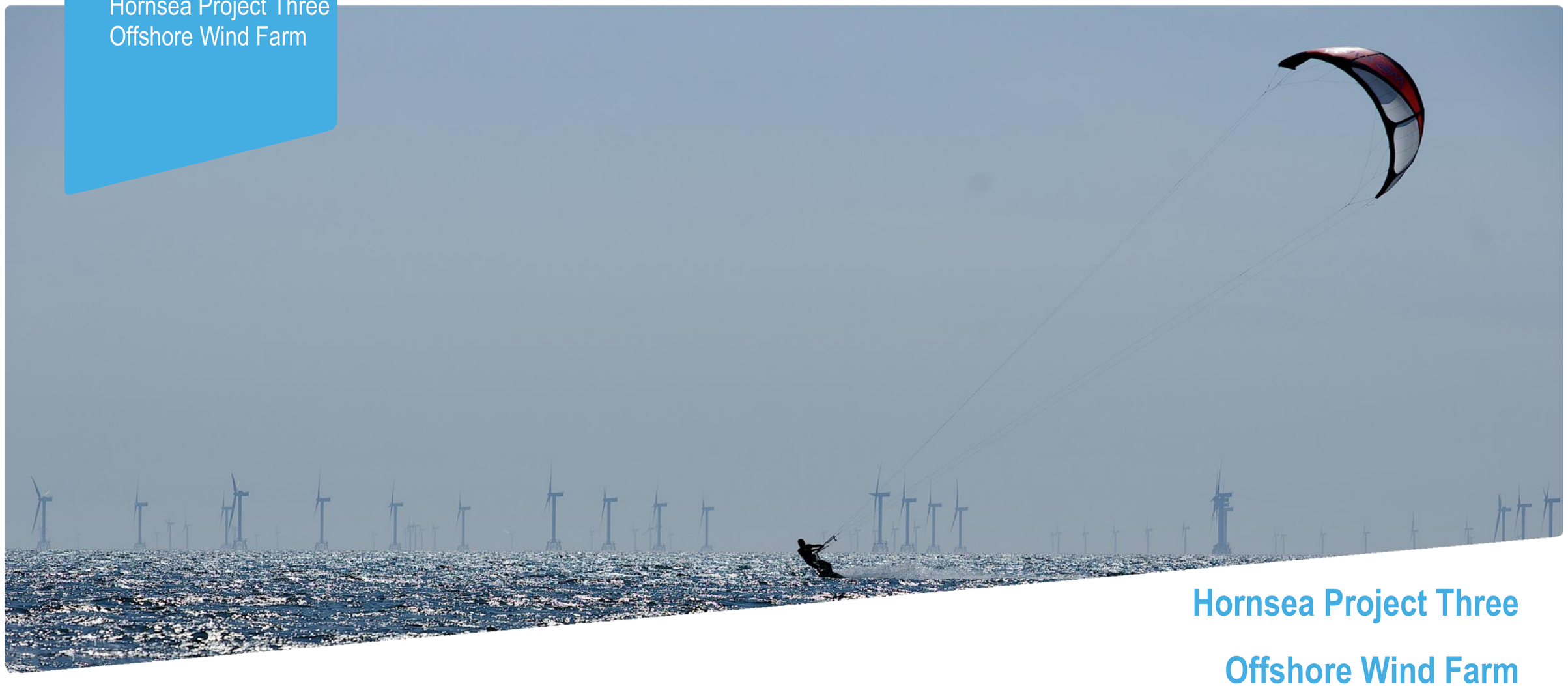
Hornsea Project Three
Offshore Wind Farm



Hornsea Project Three

Offshore Wind Farm

Environmental Statement:
Volume 6, Annex 1.1 – Borehole Logs

PINS Document Reference: A6.6.1.1
APFP Regulation 5(2)(a)

Date: May 2018

Hornsea 3
Offshore Wind Farm

Ørsted

Environmental Impact Assessment

Environmental Statement

Volume 6

Annex 1.1 – Borehole Logs

Liability

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

Report Number: A6.6.1.1

Version: Final

Date: May 2018

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

Ørsted

5 Howick Place

London, SW1P 1WG

Front cover picture: Kite surfer near a UK offshore wind farm © Orsted Hornsea Project Three (UK) Ltd., 2018.

Prepared by: RPS

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Approved by: Sophie Banham

Table of Contents

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Acronyms

Acronym	Description
BGS	British Geological Survey
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current

Units

Unit	Description
m	Metre (distance)
km	Kilometre (distance)

1. Introduction

1.1 Purpose

1.1.1.1 This annex provides details of all borehole logs within the Hornsea Three geology and ground conditions study area as defined in volume 3, chapter 1: Geology and Ground Conditions.

1.1.1.2 Table 1.1 and Figure 1.1 (sheets 1 to 9) confirm the location of these boreholes. The logs of all the boreholes listed in Table 1.1 are provided at Appendix A. The borehole logs were obtained from British Geological Survey (BGS).

1.1.1.3 The information presented in this annex has been used to inform the baseline and impact assessment presented in volume 3, chapter 1: Geology and Ground Conditions.

Table 1.1: BGS Borehole Logs.

Easting	Northing	Label	BGS reference
610390	343440	R A F Station Weybourne NO 1	TG14SW23
610390	343330	R A F Station Weybourne NO 2	TG14SW24
610390	343250	R A F Station Weybourne NO 3	TG14SW25
610360	343170	R A F Station Weybourne NO 4	TG14SW26
611630	334400	Rifle Range Plumstead	TW13SW19
611300	333200	Great Farm Saxthorpe	TG13SW5
611460	332340	Shrub Farm Saxthorpe	TG13SW17
609980	328780	Red Pit Farm Wood Dalling	TG02NE26
612370	322350	Booton Norfolk	TG12SW1
612260	321620	The Grove Booton	TG12SW27
612030	318780	Hall Road Farm Alderford	TG11NW79
612200	314270	Morton Estate Norfolk 7	TG11SW112
612430	313480	Blackbeck Plantation Ringland	TG11SW12
612710	313300	Morton Estate Norfolk 5	TG11SW114
612800	313300	RW1-Ringland	TG11SW99
612800	313300	RW2-Ringland	TG11SW100
612820	313270	Morton Estate Norfolk 6	TG11SW115
612780	313110	Morton Estate Norfolk 4	TG11SW117
612750	310995	A47 Norwich Southern Bypass 7	TG11SW74
612960	309440	Malvern Marlingford	TG10NW33
613560	309440	Cobbs Grove Plantation Marlingford	TG10NW14
614140	308950	North of Algarsthorpe	TG10NW20
614840	307600	Valley Farm; Marlingford	TG10NW76
614680	307580	Valley Farm Barford ABH	TG10NW45
615780	306650	Glenhaven Little Melton	TG10NE87
615310	306570	Church Farm Little Melton	TG10NE43
616440	305810	Burnthouse Lane Hethersett	TG10NE49
616690	304790	Station Lane Hethersett	TG10SE3
617530	304640	Wymondham-Cringleford 28	TG10SE94
617345	304520	Wymondham-Cringleford 27	TG10SE93
617380	304440	Wymondham-Cringleford 35	TG10SE97
617500	304420	East of Hethersett Station	TG10SE7
620750	303700	A47 Norwich Southern Bypass	TG20SW82
621490	303690	A47 Norwich Southern Bypass 148 (T)	TG20SW91
620986	303665	A47 Norwich Southern Bypass 592	TG20SW127
621460	303660	A47 Norwich Southern Bypass 147	TG20SW90
620870	303650	A47 Norwich Southern Bypass 141 (T)	TG20SW83
621360	303650	A47 Norwich Southern Bypass 146 (T)	TG20SW89
620950	303640	A47 Norwich Southern Bypass 142	TG20SW84
620980	303630	A47 Norwich Southern Bypass 144 A	TG20SW87
621160	303630	A47 Norwich Southern Bypass 145	TG20SW88
620950	303620	A47 Norwich Southern Bypass 143	TG20SW85
620970	303600	A47 Norwich Southern Bypass 144 (T)	TG20SW86
618420	303560	South-West of Hall Farm Intwood	TG10SE11
620640	303280	Sports Ground Swardeston	TG20SW166
620640	303280	Sports Ground Lakenham Hewitt	TG20SW112

Easting	Northing	Label	BGS reference
621360	303180	Near Mangreen Hall Swardeston	TG20SW14
620640	303150	Police House Swardeston	TG20SW55
619570	302330	South-West of Hospital Farm Swardeston	TG10SE18

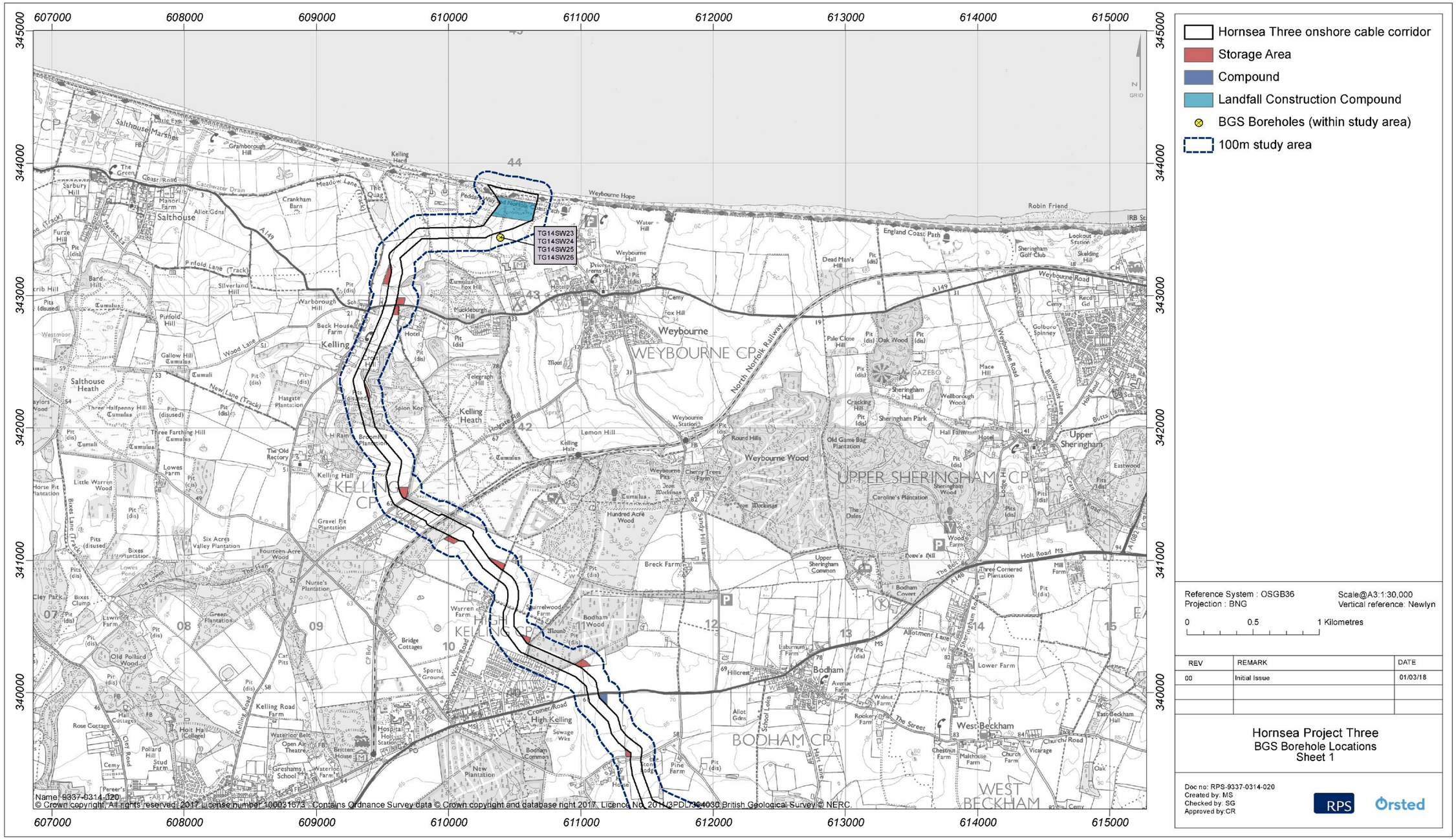


Figure 1.1: BGS Borehole Locations.

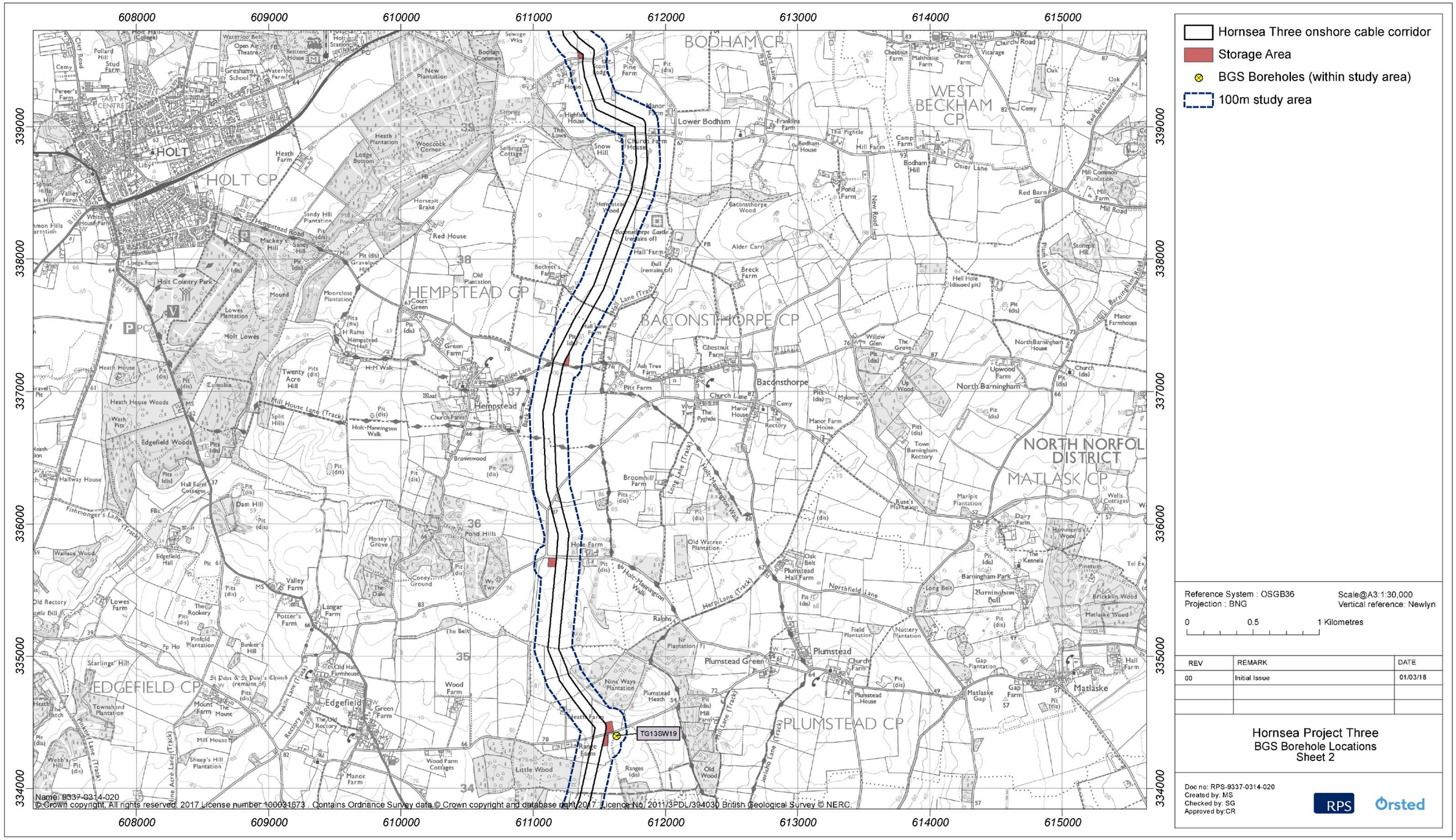


Figure 1.1: BGS Borehole Locations.

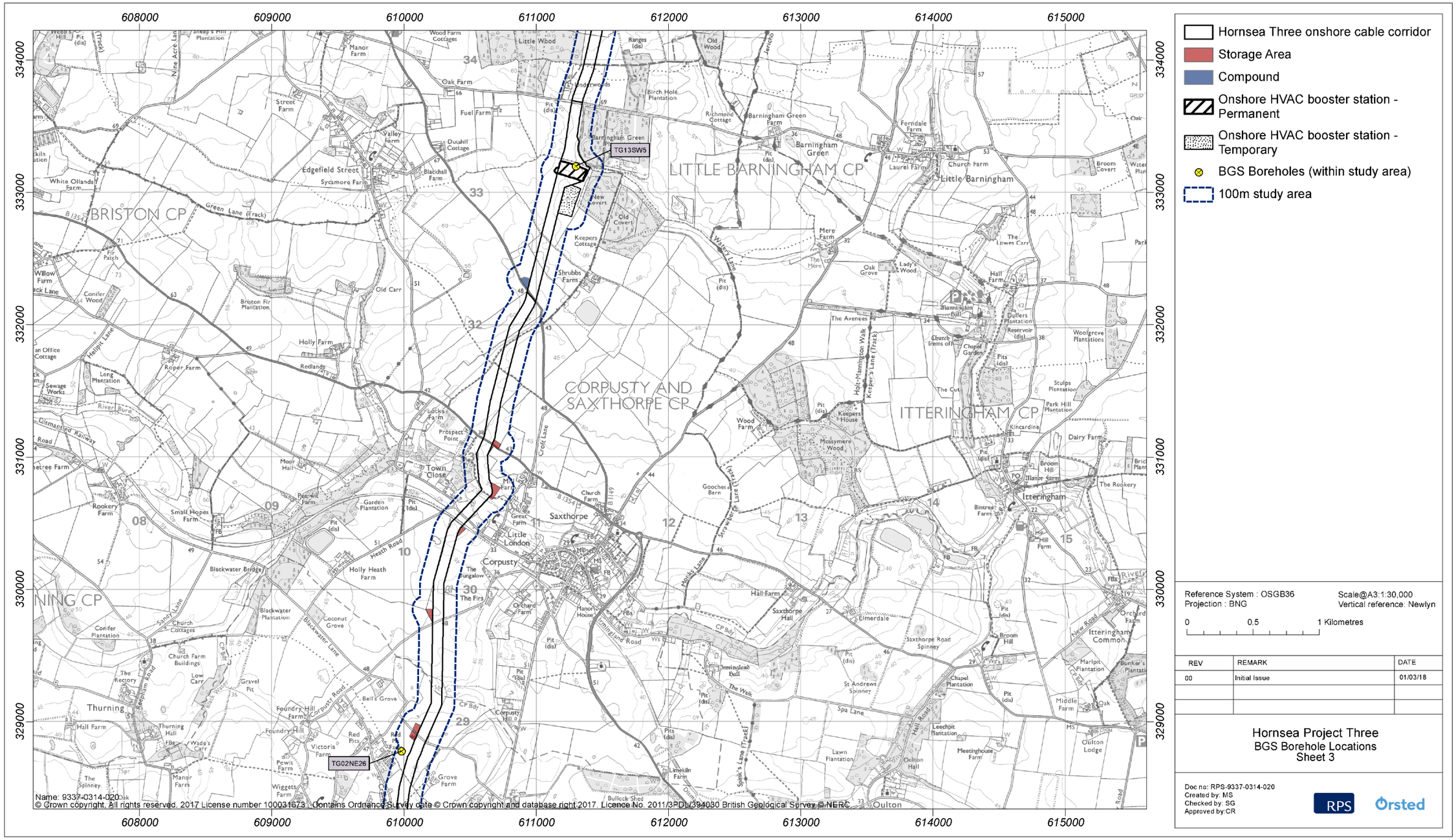


Figure1.1: BGS Borehole Locations.

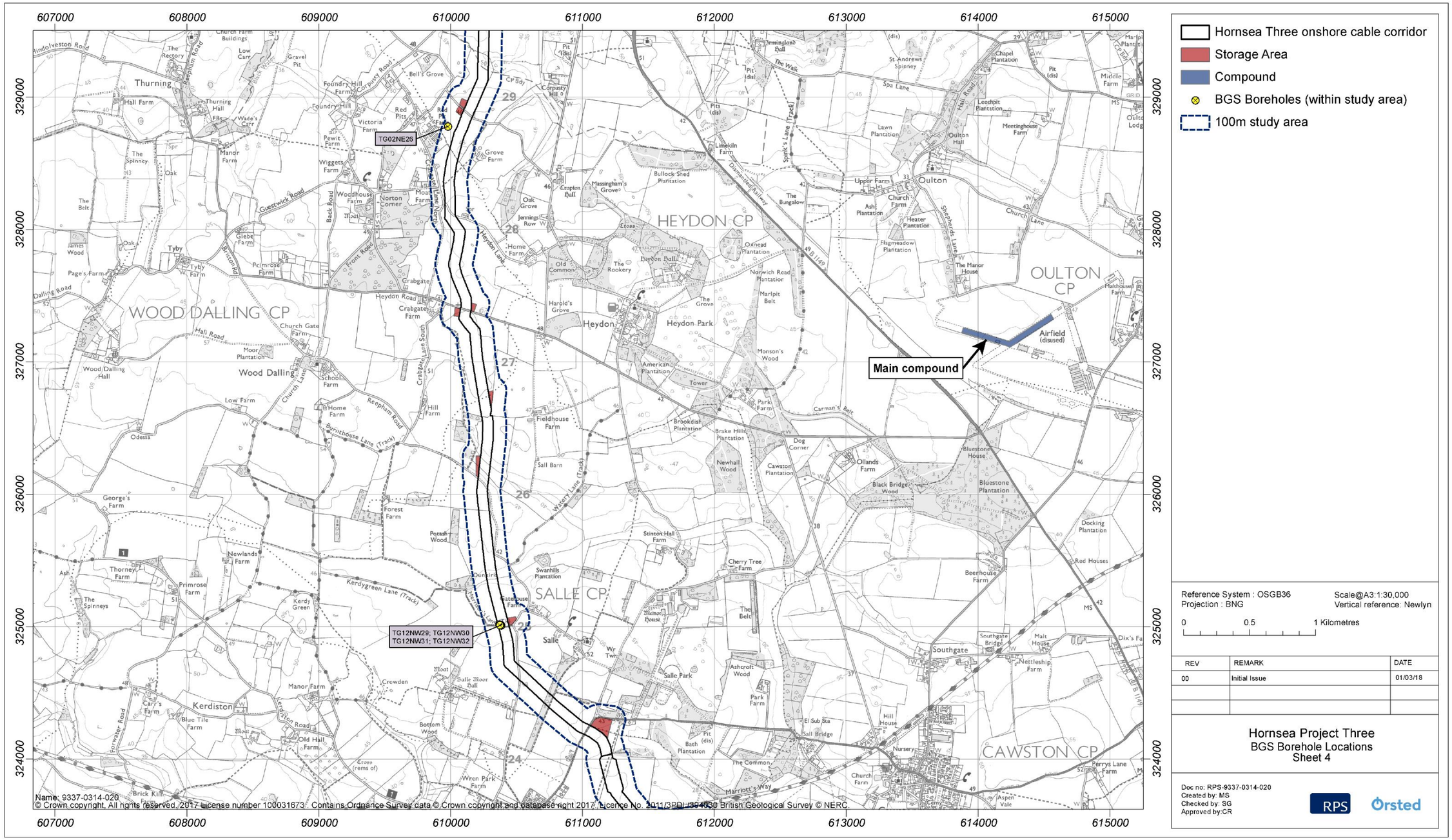


Figure 1.1: BGS Borehole Locations.

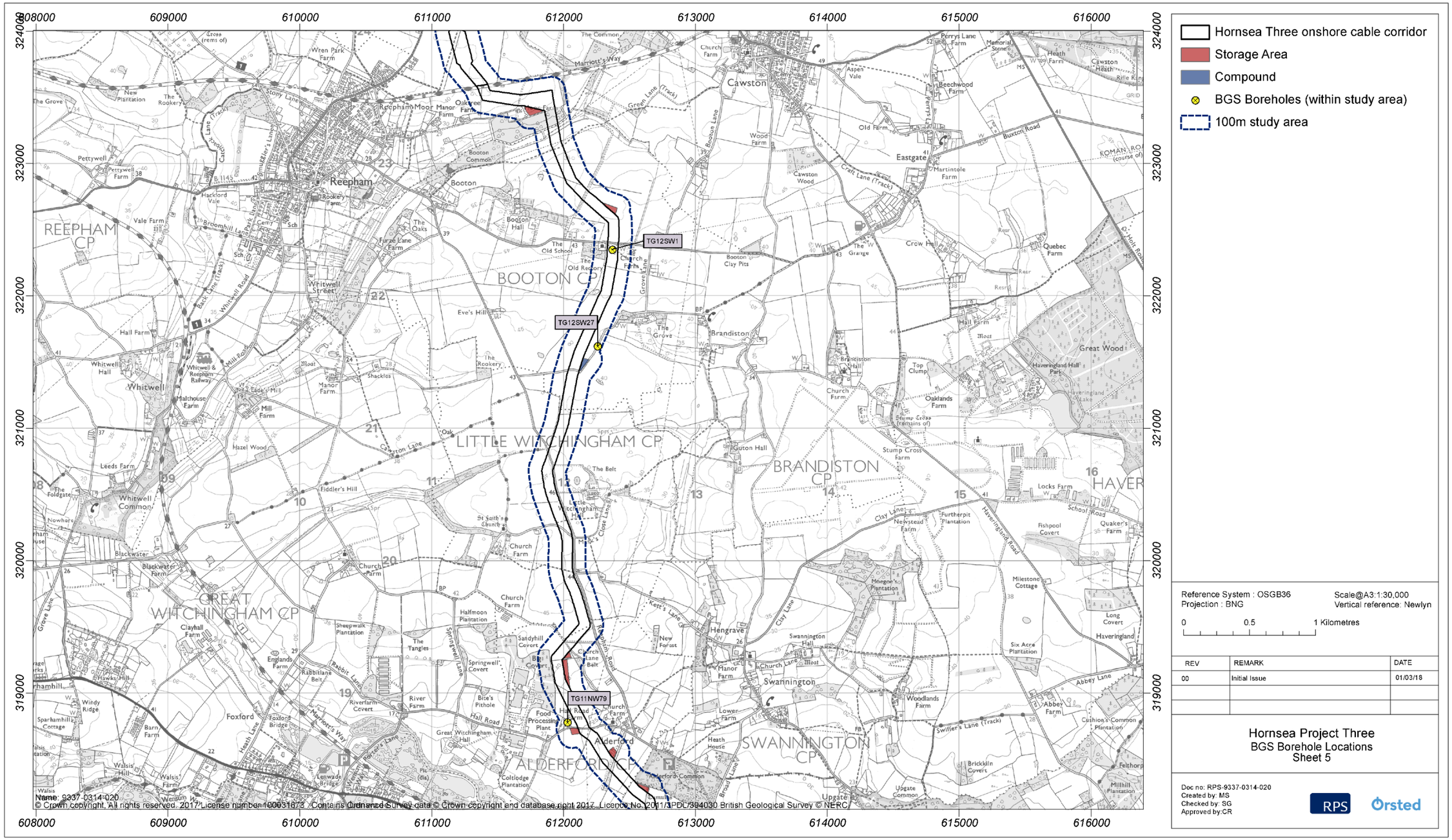


Figure 1.1: BGS Borehole Locations.

