NRA-AWGLIAN 273





Scott Wilson Kirkpatrick

NRA 556.04 (410.134)

NATIONAL RIVERS AUTHORITY

ANGLIAN REGION

RIVER WISSEY HYDROMETRIC SCHEME

DRILLING CONTRACT - FACTUAL REPORT

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NATIONAL RIVERS AUTHORITY

ANGLIAN REGION

RIVER WISSEY HYDROMETRIC SCHEME - DRILLING CONTRACT

FACTUAL REPORT

CONTENTS

- 1. INTRODUCTION
- 2. SITE WORKS
 - 2.1 Factual Account of the Works
 - 2.2 Notes Concerning Logs and Results
- .3. FINAL BOREHOLE LOCATIONS
- 4. BOREHOLE LOGS
- 5. FALLING HEAD TEST RESULTS

NATIONAL RIVERS AUTHORITY

ANGLIAN REGION

RIVER WISSEY HYDROMETRIC SCHEME - DRILLING CONTRACT

FACTUAL REPORT

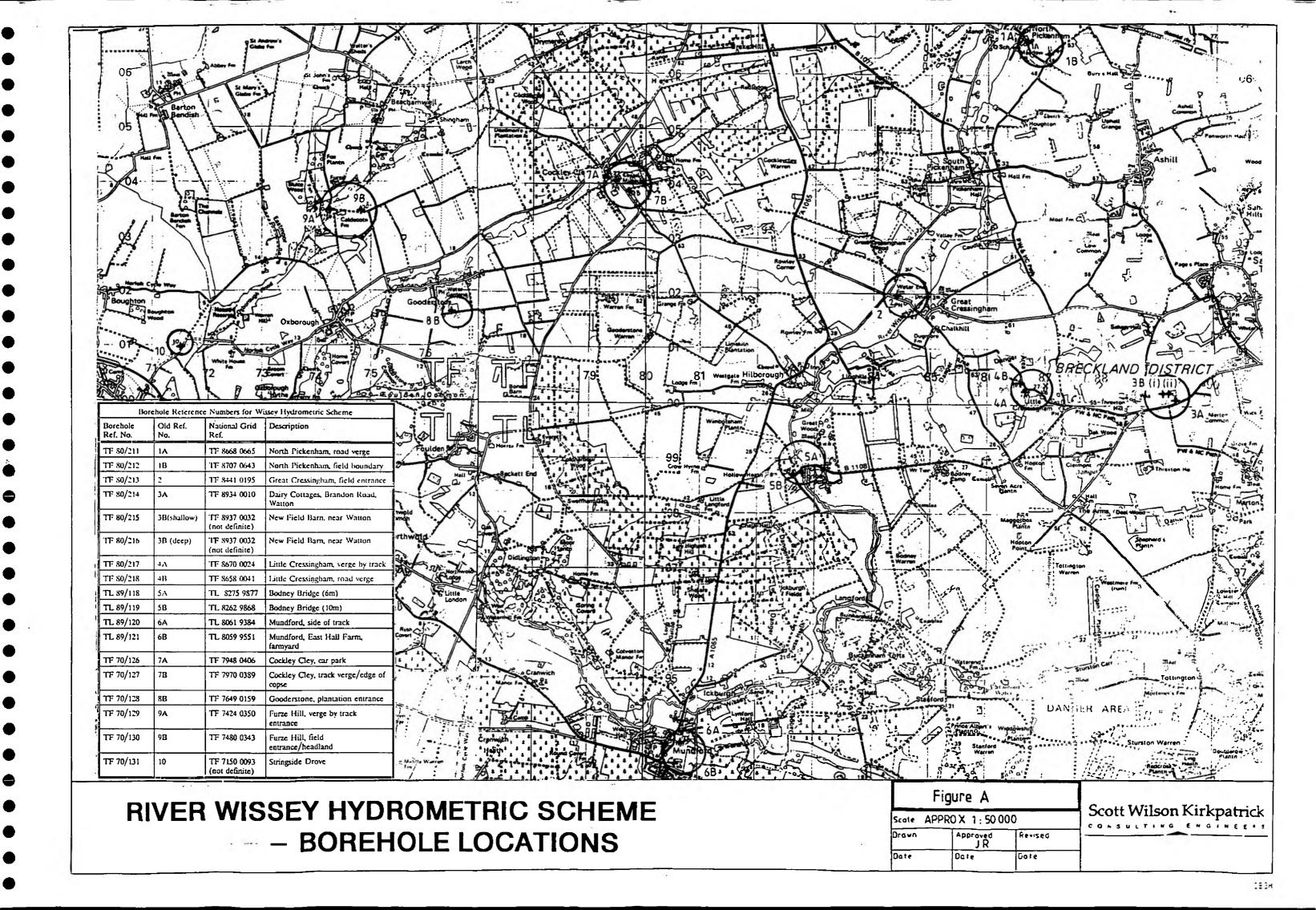
1. INTRODUCTION

The location of the contract works (see Figure A) was the catchment area of the River Wissey, a tributary of the Great Ouse, in south west Norfolk.

This report details the site works supervised by Scott Wilson Kirkpatrick on behalf of the National Rivers Authority (NRA), Anglian Region.

The works comprised the drilling of 18 No observation boreholes and installation of standpipes in each hole to enhance the groundwater resource monitoring network within the Chalk aquifer and overlying Drift. Sixteen of the boreholes were scheduled as "shallow", not exceeding 20m depth, completed either in the Drift or underlying Chalk aquifer. The two remaining "deep" holes were scheduled to be 30m deep, ending in "Firm" chalk (defined as being unweathered, stable without the need for borehole casing, and producing good water flow).

The drilling operations, which were undertaken by Soils Engineering, the NRA Term Drilling Contractor, began on 23 January 1995 and were completed on 6 March 1995.



SITE WORK AND NOTES

2. SITE WORKS

2.1 Factual Account of the Works

Table 1 schedules the progress of the works in diary form. Within a day of site works commencing a decision was made to increase the length of the gravel filter zone from 1.0m to 1.35m. This was to further safeguard the geotextile filter wrap around the standpipe slots from possible blockage caused by the top and bottom bentonite/cement seals. The change applied to all holes including TF 80/215 which had already been backfilled, but which had to be redrilled due to problems which occurred during withdrawal of the 150mm across casing.

Under the terms of the contract, all water/slurry was to be stored on site until the fines had sufficiently settled to allow clear water to be pumped into a nearby drain. Each of the two "deep" boreholes had a skip into which all the arisings were emptied and allowed to settle out. For the remaining holes a cheaper option was the use of a trailer mounted container, capable of being towed by the contractor's pick-up. Arisings were emptied directly into this which was itself emptied into a third skip at the site store at the end of each day. This method proved very successful despite the time taken to empty the "baler" into the container every time, and the time to unload it each day.

