., B December 1969 Vev

Waste (18.3 m +) 60 ft +

British Geological Survey

British Geological Survey

			Thickness		Dept	h
			(m)	ft	(m)	ft
		Soil.	(0.6)	2	(0.6)	2
	halky Boulder lay	Brown clay with traces of medium sand and fine gravel towards the	(4.6)	15	(5.2)	17
British Geological Survey		base. British Geological Survey			Briti	sh Geological Survey
		Brown chalky clay.	(13.1 +)	13 -	(18.3)	60

British Geological Survey British Geological Survey British Geological Survey

British Geological Survey

51

British Geological Survey British Geological Survey British Geological Survey

British Geological Survey British Geological Survey British Geological Survey

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British Geological Survey British Geological Survey British Geological Survey

TG 10 NW 14

1356 0944

Cobb's Grove Plantation, Marling ford

Surface level (+ 37.9 m) + 124 ft Groundwater conditions not recorded Shell and auger, 8 inch diam., December 1969

Overburden (0.3 m) 1 ft; Mineral (4.9 m) 16 ft; Waste (10.3 m) 34ft; Bedrock (0.9 m +) 3 ft +

			Thickne	ess	Depth			
			(m)	ft	(m)	ft		
		Soil.	(0.3)	1	(0.3)	1		
	Glacial Sand and Gravel	Sandy gravel. Gravel: fine to coarse subangular flint, with traces of fine subrounded	(4.9)	16	(5.2)	17	Çe e	39 Si
ritish Geological Sun	vey	quartz. British Geological Survey			British	Geologi	cal Survey	
		Sand: medium with coarse, mainly subangular flint. Brown.						
	Chalky Boulder Clay	Slightly sandy brown clay with traces of gravel.	(6.4)	21	(11.6)	38		
		Light brown chalky clay.	(0.9)	3 .	(12.5)	41		
		Sandy brown clay with traces of	(3.0)	10	(15.5)	51		
	British Geological Survey	gravel. British Geo	logical Survey				British (Seological Survey
	Upper Chalk	Chalk.	(0.9+)	3+	(16.4)	54		
	Gravel 44	mm %	Depth belo surface (for		Fines Sa	entage ind 2	Gravel 52	10 B

		OT.								Dep	th below		Percentag	e
					mm			%			face (ft)	Fines	Sand	Gravel
	Gravel	44	4	64	HIII		:	ő		1	- 4	6	42	52
	O.L.	1717	_	64	+	16	:	23		4	- 7	2	46	52
				16	+	4	:	21		7	- 10	6	70	24
										10	- 13	0	70	30
British Geological Survey	Sand	53	_	4	+	1	By.	14	Seological Survey	13	- 17	1	Britist 42 eol	ogical 57 rvey
			-	1	4	1/4	:	33						
			-	1/4	+	1/16	:	6						

British Geological Survey

TG 10 NW 20 1414 0895 North of Algarsthorpe

Surface level (+ 14.1 m) + 46 ft Water struck at (+ 13.1 m) + 49 ft Shell and auger, 8 inch diam., December 1969

Overburden (2.4 m) 8 ft; Mineral (6.4 m) 21 ft; Bedrock (0.9 m +)3 ft +

		Thicks	iess	Dep	th	
		(m)	ft	(m)	ft	
Alluvium	Soil and brown silty and peaty clay.	(2.4)	8	(2.4)	8	
Sub-alluvium	Gravel.	(6.4)	21	(8.8)	29	
_{al} s grayel	Gravel: fine to coarse subangular flint, with traces of subrounded brown flint and traces of fine subrounded quartz.	20			British Geological Su	vey
	Sand: medium and coarse subangular					

flint with subrounded quartz and chalk. Grey and brown.

Upper Chalk

(0.9 +) 3+

(9.7)

Depth below Percentage Gravel surface (ft) Fines Sand 8 - 11 33 64 16 : 30 11 - 14 32 66 4: 35 14 - 17 27 71 17 - 20 34 62 59 67 - 4 + 1 : 13 Sand 32 20 - 23 36 1 + 1/4 : 14 23 - 26 32 66 1/4 + 1/16: 5 26 - 29 33

Fines 3 - 1/16

41

Ref: A/S 40/91

TG 10 NW / 45 1468, 0758,

June 92

F SMITH & SON (GRIMSBY) LIMITED

Record of 762mm (30") nominal dia x 87m deep Water Abstraction borehole drilled for Anglian Water Services Ltd Histon Cambridge

161

1468 0758 VALLEY FARM Nr BARFORD NORLK NGR TG 148 076

TGIONW

British Geological Survey	British Geological Survey		British Georg
STRATA	3	Thickness M.	Depth M.
	eological Survey UPPER CHA (UPPER CRETACEOU	2.00 Britist	0.50 1.70 3.50 4.50 8.00 10.00 28.00 77.00 87.00
	Roo Mameli		

Roo Mundi 3-2-43

WATER

RWL 2.81m bg1, reading taken 6 December 1991

LINING TUBE

a) 25.50m x 762mm OD plain mild steel lining tube installed to a depth of

25.50m x 762mm OD plain will steel library tube installed to a depth of 25m BGL, the top being fitted with a weld - on flange drilled NP16; Geological Survey by 87.5 x 600mm od steel casing installed to base of borehole the top being left flush with head flange drilled NP16 casing column made up as follows:
1) Perforated from base of borehole to 24m BGL (63")

11) Plain from 24m BGL to top flange.

111) Slotting pattern: Rings of 10 No x 300mm long x 12.5 wide slots with 50mm plain tube between rings adjacent rows of slots staggered. Total No of slots 1773.

Stabiliser Pack

The annular space between the 600mm OD lining and the borehole wall and between the 600mm OD lining and 762mm OD lining was packed with 40mm natural shingle.

12th January 93

9656

British Geological Survey