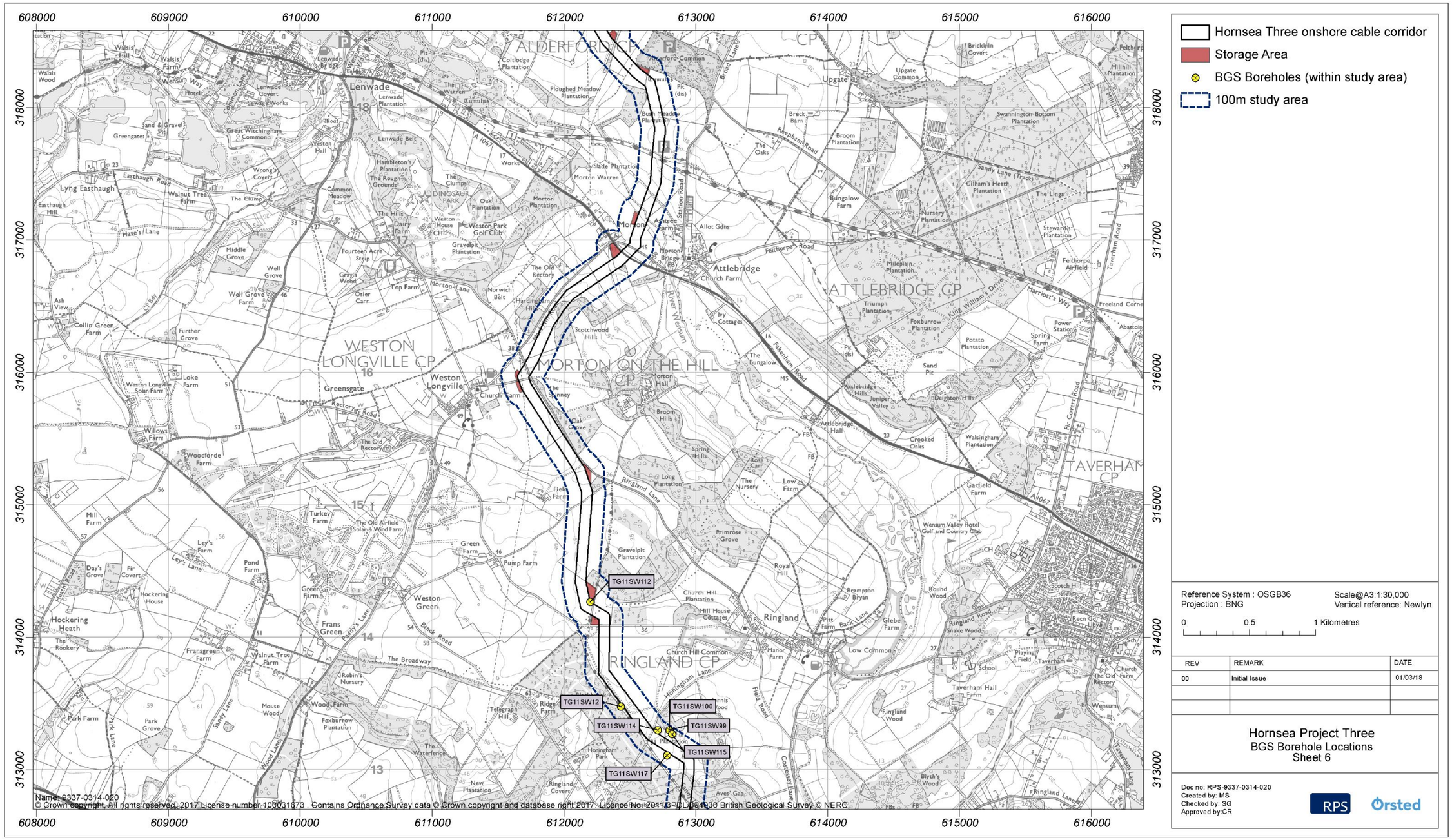


Figure 1.1: BGS Borehole Locations.

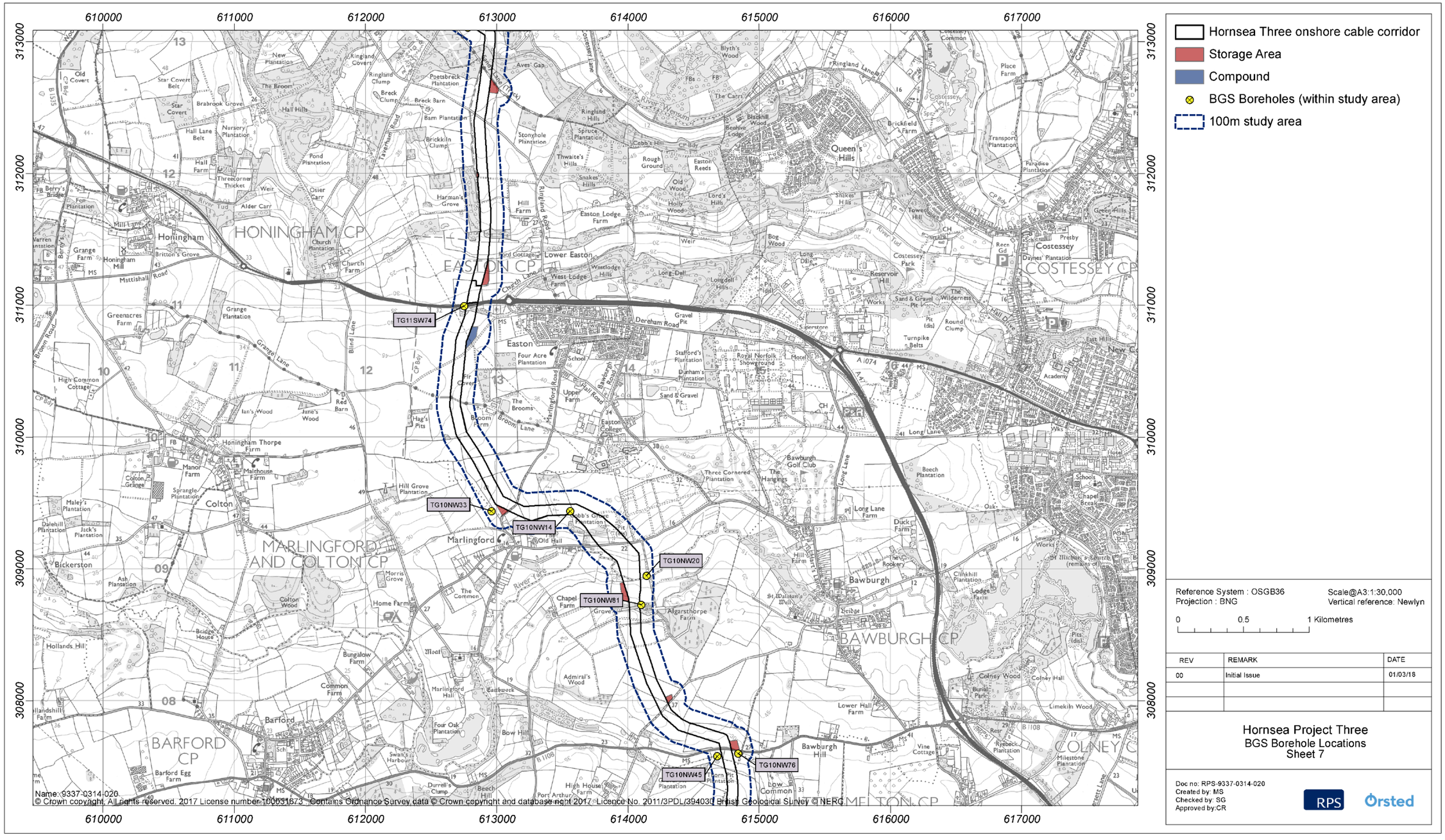


Figure 1.1: BGS Borehole Locations.

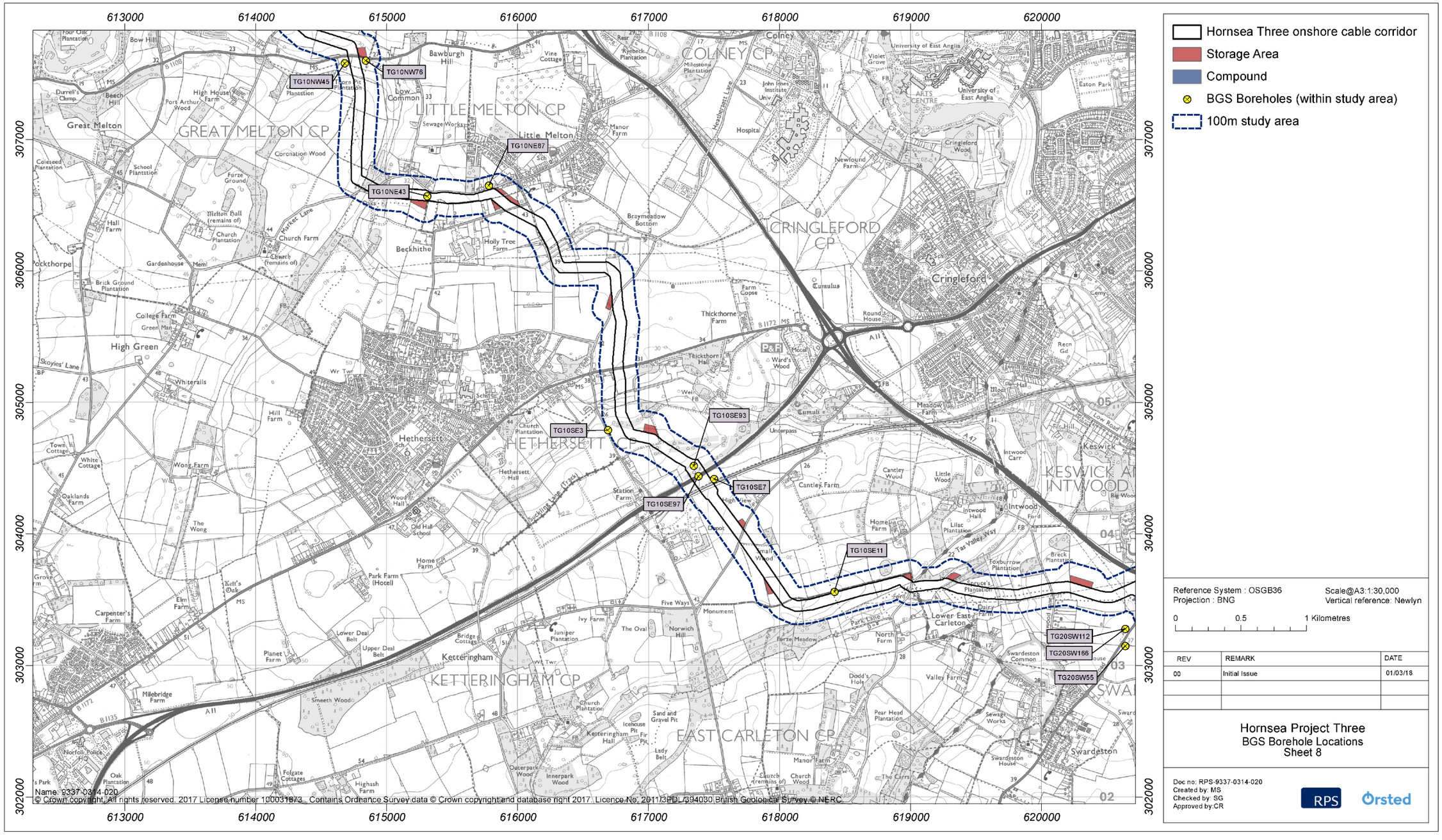


Figure 1.1: BGS Borehole Locations.

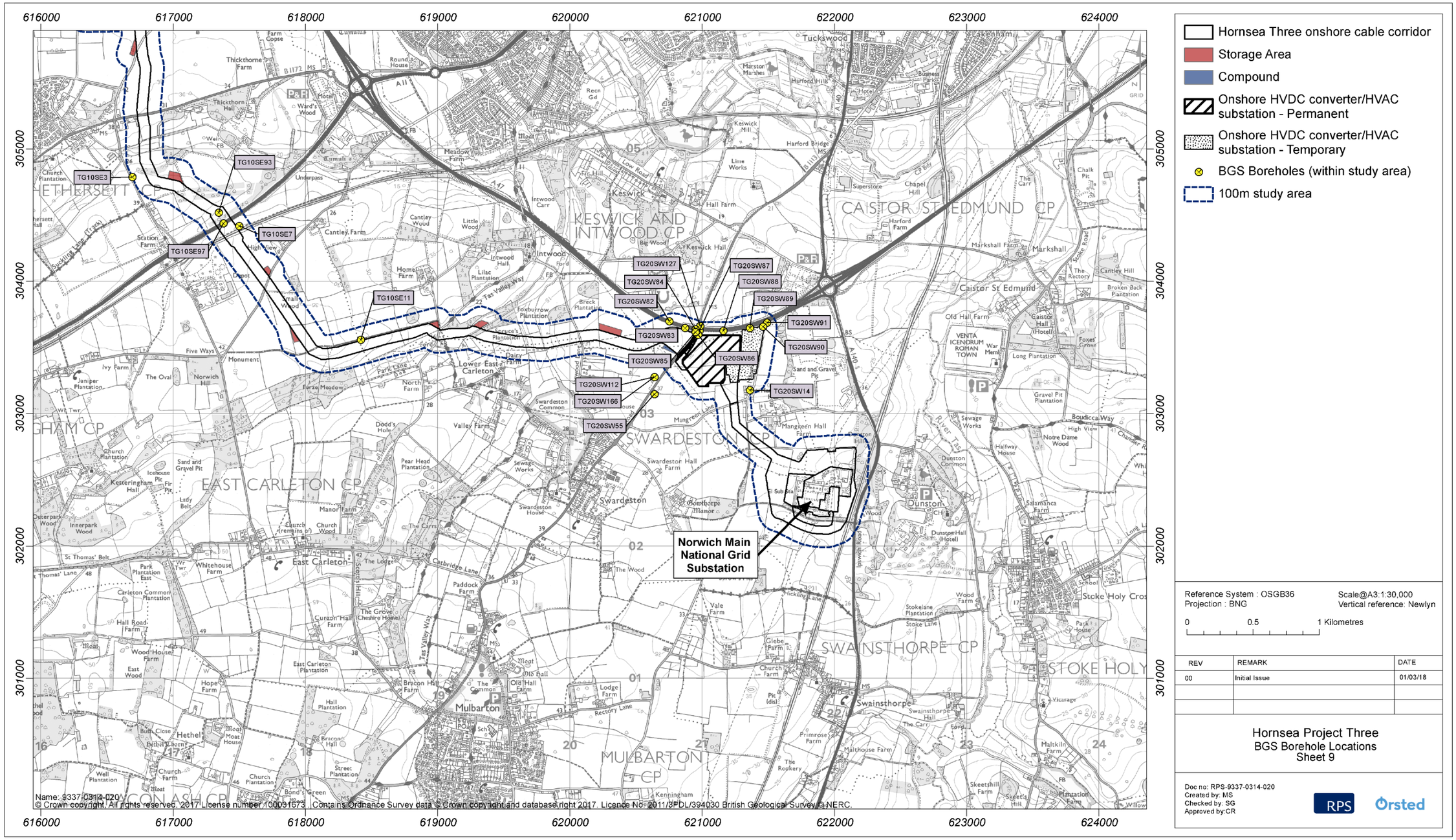


Figure 1.1: BGS Borehole Locations.

Appendix A Borehole Logs

A.1.1 TG14SW23

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG 14SW

BH REGISTRATION NUMBER 23-26

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

131/47 Ministry of Defence, Royal Air Force Station, Weybourne TG14/9

(a) (Disused). Surface +85. Bore 208. Lining tubes: 90 × 6 in; 80 × 4½ in from 65 down. Ck -55. R.W.L. +39. *Buckingham, 1937.* A TG 1039 4344
Yield 2,000 g.p.h. (72 h. test). Sand entered. *1938.*
(b) (Disused). Surface +93. Bore 224. Lining tubes: 197½ × 6 in. Ck -89. R.W.L. +25. Yield 2,350 g.p.h. *Buckingham, 1938.* B TG 1039 4383
Yield 1,500 g.p.h. *Aug. 1947.* R.W.L. +34¾. P.W.L. +21¼. Yield 2,500 g.p.h. *Aug. 1953.* R.W.L. +34. P.W.L. +7. Yield 1,666 g.p.h. *Nov. 1956.* R.W.L. +38. P.W.L. +33¾. Yield 2,600 g.p.h. *Oct. 1960.*
(c) (? Disused). Surface +100. Bore 222 × 6 in. Ck -83. R.W.L. +28. P.W.L. +16. Yield 1,800 g.p.h. (test). *Buckingham, 1939.* C TG 1039 4325
Yield 600 g.p.h. *Aug. 1947.*
(d) Surface +100. Lining tubes: 153¾ × 6 in. Ck -22. Water struck at -40. R.W.L. +18. *R.E., Mar. 1942.* D TG 1036 4317
Yield 1,200 g.p.h. *Aug. 1947.* R.W.L. +32. P.W.L. +19¾. Yield 4,500 g.p.h. *Oct. 1952.* R.W.L. +38. P.W.L. +19¾. Yield 4,000 g.p.h. *Oct. 1960.* R.W.L. +44. *Oct. 1964.*
(e) Surface +45. Bore 250 × 10 in reduced to 8 in at depth. Lining tubes: × 15 in to 51¼; × 12 in to 128¾; × 10 in to 182¼; 76 × 8 in from 174 down (perforated). Ck -73. Water struck at -21 and -c.155. R.W.L. -10. P.W.L. -40. Recovered to -10 in 65 min. Suction -112. Yield 7,060 g.p.h. (14 d. test). *Dando, Apr. 1952.* E TG 1008 4380
R.W.L. -13. P.W.L. -21. Yield 6,300 g.p.h. *Nov. 1956.* R.W.L. -7¼. P.W.L. -12¼. Yield 6,000 g.p.h. *Oct. 1960.*

(d)		Topsoil ...	2	2
	Boulder Clay (Buried channel) 75	Rubble sandy chalk and flints	8	10
		Sandy chalk flints and stones	14	24
		Grey chalk flints and stones	41	65
		Light brown clay, chalk stones and flints ...	10	75
	Sand and Gravel (Buried channel) 47	Sand (blowing) and gravel	46½	121½
		Flints	½	122
	UCk 128	Chalk and flints (top 25 ft very soft)	128	250

pp. W.M. Edmunds 17.2.67

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.

RECORD OF WELL (SHAFT, OR BORE)

131/47 B1

1" O.S. TG14/9

At Weybourne Camp R.A.F. Station

Town or Village Weybourne County Norfolk. Six-inch quarter sheet 10 N.W.E.

Exact site

(A rough sketch-map or a tracing from a map is very desirable)

in parish of

Level of ground surface above sea-level (O.D.) 085. ft. If well starts below ground surface, state how far ft.

Shaft ft., diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.

Details of permanent lining tubes (internal diameters preferred) 90 ft. × 6in.; 80 ft. × 4½in. from 85 ft. down

Water struck at depths of (feet)

Rest-level of water below/above top of well 146 feet. Suction at feet. Yield on hours'/days' test

gallons per (with pump of capacity g.p.h.); depressing water level to feet below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.

Quality (attach copy of analysis if available)

Sunk by F. H. Buckingham for Mr. Date of well 1934

Information from Do.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.	
Boulder Clay	Yellow clay	12		12		
125	Boulder clay	113		125		40
Buried channel Sand and gravel	Hard pan of sand + shingle	15		140		55
Uck	Chalk	68		208		
Wfe det 68	In 1938 this borehole was tested at 2000 gls per hour after 72 hours test fine sand choked the borehole. An attempt to shut out the sand failed & the bore was abandoned.					
	a.b.c.d visited & visited H.H. 15.9.47.					
	Visited. Checked site and O.D. Camp deserted. M.G.C. 23/7/60.					

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

(*11815) Wt.29051/O.369 10,000 9/39 A.& E.W.Ltd. Gp.686

ADDITIONAL INFORMATION SHEET

Licence No. TG14/9

131/47

Date of completion of well catalogue

Date of publication

Additional Sheet No.

DATE	*	ADDITIONAL INFORMATION			INIT.
2/10/70	A	Boulder clay (Buried channel) Yellow clay	12	12	
125		Boulder clay	113	125	
		Sand and gravel (Buried channel) Hard pan of sand and shingle	15	140	
		15			
		Uck Chalk	68	208	
		68			
	B	Soil	4	4	
		Yellow clay	12	16	
		Coarse red sand	36	52	
		Pleist. Drift Yellow clay & sand	8	60	
		(Buried channel) Dark red coarse sand	40	100	
		182 Light yellow sand	10	110	
		Fine grey sand	16	126	
		Boulder clay	39	165	
		Shingle & big stone	17	182	
		Uck Chalk, very good & hard	42	224	
		42			
	C	Soil	3	3	
		Pleist. Drift Clay	16	19	
		(Buried channel) Sand	40	59	
		183 Dark sand	46	105	
		Clay mixed with sand	22	127	

FILMED

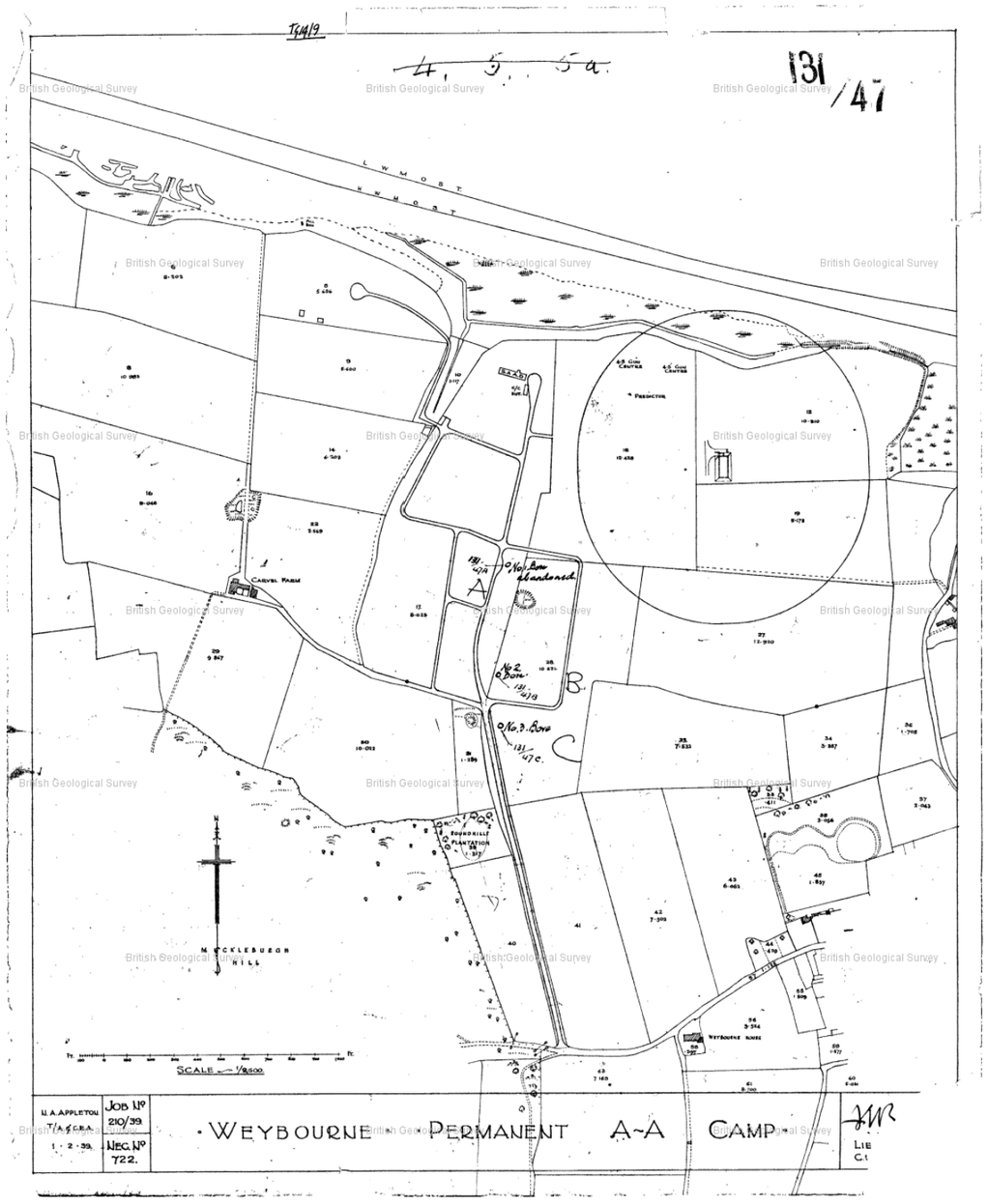
* Insert Well Reference Letter, If More Than One Well At Site

P.T.O.

Section 6	Pumping test	Observ. well	Recorder	E.R. log

GEOLOGICAL SURVEY, WATER DEPARTMENT SOUTH KENSINGTON, LONDON, S.W.7.

(4130) Wt.34984/P.S.127 5m 9/63 G.W.B.Ltd. Gp.863



A.1.2 TG14SW24

BGS 1835

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG14SW

BH REGISTRATION NUMBER 23-26

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

131/47 Ministry of Defence, Royal Air Force Station, Weybourne TG4/9

(a) (Disused). Surface +85. Bore 208. Lining tubes: 90 × 6 in; 80 × 4½ in from 65 down. Ck -55. R.W.L. +39. *Buckingham, 1937.* A TG 1039 4344

Yield 2,000 g.p.h. (72 h. test). Sand entered. *1938.*

(b) (Disused). Surface +93. Bore 224. Lining tubes: 197½ × 6 in. Ck -89. R.W.L. +25. Yield 2,350 g.p.h. *Buckingham, 1938.* B TG 1039 4333

Yield 1,500 g.p.h. *Aug. 1947.* R.W.L. +34¾. P.W.L. +21¼. Yield 2,500 g.p.h. *Aug. 1953.* R.W.L. +34. P.W.L. +7. Yield 1,666 g.p.h. *Nov. 1956.* R.W.L. +38. P.W.L. +33¾. Yield 2,600 g.p.h. *Oct. 1960.*

(c) (? Disused). Surface +100. Bore 222 × 6 in. Ck -83. R.W.L. +28. P.W.L. +16. Yield 1,800 g.p.h. (test). *Buckingham, 1939.* C TG 1039 4325

Yield 600 g.p.h. *Aug. 1947.*

(d) Surface +100. Lining tubes: 153¼ × 6 in. Ck -22. Water struck at -40. R.W.L. +18. *R.E., Mar. 1942.* D TG 1036 4317

Yield 1,200 g.p.h. *Aug. 1947.* R.W.L. +32. P.W.L. +19¼. Yield 4,500 g.p.h. *Oct. 1952.* R.W.L. +38. P.W.L. +19¾. Yield 4,000 g.p.h. *Oct. 1960.* R.W.L. +44. *Oct. 1964.*

(e) Surface +45. Bore 250 × 10 in reduced to 8 in at depth. Lining tubes: × 15 in to 51¾; × 12 in to 128¾; × 10 in to 182¼; 76 × 8 in from 174 down (perforated). Ck -73. Water struck at -21 and -c.155. R.W.L. -10. P.W.L. -40. Recovered to -10 in 65 min. Suction -112. Yield 7,060 g.p.h. (14 d. test). *Dando, Apr. 1952.* E TG 1008 4380

R.W.L. -13. P.W.L. -21. Yield 6,300 g.p.h. *Nov. 1956.* R.W.L. -7½. P.W.L. -12¾. Yield 6,000 g.p.h. *Oct. 1960.*

(d)

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.
	Topsoil ...	2	2
Boulder Clay (Buried channel) 75	Rubble sandy chalk and flints	8	10
	Sandy chalk flints and stones	14	24
	Grey chalk flints and stones	41	65
	Light brown clay, chalk stones and flints ...	10	75
Sand and Gravel (Buried channel) 47	Sand (blowing) and gravel	46½	121½
	Flints	½	122
UCk 128	Chalk and flints (top 25 ft very soft)	128	250

pp. W.M. Edmunds 17.2.67

RECORD OF WELL (SHAFT OR BORE) 131/47B

1" N.S. TG4/9
1" O.S.
Grid F

At R.A. Camp No 2 Bore.
Town or Village Weybourne County Norfolk. Six-inch qua... 10 N.W.E.
Exact site ... in parish of ... (sketch-map ... from a ... map is very desirable)
Level of ground surface above sea-level (O.D.) c 93. ft. If well starts below ground surface, state how far ... ft.
Shaft ... ft., diameter ... ft. Bore ... ft. Diameter of bore: at top 6 ins.; at bottom ... ins.
Details of permanent lining tubes (internal diameters preferred) 197½ ft. × 6in
Water struck at depths of (feet) ...
Rest-level of water below ~~above~~ top of well 68 feet. Suction at ... feet. Yield on ... hours' / days' test 2350 gallons per hour. (with pump of capacity ... g.p.h.); depressing water level to ... feet below top. Time of recovery ... hrs. Amount normally pumped daily ... g.p.h. for ... hours.
Quality (attach copy of analysis if available) ...
Sunk by F. H. Buckingham for Mr. ... Date of well 1938
Information from Do.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
	Soil	4		4	
	Yellow clay	12		16	
	Coarse red sand	36		52	
	Yellow clay & sand	8		60	
	Dark red coarse sand	40		100	
	Light yellow sand	10		110	
	Fine grey sand	16		126	
	Boulder clay	39		165	
	Shingle & big stone	17		182	
	Chalk, very good & hard	42		224	
	Yield 1500 g.p.h. 1947. JK.1 15.8.47.				
	Consumption from b.e.d 40,000 g.p.d on the average.				
	Disused as from 1963 (see sect. 6 card).				

Geological Survey and Museum,
South Kensington,
London, S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)

(*11815) Wt.29051/O.369 10,000 9/39 A.& E.W.Ltd. Gp.686

ADDITIONAL INFORMATION SHEET

Licence No. TG41/9

131/47

Date of completion of well catalogue .....

Date of publication .....

Additional Sheet No. .....

DATE	*	ADDITIONAL INFORMATION			INIT.
2/10/70	A	Boulder clay (Buried channel) Yellow clay	12	12	
125		Boulder clay	113	125	
		Sand and gravel (Buried channel) Hard pan & sand and shingle	15	140	
15					
		VCk Chalk	68	208	
68					
	B	Soil	4	4	
		Yellow clay	12	16	
		Coarse red sand	36	52	
Pleist. Drift		Yellow clay & sand	8	60	
(Buried channel)		Dark red coarse sand	40	100	
182		Light yellow sand	10	110	
		Fine grey sand	16	126	
		Boulder Clay	39	165	
		Shingle & big stone	17	182	
VCk		Chalk, very good & hard	42	224	
42					
	C	Soil	3	3	
Pleist. Drift		Clay	16	19	
(Buried channel)		Sand	40	59	
183		Dark sand	46	105	
		Clay mixed with sand	22	127	

FILMED .....