To ensure that the boreholes would respond quickly to any change in groundwater levels, two Falling Head permeability tests were performed in each borehole. The first test was performed within the 150mm casing during drilling, and the second was within the 50mm standpipe after borehole completion. Approximately 14 of the second tests gave a better performance than the first. Also, approximately half of the 36 tests indicated excellent hydraulic connection, often making it impossible to fill the hole with water up to ground level.

No services belonging to public utilities or private parties were encountered during the investigations.

The surveyors employed to provide levels of the headworks spent a couple of days on site near the contract end. They arrived on site having done no background work to establish benchmark locations and levels. These were determined once on-site by referencing various Ordnance Survey extracts held on site by Scott Wilson Kirkpatrick.

The contract period was programmed for 24 working days. Eventual finish date was the 6 March 1995, an over-run of 7 working days. Of these seven days, 3½ have been deemed to have been "unavoidable" due to the driller falling ill (1 day total) and four boreholes being extended beyond their scheduled depths (2½ days total). The remaining 3½ days over-run were, in our opinion, avoidable and were due to: worn equipment and lack of a chisel; the driller's vehicle being taken for a service (without prior notification); but primarily due to the driller's insistence on finishing very early on site most days.

Of the landowners/points of contact with whom we were in contact during the works, all were satisfied and no complaints were received.

During the contract all boreholes apart from four were drilled at the NRA preferred locations. The four that were moved were TF 80/211, 80/214, 70/131 and TL 89/119, and their final locations are indicated in Section 3 of this report.

The scheduled borehole depths were governed by the anticipated depth to the Chalk aquifer and ensuring that the standpipe did not dry up during the summer months. Four boreholes, TF 80/211, 218, TL 89/120 and TF 70/128, were eventually drilled deeper by 9.5m, 6m, 23m and 3m respectively because the above conditions were not initially met.

TF 80/211 encountered Boulder Clay (dry) within 2.5m of ground level and this continued to 17.5m depth. After being left overnight the hole squeezed to within approximately 4.0m of ground level. After discussions with the NRA, drilling was halted and the standpipe was installed with its tip at 4.0m.

TF 80/218 similarly passed through a little drift and then Boulder Clay until chalk and free flowing groundwater conditions were encountered at 18m. The standpipe tip was then placed at this depth.

TL 89/120 likewise went beyond its cheduled depth although this time the hole was near to a buried alluvial channel which after 29m had only yielded fine to medium sand. After discussions with the NRA the drilling was halted and the standpipe installed at 29m depth.

With TF 70/128 water entry was not evident by the 10m scheduled depth despite being 6.5m into the chalk. Having been instructed to continue until the hole was approximately 4.0m below the water table, drilling was halted for the day at 13.0m. By the next morning water had risen in the hole to its equilibrium level of 8m below ground level. After clearing the borehole of settled chalk fines and at the same time removing water, the water flow into the hole was proved fast enough to mirror possible groundwater level changes, and so the standpipe was installed at 13m depth.

As already mentioned, borehole TF 80/215 had to be redrilled. This was because the bentonite/cement pellets were poured into the hole too quickly, and as a result they jammed in the gap between the 50mmØ and 150mmØ casings, where they began to swell due to reaction with the water present. This problem was avoided on subsequent boreholes by adding the pellets at a much slower rate.

Only one borehole location TF 80/212 required any work to create a level working platform for the drilling rig. It had initially been envisaged that a scaffold platform or a mound built from hardcore would be needed, but after no objection from the landowner, the small embankment was excavated (and later restored) to create a level surface.

TABLE 1: PROGRESS OF THE WORKS

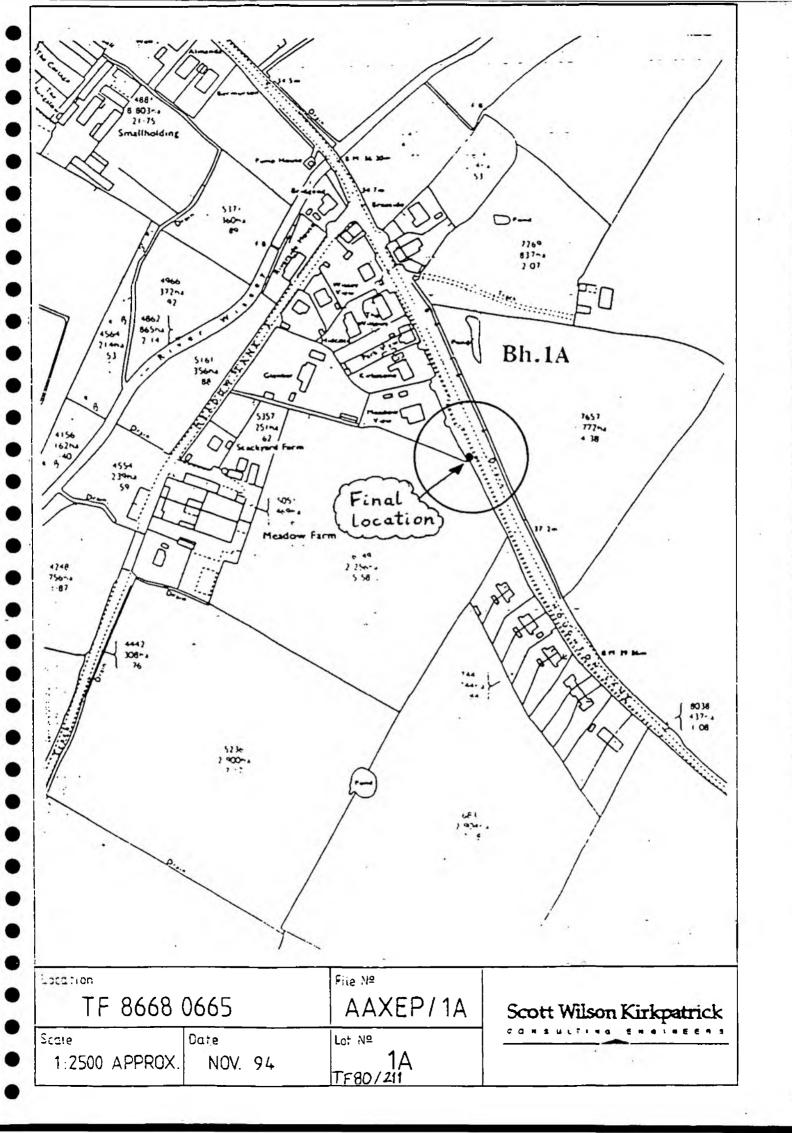
WORK DONE
TF 80/215
TF 80/216
TF 80/214
TF 80/217
TF 80/218
Headworks at TF 80/214. One Driller ill.)
Re-drilled TF 80/215
TF 80/213
TF 80/211
TF 80/212
TF 70/126
TF 70/127
Headworks at TF 80/211, 215, 216. One Driller ill.
TF 70/128
TF 70/129 (Half day lost due to lack of chisel.)
Drillers not on site due to reported vehicle breakdown.)
TF 70/130
TF 70/131
TL 89/121
Drillers' vehicle taken to be serviced.)
TL 89/120
Headworks at TF 80/214, 215, 216.)
TL 89/119
TL 89/118
Headworks generally