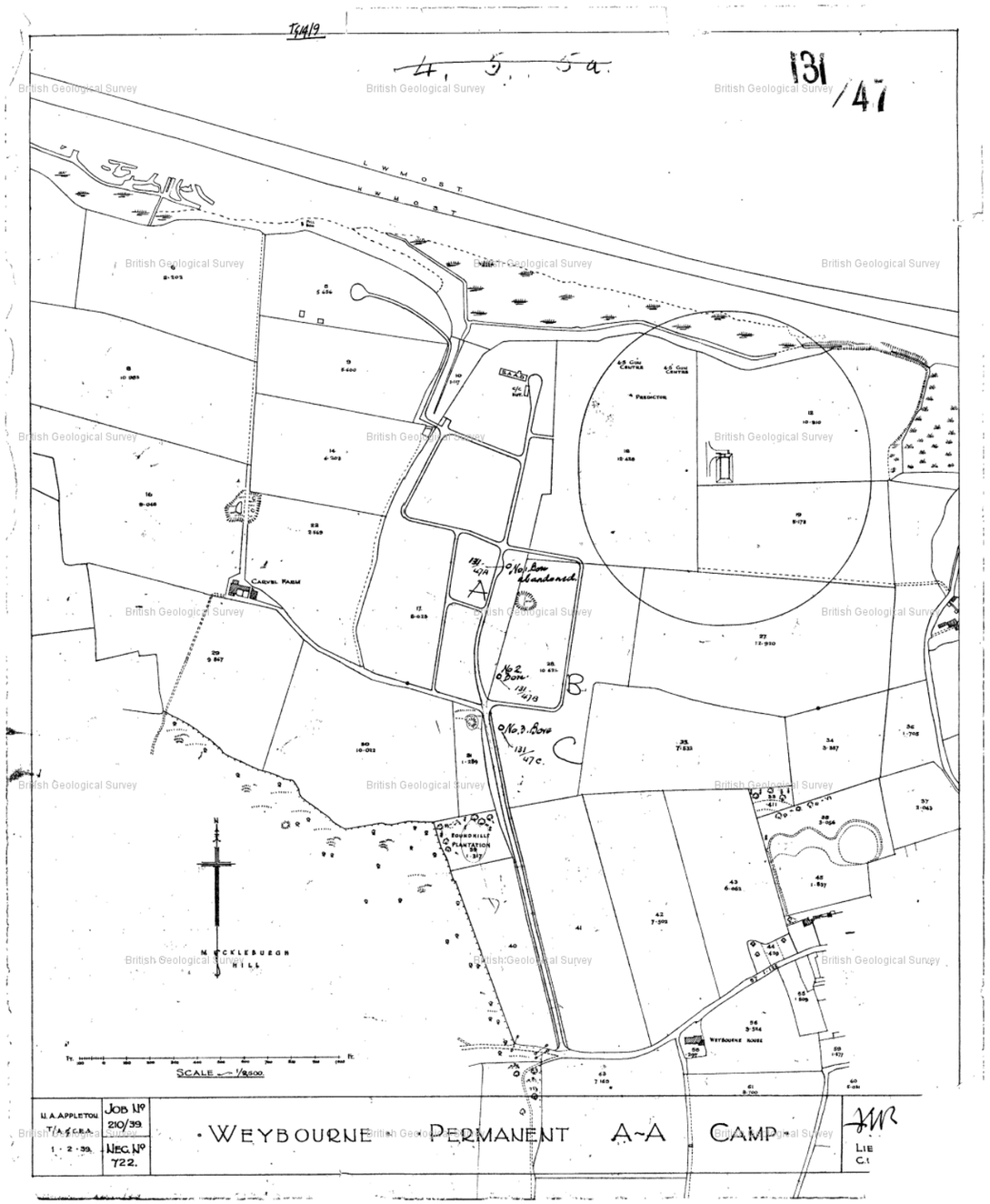
* Insert Well Reference Letter, If More Than One Well At Site

P.T.O.

Section 6	Pumping test	Observ. well	Recorder	E.R. log

Geological Survey, Water Department South Kensington, London, S.W.7.

(4130) Wt.34984/P.5.127 5m 9/63 G.W.B.Ltd. Gp.863



A.1.3 TG14SW25

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG 14 SW

BH REGISTRATION NUMBER 23-26

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

131/47 Ministry of Defence, Royal Air Force Station, Weybourne TG14/9

(a) (Disused). Surface +85. Bore 208. Lining tubes: 90 × 6 in; 80 × 4½ in from 65 down. Ck -55. R.W.L. +39. *Buckingham, 1937.* A TG 1039 4344
Yield 2,000 g.p.h. (72 h. test). Sand entered. *1938.*

(b) (Disused). Surface +93. Bore 224. Lining tubes: 197½ × 6 in. Ck -89. R.W.L. +25. Yield 2,350 g.p.h. *Buckingham, 1938.* B TG 1039 4333
Yield 1,500 g.p.h. *Aug. 1947.* R.W.L. +34¾. P.W.L. +21¼. Yield 2,500 g.p.h. *Aug. 1953.* R.W.L. +34. P.W.L. +7. Yield 1,666 g.p.h. *Nov. 1956.* R.W.L. +38. P.W.L. +33¾. Yield 2,600 g.p.h. *Oct. 1960.*

(c) (? Disused). Surface +100. Bore 222 × 6 in. Ck -83. R.W.L. +28. P.W.L. +16. Yield 1,800 g.p.h. (test). *Buckingham, 1939.* C TG 1039 4325
Yield 600 g.p.h. *Aug. 1947.*

(d) Surface +100. Lining tubes: 153¼ × 6 in. Ck -22. Water struck at -40. R.W.L. +18. *R.E., Mar. 1942.* D TG 1036 4317
Yield 1,200 g.p.h. *Aug. 1947.* R.W.L. +32. P.W.L. +19¼. Yield 4,500 g.p.h. *Oct. 1952.* R.W.L. +38. P.W.L. +19¾. Yield 4,000 g.p.h. *Oct. 1960.* R.W.L. +44. *Oct. 1964.*

(e) Surface +45. Bore 250 × 10 in reduced to 8 in at depth. Lining tubes: × 15 in to 51¼; × 12 in to 128¾; × 10 in to 182¼; 76 × 8 in from 174 down (perforated). Ck -73. Water struck at -21 and -c.155. R.W.L. -10. P.W.L. -40. Recovered to -10 in 65 min. Suction -112. Yield 7,060 g.p.h. (14 d. test). *Dando, Apr. 1952.* E TG 1008 4380
R.W.L. -13. P.W.L. -21. Yield 6,300 g.p.h. *Nov. 1956.* R.W.L. -7¾. P.W.L. -12¾. Yield 6,000 g.p.h. *Oct. 1960.*

(d)

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.
Boulder Clay (Buried channel) 75	Topsoil ...	2	2
	Rubble sandy chalk and flints	8	10
	Sandy chalk flints and stones	14	24
	Grey chalk flints and stones	41	65
	Light brown clay, chalk stones and flints ...	10	75
Sand and Gravel (Buried channel) 47	Sand (blowing) and gravel	46½	121½
	Flints	½	122
UCk 128	Chalk and flints (top 25 ft very soft)	128	250

pp. W.M. Edmunds 17.2.67

RECORD OF WELL (SHAFT OR BORE)

131 / 47 C

At A.A. Camp No 3 Bore
Town or Village Weybourne, Holt
County Norfolk Six-inch quarter sheet 10 N.W.E.
For Mr. W.O.
Exact site of well
Attach a tracing from a map, or a sketch-map, if possible.
Level of ground surface above sea-level (O.D.) 100 feet.
Is well-top at ground level? If not, state how far above / below; feet.
Shaft ft., diameter ft. Details of headings
Bore 222 ft.; diameter of bore: at top 6 ins.; at bottom ins.
Lengths, diameters, perforations, etc., of lining tubes
Water struck at depths, below well-top, of (feet)

TEST DETAILS (Month / Year)
Rest-level of water 72 ft. above / below well-top. Suction at ft. Yield on hours / days
pumping 1800 gallons per hour (max. capacity of pump g.p.h.),
with depression of 12 feet. Recovery to 72' in mins. / hours.

WORKING CONDITIONS
Rest-level of water in (month), (year), ft. above / below well-top.
Highest ,, in (month), (year), ft. above / below ,,
Lowest ,, in (month), (year), ft. above / below ,,
Suction at ft. Rate of pumping galls. per for hours per day.
with average depression of ft. Recovery to in mins. / hours

Quality of water (*attach copy of analysis if available*)
Well made by Buckingham Date of well 1939
Information from

ADDITIONAL NOTES.

Yield 600 g.p.h. 1947. JW. 15.8.47.

LOG OF STRATA OVERLEAF.

Date received.	G.S.M. Office File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map.	on 6" Map.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

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

(For Survey use only) GEOLOGICAL CLASSIFICATION (5)

NATURE OF STRATA (If measurements start below ground surface, state how far...)	Thickness Feet	Thickness Inches	Depth Feet	Depth Inches	
Soil	3	-			
Clay	16	-	19	-	281
Sand	40	-	59	-	141
Dark sand	46	-	105	-	-5
Clay mixed with sand	22	-	127	-	-7
Boulder clay	37	-	164	-	-64
Shingle & stone	19	-	183	-	-83
Chalk	39	-	222	-	

ADDITIONAL INFORMATION SHEET

Licence No. TG1419

131/47

Date of completion of well catalogue .....

Date of publication .....

Additional Sheet No. .....

DATE	*	ADDITIONAL INFORMATION			INIT.
2/10/70	A	Boulder clay (Buried channel) Yellow clay	12	12	
125		Boulder clay	113	125	
		Sand and gravel (Buried channel) Hard pan of sand and shingle	15	140	
15					
Vck		Chalk	68	208	
68					
	B	Soil	4	4	
		Yellow clay	12	16	
		Coarse red sand	36	52	
		Pleist. Drift Yellow clay & sand	8	60	
		(Buried channel) Dark red coarse sand	40	100	
182		Light yellow sand	10	110	
		Fine grey sand	16	126	
		Boulder clay	39	165	
		Shingle & big stone	17	182	
Vck		Chalk very good & hard	42	224	
42					
	C	Soil	3	3	
		Pleist. Drift Clay	16	19	
		(Buried channel) Sand	40	59	
183		Dark sand	46	105	
		Clay mixed with sand	22	127	

FILMED .....

* Insert Well Reference Letter, If More Than One Well At Site

P.T.O.

Section 6	Pumping test	Observ. well	Recorder	E.R. log	Geological Survey, Water Department South Kensington, London, S.W.7.

(4130) Wt.34944/P.S.127 5m 9/63 G.W.B.Ltd. Gp.863

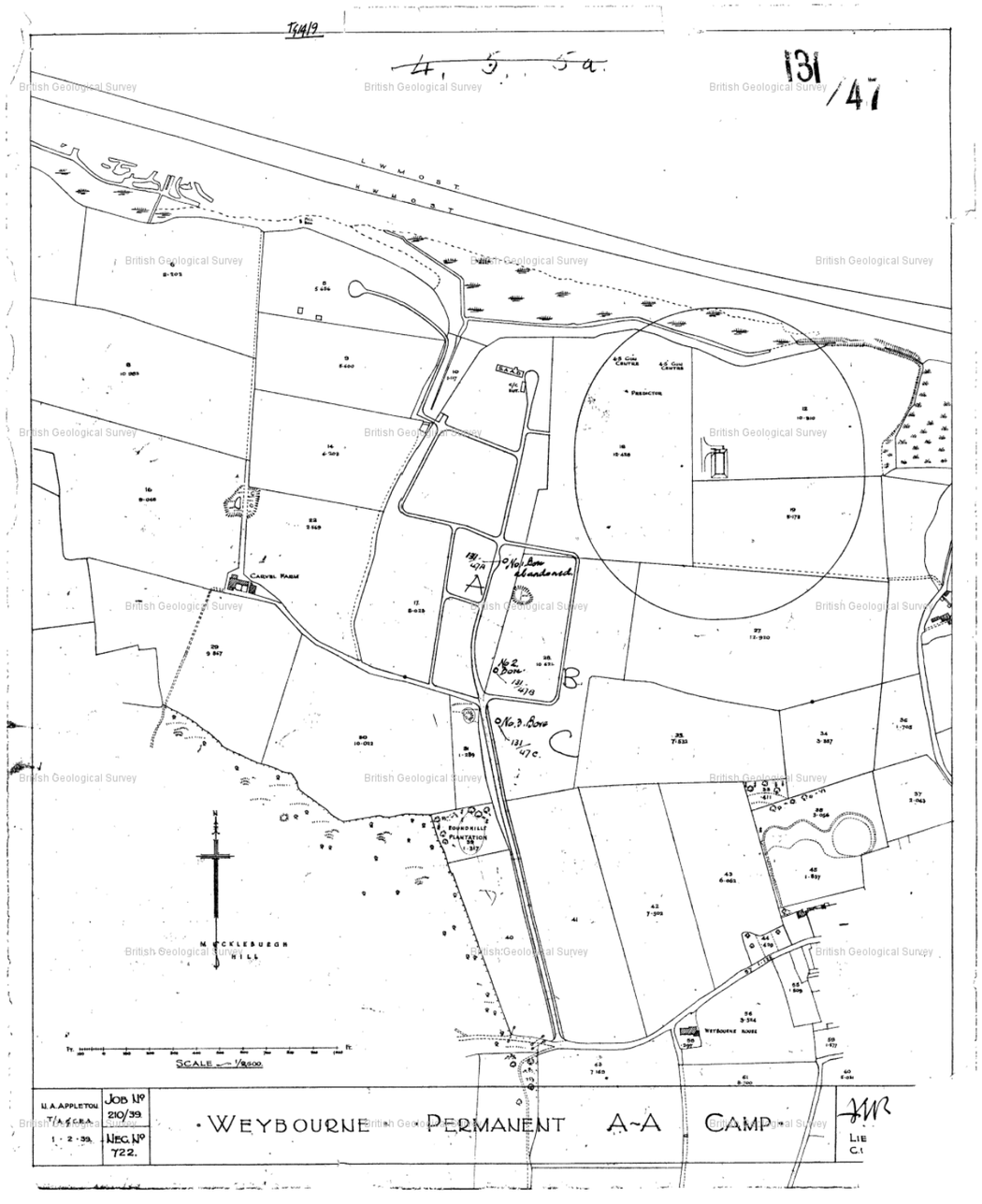
DATE	*	ADDITIONAL INFORMATION			INIT.
		Boulder clay	37	164	
		Shingle & stone	19	183	
	Vck	Chalk	39	222	
	39				
	E	Sand and sandy clay	25	25	
		Sand	13	38	
		Sand and sandy clay	13	51	
	Pleist. Drift	gravel	7	58	
	(Buried channel)	gravel & some clay	7	65	
	118	Sandstone & sand	16	81	
		Sand	9	90	
		Sand & gravel	28	118	
		~~Stiff grey~~			
	Vck	Stiff grey plastic chalk	52	170	
	132	Chalk and flints	80	250	MJC

DATA Bank

FILMED .....

Insert Well Reference Letter, If More Than One Well At Site

Additional Information Sheet No. ..... Commenced .....



A.1.4 TG14SW26

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG 14 SW

BH REGISTRATION NUMBER 23-26

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

131/47 Ministry of Defence, Royal Air Force Station, Weybourne TG14/9

(a) (Disused). Surface +85. Bore 208. Lining tubes: 90 × 6 in; 80 × 4½ in from 65 down. Ck -55. R.W.L. +39. *Buckingham, 1937.* A TG 1039 4344
Yield 2,000 g.p.h. (72 h. test). Sand entered. *1938.*

(b) (Disused). Surface +93. Bore 224. Lining tubes: 197½ × 6 in. Ck -89. R.W.L. +25. Yield 2,350 g.p.h. *Buckingham, 1938.* B TG 1039 4333
Yield 1,500 g.p.h. *Aug. 1947.* R.W.L. +34¼. P.W.L. +21¼. Yield 2,500 g.p.h. *Aug. 1953.* R.W.L. +34. P.W.L. +7. Yield 1,666 g.p.h. *Nov. 1956.* R.W.L. +38. P.W.L. +33¾. Yield 2,600 g.p.h. *Oct. 1960.*

(c) (? Disused). Surface +100. Bore 222 × 6 in. Ck -83. R.W.L. +28. P.W.L. +16. Yield 1,800 g.p.h. (test). *Buckingham, 1939.* C TG 1039 4325
Yield 600 g.p.h. *Aug. 1947.*

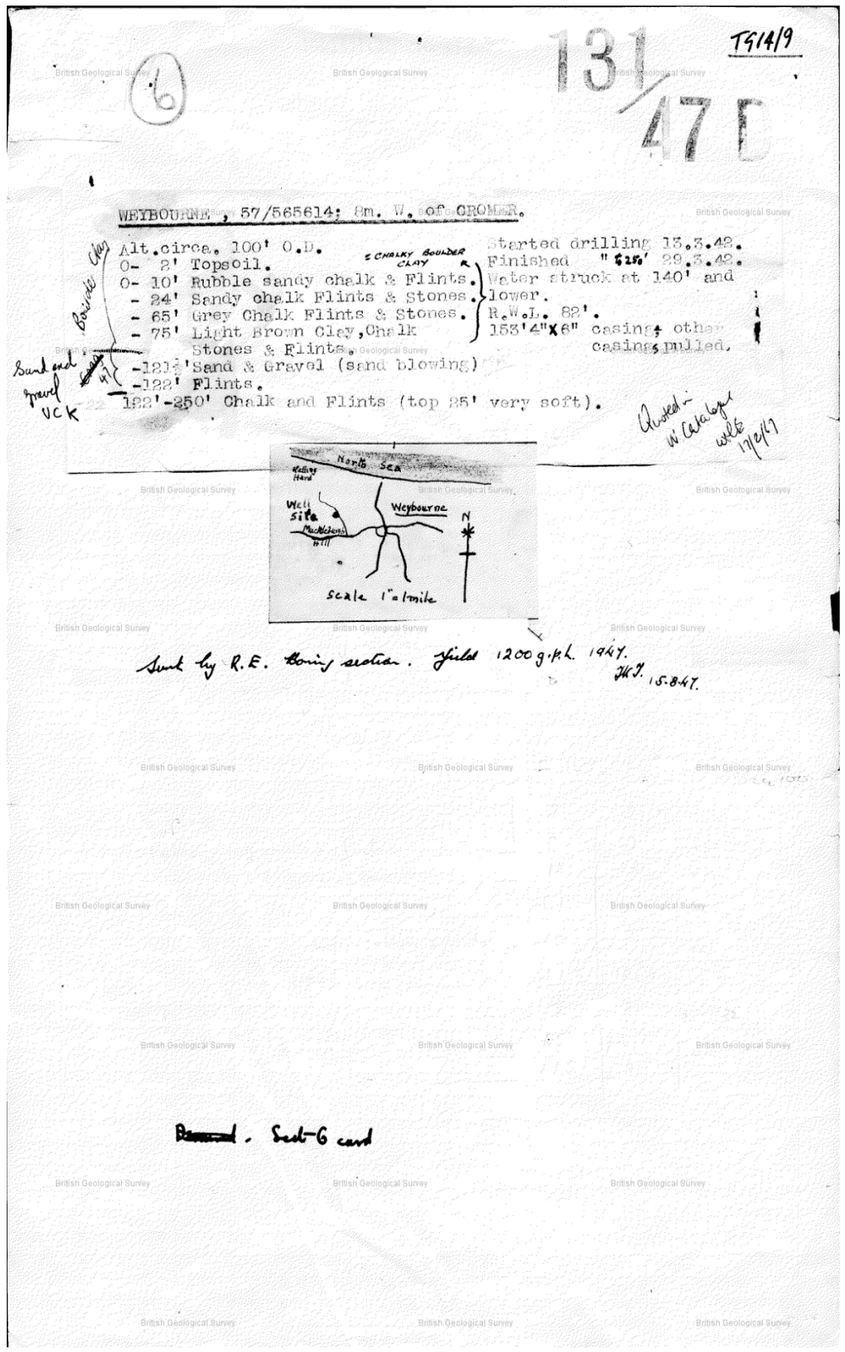
(d) Surface +100. Lining tubes: 153¼ × 6 in. Ck -22. Water struck at -40. R.W.L. +18. *R.E., Mar. 1942.* D TG 1036 4317
Yield 1,200 g.p.h. *Aug. 1947.* R.W.L. +32. P.W.L. +19½. Yield 4,500 g.p.h. *Oct. 1952.* R.W.L. +38. P.W.L. +19¾. Yield 4,000 g.p.h. *Oct. 1960.* R.W.L. +44. *Oct. 1964.*

(e) Surface +45. Bore 250 × 10 in reduced to 8 in at depth. Lining tubes: × 15 in to 51¼; × 12 in to 128¾; × 10 in to 182¼; 76 × 8 in from 174 down (perforated). Ck -73. Water struck at -21 and -c.155. R.W.L. -10. P.W.L. -40. Recovered to -10 in 65 min. Suction -112. Yield 7,060 g.p.h. (14 d. test). *Dando, Apr. 1952.* E TG 1008 4380
R.W.L. -13. P.W.L. -21. Yield 6,300 g.p.h. *Nov. 1956.* R.W.L. -7½. P.W.L. -12¾. Yield 6,000 g.p.h. *Oct. 1960.*

(d)		Topsoil ...	2	2
	Boulder Clay (Buried channel) 75	Rubble sandy chalk and flints	8	10
		Sandy chalk flints and stones	14	24
		Grey chalk flints and stones	41	65
		Light brown clay, chalk stones and flints ...	10	75
	Sand and Gravel (Buried channel) 47	Sand (blowing) and gravel	46½	121½
		Flints	½	122
	UCk 128	Chalk and flints (top 25 ft very soft)	128	250

pp. W.M. Edmonds 17.2.67

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.



RECORD of WELL or BORING

Survey No.
1" N.S. 79
1" O.S.

79/54

at (house or farm) Royal Hotel
Town, Village, &c. RAWCLIFFE County YORKS: W.R. Six-inch map
Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). 25" Edition Sheet
6 in. map. Square
Surface level of ground ft. above Ordnance Datum. Well or Bore commenced at ft. (surface level) of ground.
Sunk ft., diameter ft. Bored ft.; diameter of boring: at top in. bottom in.
Details of lining tubes (internal diameters preferred)

Water struck at depths of (feet)
Rest level of water below / above top of well or bore ft. Pumping level ft. Time of recovery hours.
Suction at ft. depth. Yield: (i) on test galls. per , (ii) normal galls. per
Quality (attach copy of analysis if available)
Made by for Mr. Date of boring 1893
Information from

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	THICKNESS. Inches.	DEPTH. Feet.	DEPTH. Inches.
	For record see:- 'Water Supply of E.Riding' Mem.Geol.Survey,1906 p.69				

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.

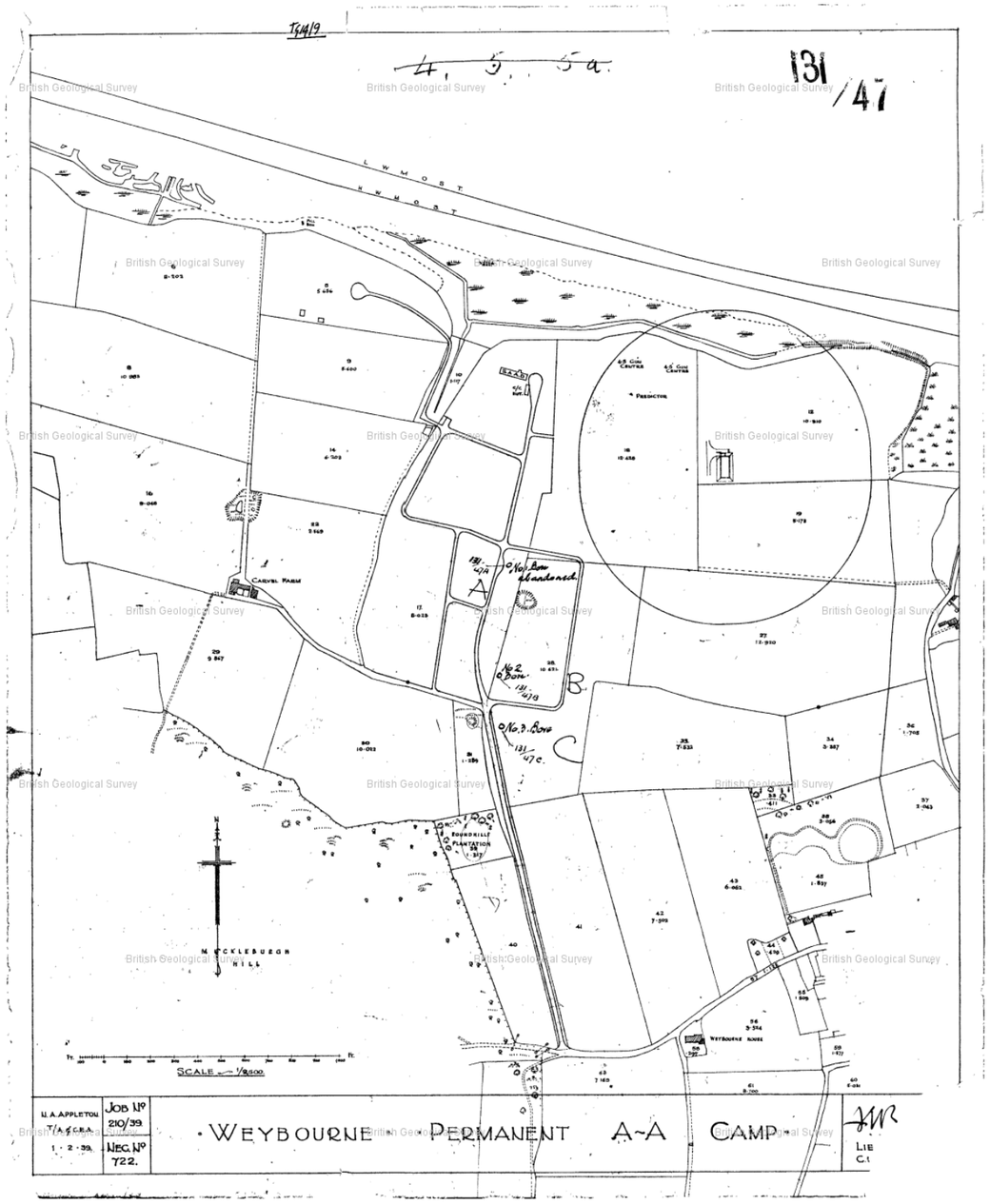
(24738C) Wt 26930/295 5,000 11/36 H, J, R & L, Ld Gp 616

DATE	*	ADDITIONAL INFORMATION			INIT.
		Boulder clay	37	164	
		Shingle & stone	19	183	
	Uck	Chalk	39	222	
	39				
	E	Sand and sandy clay	25	25	
		Sand	13	38	
		Sand and sandy clay	13	51	
	Pleist. Drift	gravel	7	58	
	(Buried channel)	gravel & some clay	7	65	
	118	Sandstone & sand	16	81	
		Sand	9	90	
		Sand & gravel	28	118	
		~~Stiff grey~~			
	Uck	Stiff grey plastic chalk	52	170	
	132	Chalk and flints	80	250	MJK
		DATA Bank			

FILMED

INSERT WELL REFERENCE LETTER, IF MORE THAN ONE WELL AT SITE

Additional Information Sheet No. Commenced



A.1.5 TW13SW19

131/82 Rifle Range, Plumstead TG 1163 3440 TG13/14

Surface +230. Bore 4 in. Lining tubes: × 2¾ in to 120. Ck +38. R.W.L. +145. P.W.L. +130. Yield 600 g.p.h. (test). *Barnham, June 1939.*

Pleist. Drift) Crag)	...	...	192	192
UCk	...	...	54	246

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS ft.	DEPTH ft.
	Sand	110	
192' PLEIST DRIFT CRAG	Sand and clay	45	155
	Sand	17	172
	Black sand	10	182
	Sand and chalk	10	192
	Chalk	5	197
UCHALK 54'	Chalk & flints	32	229
	Chalk	17	246

p.p. W.M. Edmunds
1967

RECORD OF WELL (SHAFT OR BORE)

131 TG13/14
(Lablot) /92

At Ripton Range (Plumstead Parish)
Town or Village ~~Hoxne~~ Heacham.
County Norfolk. Six-inch quarter sheet 18 S.E.W.
For Mr.
Exact site of well { Attach a tracing from a map, or a sketch-map, if possible.

Level of ground surface above sea-level (O.D.) 230 feet.
Is well-top at ground level? Yes. If not, state how far above ; below ; feet.

Shaft ft., diameter ft. Details of headings

Bore 240 ft. ; diameter of bore : at top 4 ins. ; at bottom ins.
Lengths, diameters, perforations, etc., of lining tubes

Water struck at depths, below well-top, of (feet)

TEST DETAILS — Month June, Year 1939:
Rest-level of water 85 ft. ~~above~~ below well-top. Suction at ft. Yield on hours' / days'
pumping 600 gallons per hour (max. capacity of pump g.p.h.),
with depression of 15 feet. Recovery to in mins. / hours.

WORKING CONDITIONS:
Rest-level of water in (month), (year), ft. above / below well-top.
Highest ,, in (month), (year), ft. above / below ,,
Lowest ,, in (month), (year), ft. above / below ,,
Suction at ft. Rate of pumping galls. per for hours per day.
with average depression of ft. Recovery to in mins. / hours

Quality of water (*attach copy of analysis if available*)

Well made by A. W. BARNHAM, Date of well June 1939.
Information from WALSINGHAM-
DO

ADDITIONAL NOTES.

Coal test tube 2 3/4" to 120'
Visited & tested. Still in use intermittently. To details available. WJS 208.47.
Visited. Building locked. MGC 14/7/60.

LOG OF STRATA OVERLEAF.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

Date received.	G.S.M. Office File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map.	on 6" Map.
		~~TM~~ 131			⊙

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

RECORD OF WELL (SHAFT OR BORE)
131 TG13/14 (Lablot) /92
At Ripton Range (Plumstead Parish)
Town or Village ~~Hoxne~~ Heacham.
County Norfolk. Six-inch quarter sheet 18 S.E.W.
For Mr.
Exact site of well — Attach a tracing from a map, or a sketch-map, if possible.
Level of ground surface above sea-level (O.D.) 230 feet.
Is well-top at ground level? Yes. If not, state how far above ; below ; feet.
Shaft ft., diameter ft. Details of headings
Bore 240 ft. ; diameter of bore : at top 4 ins. ; at bottom ins.
Lengths, diameters, perforations, etc., of lining tubes
Water struck at depths, below well-top, of (feet)
TEST DETAILS — Month June, Year 1939:
Rest-level of water 85 ft. ~~above~~ below well-top. Suction at ft. Yield on hours' / days'
pumping 600 gallons per hour (max. capacity of pump g.p.h.),
with depression of 15 feet. Recovery to in mins. / hours.
WORKING CONDITIONS:
Rest-level of water in (month), (year), ft. above / below well-top.
Highest ,, in (month), (year), ft. above / below ,,
Lowest ,, in (month), (year), ft. above / below ,,
Suction at ft. Rate of pumping galls. per for hours per day.
with average depression of ft. Recovery to in mins. / hours
Quality of water (*attach copy of analysis if available*)
Well made by A. W. BARNHAM, Date of well June 1939.
Information from WALSINGHAM-
DO
ADDITIONAL NOTES.
Coal test tube 2 3/4" to 120'
Visited & tested. Still in use intermittently. To details available. WJS 208.47.
Visited. Building locked. MGC 14/7/60.
LOG OF STRATA OVERLEAF.
GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.
(17208) Wt.42901/0877 10,000 2/41 A.& E.W.Ltd. Gp.686

A.1.6 TG13SW5

TG13SW 5 113-332

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PUMP HIRE

BOREHOLES DRILLED ACIDISED & TESTED

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FAX No.: (036287) 612

WELL LOG

CUSTOMER'S NAME: P.J.G. SEAMAN SITE: GREAT FARM, SAXTHORPE.
GRID REF.: TG. 113 332 DATE:
DIA.: LINED TO: 235 FT. 18" DIA. REDUCED AT 235 FT. - 328 FT. 16"

DEPTH	STRATA
0 - 2 FT.	TOP SOIL
2 - 20 FT.	SANDY SUBSOIL
20 - 50 FT.	SAND
50 - 80 FT.	CLAY
80 - 105 FT.	CLAY, BLOWING SAND & FLINT.
105 - 125 FT.	CHALK, FLINT & SAND.
125 - 150 FT.	CHALK.
150 - 252	BLOWING SAND
252 - 328	CHALK & FLINT
328 -	CLAY.

CUSTOMER SIGN DEPTH .....
DRILLER .....
RIG ..... REST WATER LEVEL .....

REGISTERED OFFICE: BRADENHAM ROAD, SCARNING, DEREHAM, NORFOLK

DATA ACQUISITION SHEET

147

CSC/D/163

TG13/103

P25

TG13SW/5

NRA region: ANGLIAN (NORWICH)
File Number: 34/6/G/EN331

Pump Well Identification:
NRA id No: 34/6/G/EN331
BGS (WL) No: TG13/103
NGR: TG 1155 3320
Elevation: [illegible]
Measuring Point:
Site Name: C.J. LEE SHRUB FARM
Locality: EDGEFIELD

Well details:
depth of pumping well: 100m
diameter: 460mm
casing details: 15" solid to 71.2m
☑ observation boreholes
number of obs bhs: 4 bh, in clay 1 well in drift
obs bh details: no details

Aquifer Details:
Leaky
confined / ~~unconfined~~ If confined, confining layer: Drift

Aquifer Geology	from	to	Aquifer Geology	from	to
Sands to 15.15m Clay 24.2m Clay Sand Flint Ch 37.8m Clay Sand 37.8 to 45.45 Sand? CHALK 45.45 to 76.4?		100m			

Pumping Test Details:
STEP TEST 19.3.92
date of test: CONSTANT RATE 11.8.92 - 25.8.92
length of test: 14 days
RWL: 7.37m
PWL: 39.22
Drawdown 32.2m (at 13 l/s?)
pumping rate: 15 l/s

Additional Well Information:

- ☐ Well Loss Data: B..... C..... Efficiency.....
- ☑ Well Acidified
- ☐ Flow Logs
- ☐ Other Geophysical Logs
- ☐ Fissure Information: major inflows from.....to.....
  from.....to.....
  from.....to.....

Aquifer Parameters:

Analysis Type: Transmissivity: see tabulation attached Storage Coefficient:	Analysis Type: Transmissivity: Storage Coefficient:
Analysis Type: Transmissivity: Storage Coefficient:	Other Data: Values used for predictions; T = 160 m²/d S = 2·6 x 10⁻³

Confidence:

excellent ☐ ☑ ☐ ☐ ☐ very poor

Notes: Values for predictive purposes obtained from Jacobs II Distance ddn because these could be gauged against observed drawdowns etc in the area during the test."

TG13/103 P25

RANGE OF VALUES FOR CHALK AQUIFER (EDGEFIELD)

SOURCE	METHOD	KD	S
PROD BORE	EDEN & HAZEL STEP		
	STEP 2	91 m²/d	
	STEP 3	66 m²/d	
	STEP 4	42 m²/d	
-"-	COOPER JACOB PUMPING	91 m²/d , 108 m³/day	
-"-	COOPER JACOB RECOVERY	75 m²/d	
	LATE RECOVERY	24·2 m²/day	
SHRUB FARM OBS BORE	COOPER JACOB EARLY PUMPING	306 m²/d	(1·3 x 10⁻³)
-"-	MIDDLE -"-	455 m²/d	(9·7 x 10⁻⁴)
-"-	LATER -"-	1053 m³/d	(7·7 x 10⁻⁵)
	LATER -"-	1119 m³/d	(6·4 x 10⁻⁵)
	COOPER JACOB RECOVERY	578 m²/day	(2·3 x 10⁻⁶)
-"-	-"-	453 m³/day	(3·3 x 10⁻⁶)
-"-	TYPE CURVE PUMPING DATA	288 m²/d	(1·6 x 10⁻³)
		380 m³/d	(1·7 x 10⁻³)
BLACKHALL FARM	COOPER JACOB PUMPING	1890 m²/d	(3·8 x 10⁻²)
-"-	-"- RECOVERY	1977 m³/d	(2·8 x 10⁻⁸)
		494 m³/d	(9·7 x 10⁻⁷)
SHRUB FARM AGS. BORE	C.J. PUMPING	1987 m³/d	(1·1 x 10⁻³)
	RECOVERY	1557 m³/d	(9·5 x 10⁻⁶)
DISTANCE/DRAWDOWN	JACOB II	162 m²/d	2·6 x 10⁻³

24/06 2002 MON 12:06 FAX 01159363458

TG13SW 5 113-332

DEREHAM WATER SUPPLIES LTD. TG13/103

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GENERATOR HIRE
PUMP HIRE

BOREHOLES DRILLED ACIDISED & TESTED

Tel.: WENDLING (036287) 613
FAX No.: (036287) 612

WELL LOG

CUSTOMER'S NAME: P.J.G. SEAMAN SITE: GREAT FARM, SAXTHORPE.

GRID REF.: TG. 113 332 DATE:

DIA.: LINED TO: 235 FT: 18" DIA; REDUCED AT 235 FT - 328 FT. 6"

DEPTH	STRATA
0 - 2 FT.	TOP SOIL
2 - 20 FT.	SANDY SUBSOIL
20 - 50 FT.	SAND
50 - 80 FT.	CLAY
80 - 105 FT.	CLAY. BLOWING SAND & FLINT.
105 - 125 FT.	CHALK, FLINT & SAND.
125 - 150 FT.	CHALK.
150 - 252	BLOWING SAND
252 - 328	CHALK & FLINT
328 -	CLAY.

CUSTOMER SIGN DEPTH .....

DRILLER .....

RIG ..... REST WATER LEVEL .....

REGISTERED OFFICE BRADENHAM ROAD, SCARNING, DEREHAM, NORFOLK

A.1.7 TG13SW17

RECORD OF WELL

For Survey use only Licence No. L/31/663
147/562
TG13/1

At 8 Street Farm

Town or Village Saxthorpe

County Norfolk.

EXACT SITE OF WELL

Six-inch sheet TG13 SE/W Six-inch National Grid sheet TG 13 SE 3324 TG 13 SE 323

For Mr. C.J.F. Lee State whether owner, tenant, builder, contractor, consultant, etc.:—

Address (if different from above)

* DELETE WHICHEVER IS INAPPLICABLE

Level of ground surface 4.3m O.D. above sea level (O.D.) Approx 175 ft. If well top is not at ground level, state how far above:* / below; ft.

SHAFT ft.; diameter ft.; HEADINGS (please attach details—dimensions and directions)

BORE 179 ft.; diameter of bore: at top in.; at bottom in.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

Water struck at depths of ft. below well top.

TEST CONDITIONS

Rest level of water 48 ft. above* / below well top. Suction at ft. Yield on hours'* / days' test pumping at Tcv galls. per ~~hour~~ with depression to 62 ft. below well top.

Recovery to rest level in 3 ~~hours~~ mins.* Capacity of pump g.p.h. Date of measurements 1965

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type Motive power

Capacity galls. per hour. Suction at ft. below well top.

Amount pumped galls. per day. Estimated consumption galls. per week.

Well made by J. Thirkettle & Son Ltd Date of sinking

Information from Thurston Road Norfolk.

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF.

For Survey use only

Date Received 16.2.66.

Section 6

Pumping test

Observ. well

Recorder

E.R. log

Site marked on

1" map O 10

6" map O 17.2.66. (use symbol)

Record forwarded

to

date

GEOLOGICAL SURVEY, WATER DIVISION, SOUTH KENSINGTON, LONDON, S.W.7.

23/11/59 (3971) W.54188—T.S.17 100L 1/60 M.P.Ltd. G.722

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far	THICKNESS Feet	THICKNESS Inches	DEPTH Feet	DEPTH Inches
Glacial Sand + gravel on Hill.	Top Soil	1	-	1	-
	Loam	3	-	4	-
	Brown Sand	8	-	12	-
	Brown Sand + Stones	7	-	19	-
	Yellow Clay	32	-	51	-
	Brown Sand & layers of clay	37	-	88	-
	Slate grey clay	12	-	100	-
	" " Sand.	22	-	122	-
	Stones	8	-	130	-
U. Chalk.	Chalk.	49	-	179	-

C - 45

24 18 2.66

VE 3

N.11861

147/562

TG13/1

MINISTRY OF HOUSING & LOCAL GOVERNMENT

Section 14 of the Water Act 1945

Licence No. L/31/663

The Norfolk and Suffolk Area (Conservation of Water)

Order 1956

In this licence:-

(a) "the Minister" means the Minister of Housing and Local Government;

(b) a group of two letters and eight figures represents the map co-ordinates of the proposed position of the borehole which is the subject of this licence, estimated to the nearest ten metres on the grid of the national reference system used by the Ordnance Survey on its maps and plans.

The Minister, in exercise of his powers under section 14(6) of the Water Act 1945, hereby licenses Mr. C. J. Lee to construct a borehole for the purpose of abstracting underground water at Shrub Farm, Corpusty in Norfolk, national grid reference TG/11453234, subject to the following conditions:-

1. The depth of the borehole shall not exceed 130 feet.

2. The capacity of the pump to be installed for abstracting water from the borehole shall not exceed 750 gallons per hour.

3. Except with the consent of the Minister given after like proceedings with respect to the publication and service of notices, and the making and hearing of objections, as apply to applications for licences under section 14(6) of the Water Act 1945, not more than 5,000 gallons of water shall be abstracted from the borehole in any one day of 24 hours.

4. If the borehole is not constructed within one year from the date of this licence, the licence shall cease to have effect.

GIVEN under the Official Seal of the

Minister of Housing and Local Government

on 30th November 1964

H. J. RYAN
Assistant Secretary

Ministry of Housing and Local Government

Sited by Norfolk 18SE/W.

N.B. UNDER THE WATER ACT 1945, IT IS AN OFFENCE PUNISHABLE BY FINE TO CONTRAVENE ANY CONDITION ATTACHED TO THIS LICENCE.

R.F sent 12.69.

Page 5a.

A.1.8 TG02NE26

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG 02 NE

BH REGISTRATION NUMBER 12 – 26

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

Eastern A.W.A.

RECORD OF WELL

For Institute use only Licence No. N .....

TG02/95

147 TG02/NE

At RED PIT FARM

Town or Village WOOD DALLING

County NORFOLK

EXACT SITE OF WELL

Six-inch National Grid sheet and reference TG 0998 2878

For D.G. WILLIAMS AND RED PIT FARM LTD.

State whether owner, tenant, builder, contractor, consultant, etc.:

Address (if different from above)

Level of ground surface above sea level (O.D.) ft (m)

*DELETE AS NECESSARY

If well top is not at ground level state how far above:* below: ft (m)

SHAFT ft (m); diameter ft (m);

HEADINGS (please attach details—dimensions and directions)

BORE 200 ft (60.96 m); diameter: at top 8 in (203 mm);

at bottom in (mm)

Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):

Steel lining tubes (115ft) 35.05m.

Water struck at depths of ft (m) below well top

TEST CONDITIONS

Rest level of water ft (m) above* below well top. Suction at ft (m)

Yield on hours'* days' test pumping at galls per (l/s) with

depression to ft (m) below well top. Recovery to rest level in mins* hours

Capacity of pump g.p.h. (l/s)

Date of measurements

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type Motive power

Capacity galls (m³) per hour. Suction at ft (m)

below well top. Amount pumped galls (m³) per day. Estimated

consumption galls (m³) per week

Well made by F.H.V. HEWSON & SON Date of sinking JUNE 1988

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

Received from A.W.A. Norwich Division

Date 22.9.88

Observation well

Recorder

ER log

Site marked on

1" map

6" map—Grid Sheet

(use symbol)

Copy to

Date

INSTITUTE OF GEOLOGICAL SCIENCES
HYDROGEOLOGY UNIT
EXHIBITION ROAD
LONDON SW7 2DE

IGS 2494 10 000 7/79

For Institute use only

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA *If measurements start below ground surface, state how far.*	THICKNESS Feet	Inches	Metres	DEPTH Feet	Inches	Metres
	TOP SOIL AND MADE UP GROUND	4		1·21	4		1·21
	SANDY CLAY	14		4·27	18		5·48
	GREY CLAY	49		14·94	67		20·42
	SANDY CLAY	16		4·87	83		25·29
	GREEN SAND	13		3·97	96		29·26
	GREEN SAND + GRAVEL	2		0·61	98		29·87
	CHALK	102		31·09	200		60·96

TG02/95

F. H. V. HEWSON & SON

Shipdham Thetford Norfolk IP25 7LU
Telephone: Dereham (0362) 820258

- **Boreholes drilled acidised and tested**
- **Pumps supplied and repaired**
- **Generator Hire**
- **Pump Hire**

Members of the Well Drillers Association
WATER SUPPLY ENGINEERS

VAT Reg. No. 106 1372 11

Our Ref: FCH/GH.

Your Ref:

14th June 1988.

Anglian Water Authority,
Norwich Division,
Yare House,
62 - 64, Thorpe Road,
N O R W I C H NR1 1SA.

Dear Sirs,

Red Pit Farm, Wood Dalling.

Herewith details of the borehole recently constructed for Mr D.Williams at the above site.

Depth of Borehole	200 feet.		
Diameter of Borehole	8 inch.		
Steel lining tubes.	115 feet.		
Strata:-			
Top Soil and made up ground	4'	-	4'
Sandy Clay	14'	-	18'
Grey Clay	49'	-	67'
Sandy Clay	16'	-	83'
Green Sand	13'	-	96'
Green Sand and Gravel	2'	-	98'
Calk.	102'	-	200'

We trust the above information meets your requirements.

Yours faithfully,

[redacted]

F.H.V.HEWSON & SON.

21 SEP

PASSED FOR FILING

G.M. Hewson F.C. Hewson

DATA ACQUISITION SHEET

CSC/D/093

P15

NRA region: ANGLIAN (NORWICH)

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

TG02/95

Pump Well Identification:

NRA id No: 34/6/D/218

BGS (WL) No: TG02/95

NGR: TG 099 287

Elevation: c47m OD

Measuring Point: D.G. WILLIAMS

Site Name: RED PIT FARM

Locality: WOOD DALLING

Well details:

depth of pumping well: 61.0m

diameter: 200mm

casing details: plain steel to 35m

☑ observation boreholes

number of obs bhs: 4

obs bh details: NA

Aquifer Details:

confined / ~~unconfined~~ If confined, confining layer: Boulder clay

Aquifer Geology	from	to	Aquifer Geology	from	to
Clay 25.3 STS 30.0 CHALK	30.0	61.0			

Pumping Test Details:

date of test: 28 MARCH 1988

length of test: 5 hours

RWL: 6.32m bgl

PWL: 31.26m bgl at end of test

pumping rate: Av. 1.96l/s; 169m³/d (max 2.2l/s min 1.7l/s) END OF TEST Q = 1.88l/s

Additional Well Information:

☐ Well Loss Data: B..... C..... Efficiency.....

☒ Well Acidified NO

☐ Flow Logs

☐ Other Geophysical Logs

☐ Fissure Information: major inflows from.....to.....
from.....to.....
from.....to.....

Aquifer Parameters:

~~OBS~~ 3 + ?
Analysis Type: JACOB I
Transmissivity: 233 m²/d 150m²/d
Storage Coefficient: 3.32×10^{-4} 2.14×10^{-4}

Analysis Type:
Transmissivity:
Storage Coefficient:

Analysis Type:
Transmissivity:
Storage Coefficient:

Other Data:
Values used for assessment is
T = 233m²/d
S = 3.32×10^{-3}
gave abstraction close to those actually observed

Confidence:

excellent ☐ ☐ ☐ ☐ ☑ very poor

Notes: Massive drawdown recorded for v small yield
Initial Q reduced to prevent wl falling to pump inlet
Flow meter u/s after 8min - Q later reduced further
No recovery readings for first 5min complete recovery by ~~5min~~ 15hrs
Test bh data unusable for abstraction.

A.1.9 TG12SW1

RECORD OF WELL

For Institute use only Licence No. E7|34|11|9|489

TG12SW1

147/606

At .....
.....
Town or Village Booton
County .... Norfolk

EXACT SITE OF WELL

Six-inch National Grid sheet and reference .... TG 1237 2235 .... TG 12 SW
For .... Booton Farms Ltd
State whether owner, tenant, builder, contractor, consultant, etc.: Owner
Address (if different from above) .... Oxnead House, Oxnead, Norwich.
.....
Level of ground surface above sea level (O.D.) ..... ft (.....m)
DELETE AS NECESSARY If well top is not at ground level state how far above: below: .....ft (.....m)
SHAFT.....ft (.....m); diameter.....ft (.....m);
HEADINGS (please attach details—dimensions and directions)
BORE..250.....ft (....76.2...m); diameter: at top.....12.....in (.....mm);
at bottom.....in (.....mm)
Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):
....Lined with 12" dia. tubes to 109 ft.....
.....
.....
.....

TEST CONDITIONS

Water struck at depths of .....ft (.....m) below well top
Rest level of water.....ft (.....m) above* below well top. Suction at..... ft (..... m)
Yield on..... hours'* days' test pumping at.....galls per ..... (..... l/s) with
depression to.....ft (.....m) below well top. Recovery to rest level in ..... mins* hours
Capacity of pump.....g.p.h. (.....l/s)
Date of measurements.....

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:
Make and/or type ..... Motive power.....
Capacity.....galls (.....m³) per hour. Suction at ..... ft (..... m)
below well top. Amount pumped.....galls (.....m³) per day. Estimated
consumption .....galls (.....m³) per week
Well made by T. W. Page & Son Ltd..... Date of sinking.....

LOG OF STRATA OVERLEAF

ADDITIONAL NOTES ANALYSIS (please attach copy if available)
Drillers log attached

Received from .....
AWA
Date 19/8/83
Observation well.....
Recorder .....
ER log .....
Site marked on
1" map .....
6" map—Grid Sheet.....
(use symbol)
Copy to EARSE
.....
Date.....

INSTITUTE OF GEOLOGICAL SCIENCES
HYDROGEOLOGY UNIT
EXHIBITION ROAD
LONDON SW7 2DE

IGS 2494 10 000 7/79

RECORD OF WELL

For Institute use only Licence No. E7|34|11|9|489

147/606
TG12/92

At .....
.....
Town or Village Booton
County .... Norfolk

EXACT SITE OF WELL

Six-inch National Grid sheet and reference .... TG 1237 2235 .... TG 12 SW
For .... Booton Farms Ltd
State whether owner, tenant, builder, contractor, consultant, etc.: Owner
Address (if different from above) .... Oxnead House, Oxnead, Norwich.
.....
Level of ground surface above sea level (O.D.) ..... ft (.....m)
DELETE AS NECESSARY If well top is not at ground level state how far above: below: .....ft (.....m)
SHAFT.....ft (.....m); diameter.....ft (.....m);
HEADINGS (please attach details—dimensions and directions)
BORE..250.....ft (.....m); diameter: at top.....12.....in (.....mm);
at bottom.....in (.....mm)
Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):
....Lined with 12" dia. tubes to 109 ft.....
.....
.....
.....

TEST CONDITIONS

Water struck at depths of .....ft (.....m) below well top
Rest level of water.....ft (.....m) above* below well top. Suction at..... ft (..... m)
Yield on..... hours'* days' test pumping at.....galls per ..... (..... l/s) with
depression to.....ft (.....m) below well top. Recovery to rest level in ..... mins* hours
Capacity of pump.....g.p.h. (.....l/s)
Date of measurements.....

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:
Make and/or type ..... Motive power.....
Capacity.....galls (.....m³) per hour. Suction at ..... ft (..... m)
below well top. Amount pumped.....galls (.....m³) per day. Estimated
consumption .....galls (.....m³) per week
Well made by T. W. Page & Son Ltd..... Date of sinking.....

LOG OF STRATA OVERLEAF

ADDITIONAL NOTES ANALYSIS (please attach copy if available)
Drillers log attached

Received from .....
AWA
Date 19/8/83
Observation well.....
Recorder .....
ER log .....
Site marked on
1" map .....
6" map—Grid Sheet.....
(use symbol)
Copy to EARSE
.....
Date.....

INSTITUTE OF GEOLOGICAL SCIENCES
HYDROGEOLOGY UNIT
EXHIBITION ROAD
LONDON SW7 2DE

IGS 2494 10 000 7/79

147/66
TG12 SW/1

ANGLIAN WATER AUTHORITY - NORFOLK AND SUFFOLK RIVER DIVISION

K.A. Buckley.
B.Sc. Tech, C.Eng.,
M.I.C.E., M.I.W.E.S.
Divisional Engineer.

Our Ref.

Your Ref.

P.O. Box 50,
Norwich.
NR1 1BR

- 7 DEC 1982

The Director,
Institute of Geological Sciences,
Exhibition Road,
South Kensington,
London. S.W.7

Notification of new wells and boreholes for water under the Water Resources Act, 1963

Licence Number E7: 34 : 11 : G : 409: dated the 31/1/77

Consent under Section 24(9) dated the 5/3/70

has been issued to Boston Maltsters Ltd
Oxnead House
Oxnead
Norwich

authorising the construction of a new ~~well~~/borehole at

Nat. Grid Ref: TG 1237 2235. Depth 250 ft/~~m~~ Diameter 6 ins/~~mm~~

by the contractors Messrs T.W. Page & Son
Buxton Road
Aylsham

[redacted]

DIVISIONAL ENGINEER

For Institute use only

Geological Classification	Nature of Strata *If measurements start below ground surface, state how far.*	Thickness Feet	Thickness Inches	Thickness Metres	Depth Feet	Depth Inches	Depth Metres

147/606
LICENCE No. E7/34/11/G/409 TG12SW/1

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

T. W. PAGE & SON LTD.

DIRECTORS: T. W. PAGE J. H. PAGE F. H. PAGE

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
Top soil.....	1 ft.
Brown clay.....	5 ft.
Brown sand.....	45 ft.
Sand and stones....	9 ft.
Grey clay.....	10 ft.
Stones.....	9 ft.
Chalk.....	163 ft.
	250 ft.

C-SG + Till ? Lower tert
wclk.
Flint
9.E.84

We trust these details meet with your requirements.

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

[redacted]

G.E.Brooke.

RIVERS DIVISION No. 2
19 MAY 1976
62 WK/16
12 FT AWH.

Registered in England at 35 Exchange Street, Norwich. Registered No. 756534 V.A.T. Registered No. 105 6983 60

147/606 TG12/92

ANGLIAN WATER AUTHORITY - NORFOLK AND SUFFOLK RIVER DIVISION

K.A. Buckley.
B.Sc. Tech, C.Eng.,
M.I.C.E., M.I.W.E.S.
Divisional Engineer.

Our Ref.

Your Ref.

P.O. Box 50,
Norwich.
NR1 1BR

- 7 DEC 1982

The Director,
Institute of Geological Sciences,
Exhibition Road,
South Kensington,
London. S.W.7

Notification of new wells and boreholes for water under the Water Resources Act, 1963

Licence Number E7: 34 : 11 : G : 409: dated the 31/1/77

Consent under Section 24(9) dated the 5/3/76

has been issued to Booton Farms Ltd
Oxnead House
Oxnead
Norwich

authorising the construction of a new ~~well~~/borehole at

Nat. Grid Ref: TG 1237 2235. Depth 250 ft/~~m~~ Diameter 12 ins/~~mm~~

by the contractors Messrs T.W. Page & Son
Buxton Road
Fretteshen

[redacted]

DIVISIONAL ENGINEER

MLR.

TGR/92
147/606

LICENCE No. E7/34/11/G/409

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

T. W. PAGE & SON LTD.

DIRECTORS: T. W. PAGE I. H. PAGE F. H. PAGE

Water Supply Engineers and Artesian Well Borers
Welding and General Engineers

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Anglian Water Authority,
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Diameter 12"
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Details of strata	Depths in feet
Top soil.....	1 ft.
Brown clay.....	5 ft.
Brown sand.....	45 ft.
Sand and stones....	9 ft.
Grey clay.....	10 ft.
Stones.....	9 ft.
Chalk.....	163 ft.
	250 ft.

1-5+9 Till ? Lowestoft

UCHK

We trust these details meet with your requirements.

PP. FB 9.3.84

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

[redacted]

G.E.Brooke.

RIV... N No. 2
19 MAY 1976
62 GK/16
12 F AWH.

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

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

A.1.10 TG12SW27

BGS 1835

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG12SW

BH REGISTRATION NUMBER 5-34

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

147/72 **The Grove, Booton** (formerly War Department). (? Filled in)
TG 1226 2162
Surface +140. Bore 4 in. Lining tubes: 134½. R.W.L. +124. Yield 600 g.p.h. (test).
Fake, May 1941.
TG12/53

Boulder Clay	5½	5½
Sand and Gravel... ...	53	58½
Boulder Clay	26	84½
Ukk	68¼	152¾

BOULDER CLAY 5½'	TOP SOIL	1' 6"	1' 6"
	BRICK EARTH	4' 0"	5' 6"
SAND AND GRAVEL 53'	LOAM SAND	4' 6"	10' 0"
	LIGHT GREY CLAY	8' 0"	18' 0"
	FINE LIGHT GREY SAND	25' 0"	43' 0"
	LIGHT BROWN SAND	12' 6"	55' 6"
	SAND AND SHINGLE	3' 0"	58' 6"
BOULDER CLAY 26	GREY CLAY	3' 6"	62' 0"
	BLUE CLAY	22' 6"	84' 6"
U. CHALK 68¼	SOFT CHALK (TUBED)	50' 1"	134' 7"
	HARD CHALK	18' 3"	152' 10"

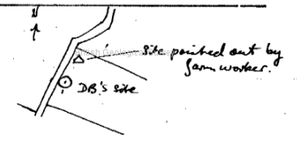
RECORD OF WELL (SHAFT OR BORE)
47/72
TG12/53
now property of The Grove
At Searchlight to R.E.
Town or Village Booton.
County Norfolk Six-inch quarter sheet 35 SE/W.
For Mr. War Office.
Exact site of well 700yds SSW of Church. (Attach a tracing from a map, or a sketch-map, if possible.)
Level of ground surface above sea-level (O.D.) + 140 feet.
Is well-top at ground level? If not, state how far above ; below ; feet.
Shaft ft., diameter ft. Details of headings
Bore 152' 10" ft.; diameter of bore: at top 4 ins.; at bottom ins.
Lengths, diameters, perforations, etc., of lining tubes
Water struck at depths, below well-top, of (feet)

TEST DETAILS
Month May
Year 1941
Rest-level of water 16 ft. above below well-top. Suction at ft. Yield on hours' days'
pumping 600 gallons per hour (max. capacity of pump g.p.h.),
with depression of feet. Recovery to in mins. hours.