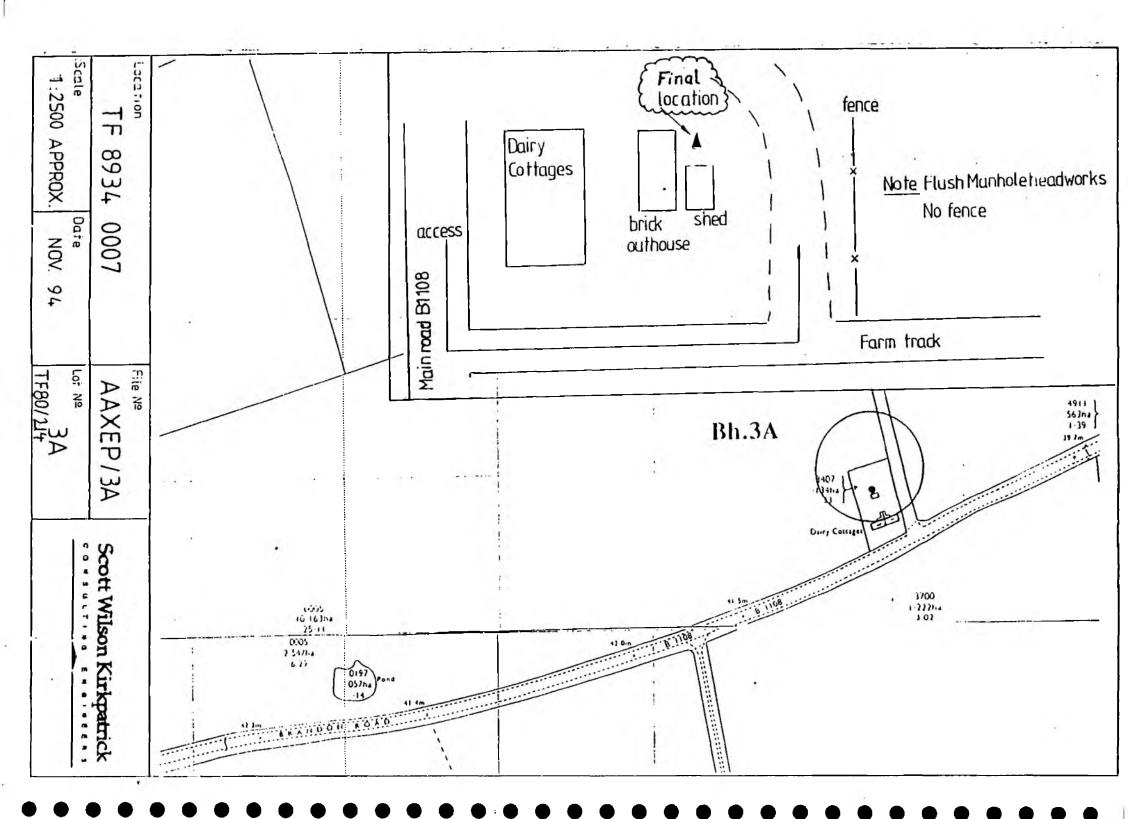
2.2 Notes Concerning Logs and Results

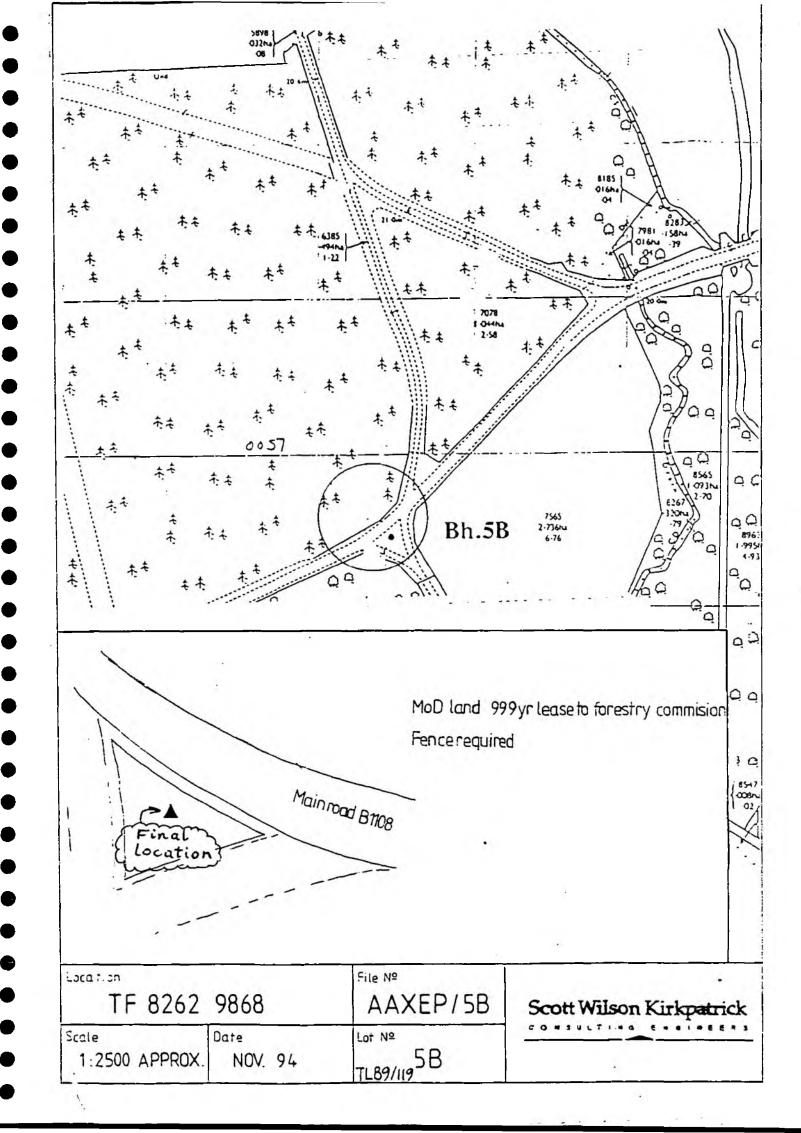
- where materials of granular nature were encountered in the boreholes, the description of their "compactness", is that of the driller.
- Where "Times" are recorded on the borehole logs, 14.2 means 14:20 hrs.
- Data sheets recording Falling Head permeability test results (Section 5) for tests performed in the 50mm standpipe, have used the length of response zone of 1.35m. This is the length of the gravel zone only and ignores the fact that the slotted pipe is only 1.0m long and that there is also a 0.15m depth of less permeable sand filter, making up the overall filter.

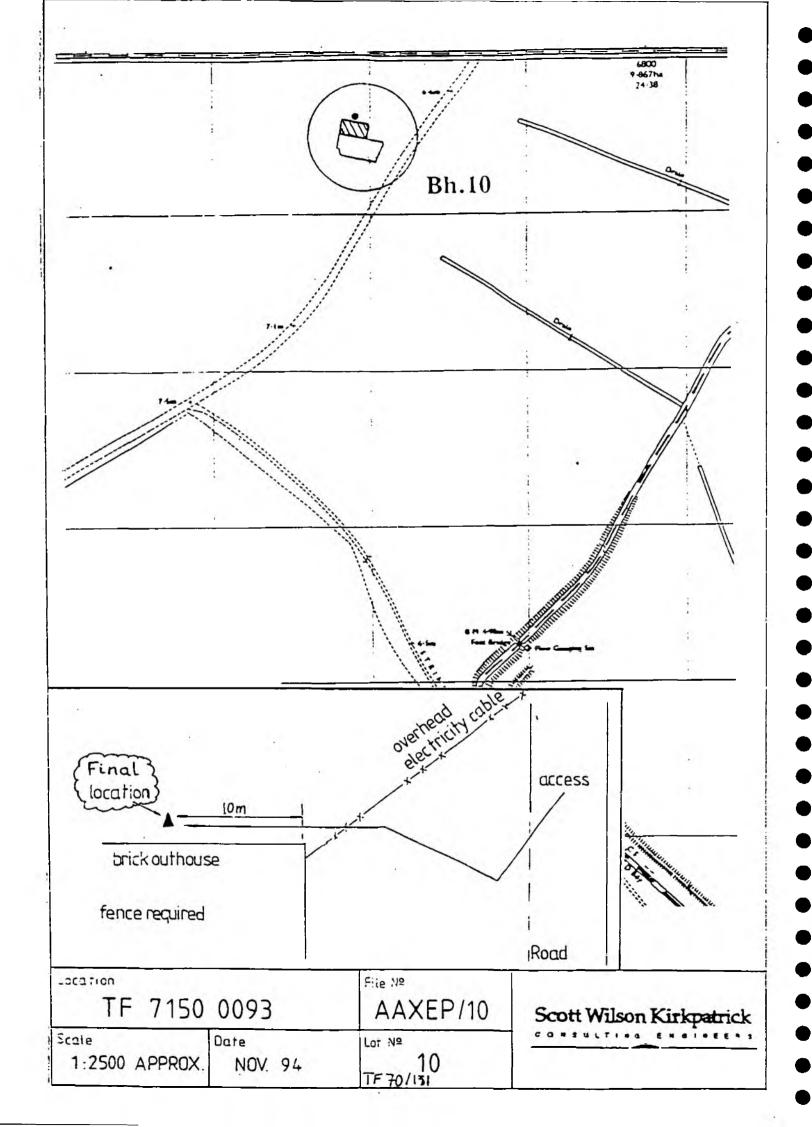
BOREHOLE LOCATIONS 3











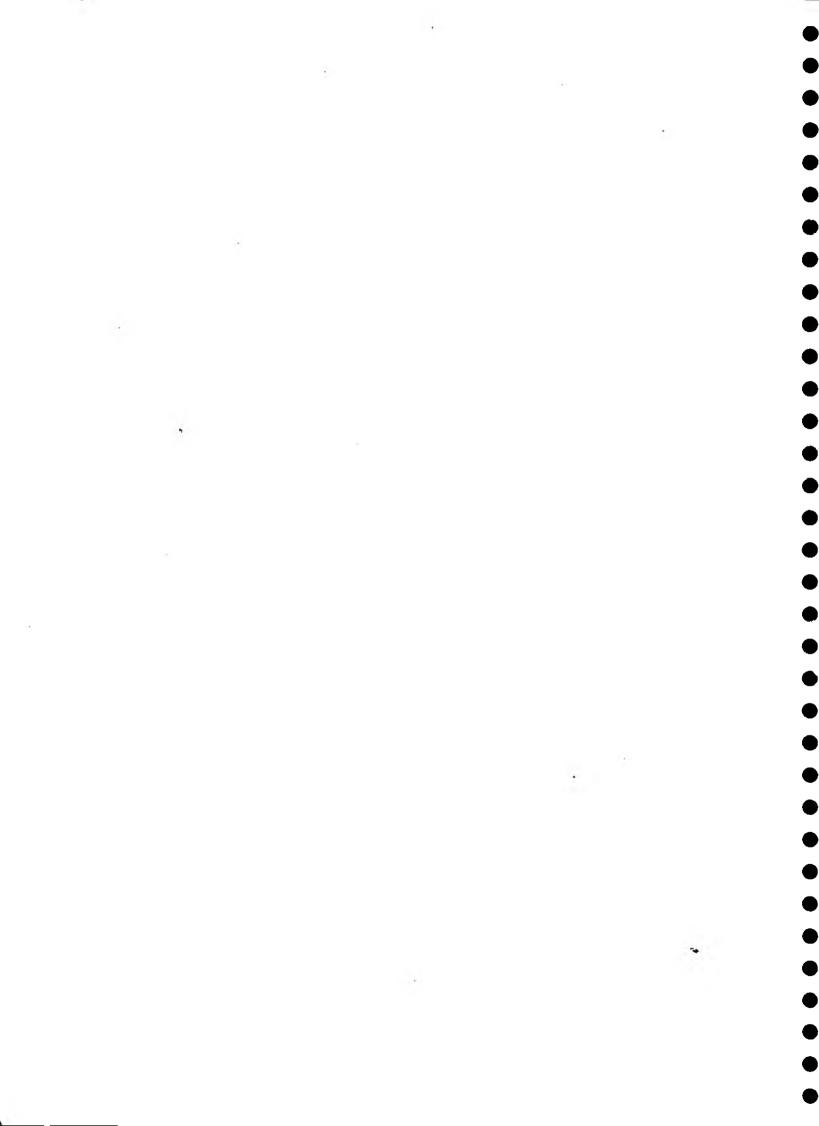
BOREHOLE DATUM LEVELS

Borehole Ref	Datum [and pin] levels (mOD). (See figure).
TF 80/211 TF 80/212 TF 80/213 TF 80/214 TF 80/215 TF 80/216 TF 80/217 TF 80/218 TL 89/118 TL 89/119 TL 89/120 TL 89/121 TF 70/126 TF 70/127 TF 70/128 TF 70/129 TF 70/130 TF 70/131	36.665 [36.425] 49.822 33.596 39.912[39.450] 39.359[38.889] 39.259[38.795] 28.782 31.661[31.471] 20.276 22.118 13.475 20.208 24.541 35.158 20.102 9.942 10.859 7.988

ADDITIONAL WATER LEVELS (See also Borehole logs)

** •••••	Date:	31/1/95	1/2/95	3/2/95	10/3/95
TF 80/211					0.46
TF 80/212					11.48
TF 80/213					6.17
TF 80/214				5.77	5.06
TF 80/215					4.36
TF 80/216		5.10	5.05		4.33
TF 80/217					1.70
TF 80/218					5.91
TL 89/118					0.62
TL 89/119					2.97
TL 89/120					0.83
TL 89/121					5.77
TF 70/126					2.68
TF 70/127					12.46
TF 70/128					7.88
TF 70/129					1.87
TF 70/130					2.37
TF 70/131				в Э	2.07

(Note: Readings are metres depth below existing GL.)