WORKING CONDITIONS
Rest-level of water in (month), (year), ft. above below well-top.
Highest „ in (month), (year), ft. above below „
Lowest „ in (month), (year), ft. above below „
Suction at ft. Rate of pumping galls. per for hours per day.
with average depression of ft. Recovery to in mins. hours

Quality of water (*attach copy of analysis if available*)
Well made by W. & G. Fake, Ironwich Date of well May 1941.
Information from Do.

ADDITIONAL NOTES.
Site visited 20/8/47 DAB.
Deceased.
Surface + well tops c + 140.
Sited on Norfolk 35 SE/W.
Visited. Belongs to The Grove, Booton. Site of bore indicated by farmworker slightly north of site given on 6" map. which is beside the former buildings. No trace of bore now — ? filled in. Site not altered.
(2.7.60 ASR.



LOG OF STRATA OVERLEAF.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

Date received.	G.S.M. Office File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map.	Site marked (use symbol) on 6" Map.
May 1941		147		⊙	⊙

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

2

(For Survey use only) GEOLOGICAL CLASSIFICATION

NATURE OF STRATA If measurements start below ground surface, state how far...	Thickness Feet	Thickness Inches	Depth Feet	Depth Inches
Boulder Clay 5½ — Top soil	1	6	1	6
Brickearth	4	.	5	6
Sand and Gravel 53 — Loam sand	4	6	10	-
Light grey clay	8	.	18	-
Fine light grey sand	25	.	43	-
Light brown sand	12	6	55	6
Sand & shingle	3	.	58	6
Boulder Clay 26 — Grey clay	3	6	62	-
Blue Clay	22	6	~~84~~ 155½	6
Lick 68¼ — Soft Chalk (Tubed)	50	1	134	7
Hard Chalk	18	3	152	10

RA/1965

3

RECORD OF WELL (SHAFT OR BORE)

147/72
TG12/58

At
Town or Village Booton, 1¼ mls. S.E. of Fakenham
County Six-inch quarter sheet
For Mr.
Exact site of well See tracing

Attach a tracing from a map, or a sketch-map, if possible.

Level of ground surface above sea-level (O.D.) 130 (140) feet.

Is well-top at ground level? If not, state how far above / below; feet.

Shaft ft., diameter ft. Details of headings

Bore 153 ft.; diameter of bore: at top ins.; at bottom ins.

Lengths, diameters, perforations, etc., of lining tubes 13½ x

Water struck at depths, below well-top, of (feet)

TEST DETAILS (Month / Year)
Rest-level of water 16 ft. above / below well-top. Suction at ft. Yield on hours' / days'
pumping 570 gallons per Hour (max. capacity of pump g.p.h.),
with depression of feet. Recovery to in mins. / hours.

WORKING CONDITIONS
Rest-level of water in (month), (year), ft. above / below well-top.
Highest „ in (month), (year), ft. above / below „
Lowest „ in (month), (year), ft. above / below „
Suction at ft. Rate of pumping galls. per for hours per day.
with average depression of ft. Recovery to in mins. / hours

Quality of water (*attach copy of analysis if available*)

Well made by Date of well ? 1941.
Information from Garrison Engineer, Holt, per W. & H. Gracefield, Ltd.

ADDITIONAL NOTES.

LOG OF STRATA OVERLEAF.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

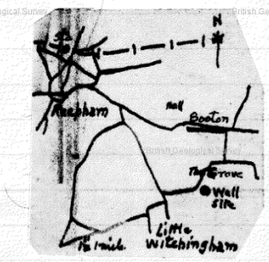
Date received.	G.S.M. Office File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked (use symbol) on 1" Map.	Site marked (use symbol) on 6" Map.

(17208) Wt.42901/0377 10,000 2/41 A.& E.W.Ltd. Gp.686

For Survey use only Geological Classification	Nature of Strata. If measurements start below ground surface, state how far...	Thickness Feet	Thickness Inches	Depth Feet	Depth Inches	
Boulder Clay 52	Topsoil	1	6			
	Brickearth	4	0	5	6	
	Loam sand	4	6	10	0	
Sand and Gravel 53	Light grey clay	8	0	18	0	
	Light grey sand	25	0	43	0	
	Light loam sand	12	6	55	6	54½
	Sand and shingle	3	0	58	6	+81½ 322
Boulder Clay 26	Grey clay	3	6	62	0	+78
	Blue clay	22	6	84	6	+55½
Uck	Soft chalk	40	0	124	6	
	Hard chalk	28 ~~27~~	~~1~~ 0	152	10	

RA/1965

DATA Bank



A.1.11 TG11NW79

BGS 1835

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG11NW

BH REGISTRATION NUMBER 44 - 97

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

1

147/553 Hall Road Farm, Alderford (formerly Red House Farm)

TG11/186

Surface +95. Shaft × c.3. Brick lined. Date unknown.
R.W.L. +43. Handpump. May 1965. TG 1189 1867

58 58

Pleist. Drift)
UCK)

Re-class: fidly

F. Cox.
23.3.71.

NO DETAILS KNOWN

1

RECORD OF WELL

Hall Road

At Red House Farm,

Town or Village Alderford.

County Norfolk.

For Survey use only Licence No.

N.

147/553

TG11/186

EXACT SITE OF WELL

Six-inch sheet 50 NE/W. Six-inch National Grid sheet.

For Mr. & Mrs. Gray State whether owner, tenant, builder, contractor, consultant, etc.:—

Address (if different from above)

* DELETE WHICHEVER IS INAPPLICABLE

Level of ground surface above sea level (O.D.) +c.95 ft. If well top is not at ground level, state how far ... above:* below:* ft.

SHAFT 58 ft.; diameter c.3 ft.; HEADINGS (please attach details—dimensions and directions)

BORE 58 ft.; diameter of bore: at top ... in.; at bottom ... in.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

Water struck at depths of ... ft. below well top.

TEST CONDITIONS

Rest level of water ... ft. above* below* well top. Suction at ... ft. Yield on ... hours'* days'* test pumping at ... galls. per ... with depression to ... ft. below well top.

Recovery to rest level in ... mins.* hours* Capacity of pump ... g.p.h. Date of measurements ...

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

NORMAL CONDITIONS

Make and/or type ... Motive power ...

Capacity ... galls. per hour. Suction at ... ft. below well top.

Amount pumped ... galls. per day. Estimated consumption ... galls. per week.

Well made by ... Date of sinking ...

Information from St. Faith's & Aylsham R.D.C. See letter filed under WE147/Gt. Witchingham,

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

6' 0" water in well - hand pump.
Visited and site checked.
Shaft 58' x c.3. (planked). Brick lined.
R.W.L. 51' 11" b.s.
Hand pump.
OD + c.95
Farm renamed Hall Road Farm.
25/5/65 BN.

DATA Bank

LOG OF STRATA OVERLEAF.

For Survey use only

Date Received 18. 2. 68

Section 6 ...

Pumping test ...

Observ. well ...

Recorder ...

E.R. log ...

Site marked on

1" map O 1/2

6" map O 1. 2. 68.
(use symbol)

Record forwarded

to ...

date ...

GEOLOGICAL SURVEY, WATER DIVISION, SOUTH KENSINGTON, LONDON, S.W.7.

23/11/59 (30P) WL5188—P.S.47 10M 1/60 M.P.Ltd. G.722

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far	THICKNESS Feet	THICKNESS Inches	DEPTH Feet	DEPTH Inches

A.1.12 TG11SW112

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 7 **at** Moreton Estate.

TG11SW/112
1220 1427

For Mr. J.V. Berney.

O/No. 2374 **Boring Completed on** 12.11.62. **O.D. Level**

Boring lined to a Depth of 17'6" **Diameter** 7¼"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Sand & stones.	5	0	5	0				
Sand & gravel.	7	6	12	6				
Mottled clay.	1	0	13	6			Nil.	
Sand.	4	0	17	6				
TOTAL DEPTH	17	6						

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 ~~YES~~/NO

Standard Penetration Tests Carried Out

From	To	Blows
From	To	Blows
From	To	Blows

Boring Foreman's Remarks

Signed [redacted]
For LE GRAND ADSCO LIMITED

A.1.13 TG11SW12

[redacted] Institute of Geological Sciences
Mineral Assessment Unit
Sand and Gravel Survey

BOREHOLE RECORD SHEET

Borehole Reg. No.: TG 11 SW/12
Temporary designation: 3
Nat. Grid Ref.: 124/1348
Locality: Blackbreck Plantation, Ringland.
Date: 31-10-69
Recorded by: A. R. Clayton.

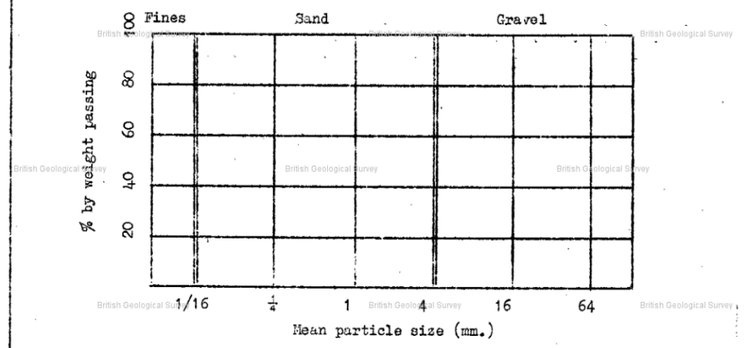
Drilled by: Fitzpatrick
Drill Type: Wirth B1
Hole diameter: 8"
Ground level (O.D.): 128
Water struck at (O.D.): Dry

Horizon	Thickn. m	Thickn. ft.	Nature
Overburden		1	Sandy Soil
Mineral		51	Sand
Baserock		9	Clay & Chalk

Remarks

Grading Curve (from Sampling Analysis Sheet)

Grading percentages:	Fines	Sand	Gravel



Description of Strata	Depth to base ft.	Thickn. ft.	Sample Nos.
Topsoil	1	1	
Med. sand w. fine-med. gravel Sand Med. w. tr. co. SA light brown Gravel Fine &med. SA flint LPS 30	7	6	N969-970
Med. sand w. fine & med. gravel Sand Med. w.co. SA dark brown. Gravel Fine & med. SA irreg. flint w. co. SA occ. SR flint tr. fine SR qtz LPS 40	22	15	N971-975
Med. sand w. fine & med. gravel. Sand } As N975 but light brown Gravel }	25	3	N976
Med. sand w. fine & med. gravel. Sand. As N976 Gravel. As N976 but w. tr. SR irreg. flint cobbles LPS 80	31	6	N977-978

→

[50]

[redacted]

Description of Strata (continued)	Depth to base ft.	Thickn. ft.	Sample Nos.
Med. sand w. fine-med. gravel. Gravel. Fine and med. SA irreg. flint w. SR qtz. LPS 45 Sand. Med. w. tr. co. SA lightbrown.	34	3 co. SA flint &	N979 tr. fine
Med. sand w. fine-med. gravel. Sand. } Gravel. } As N980 but dark brown	37	3	N980
Med. sand w. fine-med. gravel &tr. cobbles. Sand. Med. w. tr. co. SA light brown. Gravel. Fine & med. SA irreg. flint w. co. &fine SRqtz. LPS 12o	52	15 &tr. cobble SA	N981-985 flint
Grey Chalky Boulder Clay	58	6	-
Chalk	61	3	

TG 11 SW 12 1243 1348 **Blackbeck Plantation, Ringland**

Surface level (+39.0 m) +128 ft
Water not struck
Wirth B1, 8 inch diam.
October 1969

Overburden (0.3 m) 1 ft
Mineral (15.6 m) 51 ft
Waste (1.8 m) 6 ft
Bedrock (0.9 m+) 3 ft+

		Thickness (m)	ft	Depth (m)	ft
	Soil.	(0.3)	1	(0.3)	1
Glacial Sand and Gravel	Pebbly sand. Gravel occasionally absent. Gravel: coarse with fine, subangular with traces of subrounded, mainly flint with traces of fine subrounded quartz, with occasional flint cobbles in parts. Sand: fine and medium with traces of coarse, subangular; light to dark brown.	(15.6)	51	(15.9)	52
Boulder Clay	Grey chalky clay.	(1.8)	6	(17.7)	58
Upper Chalk	Chalk.	(0.9+)	3+	(18.6)	61

%	mm	%
Gravel 20	+64	0
	-64+16	13
	-16+4	7
Sand 78	-4+1	5
	-1+¼	39
	-¼+1/16	34
Fines 2	-1/16	2

Depth below surface (ft)	Percentage Fines	Sand	Gravel
1 - 4	2	76	22
4 - 7	1	62	37
7 - 10	0	63	37
10 - 13	1	78	21
13 - 16	1	74	25
16 - 19	2	98	0
19 - 22	3	83	14
22 - 25	6	94	0
25 - 28	0	67	33
28 - 31	8	62	30
31 - 34	2	98	0
34 - 37	1	64	35
37 - 40	0	72	28
40 - 43	0	100	0
43 - 46	2	67	31
46 - 49	2	94	4
49 - 52	11	64	25

92

A.1.14 TG11SW114

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 5 **at** Morston Estate.

TG11SW/114

For Mr. J.V. Berney.

O/No. 2374 **Boring Completed on** 2.11.62. **O.D. Level** 127 1330

Boring lined to a Depth of 23'0" **Diameter** 7¼"

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	Ins	DEPTH Ft	Ins
Loamy sand.	5	0	5	0
Brown clay.	2	3	7	3
Sand & gravel.	10	0	17	3
Loamy sand.	4	9	22	0
Chalk.	5	0	27	0

WATER OBSERVATIONS Date	Time	W.S.	SWL
1.11.62.		12'0"	

TOTAL DEPTH 27 0

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

Disturbed Jar Samples Taken at - 3', 6'6", 7'6", 12'6", 18', 27'.

Two bulk samples taken.

Water Samples Taken ~~YES~~/NO

Standard Penetration Tests Carried Out

	From	To	Blows
	From	To	Blows
	From	To	Blows

Boring Foreman's Remarks

Signed [redacted]
For LE GRAND ADSCO LIMITED

A.1.15 TG11SW99

Eastern L.S. Anglian Water Region, NRA 900066

TG11SW 99 128-133 TG11/212A

* * GEORGE STOW & CO LTD * * Code: AW016

Reading Road - Henley-on-Thames - RG9 1DX TG11SW

BOREHOLE RECORD

Borehole No: RW 1 **Date completed:** 24-09-90 161

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	8	m	"	..... m	"	" 13	m B.G.L.
300	mm	.....	m	"	36 m	"	" 21	m B.G.L.
300	mm	8	m	"	..... m	"	" 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: .....

Remarks: .....

STRATA RECORD

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS METRES	DEPTH METRES
? Glacial Sand and Gravel	light brown sand & stones	2	2
	SAND & CHALK	2	4
	CLAY / CHALK with flints	2	6
Upper Chalk	brown puggy CHALK with flints	2	8
	creamy soft CHALK	7	15
	soft CHALK with flints	24	39
	firm CHALK with flints	26	65

AMM 17/4/91

2001

RECEIVED N.C.D.C. DATE: 5 NOV 1990 SIG:

Eastern L.S. Anglian Water 900066

Tg11/212A

* * GEORGE STOW & CO LTD * * Code: AW016

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

Tg11SW

BOREHOLE RECORD

Borehole No: RW 1 **Date completed:** 24-09-90 161

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	8	m	"	..... m	"	" 13	m B.G.L.
300	mm	.....	m	"	36 m	"	" 21	m B.G.L.
300	mm	8	m	"	..... m	"	" 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: .....

Remarks: .....

STRATA RECORD

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	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
	firm CHALK with flints	26	65

A.1.16 TG11SW100

Eastern L.S. Anglian Water. Region, NRA

900066

TG11SW 100 128-133

TG11/212B

* * GEORGE STOW & CO LTD * * Code: AW017

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

TG11SW

BOREHOLE RECORD

Borehole No: RW 2 **Date completed:** 4-09-90

161

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

Diameter		Length Inserted						
450	mm	20.5	m	Plain	..... m	Slotted	Top At 0.5	m A.G.L.
300	mm	8	m	"	..... m	"	" 17	m B.G.L.
300	mm	.....	m	"	36 m	"	" 25	m B.G.L.
300	mm	4	m	"	..... m	"	" 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.

STRATA RECORD

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS METRES	DEPTH METRES
"Glacial loam and Marl" - possibly Kesgrave Brickearth	brown sandy soil	2	2
	brown clay	4	6
	grey-brown sandy CLAY	4	10
Upper Chalk	puggy CHALK, flints at base	10	20
	CHALK with flints	45	65

MM 17/4/91

RECEIVED N.S.D.C.
DATE 15 NOV 1990
SIG [redacted]

.....2002.....

Eastern L.S. Anglian Water.

900066

TG11/212B

* * GEORGE STOW & CO LTD * * Code: AW017

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

TG11SW

BOREHOLE RECORD

Borehole No: RW 2 **Date completed:** 4-09-90

161

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.): .....m

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

Details of Permanent Lining Tubes

Diameter		Length Inserted						
450	mm	20.5	m	Plain	..... m	Slotted	Top At 0.5	m A.G.L.
300	mm	8	m	"	..... m	"	" 17	m B.G.L.
300	mm	.....	m	"	36 m	"	" 25	m B.G.L.
300	mm	4	m	"	..... m	"	" 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.

STRATA RECORD

GEOLOGICAL CLASSIFICATION	NATURE OF STRATA	THICKNESS METRES	DEPTH METRES
	brown sandy soil	2	2
	brown clay	4	6
	grey-brown sandy CLAY	4	10
	puggy CHALK, flints at base	10	20
	CHALK with flints	45	65

A.1.17 TG11SW115

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 6 at Moreton Estate.
For Mr. J.V. Berney.
O/No. 2374 Boring Completed on 7.11.62. O.D. Level
Boring lined to a Depth of 15'0" Diameter 7¼"

TG11SW/115
1282 1327

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Sand & stones.	2	0	2	0				
Sand.	14	0	16	0				
TOTAL DEPTH			16	0				

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

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

Water Samples Taken ~~YES~~/NO
Standard Penetration Tests Carried Out

From	To	Blows
From	To	Blows
From	To	Blows

Boring Foreman's Remarks

Signed [redacted]

A.1.18 TG11SW117

LE GRAND ADSCO LIMITED

RECORD OF TEST BORING No. 4 at Moreton Estate.
For Mr. J.V. Berney.
O/No. 2374 Boring Completed on 5.11.62. O.D. Level
Boring lined to a Depth of 28'0" Diameter 7¼"

TG11SW/117
1278 1311

BORING FOREMAN'S STRATA RECORD	THICKNESS Ft	THICKNESS Ins	DEPTH Ft	DEPTH Ins	WATER OBSERVATIONS Date	Time	W.S.	SWL
Sand & stones.	2	0	2	0				
Sand.	26	0	28	0			Nil.	
TOTAL DEPTH			28	0				

SAMPLING DETAILS

Lab Location No.

Undisturbed Core Samples Taken at

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

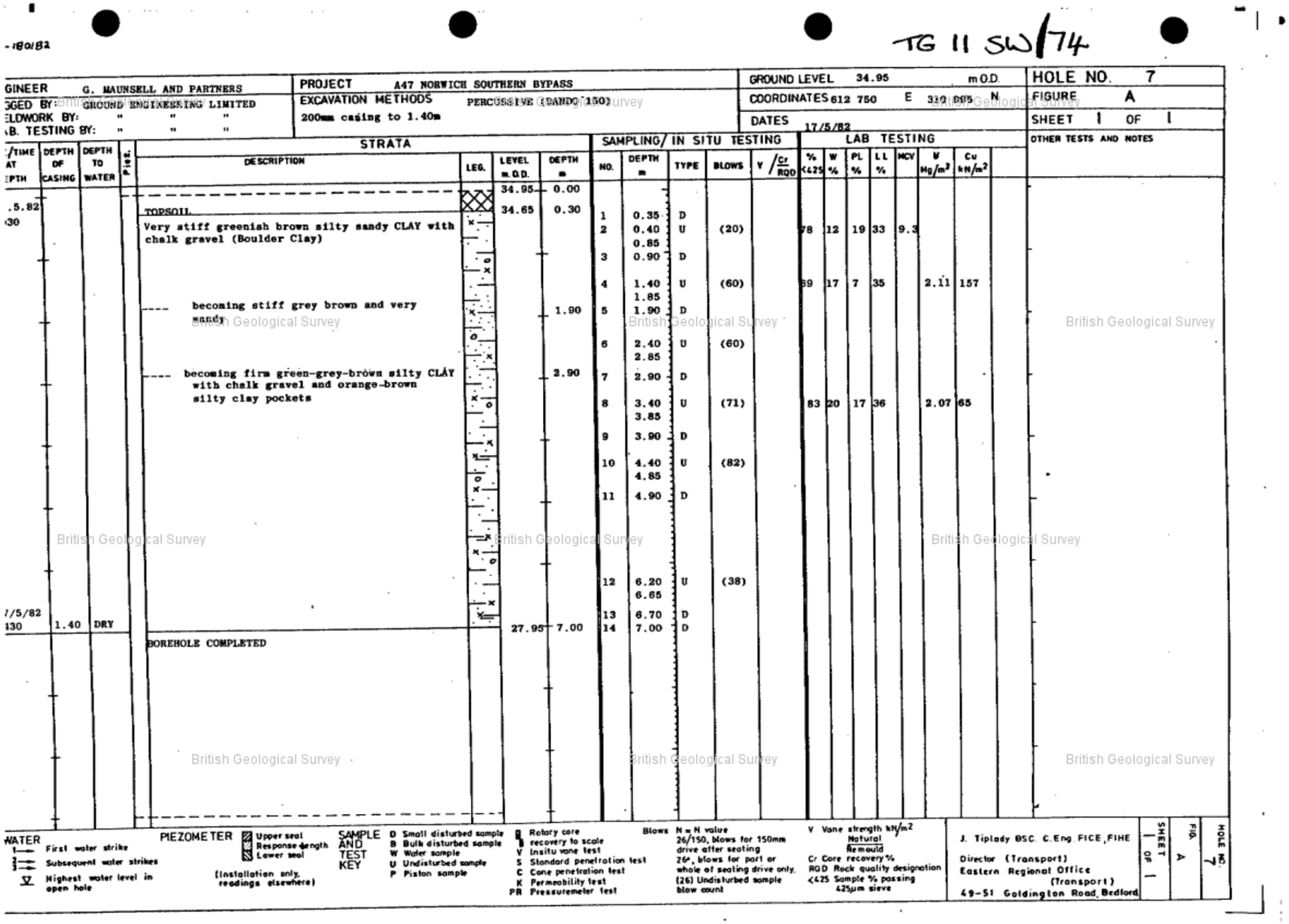
Water Samples Taken ~~YES~~/NO
Standard Penetration Tests Carried Out

From	To	Blows
From	To	Blows
From	To	Blows

Boring Foreman's Remarks

Signed [redacted]
For LE GRAND ADSCO LIMITED

A.1.19 TG11SW74



-18/1/82

TG 11 SW/74

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 34.95 m O.D.	HOLE NO. 7
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS PERCUSSIVE (DANDO 150)	COORDINATES 612 750 E 310 895 N	FIGURE A
FIELDWORK BY: " " "	200mm casing to 1.40m	DATES 17/5/82	SHEET 1 OF 1
LAB. TESTING BY: " " "			OTHER TESTS AND NOTES

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	FIELD RECORDS	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	M Mg/m³	Cu kN/m²
						34.95	0.00												
15.5.82 0930				TOPSOIL		34.65	0.30	1	0.35	D									
				Very stiff greenish brown silty sandy CLAY with chalk gravel (Boulder Clay)				2	0.40 0.85	U	(20)		78	12	19	33	9.3		
								3	0.90	D									
								4	1.40 1.85	U	(60)		89	17	7	35		2.11	157
				becoming stiff grey brown and very sandy			1.90	5	1.90	D									
								6	2.40 2.85	U	(60)								
				becoming firm green-grey-brown silty CLAY with chalk gravel and orange-brown silty clay pockets			2.90	7	2.90	D									
								8	3.40 3.85	U	(71)		83	20	17	36		2.07	65
								9	3.90	D									
								10	4.40 4.85	U	(82)								
								11	4.90	D									
								12	6.20 6.65	U	(38)								
17/5/82 1130	1.40	DRY						13	6.70	D									
				BOREHOLE COMPLETED		27.95	7.00	14	7.00	D									

WATER
1 First water strike
2 Subsequent water strikes
3 Highest water level in open hole

PIEZOMETER
Upper seal
Response zength
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core
recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

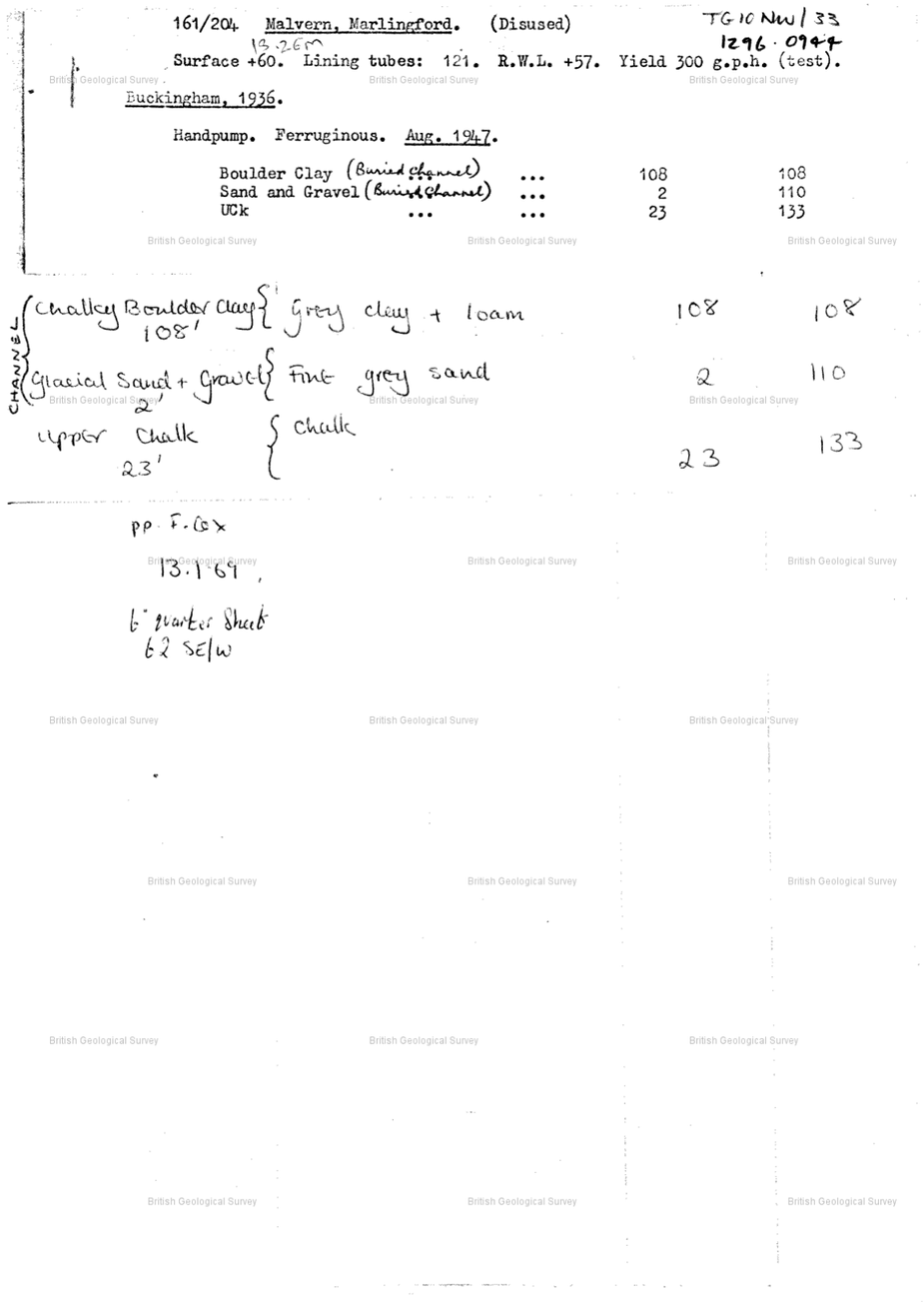
Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425µm sieve

J. Tiplady BSC. C.Eng. FICE, FIHE
Director (Transport)
Eastern Regional Office (Transport)
49-51 Goldington Road, Bedford

SHEET 1 OF 1 | FIG. A | HOLE NO. 7

A.1.20 TG10NW33



161/204 Malvern, Marlingford. (Disused) TG 10 NW / 33
13.26m 1296 · 0944
Surface +60. Lining tubes: 121. R.W.L. +57. Yield 300 g.p.h. (test).
Buckingham, 1936.