Project	Project RIVER WISSEY - HYDROMETRIC SCHEME								
JEN Project No	JEN Project No A A X E P 0 4 2 S B Date 8-2-95 Sheet 1 of 3								
Contracto	Soils Engineering	Ground Level (m.) 36.82	Co-Ordinates 0						

DUIAN FT	ES & T	ESI2	Ë				STRATA	6	1
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	
						(0.40)	Topsoil		Í
			11	36.42	00 0	0.40 (0.30) 0.70	Loose orangey yellow clayey SAND and angular GRAVEL	+	1
			**	36.12	===	- 0.70	Firm grey and orange mottled CLAY.		1
1.00-1.10	D				噩	3A 11			
				13	噩	(1.70)			
					噩	(1.70)			*
					==				
2.00-2.10	D			34.42	==	2.40			
					<u> </u>		Firm dark grey CLAY with many sand to coarse gravel sized chalk fragments.		
				4.5	-0	<u> </u>	n «Kreens		
3,00-3,10	D					-			-
					<u></u>				
									* * *
4.00-4.10	D					-			
	-			1	<u> </u>	<u> </u>			Ì
		1				<u> </u>	1	1	ı
									ı
5.00-5.10	D				0	E	J. A.		ł
						È	at 5.5m becoming stiff		ì
									ı
6.00-6.10	D				6	-			
					-8				
0	2				-0_				
7.00-7.10	D				_0_	-			
					<u></u>	Ī			
		ļ			- d				

Во	Boring Progress and Water Observations							Chiselling Water Added		Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	То	Hours	From	То	REMARKS
8/2/95 8/2/95 8/2/95 9/2/95 15/2/95 16/2/95 10/2/95	11.25 11.40 15.10 13.15 13.50 a.m. 09.15	0.6 0.6 17.5 4.0 4.0 4.0	3.0	150	0.60 0.60 17.5 0.55 0.35 0.43 0.40						Headworks pit dug first to check for services. Seepage at unknown depth in stiff clay. Hole contracted up to 4.0m by a.m. 9/2/95.

				
All dimensions in metres Scale 1:50	Client	National Rivers Authority	Method Cable Percussion	Logged By AF GILLEARD

						BU	KEHULE I	A)G		
Project RIVER WISSEY - HYDROMETRIC SCHEME								BOREHOL		
JEN Project No	A A	ХE	P	0 4	2 S	B Date	8-2-95	TF80/2	11	
Contractor		s Engin	eeri	ng		Ground Le	36.82	Co-Ordinates 0		
SAMPL	ES & T	ESTS	٤.				STF	ATA	3	3 5
Depth	Type No	Test Result	Wate	Reduced Level	Legend	Depth (Thick- ness)		DESCRIPTION	o loe	Instr
8.00-8.10	D				0	-	_		J. 232	

SAMPLE	S & TESTS L						STS L STRATA 8		
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
8.00-8.10	D						Stiff dark grey CLAY with many sand to coarse gravel sized chalk fragments.		
9.00-9.10	D						at 9.0m becoming very stiff		
10.00-10.10	D					(15.10)	*		
11.00-11.10	D								
1200-1210	D				 				
13.00-13.10	D				 				:
14.00-14.10	D								
15.00-15.10	D				Б _ Б _ Б _ Б _ Б _		at 15.0m becoming very stiff / hard with up to cobble sized chalk fragments and rare flints.		

		'		- 0							
Во	ring Prog	ress and	Water C	Observation	ons		Chiselling	Z	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	То	Hours	From	To	REMARKS
8/2/95 8/2/95 8/2/95 9/2/95 15/2/95 16/2/95 10/2/95	11.25 11.40 15.10 13.15 13.50 a.m. 09.15	0.6 0.6 17.5 4.0 4.0 4.0	3.0	150	0.60 0.60 17.5 0.55 0.35 0.43 0.40						Headworks pit dng first to check for services. Seepage at unknown depth in stiff clay. Hole contracted up to 4.0m by a.m. 9/2/95.

				_	·
All dimensions in metres	Client	National Rivers	Method	Logged	
Scale 1:50		Authority	Cable Percussion		AF GILLEARD

Project RIVER WISSEY - HYDROM	BOREHOLE No		
JEN A A X E P 0 4 2	TF80/211		
Contractor Soils Engineering	Ground Level (m) 36.82	Co-Ordinates 0	

SAMPLE	S & T	ESTS	4				STRATA		\$\ <u>`</u>
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Seo logy	Instrument
16.00-16.10 17.00-17.10	D D			19.32	o	17.50	Very stiff dark grey CLAY with many sand to cobble sized chalk fragments and rare flints.		
				1912			END OF BOREHOLE		
								-	
							¥ .		
				-	, 4		10 (3 de m		
							- 4		
							•		

										_	
Вс	oring Prop	gress and	Water C	Observatio	ons		Chiselling	3	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS
8/2/95 8/2/95 8/2/95 9/2/95 15/2/95 16/2/95	11.25 11.40 15.10 13.15 13.50 a.m. 09.15	0.6 0.6 17.5 4.0 4.0 4.0	3.0	150	0.60 0.60 17.5 0.55 0.35 0.43 0.40						Headworks pit dug first to check for services. Seepage at unknown depth in stiff clay. Hole contracted up to 4.0m by a.m. 9/2/95.