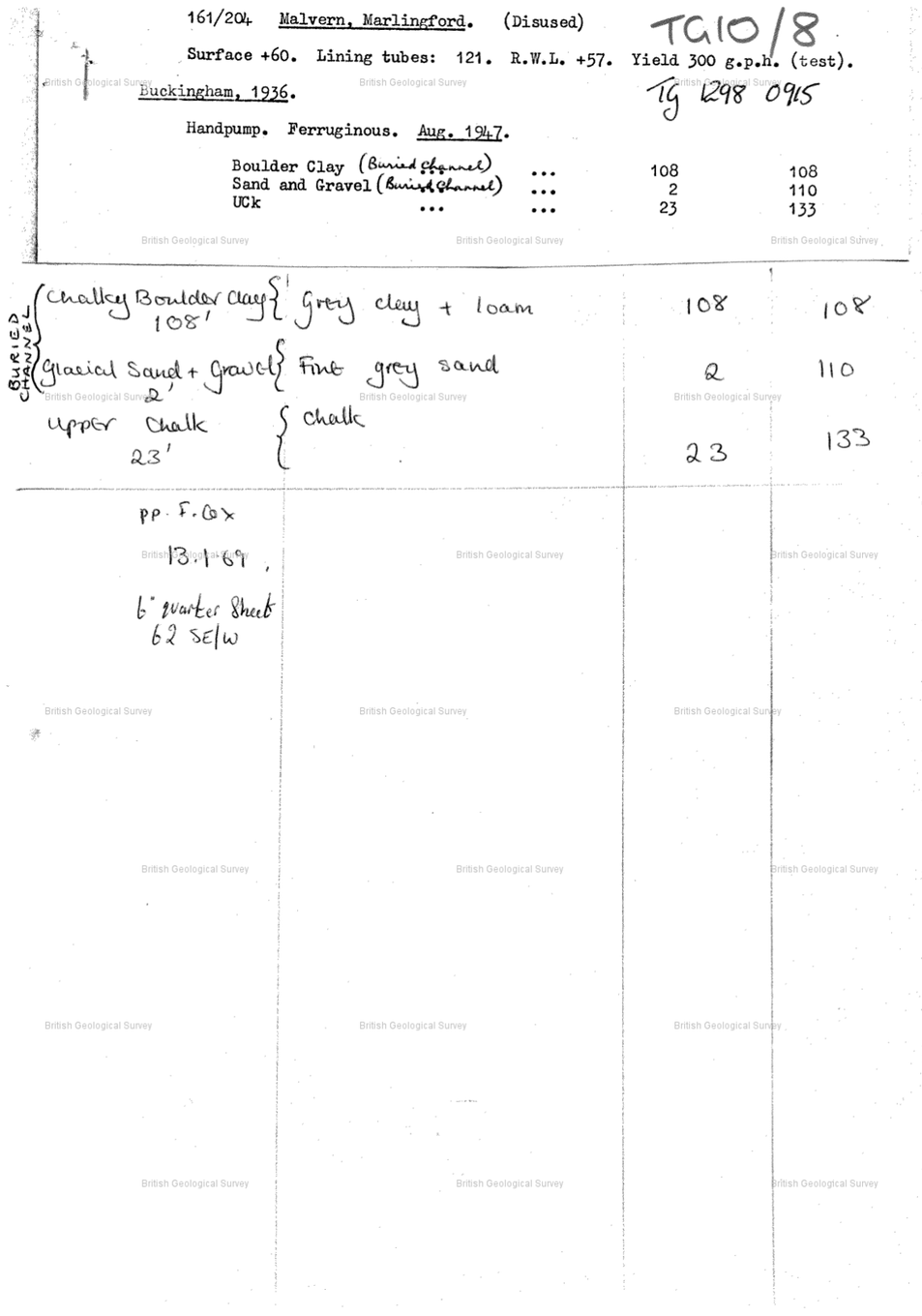
Handpump. Ferruginous. Aug. 1947.

Boulder Clay (Buried Channel) ...	...	108	108
Sand and Gravel (Buried Channel) ...	...	2	110
UCk ...	...	23	133

CHANNEL
Chalky Boulder Clay 108' { Grey clay + loam — 108 — 108
Glacial Sand + Gravel 2' { Fine grey sand — 2 — 110
Upper Chalk 23' { Chalk — 23 — 133

pp. F.Cox
13.1.69,

6" quarter Sheet
62 SE/w



161/204 Malvern, Marlingford. (Disused) TG10/8
Surface +60. Lining tubes: 121. R.W.L. +57. Yield 300 g.p.h. (test).
Buckingham, 1936. TG 1298 0915

Handpump. Ferruginous. Aug. 1947.

Boulder Clay (Buried Channel) ...	...	108	108
Sand and Gravel (Buried Channel) ...	...	2	110
UCk ...	...	23	133

BURIED CHANNEL
Chalky Boulder Clay 108' { Grey clay + loam — 108 — 108
Glacial Sand + Gravel 2' { Fine grey sand — 2 — 110
Upper Chalk 23' { Chalk — 23 — 133

pp. F.Cox
13.1.69,

6" quarter Sheet
62 SE/w

TG10/8

RECORD OF WELL (SHAFT OR BORE)

1" N.S.
1" O.S.
Grid Ref.

At Red Bell Inn "Malvern"
Town or Village Maplingford County Suffolk. Six-inch quarter sheet to 2 SE (W).
Exact site on 6" map.
in parish of (A rough sketch-map or a tracing from a map is very desirable)
Level of ground surface above sea-level (O.D.) 60. ft. If well starts below ground surface, state how far ft.
Shaft ft., diameter ft. Bore ft. Diameter of bore: at top ins.; at bottom ins.
Details of permanent lining tubes (internal diameters preferred) 131 ft.
Water struck at depths of (feet)
Rest-level of water below above top of well 3 feet. Suction at feet. Yield on hours' days' test
300 gallons per hr? (with pump of capacity g.p.h.); depressing water level to feet
below top. Time of recovery hrs. Amount normally pumped daily g.p.h. for hours.
Quality (attach copy of analysis if available)
Sunk by E. H. Buckingham for Mrs Rix. Date of well 1936
Information from Do.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA (and any additional remarks).	THICKNESS Feet.	THICKNESS Inches.	DEPTH Feet.	DEPTH Inches.
Glacial Drift	Chalky boulder clay	Grey clay and loam	108		108	
	Glacial sand	Fine grey sand	2		110	
Buried Channel	Chalk	Chalk	23		133	
		Visited o site. Operated by handpump.				
		Supplies Bungalow. Considerable amount				
		of iron in the water. W.S. 28.8.47.				
		Visited.				
		Disused. 22/8/60 DH.				

DATA Bank

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON. S.W.7.

For Survey use only

Date received	G.S.M. Office File No.	Site marked on 1" map (use symbol)

(*11815) Wt.29051/O.369 10,000 9/39
A.& E.W.Ltd. Gp.686

A.1.21 TG10NW14

TG 10 NW 14 1356 0944 Cobb's Grove Plantation, Marlingford

Surface level (+ 87.9 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 +

		Thickness (m)	Thickness ft	Depth (m)	Depth 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 quartz. Sand: medium with coarse, mainly subangular flint. Brown.	(4.9)	16	(5.2)	17
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 gravel.	(3.0)	10	(15.5)	51
Upper Chalk	Chalk.	(0.9 +)	3+	(16.4)	54

	%	mm	%
Gravel	44	+ 64	: 0
		– 64 + 16	: 23
		– 16 + 4	: 21
Sand	53	– 4 + 1	: 14
		– 1 + ¼	: 33
		– ¼ + 1/16	: 6
Fines	3	– 1/16	: 3

Depth below surface (ft)	Percentage Fines	Sand	Gravel
1 – 4	6	42	52
4 – 7	2	46	52
7 – 10	6	70	24
10 – 13	0	70	30
13 – 17	1	42	57

36

A.1.22 TG10NW20

TG 10 NW 20 1414 0895 North of Algarsthorpe

Surface level (+ 14.1 m) + 46 ft
Water struck at (+ 13.1 m) + 43 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 +

		Thickness (m)	ft	Depth (m)	ft
Alluvium	Soil and brown silty and peaty clay.	(2.4)	8	(2.4)	8
Sub-alluvium gravel	Gravel.	(6.4)	21	(8.8)	29
	Gravel: fine to coarse subangular flint, with traces of subrounded brown flint and traces of fine subrounded quartz.				
	Sand: medium and coarse subangular flint with subrounded quartz and chalk. Grey and brown.				
Upper Chalk	Chalk.	(0.9 +)	3 +	(9.7)	32

	%		mm		%
Gravel	65	+	64	:	0
		–	64 +	16 :	30
		–	16 +	4 :	35
Sand	32	–	4 +	1 :	13
		–	1 +	¼ :	14
		–	¼ +	1/16 :	5
Fines	3	–	1/16	:	3

Depth below surface (ft)	Percentage Fines	Sand	Gravel
8 – 11	3	33	64
11 – 14	2	32	66
14 – 17	2	27	71
17 – 20	4	34	62
20 – 23	5	36	59
23 – 26	1	32	67
26 – 29	1	33	66

41

A.1.23 TG10NW76

DATA ACQUISITION SHEET TG10/151 CSC/D/138 P21

NRA region: ANGLIAN (NORWICH) 161

File Number: PUMP TEST FILE 34/13 TECHNICAL FILE TG10 NW /76

Pump Well Identification:

NRA id No:

BGS (WL) No: TG10/151

NGR: TG 1484 0760

Elevation:

Measuring Point:

Site Name: VALLEY FARM MARLINGFORD

Locality: YARE VALLEY

Well details:

depth of pumping well: 80.0m

diameter: 100mm

casing details: plain casing to 30.0m slotted to 50.0m

☒ observation boreholes NONE

number of obs bhs: N/A

obs bh details:

Aquifer Details:

~~confined~~ / unconfined If confined, confining layer: N/A

Aquifer Geology	from	to	Aquifer Geology	from	to
CHALK	2.1	80.0			

Pumping Test Details:

date of test: 3 JUNE 1987 STEP TEST
CONSTANT RATE 6. JUNE 1993

length of test: 3 steps each 120 min, 4th step extended
CONSTANT RATE : 10080 min = 7 DAYS

RWL: 2.1m bmp

PWL: 9.64m bmp

pumping rate: STEP TEST: 465 m³/d; 576 m³/d, 804 m³/d, 1140 m³/d AV. 747 m³/d
CONSTANT RATE 1151 m³/d

Additional Well Information:

☐ Well Loss Data: B..... C..... Efficiency.....
☐ Well Acidified
☒ Flow Logs NO
☒ Other Geophysical Logs NO
☐ Fissure Information: major inflows from.....to.....
from.....to.....
from.....to.....

Aquifer Parameters:

Analysis Type: ~~Recovery~~ JACOB SL
Transmissivity: 208 m^2/d
Storage Coefficient:

Analysis Type:
Transmissivity:
Storage Coefficient:

Analysis Type:
Transmissivity:
Storage Coefficient:

Other Data:

Confidence:

excellent ☐ ☐ ☐ ☑ ☐ very poor

Notes: Borehole collapsed on completion of pumping hence not possible to carry out geophysical logging

A.1.24 TG10NW45

Ref:A/S 40/91

TG10NW/45
1468. 0758.

June 92

TG10/136

161

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

1468 0758

VALLEY FARM Nr BARFORD NORLK NGR TG ~~148 076~~

TG10NW

STRATA

		Thickness M.	Depth M.
Top soil	QUARTERNARY ALLUVIUM	0.50	0.50
Grey and brown sandy clay		1.20	1.70
Dry White chalk	UPPER CHALK (UPPER CRETACEOUS)	1.80	3.50
Firm and soft yellow chalk with flints		1.00	4.50
Firm and soft yellow chalk		3.50	8.00
Harder chalk and flint		2.00	10.00
Chalk and flint		18.00	28.00
Hard chalk and flint with soft seams		49.00	77.00
Hard chalk and flint with soft sticky seams		10.00	87.00

Rob Hamblin 3-2-93

WATER

RWL 2.81m bgl, reading taken 6 December 1991

LINING TUBE

a) 25.50m x 762mm OD plain mild steel lining tube installed to a depth of 25m BGL. the top being fitted with a weld - on flange drilled NP16.
b) 87.5 x 600mmOD 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 betwwen the 600mm OD lining and 762mm OD lining was packed with 40mm natural shingle.

12th January 93

[redacted]

9656

Eastern L.S. Anglian N.R.A. NN 910097

Ref:A/S 40/91. June 92

Tg10/136

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

Tg10NW/45

VALLEY FARM Nr BARFORD NORLK NGR TG ~~148 076~~ 1468 0758

STRATA		Thickness M.	Depth M.
Top soil	Quaternary	0.50	0.50
Grey and brown sandy clay	Alluvium	1.20	1.70
Dry White chalk	Upper Chalk	1.80	3.50
Firm and soft yellow chalk with flints		1.00	4.50
Firm and soft yellow chalk		3.50	8.00
Harder chalk and flint	Upper	2.00	10.00
Chalk and flint		18.00	28.00
Hard chalk and flint with soft seams	Cretaceous	49.00	77.00
Hard chalk and flint with soft sticky seams		10.00	87.00

3.2.93

WATER

RWL 2.81m bgl, reading taken 6 December 1991

LINING TUBE

a) 25.50m x 762mm OD plain mild steel lining tube installed to a depth of 25m BGL. the top being fitted with a weld - on flange drilled NP16.
b) 87.5 x 600mmOD 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 betwwen the 600mm OD lining and 762mm OD lining was packed with 40mm natural shingle.

JANUARY 1993

Tg10/136

Grouting

The annulor space between the 762mmOD lining and the wall of the borehole was packed with stabiliser gravel and smaller grit to make grout retaining seal at 18.50m BGL and the remaining space filled with cement and grout to GL.

TEST PUMPING

The borehole was clearance pumped, step tested and yield tested for a period of 14 days approximately 23.31/sec from approx 21m BGL.

DATES

Commenced: drilling October 1991
Completed: Pumping June 1992

DRILLING MACHINE

Ruston Erie 29T/S Cable Percussion Rig.

DRILLER

C Billings
Pumping
J.Best

NN 910097
TG10/136

Grouting

The annulor space between the 762mmOD lining and the wall of the borehole was packed with stabiliser gravel and smaller grit to make grout retaining seal at 18.50m BGL and the remaining space filled with cement and grout to GL.

TEST PUMPING

The borehole was clearance pumped, step tested and yield tested for a period of 14 days approximately 23.3l/sec from approx 21m BGL.

DATES

Commenced: drilling October 1991
Completed: Pumping June 1992

DRILLING MACHINE

Ruston Erie 29T/S Cable Percussion Rig.

DRILLER

C Billings

Pumping
J.Best

DATA ACQUISITION SHEET

CSC/D/140

NRA region: ANGLIAN (NORWICH)

File Number: PTF 34/13 TECHNICAL FILE (B) TG10/136 P21

Pump Well Identification:

NRA id No:

BGS (WL) No: TG10/136

NGR: TG 1487 0759

Elevation: PROD +25.038m OD (Top head plate)
OBS +24.338m OD (" ")

Measuring Point: PROD datum + 0.76m AGL
OBS : HEAD PLATE

Site Name: PRODUCTION BH
VALLEY FARM

Locality: MARLINGFORD
NORFOLK

Well details:

depth of pumping well: 87 m

diameter: 762mm

casing details: 762mm plain steel to 25m bgl
600mm plain steel to 24m bgl
600mm slotted steel 24 to 87m bgl

☐ observation boreholes

number of obs bhs: 9

obs bh details: Valley farm obs bh r = 37m
earlier pilot bh details CSC/D/135

Aquifer Details:

~~confined~~ / unconfined If confined, confining layer: NA

Aquifer Geology	from	to	Aquifer Geology	from	to
CRAG + bn sndy clay to 1.7m CHALK					

Pumping Test Details:

date of test: STEP TEST : 8.5.92
CONSTANT RATE : 12.5.92 & 26.5.92

length of test: 14 days

RWL: 3.57 mbd

PWL: 20.50 mbd

pumping rate: 24.1 l/s; 2085 m³/d

Additional Well Information:

- ☐ Well Loss Data: B..... C..... Efficiency.....
- ☒ Well Acidified NOT ACIDISED see below
- ☐ Flow Logs
- ☑ Other Geophysical Logs inc CCTV
- ☐ Fissure Information: major inflows from.....to.....
  little flow above 33.5m bd — from.....to.....
  a little below c 63m bd — from.....to.....
  bos ll showed little flow below 59m

Aquifer Parameters:

	PROD	OBS
Analysis Type: COOPER JACOB		
Transmissivity:	94	114 m^2/d
Storage Coefficient:	–	0.039

	PROD	OBS
Analysis Type: COOPER JACOB RECOVERY		
Transmissivity:	154	162 m^2/d
Storage Coefficient:	–	–

	PROD	OBS EARLY	OBS LATE
Analysis Type: THEIS			
Transmissivity:	–	155	90 m^2/d
Storage Coefficient:	–	0.0004	0.076

Other Data:
REPRESENTATIVE AQUIFER PARAMETERS;
$T = 130\ m^2/d$
$S = 0.0004$
$S_y = 0.04$

Confidence:

excellent ☐ ☑ ☐ ☐ ☐ very poor

Notes: Not acidised because Chalk not stable & also there is a fish pond nearby
Since original pilot bh collapsed after test pumping a new obs bh was drilled 39m from prodn bh

STEP TEST.

Q(m^3/d)	Duration(min)	Drawdown(m)
686	120	1.93
1048	"	3.64
1589	"	8.18
2505	"	17.57

Constant rate test – Q was not constant – first 60min Q = 1726 m^3/d before being increased – increased again during 22 hrs before end of test.
Cooper Jacob recovery gives different T from drdn – may be better if recovery data corrected
Theis curve fitting "probably" subject to significant errors"

FOR EARLIER TESTING OF VALLEY FARM PILOT BH see CSC/D/138

A.1.25 TG10NE87

TG10NE/87
1578·0665

161/591 Glenhaven, Little Melton
(47·06m)
Surface +138. Shaft. c. 1948.

R.W.L. +128. Electric pump. Aug. 1960.

+	Boulder Clay		
	Sand and Gravel	... ...	? 60 ? 60
	? UCk		

Estimated dassu.
pp. Flow. 30.6.69.
b"greatersheet
b2SE/E

161/591 Glenhaven, Little Melton

42.06m

TG10/107

Surface +138. Shaft. c. 1948.

R.W.L. +128. Electric pump. Aug. 1960.

+	Boulder Clay Sand and Gravel ? UCk	...	...	? 60 ? 60

Estimated dassu.

6"quarter sheet
b2SE/E

pp. Fox. 30.6.69.

TG10/107

For Survey use only

161/591

N.

161/591

Licence No.

RECORD OF WELL (SHAFT OR BORE)

EXACT SITE OF WELL

At "Glenhaven"

Town or Village Little Melton

County Norfolk. Six-inch quarter sheet ~~74 NE/E~~ ~~62 SE/E~~

For ? Mr Unwin. State whether owner, tenant, builder, contractor, consultant, etc.:—

1578 0665
~~Tg 158 067~~

Address (if different from above)

Level of ground surface above sea-level (O.D.) 138 ft. If well-top is not at ground level, state how far above: below; ft.

SHAFT ? 60 ft.; diameter ft.; Full details of headings (dimensions and directions)

BORE ft.; diameter of bore: at top ins.; at bottom ins.

Full details of permanent lining tubes (position, length, diameter, plain, slotted etc.)

Water struck at depths of ft. below well-top.

TEST CONDITIONS

Rest level of water ft. above below well-top. Suction at ft. Yield on hours' days' test pumping at galls. per with depression to ft. below well-top.

Recovery to rest-level in mins. hours Capacity of pump g.p.h. Date of measurements

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type Motive power

Capacity gallons per hour. Suction at ft.

Amount pumped galls. per day. Estimated consumption galls. per week.

Well made by a man from Wymondham (deceased) Date of well 1948

Information from

ADDITIONAL NOTES

ANALYSIS (please attach copy if available)

Visited and Sited on 6" map. Electric pump.

R.W.L. 9' 11" b.s. A.S. 19/8/00.

Estimated Succession:

Boulder Clay	c. 50'–60'
Glacial Gravel	c. 10'
UCk	

[redacted]

30/6/69.

DATA Bank

LOG OF STRATA OVERLEAF.

Geological Survey and Museum, South Kensington, London, S.W.7.		Section 6.	Date Received	1" O.S. Map No.	Site marked on 1" Map	(use symbol) on 6" Map

(1527) D&S74/W13756 12,000 8/54 JC&S Gp689

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far ..	THICKNESS Feet ..	THICKNESS Inches ..	DEPTH Feet	DEPTH Inches

A.1.26 TG10NE43

TG 10 NE 43 1531 0657 Church Farm, Little Melton

Surface level (+ 37.5 m) + 123 ft
Water struck at (+ 34.4 m) + 113 ft
Wirth B 1, 8 inch diam.,
December 1969

Waste (18.3 m +) 60 ft +

		Thickness (m)	Thickness ft	Depth (m)	Depth ft
Chalky Boulder Clay	Soil and slightly sandy brown clay with a little chalk.	(3.0)	10	(3.0)	10
	Light grey chalky clay with traces of gravel	(6.8)	22	(9.8)	32
	Dark grey chalky clay.	(8.5 +)	28 +	(18.3)	60

46

A.1.27 TG10NE49

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.,
December 1969

Waste (18.3 m +) 60 ft +

		Thickness (m)	ft	Depth (m)	ft
	Soil.	(0.6)	2	(0.6)	2
Chalky Boulder Clay	Brown clay with traces of medium sand and fine gravel towards the base.	(4.6)	15	(5.2)	17
	Brown chalky clay.	(13.1 +)	43 +	(18.3)	60

51

A.1.28 TG10SE3

TG 10 SE 3 1669 0479 Station Lane, Hethersett

Surface level (+ 36.9 m) + 121 ft
Water not struck
Wirth B O, 8 inch diam.,
January 1970

Waste (16.4 m) 54 ft;
Bedrock (0.9 m +) 3 ft +

		Thickness (m)	ft	Depth (m)	ft
Chalky Boulder Clay	Soil and brown clay with traces of sand and gravel.	(3.0)	10	(3.0)	10
	Light brown to grey chalky clay with occasional flint pebbles.	(13.4)	44	(16.4)	54
Upper Chalk	Chalk.	(0.9 +)	3 +	(17.3)	57

65

A.1.29 TG10SE94

TG10SE A4

ENGINEER G. MAUNSELL & PARTNERS. | PROJECT A11 IMPROVEMENT - ROUNDABOUT TO CHIPPENHAM. | GROUND LEVEL 24.132 m O.D. | HOLE NO 28

LOGGED BY HGR/LRD
FIELDWORK BY SH
LAB TESTING BY S.C.C. | EXCAVATION METHODS: WHEELED EXCAVATOR (JCB 3C) | COORDINATES 617530 E 304640 N | FIGURE A

DATES 5/5/82 | SHEET 1 OF 1

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO	DEPTH m	TYPE	BLOWS	V / Cu kN/m²	LAB TESTING % <425	w %	PL %	LL %	MCV	ρ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
			Pale greyish brown LOAM with rounded flints. (TOPSOIL)		24.132	0		0											
			Orange brown subrounded very gravelly SAND. (GLACIAL SAND AND GRAVEL)		23.782	0.35	1	0.5	B				4.6						
					23.932	1.2	2	1.0[1]	B				4.5						PARTICLE SIZE DISTRIBUTION, DEL (CBR), COMPACTION.
			Mottled brown gravelly clayey SAND. (GLACIAL SAND AND GRAVEL)				3	1.5	B				9.7						
							4	2.0[2]	B				9.7			9.1			PARTICLE SIZE DISTRIBUTION, CALIFORNIA BEARING RATIO.
							5	2.5	B				8.2						
			Stiff yellow inorganic silty CLAY of low plasticity with pockets of brown fine SAND. (GLACIAL SAND AND GRAVEL)		21.332	2.8	6	3.0[3]	B			100	20	18	31				
			Very stiff greenish grey inorganic silty sandy CLAY with chalk fragments and flint. (BOULDER CLAY)		20.832	3.3	7	3.5	B										
							8	4.0[4]	B				16						
					19.632	4.5	9	4.5	B										
								5											

WATER: 1 First water strike; 2 Subsequent water strikes; Σ Highest water level in open hole

PIEZOMETER: Upper seal; Response zone; Lower seal; Installation and readings diagrams

SAMPLES AND TEST KEY: D Small disturbed sample; B Bulk disturbed sample; W Water sample; U Undisturbed sample; P Piston sample; R Rotary core, recovery to scale; V Insitu vane test; S Standard penetration test; C Cone penetration test; * Permeability test; PR Pressuremeter test

Blows N value 75/150, blows for 150mm drive after seating; 25*, blows for part or whole of seating drive only; 50U: undisturbed sample blow count

V Vane strength kN/m² Natural/Remould; Cr Core recovery %; RQD Rock quality designation; <425 Sample % passing 425um sieve

Mr D I Evans B.Sc.Tech,MSE,FICE,FIMunE,FHE
Director (Transport)
Eastern Regional Office (Transport)
49/51 Goldington Road
Bedford

A.1.30 TG10SE93

[redacted]

TG10SE 93

ENGINEER G. MAUNSELL & PARTNERS.
LOGGED BY MSB/GMD
FIELDWORK BY SH
LAB TESTING BY S.C.C.

PROJECT A11 IMPROVEMENT - WYMONDHAM TO CRINGLEFORD.
EXCAVATION METHODS
WHEELED EXCAVATOR (JCB 3C)

GROUND LEVEL 25.321 m O.D.
COORDINATES 617345 E 304520 N
DATES 29/4/82

HOLE NO 27
FIGURE A
SHEET 1 OF 1
OTHER TESTS AND NOTES

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Plot	STRATA DESCRIPTION	LEG	LEVEL m OD	DEPTH m	SAMPLING/IN SITU TESTING NO	DEPTH m	TYPE	BLOWS	V / Cu kN/m² RQD	LAB TESTING % <425	W %	PL %	LI %	MCV	γ Mg/m³	Cu kN/m²
				Pale greyish brown silty LOAM. (TOPSOIL.)		25.321	0		0										
				Pale yellowish brown gravelly SAND. (GLACIAL SAND AND GRAVEL)		24.971	0.35	1	0.5	B				3.3					
				Orange brown with reddish-brown veining uniformly graded fine-medium SAND to silty SAND. (GLACIAL SAND AND GRAVEL)		24.621	0.7	2	1.0	B				7.7					
								3	1.5	D									
						23.121	2.2	4	2.0[2]	B				6.5					

PARTICLE SIZE DISTRIBUTION.

WATER
First water strike
Subsequent water strikes
Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core, recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
k Permeability test
PA Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part of seating drive only (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Rem puic
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425µm sieve

Mr D.L.Evans B.Sc.Tech,MSE,FICE, FIMunE,FIHE
Director (Transport)
Eastern Regional Office (Transport)
49/51 Goldington Road
Bedford

SHEET 1 OF 1
Fig. A
HOLE NO 27

A.1.31 TG10SE97

TG 10 SE/97

ENGINEER G. MAUNSELL & PARTNERS.
LOGGED BY MGB/LHD
FIELDWORK BY SH
LAB TESTING BY S.C.C.

PROJECT A11 IMPROVEMENT - WYMONDHAM TO CRINGLEFORD.
EXCAVATION METHODS
WHEELED EXCAVATOR (JCB 3C)

GROUND LEVEL 24.338 mOD
COORDINATES 617380 E 304440 N
DATES 29/4/82

HOLE NO 35
FIGURE A
SHEET 1 OF 1

TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	PIEZ	STRATA DESCRIPTION	LEG.	LEVEL m OD	DEPTH m
				Pale greyish brown silty LOAM. (TOPSOIL)		24.338	0
						23.988	0.35
				Brownish red subrounded GRAVEL/SAND with old rootlets. (GLACIAL SAND AND GRAVEL)			
						23.038	1.3
				Yellow and pale grey slightly gravelly uniformly graded medium SAND. (GLACIAL SAND AND GRAVEL)			
						21.338	3.0

SAMPLING/ IN SITU TESTING					LAB TESTING						
NO	DEPTH m	TYPE	BLOWS	V / Cr RQD	% <425	W %	PL %	LL %	HCV	B Mg/m³	Cu kN/m²
1	0.5	D									
2	1.0	B				4.9					
3	1.5	D									
4	2.0	B				7.0					
5	3.0	B									

OTHER TESTS AND NOTES
PARTICLE SIZE DISTRIBUTION.
PARTICLE SIZE DISTRIBUTION.
PARTICLE SIZE DISTRIBUTION.