				_
All dimensions in metres	Client National Rivers	z Method	Logged	
	Authority	Cable Percussion	By AF GILLEARD	
Scale 1:50	Aumority	Cable Fel cussion	by Ar GILLEARD	

BOREHOLE LOG

RIVER WISSEY - HYDROMETRIC SCHEME

Project

JEN Project No	A	A	x	E	P	0	4	2	S	B Date	9-2-95		Sheet	1 of 3		TF80	721	2
Contractor		Soil	s E	ngin	eeri	ng	<u>:</u>	<u>; </u>		Ground Le	vel 48.	98	Co-Or	rdinates		<u> </u>		
SAMPL	ES	& 1	ES	TS	L							STRA	TA				25	١.:
Depth	Т	Type No	1	est esult	Water	Red	luce vel	dLeg	end	Depth (Thick- ness)			7 4,000	UPTION			Geology	Instru
						4	IR 55			(0.40)	Topsoil						Ū	
1.00-1,10		D								(1.40)	Loose or	angey brow	n fine to coa	rse SAND	with a little	e gravel.		
						4	17.15			1.80 (0.20) 200								
						4	16 95	· · · ·		200		white fine						
200-210		D						111111	b		Off white fragment	CHALK n	ecovered as a sobble sized	soft to firm flints.	clay with 1	nany chalk		
3.00-3.10		D						9119										
4.00-4.10		D						1 6 1 6 1	611161116		at 4,2m	_ becoming	less weather	red				
5.00-5.10		D						9119119	וקווקוו									
6.00-6.10		D						9 9										
7.00-7.10		D			ū			11 61 16116			ě							
Bor	ing	Pro	gres	s an	d W	ate	r O	bsen	vatio	ons		Chisellin	g	Water	Added	GENE	RAI	-
Date	Ti	me		epth		asin	$\overline{}$			Water Dp	From	То	Hours	From	То	REMA		
9/2/95 9/2/95 9/2/95 10/2/95 13/2/95 15/2/95	12 12 09	3.30 4.45 5.00 2.35 9.15 8.30		0 12.5 12.5 20.0 20.0 20.0		1.5	0	1	.50 .50	12.50 12.50 12.90 12.50 12.15						2 No falling be permeability to out.	ad	ried
All dim		sions ale 1			es	C	lien	t N	atio	onal Rive	ers	Method Cal	ble Percus	sion	Logged By	AF GILLEA	RD	

BOREHOLE No

Project RIVE	Project RIVER WISSEY - HYDROMETRIC SCHEME							
JEN Project No A A	X E P 0 4 2 S	B Date 9-2-95	Sheet 2 of 3	TF80/212				
Contractor Sc	als Engineering	Ground Level (m.) 48.98	Co-Ordinates 0					

SAMPLE	S&T	ESTS	Ľ				STRATA	fig.	7
Depth	Type No	Test Result	Wate	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
9.00-9.10	D				о _ о _ о		Off white CHALK recovered as soft to firm clay with many chalk fragments and rare cobble sized flints.		
					- d - d				
10.00-10.10	D				- d - d				
11.00-11.10	D				- d - d - d	(18.50)			
12.00-12.10	D	- 1	<u>‡</u> ‡		e -		 	3 -	
14.00-14.10	D				6 - 6 - 6			;	
					в в в в				

Box	ing Prog	ress and	Water (Observation	ons	(Chiselling	3	Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From To Hours From To				REMARKS		
9/2/95 9/2/95 9/2/95 10/2/95 13/2/95 15/2/95	13.30 14.45 15.00 12.35 09.15 08.30	0 12.5 12.5 20.0 20.0 20.0	1.50 1.50	150 150	12.50 12.50 12.90 12.50 12.15				7 G		2 No falling head permeability tests carried out.	

All dimensions in metres	Client National Rivers	Method	Logged
Scale 1:50	Authority	Cable Percussion	By AF GILLEARD

Project RIVER WISSEY - HYDRO	BOREHOLE No TF80/212							
JEN Project No A A X E P 0 4 2	EN A A X E P 0 4 2 S B Date 9-2-95 Sheet 3 of 3							
Contractor Soils Engineering								
SAMPLES & TESTS	S.L.	ATA	2 1.					

SAMPLE	S&T	ESTS	2			3 4 - 1	STRATA	28	1
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instru
16.00-16.10	D				о _ о _ о		Off white CHALK recovered as soft to firm clay with many chalk fragments and rare cobble sized flints.		
17.00-17.10	D				6 6 6				9 8
19.00-19.10	D	ų.			o				
20.00-20.10	D			28.48	р В	20.50			첋
							END OF BOREHOLE		
:									

Bo	ring Prog	ress and	Water (Observation	ons	Chiselling			Water Added		GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
9/2/95 9/2/95 9/2/95 10/2/95 13/2/95 15/2/95	13.30 14.45 15.00 12.35 09.15 08.30	0 12.5 12.5 20.0 20.0 20.0	1.50 1.50	150 150	12.50 12.50 12.90 12.50 12.15						2 No falling head permeability tests carried out.	

All dimensions in metres	Client Nat	tional Rivers	Method	Logged
Scale 1:50	Aut	thority	Cable Percussion	By AF GILLEARD

					Se	cott V	Vilson Kir	kpatrick	2 (0)		
					_	ВО	REHOLE I	.OG			
Project I	RIVER	WISSE	Y -	HYDR	OMET	TRIC SC	неме		BORE		
JEN Project No	A A	X E	P	0 4	2 S	B Date	7-2-95	Sheet 1 of 2	118	0/21	.3
Contractor	Soil	s Engin	eeri	ng		Ground Le (m.)	wel 32.84	Co-Ordinates 0			
SAMPLE	ES & T	ESTS	۲				STI	RATA		7.6	-j.
Depth	Type No	Test Result	Water	Reduced Level	I egend	Depth (Thick- ness)		DESCRIPTION		Geo l ogy	Instr
				32.44		(0.40)	Dark brown toped	vil			
1.00-1.10	D			31.04		(1.40) 1.80	coarse flint gravel				
2,00-2.10	D			30.54	_ o_ _ o_	-(0.50) 2.30	sized chalk fragme	very sandy CLAY with some up tents and occasional cobble sized f	lints		
3.00-3.10 4.00-4.10	D D			1				d as firm white CLAY with many fragments and occasional cobble		2	
500-510	D				P P						

Bor	ing Prog	ress and	Water C)bservatio	ons	Chiselling			Water	Added	GENERAL		
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS		
7/2/95 7/2/95 7/2/95 8/2/95 8/2/95	13.15 13.35 14.15 9.00 10.00	7.00 7.00 10.50 10.00 10.00	1.5 1.5 1.5 1.5	150 150 150 150	7.00 6.56 6.55 6.55 6.55					14	2 No falling head permeability tests carried out.		

at 6.5m ... becoming soft CLAY

(8.20)

6.00-6.10

7.00-7.10

D

All dimensions in metres Scale 1:50 Client National Rivers Authority Method Cable Percussion Cable Percussion By AF GILLEARD

BOREHOLE LOG

Project	RIVER	WISSE	Y -	HYDI	ROME	TRIC SC	HEME					BOREH	IOLE	No
JEN Project No	A A	X E	P () 4	2 S	B Date	7-2-95		Sheet	2 of 2		TF80)/21	3
Contracto		s Engine	erir	ıg		Ground Le	vel 32.8	4	Co-O:	rdinates				
SAMPL	ES & T	ESTS	er					STRA	TA				7	4.=
Depth	Type No	Test Result	Wate	Reduce Level	Legen	Depth (Thick- ness)	-			LIPTION		•	Geology	Instru ment Back f
9.00-9.10	D						CHALK I	ecovered as ments and c	low to me	dium dense obble sized	up to coar flints.	se gravel		
•				<u> 22.34</u>	P	1 10.50			END OF I	BOREHOI	Æ			
								•						
												÷		
		gress and				-,	 	Chiselling	ξ	Water	Added	GENE	RAL	
Date 7/2/95 7/2/95 7/2/95 8/2/95 8/2/95	Time 13.15 13.35 14.15 9.00 10.00	7.00 7.00 10.50 10.00 10.00		1.5 1.5 1.5 1.5 1.5	150 150 150 150 150	6.56 6.55	t Prom	То	Hours	From	То	REMA 2 No falling h permeability tout.	ARKS	
All din	nensions Scale 1	in metr	es	Clien		onal Rive	ers Ers	Method Cab	le Percus	sion	Logged By	AF GILLEA	RD	<u> </u>

AF GILLEARD

Project	Project RIVER WISSEY - HYDROMETRIC SCHEME JEN A A X E P 0 4 2 S B Date 30-1-95 Sheet 1 of 4												
JEN Project No	A A X E P 0 4 2 S	B Date 30-1-95	Sheet 1 of 4	TF80/214									
Contractor	Soils Engineering	Ground Level (m.) 40,01	Co-Ordinates 0										

SAMPL	ES & T	ESTS	4				STRATA	3	رڌ
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
				30 31		(0.70) 0.70	TOPSOIL / MADE GROUND (Bricks)		
1.00-1. 10	D			9/ 11		(1.00)	Firm buff and orangey brown slightly sandy CLAY with some fine to coarse gravel sized chalk fragments.		
200-210	D		6.5	_38.31		1.70	Stiff brownish grey and brownish orange CLAY / reworked CHALK?		
-07 -10			ţ	2		ودردووو	Becoming with interbedded layers of orangey fine SAND		
3.00-3.10	D								
4.00-4.10	D		<u>‡</u>						
5.00-5.10	D					(6.20)			
6.00-6.10	D								
							į.		
7.00-7.10	D		Ş	<u>}</u>		7.90			

Bo	ring Prog	gress and	Water (Observatio	ons		Chiselling	g	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	То	Hours	From	To	REMARKS
30/1/95 30/1/95 30/1/95 30/1/95 31/1/95 31/1/95 1/2/95	12.30 15.00 15.15 16.00 8.15	4.00 4.00 10.00 10.00 15.00 15.00 30.50 30.50	2.8 2.8 9.0 9.0 15.0 15.0 18.0	150 150 150 150 150 150 150 150	4.00 2.60 10.00 7.80 11.20 2.20 7.21 5.80				5.7	6.0	2 No falling head permeability tests erried out. Possible perched water leaking through casing caused water level on a.m. 31/1/95.

All dimensions in metres Client National Rivers Scale 1:50 Authority	Method Cable Percussion	Logged By AF GILLEARD
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Scott Wilson Kirkpatrick CONSULTING ENGINEERS BOREHOLE LOG

Project]	RIVER WISSEY - HYDROMI	ETRIC SCHEME	BOREHOLE No	
JEN Project No	A A X E P 0 4 2 S	B Date 30-1-95	Sheet 2 of 4	TF80/214
Contractor	Soils Engineering	Ground Level (m.) 40.01	Co-Ordinates 0	

SAMPLE	S & T	ESTS	4				STRATA			20
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)		RIPTION		Geo i ogy
L00-8.10	D			-		(2.10)	Stiff grey brown CLAY with cos chalk fragments and rare up to a with interbedded layers	cobble sized flints.)
9.00 -9 .10	D		♣	30.01		10.90				
10.00-10.10	D		\$		P P P		White CHALK recovered as sof	t clay containing chalk	fragments.	
11.00-11.10	D				P P P					
12.00-12.10	D				р р у р у р					
13.00-13.10	D					· · · · · · · · · · · · · · · · · · ·	Occasional flints recovered up to	o cobble size.		
14.00-14 .10	D			-	P P P P P P P P P P P P P P P P P P P		-			
15.00-15.10	D				P P P		· e=			

<u> </u>					<u> </u>						
Bo	ring Prog	ress and	Water (Observatio	ons		Chiselling	g	Water	Added	GENERAL
Date	Time	Depth	Casing		Water Dpt	From	To	Hours	From	To	REMARKS
30/1/95 30/1/95 30/1/95 30/1/95 30/1/95 31/1/95 1/2/95 2/2/95	12.15 12.30 15.00 15.15 16.00 8.15 14.30 8.15 15,15	4.00 4.00 10.00 15.00 15.00 30.50 30.50 30.00	2.8 2.8 9.0 9.0 15.0 15.0 18.0	150 150 150 150 150 150 150	4.00 2.60 10.00 7.80 11.20 2.20 7.21 5.80 5.80				5.7	6.0	2 No falling head permeability tests cried out. Possible perched water leaking through casing caused water level on a.m. 31/1/95.

All dimensions in metres Client National Rivers Scale 1:50 . National Rivers Cable Percussion Logged By AF GILLEARD

Project	RIVER WISSEY - HYDROM	ETRIC SCHEME		BOREHOLE No
JEN Project No	A A X E P 0 4 2 5	B Date 30-1-95	Sheet 3 of 4	TF80/214
Contractor	Soils Engineering	Ground Level (m.) 40.01	Co-Ordinates 0	

SAMPLE	S & T	ESTS	<u>L</u>				STRATA			•	TB.	5
Depth	Type No	Test Result	Water	Reduced Level	gend	Depth (Thick- pess)		DESCRIPTI	ON		Geo I ogy	Instr
6.00-16.10	D			1 1 1			White CHALK recoveree and occasional cobble si	d as soft clay zed flints.	containing chalk f	ragments		
7.00-17.10	D			7	P							
8.00-18.10	D			7 7	P P		. 13					
9.00-19.10	D			7		4						
0.00-20.10	D		7	<u>7</u>		(20.50)		7		÷		
1.00-21.10	D			7								
2.00-22.10	D		-	7 7	P P		-					
3.00-23.10	D			7 7			- -					

Во	ring Prog	ress and	Water (Observatio	ns	Chiselling				Added	GENERAL
Date	Time	Depth		Casing Dia	-	From	To	Hours	From	To	REMARKS
30/1/95 30/1/95 30/1/95 30/1/95 30/1/95 31/1/95 1/2/95 2/2/95	12.15 12.30 15.00 15.15 16.00 8.15 14.30 8.15 15.15	4.00 4.00 10.00 15.00 15.00 30.50 30.50 30.00	2.8 2.8 9.0 9.0 15.0 18.0 18.0	150 150 150 150 150 150 150 150	4.00 2.60 10.00 7.80 11.20 2.20 7.21 5.80 5.80				5.7	6.0	2 No falling head permeability tests cried out. Possible perched water leaking through casing caused water level on a.m. 31/1/95.