WATER
1 First water strike
2 Subsequent water strikes
3 Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Inertia vane test
S Standard penetration test
C Cone penetration test
k Permeability test
PR Pressuremeter test

Blows N = N value
26/150, blows for 150mm drive after seating
26*, blows for part or whole of seating drive only
U26, Undisturbed sample blow count

V Vane strength kN/m²
Natural
Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425um sieve

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SHEET 1 OF 1 | FIG. A | HOLE NO 35

A.1.32 TG10SE7

TG 10 SE 7 1750 0442 East of Hethersett Station

Surface level (+ 29.6 m) + 98 ft
Water not struck
Wirth B 1, 8 inch diam.,
December 1969

Overburden (4.2 m) 14 ft;
Mineral (4.6 m) 15 ft;
Bedrock (0.9 m +) 3 ft +

		Thickness (m)	ft	Depth (m)	ft
Chalky Boulder Clay	Soil and soft brown clay.	(4.2)	14	(4.2)	14
Glacial Sand and Gravel	Pebbly sand. Clayey in parts. Some hard chalk fragments. Gravel: fine and coarse, subangular, flint; with some fine subrounded quartz, occasional flint cobbles. Sand: medium and fine with traces of coarse, subangular flint. Brown.	(4.6)	15	(8.8)	29
Upper Chalk	Chalk.	(0.9 +)	3+	(9.7)	32

		mm		
Gravel	10	+ 64	:	$\frac{25}{32}$
		– 64 + 16	:	4
		– 16 + 4	:	6
Sand	84	– 4 + 1	:	6
		– 1 + $\frac{1}{4}$	:	57
		– $\frac{1}{4}$ + $\frac{1}{16}$	:	21
Fines	6	– $\frac{1}{16}$	:	6

Depth below surface (ft)	Fines	Sand	Gravel
14 – 17	7	74	19
17 – 20	2	98	0
20 – 23	0	100	0
23 – 26	11	75	14
26 – 29	10	75	15

69

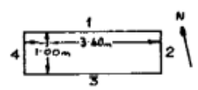
A.1.33 TG20SW82

L114-180/82

TG 20 SW 82

ENGINEER G. MAUNSELL AND PARTNERS
LOGGED BY: GROUND ENGINEERING LIMITED
FIELDWORK BY: " " "
LAB. TESTING BY: " "
PROJECT A47 NORWICH SOUTHERN BYPASS
EXCAVATION METHODS WHEELED HYMAC
GROUND LEVEL 30.70 m O.D.
COORDINATES 620 750 E 303 700 N
DATES 30/3/82
HOLE NO. 140 (T)
FIGURE A
SHEET 1 OF 1

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m.O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	W Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
30.3.82				TOPSOIL(Dark brown silty clayey fine to medium sand with fine to medium subangular gravel and organic remains)		30.70	0.00													1)Pit completed and shored to 3.50m
						30.40	0.30	1	0.40	D				17						2)No groundwater encountered
				Firm to stiff brown very silty CLAY with fine to medium rounded to angular chalk and flint gravel and orange brown medium sand pockets (Boulder Clay)				14	0.50	CBR			91	29	16	42	*			3)Photographs taken of face 2
								2	0.60	B										Consolidated Drained Triaxial
						29.90	0.80	3	0.90	D				14						
				Stiff brownish grey mottled brown very silty CLAY with orange brown and grey medium sand pockets (Boulder Clay)																CBR at 0.50m
								4	1.40	D			92	24	24	46				
				---- becoming grey			1.50	5	1.50	B										Relationship testing
									1.60											
								6	1.90	D				24						
								7	2.40	D										
								8	2.50	B			66	26	17	37	7.0			Standard compaction
						28.10	2.60		2.60											
				Loose to medium dense slightly silty slightly clayey medium SAND with small silty clay pockets (Boulder Clay)				9	2.60	D										
								10	2.70	B										
									2.80											
						27.70	3.00	11	3.00	D				18						
				Stiff grey very silty CLAY (Boulder Clay)																
								12	3.40	D										
30.3.82		DRY				27.20	3.50	13	3.50	B			85	18	16	26	7.8			
				TRIAL PIT COMPLETED																



WATER
1 First water strike
2 Subsequent water strikes
Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core
I recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only, (26) Undisturbed sample blow count

V Vane strength kN/m² Natural / Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425µm sieve

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SHEET 1 OF 1
FIG. A
HOLE NO. 140 (T)

A.1.34 TG20SW91

4-180/82

TG 20SW 91

ENGINEER G. MAUNSELL AND PARTNERS
LOGGED BY: GROUND ENGINEERING LIMITED
FIELDWORK BY: " " "
LAB. TESTING BY: " " "

PROJECT A47 NORWICH SOUTHERN BYPASS
EXCAVATION METHODS WHEELED HYMAC

GROUND LEVEL 35.05 m O.D.
COORDINATES 621 486 E 303 690 N
DATES 26/3/82

HOLE NO. 148(T)
FIGURE A
SHEET 1 OF 1

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m
26.3.82				TOPSOIL(Dark brown silty slightly clayey sand with plant remains)		35.05	0.00
				Loose to medium dense orange brown medium to coarse SAND with fine to coarse subrounded gravel (Glacial Sand and Gravel)		34.55	0.50
				---- becoming slightly silty		32.50	2.50
				... becoming very gravelly		32.00	3.00
				Loose to medium dense laminated pale grey and orange brown medium SAND (Glacial Sand and Gravel)		31.75	3.30
26.3.82		DRY		TRIAL PIT COMPLETED		30.35	4.70

SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²
1	0.70 0.90	B				14 13 13 11 8.9 6.0 5.9 6.6			*		
2	1.40 1.60	B				6.0 3.9 4.6 3.9 3.7 2.9 4.6 4.3 4.3 3.6			*		
3	2.50 2.70	B				3.1 3.3 5.1 3.4					
4	3.30 3.50	B									
5	4.20 4.40	B									
7	4.50	CBR									
6	4.50 4.70	B									

OTHER TESTS AND NOTES

1)Pit completed to 4.50m but shored to 3.20m due to collapse of pit sides below 2.90m
2)No groundwater encountered
3)Photographs taken of face 4
4)Profile sampling to 3.20m
5)CBR taken to 4.50m due to unsuitable material at 4.00m
Sieve analysis ,heavy compaction and C.B.R. (0.7m)
Sieve analysis (1.40)
Sieve analysis. Heavy compaction and CBR

CBR (4.50m)

WATER
1 First water strike
2 Subsequent water strikes
3 Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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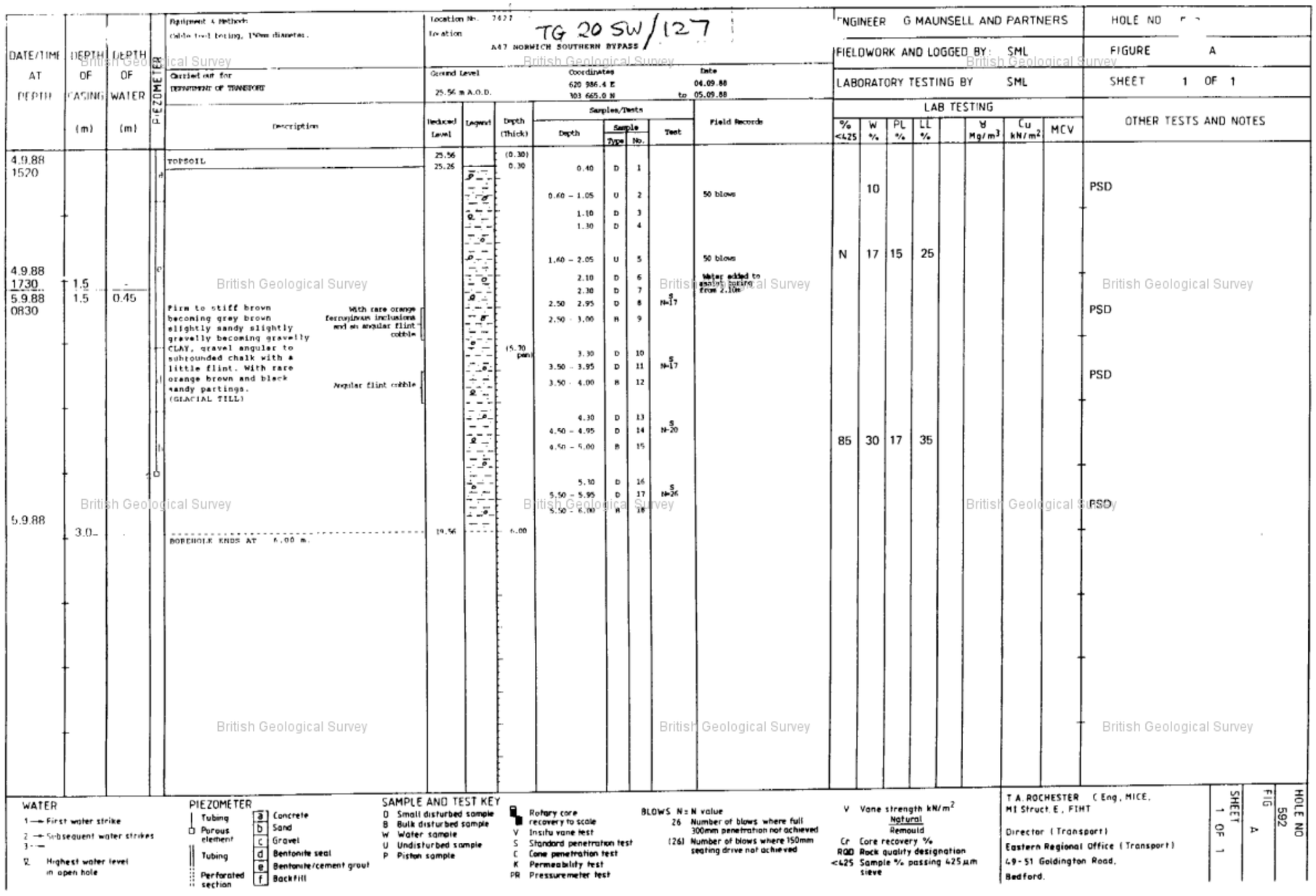
SHEET 1 OF 1
FIG. A
HOLE NO. 148(T)

A.1.35 TG20SW127



A.1.36 TG20SW90

18/8/82

TG 20 SW/90

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 35.20 m O.D.	HOLE NO. 147
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS PERCUSSIVE (PILCON WAYFARER)	COORDINATES 621 460 E 303 662 N	FIGURE A
FIELDWORK BY: " " "			
LAB. TESTING BY: " " "	200mm casing to 6.25m	DATES 28/4/82	SHEET 1 OF 1

TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m
18/8/82						35.20	0.00
10				TOPSOIL		34.80	0.40
				Firm mottled brown and dark brown silty sandy CLAY with some fine to medium subrounded to subangular gravel (Boulder Clay)			0.85
				with chalk fragments and cobbles		33.95	1.25
				Medium dense orange brown fine to medium SAND with occasional fine gravel (Glacial Sand and Gravel			1.90
				with pockets of brown clay and fine to medium subrounded to subangular gravel			2.00
				becoming brown fine to coarse SAND and fine to medium subrounded to subangular GRAVEL			5.00
				Firm pale brown silty CLAY with some fine to medium subrounded gravel and chalk fragments (Boulder Clay)		29.20	6.00
				becoming greenish brown with brown stained fissures			6.95
				becoming firm to stiff			8.00
4.82							
30	6.25	DRY					
				BOREHOLE COMPLETED		26.60	8.60

SAMPLING/ IN SITU TESTING					LAB TESTING							OTHER TESTS AND NOTES
NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	% <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	
1	0.45	B				15						
2	0.80 / 0.85	B										
3	1.00 / 1.00 / 1.45	U	(49)		70	15	16	30		1.93	20 Øu= 30°	
4	1.45	D										
5	1.90	D										Water added from 1.80m to 6.00m
6	2.00 / 2.45	BC	N=16									
7	3.00 / 3.45	BC	N=11									
8	4.00 / 4.45	BC	N=16									
9	5.00 / 5.45	BC	N=15									
10	6.10	D				14						
11	6.50 / 6.95	U	(45)		87	14	11	25		2.23	42	Consolidation
12	6.95	D										
13	7.50	D										
14	8.00 / 8.45	U	(52)		87	12	12	24		2.20	78	
15	8.45	D										

WATER
First water strike
Subsequent water strikes
Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only, (26) Undisturbed sample blow count

V Vane strength kN/m² Natural / Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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SHEET 1 OF 1 | FIG. A | HOLE NO. 147

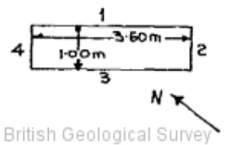
A.1.37 TG20SW83

114-18/1/82

TG20SW/83

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 28.05 m O.D.	HOLE NO. 141(T)
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS WHEELED HYMAC	COORDINATES 620 870 E 303 654 N	FIGURE A
FIELDWORK BY: " " "		DATES 30/3/82	SHEET 1 OF 1
LAB. TESTING BY: "			

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m.O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
30.3.82				TOPSOIL(Dark brown clayey silty sand with flint gravel)		28.05	0.00													1)Pit completed and shored to 3.50m 2)Photographs taken of face 4
				Firm to stiff fissured brown silty CLAY with fine to medium rounded to angular chalk and flint gravel (Boulder Clay)		27.65	0.40	1	0.50	D										
								2	0.60	B			94	22	18	46	6.0			
									0.70					18				2.01	60	
								13	0.70	U38									σu=9	
				Firm to stiff fissured brown grey silty CLAY with fine to medium rounded to angular chalk and flint gravel and small to large sand pockets (Boulder Clay)		27.15	0.90	3	1.00	D			85	18	28	42				
								4	1.40	D										
								5	1.50	B			68	22	20	44	12			Heavy compaction
									1.60											
								6	1.90	D			80	21	16	40				
								14	2.30	U38				24				1.94	32	
								7	2.40	D										
								8	2.50	B										Seepage at 2.40m
									2.60											
								9	2.90	D				20						
								12	3.40	W										
								10	3.40	D										
30.3.82	3.50	DRY		TRIAL PIT COMPLETED		24.55	3.50	11	3.50	B										
									3.60											



WATER: 1 First water strike; 2 Subsequent water strikes; 3 Highest water level in open hole

PIEZOMETER: Upper seal, Response length, Lower seal (Installation only, readings elsewhere)

SAMPLE AND TEST KEY: D Small disturbed sample; B Bulk disturbed sample; W Water sample; U Undisturbed sample; P Piston sample; R Rotary core recovery to scale; V Insitu vane test; S Standard penetration test; C Cone penetration test; K Permeability test; PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only, (26) Undisturbed sample blow count

V Vane strength kN/m² Natural / Remould; Cr Core recovery %; RQD Rock quality designation; <425 Sample % passing 425μm sieve

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SHEET 1 OF 1 | FIG. A | HOLE NO. 141(T)

A.1.38 TG20SW89

4-18/8/82

TG 20 SW 89

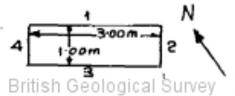
ENGINEER G. MAUNSELL AND PARTNERS
LOGGED BY: GROUND ENGINEERING LIMITED
FIELDWORK BY: " " "
LAB. TESTING BY: " " "

PROJECT A47 NORWICH SOUTHERN BYPASS
EXCAVATION METHODS WHEELED HYMAC

GROUND LEVEL 23.45 m O.D.
COORDINATES 621 360 E 303 654 N
DATES 26/3/82

HOLE NO. 146(T)
FIGURE A
SHEET 1 OF 1

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m.O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
26.3.82 11.00				TOPSOIL(Dark brown clayey silty fine to medium sand with fine to medium rounded to sugangular gravel)		23.45	0.00													1)Pit completed to 3.50m but no shoring due to collapse of pit sides 2)No groundwater encountered 3)Photographs taken of face 4
				Loose brown slightly silty fine to medium SAND with fine to medium rounded to sub-rounded gravel (Glacial Sand and Gravel)		23.05	0.40	1	0.50 0.60	B				14			*			Sieve analysis at 0.50m
				Loose to medium dense orange-brown medium SAND with rare rounded to subrounded fine to medium gravel and small brown silty clay pockets (Glacial Sand and Gravel)		22.40	1.05	2	1.50 1.60	B				12			*			Sieve analysis
				Firm to stiff brown grey very silty slightly sandy CLAY with fine rounded to angular chalk and flint gravel (Boulder Clay)		20.85	2.60	3	2.60 2.70	B			82	16	13	24			
13.00 26.3.82		DRY		TRIAL PIT COMPLETED		19.95	3.50	4	3.40 3.50	B										



WATER
First water strike
Subsequent water strikes
Highest water level in open hole

PIEZOMETER Upper seal, Response length, Lower seal (Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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SHEET 1 OF 1 | FIG. A | HOLE NO. 146(T)

A.1.39 TG20SW84

TG 20 SW /84

ENGINEER G.MAUNSELL AND PARTNERS
LOGGED BY GROUND ENGINEERING LIMITED
FIELDWORK BY " " "
LAB. TESTING BY: " " "

PROJECT A47 NORWICH SOUTHERN BYPASS
EXCAVATION METHODS WHEELED HYMAC

GROUND LEVEL 25.95 m O.D
COORDINATES 620 959 E 303 640 N
DATES 29/3/82

HOLE NO. 142
FIGURE A
SHEET | OF |

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	FIG. NO.	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
29.3.82	-	-				25.95	0.00													1)Pit completed and shored to 3.50m 2) one hours pumping 3) Photographs taken of face 4
				SEE FIGURE Ax FOR DETAILS				1	0.50	D										
								2	0.55 0.65	B										
								3	1.00	D										
								4	1.50 1.60	B										
		▽						5	1.90	D										Groundwater encountered at 2.00m
								11	2.00	W										pH and sulphate content
								6	2.35 2.45	B										
								7	2.90	D										
								8	3.30 3.40	B										
								10	3.50 3.60	B										
29.3.82	2.00			TRIAL PIT COMPLETE		22.45	3.50													

WATER
1 → First water strike
2 → Subsequent water strikes
3 → Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Und sturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part of whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural / Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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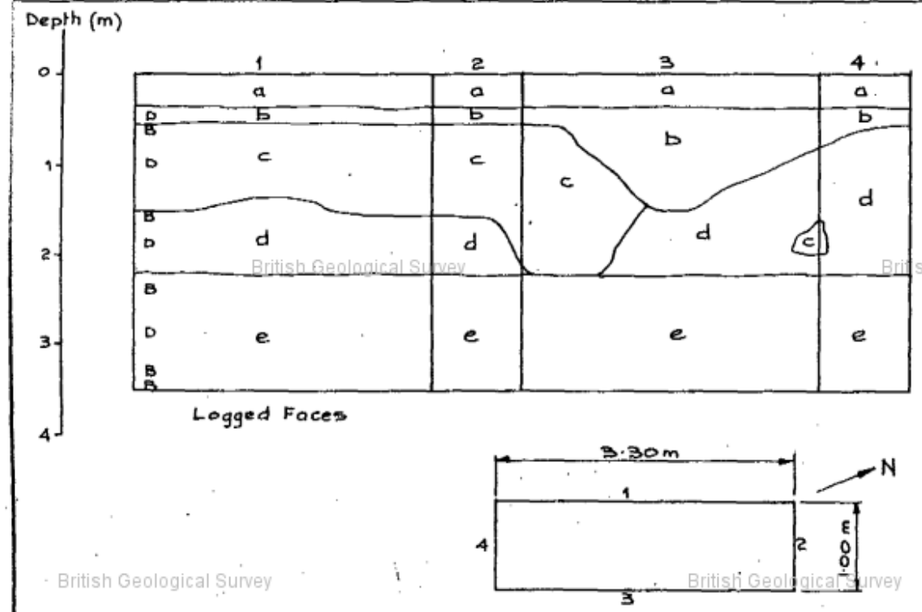
SHEET | OF |
FIG. A
HOLE NO 142

TG 20 SW/84

ENGINEER: G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 25.95 m O.D.	HOLE NO. 142(T)
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS WHEELED BYMAC	COORDINATES 620 952 E 303 642 N	FIGURE Ax
FIELDWORK BY: " " "		DATES 29/3/82	SHEET 1 OF 1
LAB. TESTING BY: " " "			



STRATA

a) TOPSOIL(Dark brown fine sandy silty clay with fine to coarse rounded to subangular gravel)

b) Medium dense orange brown clayey fine SAND with fine to coarse subrounded to subangular gravel (Glacial Sand and Gravel)

c) Stiff grey greenish brown mottled orange brown silty sandy CLAY with occasional fine to coarse subrounded to subangular gravel with chalk lumps (Boulder Clay)

d) Medium dense orange brown slightly mottled grey brown slightly clayey fine to medium SAND with abundant fine to coarse subrounded to subangular gravel with chalk lumps (Glacial Sand and Gravel)

e) Stiff blue grey mottled orange brown silty CLAY with some fine to coarse subrounded to subangular gravel with chalk lumps (Boulder Clay)

NOTES

1) Pit completed and shored to 3.50m

2) Groundwater was encountered at 2.00m

3) Photographs taken of face 4.

4) Pumping for 1 hour.

DISCONTINUITIES
Joint directions, 070/15 dip direction/dip in deg.
Fracture spacing, R; 20/50/200, minimum/average/maximum in mms.
DEPTH
All depths, levels and thicknesses in metres.

WATER
1 First water strike
2 Subsequent water strikes

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SHEET 1 OF 1 | FIG. Ax | HOLE NO. 142(T)

A.1.40 TG20SW87

TG 20 SW 87

ENGINEER G.MAUNSELL AND PARTNERS
LOGGED BY: GROUND ENGINEERING LIMITED
FIELDWORK BY: " " "
LAB. TESTING BY: " " "

PROJECT A47 NORWICH SOUTHERN BYPASS
EXCAVATION METHODS PERCUSSIVE(PILCON WAYFARER)
200mm casing to 6.00m

GROUND LEVEL 26.25 m O.D.
COORDINATES 620975 E 303630 N
DATES 26/4/82-27/4/82

HOLE NO. 144 A
FIGURE A
SHEET 1 OF 2
OTHER TESTS AND NOTES

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
6.4.82 100				TOPSOIL		26.25	0.00													
				Firm brown silty very sandy CLAY with fine to medium subrounded to subangular gravel (Boulder Clay)		25.95	0.30	1	0.50	D										
						25.50	0.75	2	0.85	D										
				Stiff grey-brown silty CLAY with fine to medium subrounded chalk gravel (Boulder Clay)				3	1.00	U	(71)		70	13	16	32		2.14	105	
									1.45					15						
								4	1.50	D									Øu= 19°	
				---- becoming firm to stiff			2.00	5	2.00	U	(59)		77	17	16	28		2.12	80	pH and sulphate content
									2.45										Øu=14	
		↓		---- with pale brown clay			2.50	6	2.50	D				10						Slight seepage at 0.70m with no rise and sealed off at 3.75m
								7	3.00	U	(32)									
									3.45											
				---- with pockets of orange brown clayey sand			3.50	8	3.50	D				17						
				---- becoming stiff			4.00	9	4.00	U	(37)		83	16	18	29		2.14	132	
									4.45											
								10	4.50	D										
						21.45	4.80	11	4.90	D										
				Stiff dark grey silty CLAY with chalk gravel (Boulder Clay)				12	5.00	U	(58)									
									5.45											
								13	5.50	D										
								14	6.00	D										
				---- becoming firm to stiff			6.50	15	6.50	U	(51)		82	14	14	29		2.11	75	
26.4.82 17.30	6.00	DRY				19.45	6.80		6.95											
27.4.82 08.30		DRY		Stiff grey-brown silty sandy CLAY with chalk gravel (Boulder Clay)				16	7.00	D										
								17	7.50	D										
								18	8.00	U	(47)									
									8.45											
								19	8.50	D										
						17.40	8.85	20	8.90	D										
				Firm cream-white lumps of fissured CHALK in a remoulded chalk matrix with flints (Upper Chalk) GRADE V				21	9.00	U	(37)									
									9.45											
								22	9.50	D										

WATER
1 First water strike
2 Subsequent water strikes
▽ Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural / Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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SHEET 1 OF 2 | FIG. A | HOLE NO. 144 A

TG 20 SW 87

ENGINEER G.MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 26.25 m O.D.	HOLE NO. 144 A
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS PERCUSSIVE (PILCON WAYFARER)	COORDINATES 620975 E 303630 N	FIGURE A
FIELDWORK BY: " " "		DATES 26/4/82-27/4/82	SHEET 2 OF 2
LAB. TESTING BY: " " "	200mm casing to 6.00m		

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	FIELD TEST	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
				AS SHEET 1				23/	10.00	DS/B	N=14									
								24	10.45											
								25	11.00	U	(46)									
									11.45											
								26	11.50	D										
								27/	12.00	DS/B	N=12									
								28	12.45											
								29	13.00	U	(39),									
									13.45											
								30	13.50	D										
								31/	14.00	DS/B	N=11									
								32	14.45											
								33	15.00	U	(40)									
									15.45											
27.4.82 14.00	6.00	DRY				10.55	15.60	34	15.50	D										
				BOREHOLE COMPLETED																

WATER
1 — First water strike
2 — Subsequent water strikes
▽ Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core
▮ recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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SHEET 2 OF 2 | FIG. A | HOLE NO. 144A

A.1.41 TG20SW88

14-18/8/82

TG 20 SW 88

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 29.35 m O.D.	HOLE NO. 145
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS WHEELED HYMAC	COORDINATES 621 164 E 303 626 N	FIGURE A
FIELDWORK BY: " " "		DATES 29/3/82	SHEET 1 OF 1
LAB. TESTING BY: " " "			

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Field Records	STRATA DESCRIPTION	LEG.	LEVEL m O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
29.3.82						29.35	0.00													
				SEE FIGURE Ax FOR DETAILS																1)Pit completed shored to 3.50m 2)No groundwater encountered 3) Photographs taken of face 4
								1	0.50	D										
								2	0.55	D										
									0.65				76	18	16	29				
								12	0.90	U38				14				2.14	62	CBR
								3	1.00	D				16					Cu=6	
									1.00	CBR										
								4	1.55	B			70	17	14	27				Sieve and pipette analysis relationship testing
									1.65											
								5	1.70	D										
								6	1.80	B			86	15	13	27	7.3			
									1.90											
								7	2.20	D				13						
								8	2.60	B			88	15	12	28	7.4			Sieve and pipette analysis heavy compaction
									2.70											
								9	3.00	D				22						
								10	3.20	B										
									3.30											
29.3.82		DRY		TRIAL PIT COMPLETED		25.85	3.50	11	3.50	D										

WATER
1 — First water strike
2 — Subsequent water strikes
▽ Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
I Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N or N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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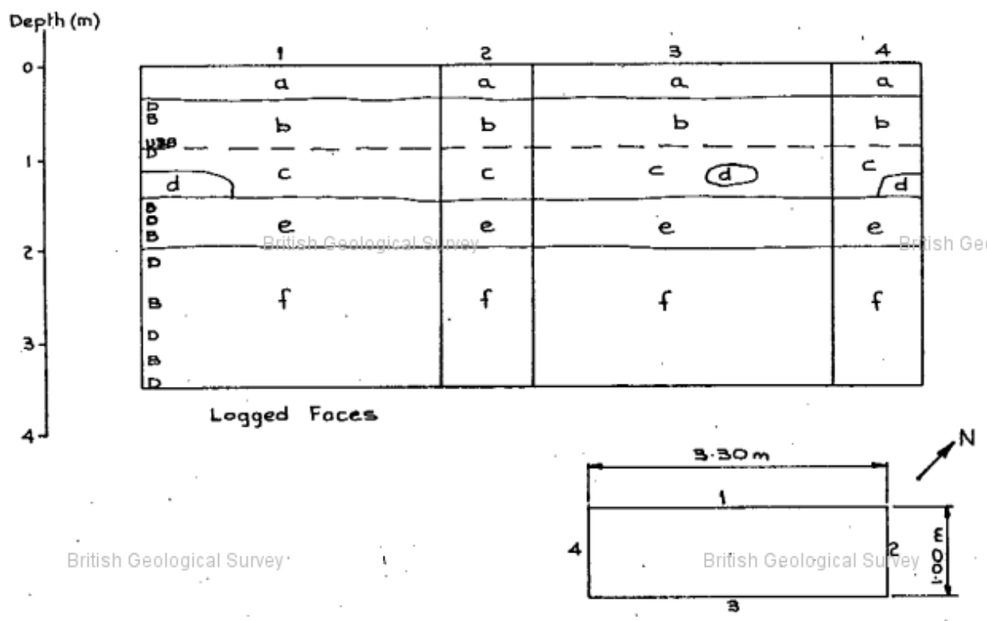
SHEET 1 OF 1 | FIG. A | HOLE NO. 145

TG 20 SW 88

ENGINEER: G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 29.35 m O.D.	HOLE NO. 145(T)
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS WHEELED HYMAC	COORDINATES 621 164 E 303 626 N	FIGURE Ax
FIELDWORK BY: " " "		DATES 29/3/82	SHEET 1 OF 1
LAB. TESTING BY: " " "			



STRATA

a) TOPSOIL(Dark brown fine sandy clay with occasional fine to coarse subangular to subrounded gravel)

b) Stiff red brown very sandy SILT and CLAY with occasional fine to coarse subrounded to subangular gravel (Boulder Clay)

c) As (b) becoming very sandy (Boulder Clay)

d) Pockets of light brown fine SAND

e) Stiff pale brown mottled orange-brown silty very fine sandy CLAY with fine to coarse rounded to subangular flints and chalk gravel (Boulder Clay)

f) Stiff pale brown slightly sandy very silty CLAY with fine to coarse rounded to angular gravel and cobble flint and chalk fragments (Boulder Clay)

NOTES

1) Pit completed and shored to 3.50m

2) No groundwater encountered

3) Photographs taken of face 4.

DISCONTINUITIES
Joint directions, 070/15 dip direction/dip in deg.
Fracture spacing, R(20/50/200, minimum/average/maximum in mms.
DEPTH
All depths, levels and thicknesses in metres.

WATER
First water strike
Subsequent water strikes

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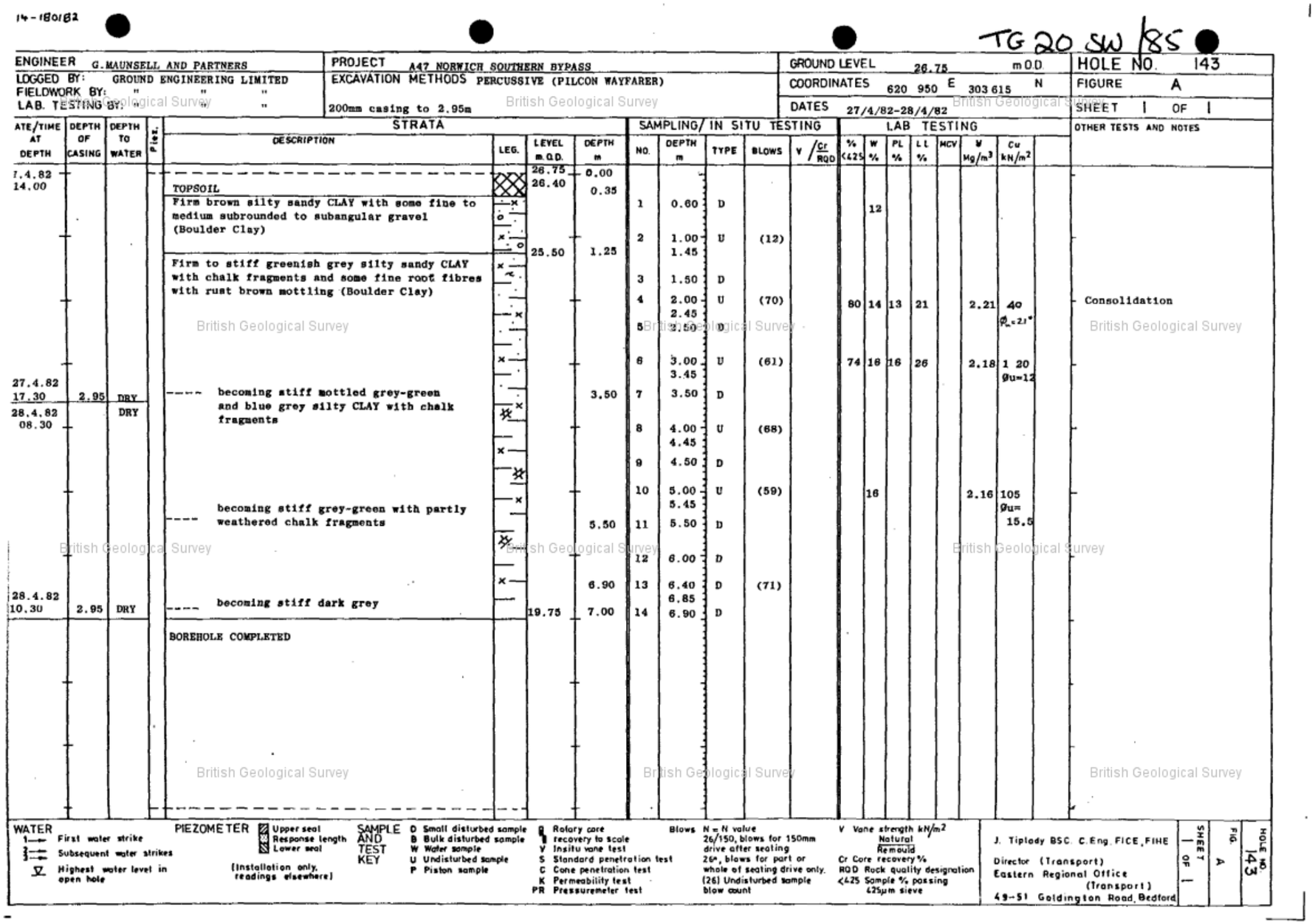
SHEET 1 OF 1 | FIG. Ax | HOLE NO. 145(T)

A.1.42 TG20SW85



14-18/8/82

TG 20 SW 85

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 26.75 mOD	HOLE NO. 143
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS PERCUSSIVE (PILCON WAYFARER)	COORDINATES 620 950 E 303 615 N	FIGURE A
FIELDWORK BY: " " "	200mm casing to 2.95m	DATES 27/4/82-28/4/82	SHEET 1 OF 1
LAB. TESTING BY: " " "			

DATE/TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Plex.	STRATA DESCRIPTION	LEG.	LEVEL m.O.D.	DEPTH m	SAMPLING/IN SITU TESTING NO.	DEPTH m	TYPE	BLOWS	V / Cr RQD	LAB TESTING % <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²	OTHER TESTS AND NOTES
1.4.82 14.00				TOPSOIL		26.75	0.00													
				Firm brown silty sandy CLAY with some fine to medium subrounded to subangular gravel (Boulder Clay)		26.40	0.35	1	0.60	D				12						
								2	1.00 1.45	U	(12)									
				Firm to stiff greenish grey silty sandy CLAY with chalk fragments and some fine root fibres with rust brown mottling (Boulder Clay)		25.50	1.25	3	1.50	D										
								4	2.00 2.45	U	(70)		80	14	13	21		2.21	40 $\phi_{c.v.}$ 23°	Consolidation
								5	2.50	D										
								6	3.00 3.45	U	(61)		74	16	16	26		2.18	1 20 ϕ_u=12	
27.4.82 17.30	2.95	DRY		becoming stiff mottled grey-green and blue grey silty CLAY with chalk fragments			3.50	7	3.50	D										
28.4.82 08.30		DRY						8	4.00 4.45	U	(68)									
								9	4.50	D										
				becoming stiff grey-green with partly weathered chalk fragments				10	5.00 5.45	U	(59)			16				2.16	105 ϕ_u= 15.5	
							5.50	11	5.50	D										
								12	6.00	D										
28.4.82 10.30	2.95	DRY		becoming stiff dark grey			6.90	13	6.40 6.85	D	(71)									
						19.75	7.00	14	6.90	D										
				BOREHOLE COMPLETED																

WATER
1 First water strike
2 Subsequent water strikes
3 Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core
recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows N = N value
26/150, blows for 150mm drive after seating
26*, blows for part or whole of seating drive only.
(26) Undisturbed sample blow count

V Vane strength kN/m²
Natural
Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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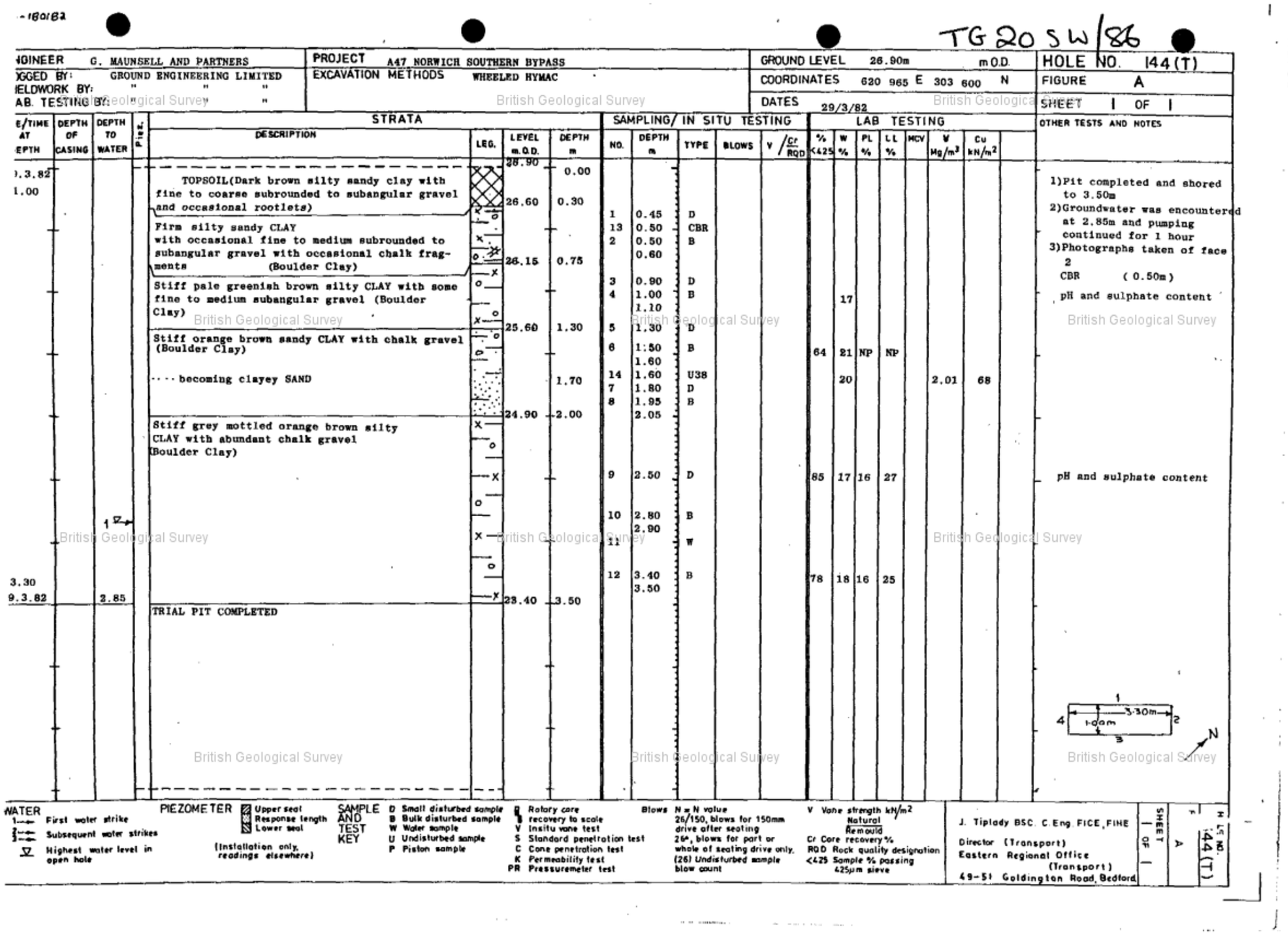
SHEET 1 OF 1 | FIG. A | HOLE NO. 143

A.1.43 TG20SW86



-16/3/82

TG 20 SW/86

ENGINEER G. MAUNSELL AND PARTNERS	PROJECT A47 NORWICH SOUTHERN BYPASS	GROUND LEVEL 26.90m m O.D.	HOLE NO. 144(T)
LOGGED BY: GROUND ENGINEERING LIMITED	EXCAVATION METHODS WHEELED HYMAC	COORDINATES 620 965 E 303 600 N	FIGURE A
FIELDWORK BY: " " "		DATES 29/3/82	SHEET 1 OF 1
LAB. TESTING BY: " "			

TIME AT DEPTH	DEPTH OF CASING	DEPTH TO WATER	Piez.	STRATA DESCRIPTION	LEG.	LEVEL m.O.D.	DEPTH m
9.3.82						26.90	
1.00				TOPSOIL(Dark brown silty sandy clay with fine to coarse subrounded to subangular gravel and occasional rootlets)		26.60	0.00
				Firm silty sandy CLAY with occasional fine to medium subrounded to subangular gravel with occasional chalk fragments (Boulder Clay)		26.15	0.30
				Stiff pale greenish brown silty CLAY with some fine to medium subangular gravel (Boulder Clay)		25.60	0.75
				Stiff orange brown sandy CLAY with chalk gravel (Boulder Clay)			1.30
				···· becoming clayey SAND		24.90	1.70
				Stiff grey mottled orange brown silty CLAY with abundant chalk gravel (Boulder Clay)			2.00
3.30							
9.3.82		2.85		TRIAL PIT COMPLETED		23.40	3.50

NO.	DEPTH m	TYPE	BLOWS	V / Cr / RQD	% <425	W %	PL %	LL %	MCV	γ Mg/m³	Cu kN/m²
1	0.45	D									
13	0.50	CBR									
2	0.50	B									
	0.60										
3	0.90	D									
4	1.00	B				17					
	1.10										
5	1.30	D									
6	1.50	B			64	21	NP	NP			
	1.60										
14	1.60	U38				20				2.01	68
7	1.80	D									
8	1.95	B									
	2.05										
9	2.50	D			85	17	16	27			
10	2.80	B									
	2.90										
11		W									
12	3.40	B			78	18	16	25			
	3.50										

OTHER TESTS AND NOTES

1) Pit completed and shored to 3.50m
2) Groundwater was encountered at 2.85m and pumping continued for 1 hour
3) Photographs taken of face 2
CBR (0.50m)
pH and sulphate content

pH and sulphate content

WATER
1 First water strike
2 Subsequent water strikes
▽ Highest water level in open hole

PIEZOMETER
Upper seal
Response length
Lower seal
(Installation only, readings elsewhere)

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
W Water sample
U Undisturbed sample
P Piston sample
R Rotary core recovery to scale
V Insitu vane test
S Standard penetration test
C Cone penetration test
K Permeability test
PR Pressuremeter test

Blows: N = N value 26/150, blows for 150mm drive after seating 26*, blows for part or whole of seating drive only. (26) Undisturbed sample blow count

V Vane strength kN/m² Natural Remould
Cr Core recovery %
RQD Rock quality designation
<425 Sample % passing 425μm sieve

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SHEET 1 OF 1
F A
H.E. NO. 144(T)

A.1.44 TG10SE11

TG 10 SE 11 1842 0356 South-west of Hall Farm, Intwood

Surface level (+ 31.5 m) + 103 ft
Water not struck
With B O, 8 inch diam.,
January 1970

Overburden (0.9 m) 3 ft;
Mineral (0.9 m) 3 ft;
Waste (16.4 m + 154 ft +

		Thickness (m)	ft	Depth (m)	ft
	Soil.	(0.9)	3	(0.9)	3
Glacial Sand and Gravel	Gravel.	(0.9)	3	(1.8)	6
	Gravel: coarse with fine, subangular flint with some subrounded quartz. Sand: medium with coarse, subangular. Brown.				
	Very 'clayey' pebbly sand	(0.9)	3	(2.7)	9
	Gravel: fine to coarse, mainly subangular to subrounded flint. Sand: fine to coarse, subangular. Light brown.				
Chalky Boulder Clay	Brown sandy clay with occasional flint pebbles.	(7.7)	25	(10.4)	34
	Light brown chalky clay.	(3.0)	10	(13.4)	44
	Brown sandy clay with thin sand bands.	(1.8)	6	(15.2)	50
	Light brown-orange clay, slightly sandy, with occasional quartz and chalk pebbles.	(3.0+)	10+	(18.2)	60

	%	mm	%
Gravel	61	– 64 :	0
		64 + 16 :	42
		16 + 4 :	19
Sand	32	4 + 1 :	8
		1 + ¼ :	21
		¼ + 1/16 :	3
Fines	7	– 1/16 :	7

Depth below surface (ft) 3 – 6

Percentage: Fines 7, Sand 32, Gravel 61

A.1.45 TG20SW166

NGRC
BOREHOLE RECORDS
ADJUSTMENT FORM

QUARTER SHEET TG 20 SW

BH REGISTRATION NUMBER 164 – 172.

RECORDS ENTERED AND HELD BY WALLINGFORD

BH REGISTRATION NUMBER(S)

RECORD OF WELL

For Institute use only Licence No.

N .....

TG 20/139

161

EXACT SITE OF WELL

At ..Sports Ground.....
..Lakenham Hewitt.....
Town or Village ..Swanderston.....
County .....Norfolk.....

Six-inch National Grid sheet and reference .....TG 2064 0328.....

For ..Lakenham & Hewitt Rugby Football Club and C.E.Y.M.S.....

State whether owner, tenant, builder, contractor, consultant, etc.: ..Licence No. E7:34:13:6:211.....

Address (if different from above) .....

.....

Level of ground surface above sea level (O.D.) ..... ft (.....m)

*DELETE AS NECESSARY

If well top is not at ground level state how far above:* below: .....ft (..... m)

SHAFT.....ft (.....m); diameter.....ft (.....m);

HEADINGS (please attach details—dimensions and directions)

BORE...200.....ft (....60:96...m); diameter: at top.....nk.....in (.....mm);

at bottom.....in (.....mm)

Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):

..not known.....

.....

.....

.....

.....

TEST CONDITIONS

Water struck at depths of .....ft (.....m) below well top

Rest level of water.....ft (..24.0...m) ~~above*~~ below well top. Suction at..... ft (..... m)

Yield on.....hours'* days'* test pumping at.....galls per ..... (..... l/s) with depression to.....ft (.....m) below well top. Recovery to rest level in ..... mins* hours*

Capacity of pump.....g.p.h. (.....l/s)

Date of measurements.....1986.....

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type ..... Motive power.....

Capacity.....galls (.....m³) per hour. Suction at ..... ft (..... m)

below well top. Amount pumped.....galls (.....m³) per day. Estimated consumption .....galls (.....m³) per week

Well made by ..T.W. Page & Son Ltd..... Date of sinking....?..11/1986.....

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

Received from ..Anglian WA.....
.....Norwich Division.....
.....
Date .....1.4.87.....
Observation well.....
Recorder .....
ER log .....
Site marked on
1" map .....
6" map—Grid Sheet.....
(use symbol)
Copy to .....
.....
Date .....

INSTITUTE OF GEOLOGICAL SCIENCES
HYDROGEOLOGY UNIT
EXHIBITION ROAD
LONDON SW7 2DE

IGS 2494 10 000 7/79

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GEOLOGICAL CLASSIFICATION	NATURE OF STRATA *If measurements start below ground surface, state how far.*	THICKNESS Feet	Inches	Metres	DEPTH Feet	Inches	Metres
	Topsoil	1	–	0.30	1	–	0.30
	Hard brown clay	2	–	0.61	3	–	0.91
	Soft yellow sand/clay	21	–	6.41	24	–	7.32
	Small stones	2	–	0.61	26	–	7.92
	Yellow sand	30	–	9.15	56	–	17.07
	Yellow mull	26	–	7.92	82	–	24.99
	Good hard chalk	38	–	11.59	120	–	36.58
	Good hard chalk with flints	52	–	15.85	172	–	52.43
	Good hard chalk	28	–	8.53	200	–	60.96

DATA ACQUISITION SHEET

CSC/D/128
P19

NRA region: ANGLIAN (NORWICH)
File Number: PTF 34/13 (4)

TG20/139

Pump Well Identification:

NRA id No: 34/13/G/211
BGS (WL) No: TG20/139
NGR: TG 2064 0329
Elevation: 37.2mOD
Measuring Point:
Site Name: LAKENHAM & HEWITT RFC
Locality: SWARESTON

Well details:

depth of pumping well: 60.96m
diameter: 100mm
casing details: plain ts ?
☒ observation boreholes NONE
number of obs bhs: —
obs bh details: —

Aquifer Details:

SEMI ?
confined / ~~unconfined~~ If confined, confining layer: Boulder Clay? Marl!

Aquifer Geology	from	to	Aquifer Geology	from	to
CLAY ts 7.31 Stones ts 12.04 Marl ts 25.0 CHALK	25.0	61.0			

Pumping Test Details:

date of test: 3.12.86
length of test: 5.5 hours
RWL: 24.6m bgl
PWL: 26.6m bgl
Drawdown: 2.0m
pumping rate: mean 1.0l/s (70.5m³/d)
~~this~~ yield dropped off towards end of test but not reflected in drdn.

Additional Well Information:

☐ Well Loss Data: B..... C..... Efficiency.....
☐ Well Acidified
☐ Flow Logs
☐ Other Geophysical Logs
☐ Fissure Information: major inflows from.....to.....
from.....to.....
from.....to.....

Aquifer Parameters:

Analysis Type: JACOB I
Transmissivity: 56.1m²/d (later data)
EARLY DATA = 21.5m²/d
Storage Coefficient: —

Analysis Type: THEIS RECOVERY
Transmissivity: 21.8m²/d good fit (virtually all data fit at line)
Storage Coefficient:

Analysis Type:
Transmissivity:
Storage Coefficient:

Other Data:

Confidence:

excellent ☐ ☑ ☐ ☐ ☐ very poor

Notes: No obs bhs ∴ not possible to calc S value.

A.1.46 TG20SW112

RECORD OF WELL

For Institute use only Licence No.

N .....

TG 20 SW 112
2064 0328

TG 20/139

161

EXACT SITE OF WELL

At ..Sports Ground.....
..Lakenham Hewitt.....
Town or Village ..Swanderston.....
County .....Norfolk.....

Six-inch National Grid sheet and reference .....TG 2064 0328.....

For ..Lakenham & Hewitt Rugby Football Club and C.E.Y.M.S.....

State whether owner, tenant, builder, contractor, consultant, etc.: ..Licence No. E7:34:13:6:211..

Address (if different from above) .....

.....

Level of ground surface above sea level (O.D.) ..... ft (.....m)

*DELETE AS NECESSARY

If well top is not at ground level state how far above:* below: .....ft (..... m)

SHAFT.....ft (.....m); diameter.....ft (.....m);

HEADINGS (please attach details—dimensions and directions)

BORE...200.....ft (....60:96...m); diameter: at top.....nk.....in (.....mm);

at bottom.....in (.....mm)

Full details of permanent lining tubes (position, length, inner and outer diameters, plain slotted etc.):

not known

.....

.....

.....

.....

Water struck at depths of .....ft (.....m) below well top

TEST CONDITIONS

Rest level of water.....ft (..24:0...m) ~~above~~* below well top. Suction at..... ft (.....m)

Yield on.....hours'* days' test pumping at.....galls per ..... (..... l/s) with

depression to.....ft (.....m) below well top. Recovery to rest level in ..... mins* hours

Capacity of pump.....g.p.h. (.....l/s)

Date of measurements.....1986.....

NORMAL CONDITIONS

DESCRIPTION OF PERMANENT PUMPING EQUIPMENT:

Make and/or type ..... Motive power.....

Capacity.....galls (.....m³) per hour. Suction at ..... ft (.....m)

below well top. Amount pumped.....galls (.....m³) per day. Estimated

consumption .....galls (.....m³) per week

Well made by ..T.W. Page & Son Ltd..... Date of sinking....?..11/1986.....

ADDITIONAL NOTES ANALYSIS (please attach copy if available)

LOG OF STRATA OVERLEAF

Received from ..Anglian WA.....
.....Norwich Division.....
.....
Date .....1.4.87.....
Observation well.....
Recorder.....
ER log .....
Site marked on

TG20SW112
2064 0328

For Institute use only

Geological Classification	Nature of Strata — *If measurements start below ground surface, state how far.*	Thickness Feet	Thickness Inches	Thickness Metres	Depth Feet	Depth Inches	Depth Metres
Cretaceous Quaternary — Glacial Deposits	Topsoil	1	–	0.30	1	–	0.30
	Hard brown clay	1	–	0.61	3	–	0.91
	Soft yellow sand/clay	21	–	6.41	24	–	7.32
	Small stones	2	–	0.61	26	–	7.92
	Yellow sand	30	–	9.15	56	–	17.0
	Yellow mull	26	–	7.92	82	–	24.92
Cretaceous — Upper Chalk.	Good hard chalk	38	–	11.59	120	–	36.51
	Good hard chalk with flints	52	–	15.85	172	–	52.4
	Good hard chalk	28	–	8.53	200	–	60.9

A.1.47 TG20SW14

TG20SW/14

TG 20 SW 14 2136 0318 Near Mangreen Hall, Swardeston

Surface level (+ 41.6 m) + 136 ft Water struck at (+ 36.9 m) + 121 ft Waste (17.2 m +) 56 ft +
Wirth B 1, 8-in diameter, February 1969

		Thickness (m)	ft	Depth (m)	ft
Boulder Clay	Soil on orange to brown sandy clay with flint pebbles.	(2.7)	9	(2.7)	9
	Grey and brown clay with abundant chalk and occasional sandy lenses.	(12.5)	41	(15.2)	50
	Slightly sandy light brown clay.	(2.0+)	6.5+	(17.2)	56

Borehole abandoned because of obstruction.

A.1.48 TG20SW55

TG20SW/55
2064·0315

161/403 Police House, Swardeston. (Sealed)

Surface +116. Shaft 87; rest bore. Lining tubes: 70 x 4 in. R.W.L. +34. P.W.L. -4. Yield 600 g.p.h. (8 h. test). Buckingham, Mar. 1950.

Handpump. 1953. Hardness: total 400. Anal. Before 1960.

† Boulder Clay	...	...	c.30	c.30
UCk	...	...	c.140	170

Estimated log
pp. P.N. Hilditch 18.6.69.
6" Quarter Sheet
75 SW E

1.

161/403 Police House, Swardeston. (Sealed) TG20/50

Surface +116. Shaft 87; rest bore. Lining tubes: 70 x 4 in. R.W.L. +34. P.W.L. -4. Yield 600 g.p.h. (8 h. test). Buckingham, Mar. 1950.

Handpump. 1953. Hardness: total 400. Anal. Before 1960.

† Boulder Clay	...	...	c.30	c.30
UCk	...	...	c.140	170

Estimated log TG 2066 0315

PP [redacted] 18.6.69.

6" Quarter Sheet
75 SW E

1.

RECORD OF WELL (SHAFT OR BORE)

(attach copy of analysis if available)

For Survey use only TG20/50 N.5117 161/403

EXACT SITE OF WELL

At Police House.

Town or Village Swardeston, Norwich

County Norfolk Six-inch quarter sheet 75 SW/E

For Mr. Norfolk County Council State whether owner, tenant, builder, contractor, consultant, etc. :—

Address (if different from above) Hospital Road, Norwich

Level of ground surface above sea-level (O.D.) ... ft. If well-top is not at ground level, state how far ... {above; below;} ... ft.

SHAFT 87 ft.; diameter ... ft.; Details of headings ...

BORE 83 ft.; diameter of bore: at top 4 ins.; at bottom ... ins.

Details of permanent lining tubes 70' x 4"

Water struck at depths of ... ft. below well-top.

TEST CONDITIONS

Rest-level of water 82 ft. above ~~below~~ well-top. Suction at ... ft. Yield on 8 hours' ~~days'~~ test pumping at 600 galls. per hour; with depression to 120 ft. below well-top.

Recovery to rest-level in ... mins. ~~hours~~ Capacity of pump ... g.p.h. Date of measurements ...

NORMAL CONDITIONS

Description of permanent pumping equipment :

Make and/or type ... Motive power ...

Capacity ... gallons per hour. Suction at ... ft.

Amount pumped ... galls. per day. Estimated consumption ... galls. per week.

Well made by J.W. Buckingham. Date of well March, 1950

Information from Co.

ADDITIONAL NOTES

Police house visited - no one in.
Site marked by Handpump outside back door,
O.D. 116'
SMA 15.10.53

Combined chlorine 1.5 grs/gall.
Total Hardness 38°
Very slight trace Iron.

Visited.
Disused & sealed.
24/5/60 BW.

M. & H. & W. Ltd. Gp.685 12,000 3/48 (32843) W1.147/0424

LOG OF STRATA OVERLEAF.

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

Date Received	1" O.S. Map No.	Site marked on 1" Map	(use symbol) on 6" Map
9.4.53.		⊙	⊙

(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE OF STRATA If measurements start below ground surface, state how far ...	THICKNESS Feet ...	THICKNESS Inches ...	DEPTH Feet	DEPTH Inches
?	Brick shaft.	87			
uck.	Chalk.	83		170	
	Estimated log:				
	BC to c. 30'				
	UCK to 170'				
	P.N.H 18.6.69.				
	DATA Bank				

A.1.49 TG10SE18

TG 10 SE 18 1957 0233 South-west of Hospital Farm, Swardeston

Surface level (+ 33.2 m) + 109 ft
Water not struck
Wirth B O, 8 inch diam.,
January 1970

Waste (15.5 m) 51 ft;
Bedrock (0.9 m +) 3 ft +

		Thickness (m)	Thickness ft	Depth (m)	Depth ft
	Made ground and soil.	(1.2)	4	(1.2)	4
Glacial Sand and Gravel	Very clayey sand. Traces of hard chalk fragments. Gravel: fine, subangular traces subrounded, mainly flint, some quartz. Sand: medium and fine, subangular. Light brown.	(0.6)	2	(1.8)	6
Chalky Boulder Clay	Brown sandy clay with some gravel. Gravel: mainly fine, subangular flint. Sand: medium and coarse.	(2.1)	7	(3.9)	13
	Light brown clay with traces of chalk.	(11.6)	38	(15.5)	51
Upper Chalk	Chalk.	(0.9 +)	3 +	(16.4)	54