All dimensions in metres	Client National Rivers	Method	Logged	
Scale 1:50	Authority	Cable Percussion	By AF GILLEARD	

BOREHOLE LOG

Project	RI	ÆR	WIS	SSE	Υ -	HYD	RO	ME1	TRIC	SCI	неме					BOREH	IOLE	No
JEN Project No		A						S			30-1-95	1	Sheet	4 of 4		TF80)/21	l4
Contracto	i _	Soil	En	gin	eeri	ng			Groui (m)	nd Le	vel 40.0)1	Co-O	rdinates		- <u>:</u>		
SAMPI	ES	& T	EST	S	,			=				STRA	ATA				<u> </u>	II, =
Depth		ype No	Te	st	Water	Reduc	ed L	egend	De (This	epth ck-				RIPTION			Seo logy	274
24.00-24.1		D	P.C.		1	Leve	ľ		ness)	-				-			G	Sen C
25.00-25.1	0	D	*								White Ci-	IALK reco	vered as sof le sized flint	t clay conta	ining chalk	fragments		
26.00-26.1	0	D					7	P			1							
27.00-27.1	0	D					F	P P										
28.00-28.1	0	D						P P										2 <u>-</u> 2.
29.00-29. 1	0	D						P I			ě							
30.00-30.1	0	D				9_5		P		30.50								
													END OF	BOREHOI	E			
						200												
Boi	ing	Prog	ress	ano	i W	ater C)bse	rvatio	ons			Chisellin	g	Water	Added	GENE	RAI	,
Date 30/1/95	Th:	ne .15		pth .00	C	asing 2.8	Casi	ng Dia 150		r Dpt	From	То	Hours	From	То	REMA	RKS	
30/1/95 30/1/95 30/1/95 30/1/95 31/1/95 31/1/95 1/2/95 2/2/95	12 15 15 16 8 14 8	30 .00 .15 .00 .15 .30 .15	10 10 15 15 30 30	1.00 1.00 1.00 1.00 1.50 1.50		2.8 9.0 9.0 15.0 15.0 18.0		150 150 150 150 150 150 150	10	2.60 0.00 7.80 1.20 2.20 7.21 5.80 5.80				5.7	6.0	2 No falling hipermeability out. Possible j water leaking casing caused on a.m. 31/1/9	tests of perche throug water	d h

All dimensions in metres

Scale 1:50

Client

National Rivers Authority

Method

Cable Percussion

Logged By

AF GILLEARD

							BO	REHOLE I	.OG			
Project	RIVE	er v	VISS	EY ·	HYDR	OME	TRIC SC	неме	i i si ee e ee ee ee			
JEN Project No	A A	X	E	P	0 4	2 S	B Date	23-1-95	Sheet 1 of 2	TF80)/ 21	3
Contracto	-	oils	Engi	neeri	ing		Ground La (m)	39.51	Co-Ordinates			
SAMPL	ES &	TE	STS	ام د				STE	RATA		20	5/=
Depth	Ty	pe G	Test Result		Reduced Level	Legen	Depth (Thick- ness)		DESCRIPTION		Geolo	Instrument
					39.41	0.	(0.10)10		e e e e e			
					39.11		(0.30)40	Loose dark brown	SAND with some gravel and roots	L		
-							: t	Loose orangey bro	own fine to medium SAND with a l	ittle fine flint		

SAMPLE	<u>ته هد 1</u>	E212	<u>_</u>				<u> SIRAIA</u> -	60	⊋
Depth	Турв No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	oloag	Instr
				39.41	0.	(0.10)10			
		:		39.11		(0.30)40	Loose dark brown SAND with some gravel and roots.		ı
L 00-1 .10	D					(1.70)	Loose orangey brown fine to medium SAND with a little fine flint gravel.		
2.10-2.20	D			37.41		210	Stiff yellowish brown CLAY with much fine to medium gravel sized chalk fragments and a little angular to subrounded fine to		
.70-2.80	D					-(1.90)	medium flint gravel. at 2.7m becoming orange streaked with a little fine sand.		
.00-4,10	D			35.51		4.00	Loose yellowish white fine to medium SAND.		
				34.81		(0.70) - 4.70			
.80-4.90	D		 <u>1</u> <u>V</u>			(1.30)	Loose orangey yellow fine to coarse SAND with a little fine subrounded gravel.		
.00-6.10	D		1	33.51	00 0	6.00	Loose orangey yellow fine to coarse SAND and subangular to		
			•		0 0 0 0	(L00)	subrounded fine to coarse GRAVEL.		
7.00-7.10	D			32.51	00 0	7.00	Loose orangey yellow fine to medium SAND with a little fine gravel.		
		:				(1.50)			

				100							9,4,9,4
Вс	ring Pro	gress and	Water C	Observation	ons		Chisellin	g	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	Prom	To	Hours	From	To	REMARKS
23/1/95 23/1/95 24/1/95 24/1/95 25/1/95 25/1/95 26/1/95 30/1/95	14.40 a.m. p.m. a.m. p.m. a.m. p.m.	7.5 7.5 7.5 8.0 8.0 8.0 8.0 8.0	75 75 75	150 150 150	6.10 5.57 5.20 5.20 5.20 5.15 5.15 4.65 5.00			=	2.1	8.0	2 No falling head permeability tests carried out. Piezometer installed at 8.0m. Hole re-drilled on 07/02/95.

All dimensions in metres | Client | National Rivers | Method | Logged | By | AF GILLEARD

BOREHOLE LOG

		_								_				
Project	RI	VEI	R W	ISS	EY	- E	IYD	RO	ME	IRI	C SCHEMI	E.		BOREHOLE No
JEN Project No	A	A	x	E	P	0	4	2	s	В	Date 23-1	-95	Sheet 2 of 2	 TF80/215
Contractor	<u> </u>	Soi	ls E	Ingi	neeı	ring				Gro (m.)	md Level	39.51	Co-Ordinates 0	
SAMPL	ES	& '	ΓES	TS		T						SIR	RATA	 7 5
	Τ,	n	Τ,	T4	7					Т	Depth			 <u>@</u> [<u>2</u>) g

Depth Typs Result 2 Reduced Legend (Depth ness) A 31.01 Depth ness) Loose crangey yellow fine to medium SAND with a little fine gravel. END OF BOREHOLE	76 F		STRATA					L	ESTS	S & T	SAMPLE
Loose orangey yellow fine to medium SAND with a little fine gravel.	RBO I OBS		DESCRIPTION		Depth (Thick- ness)	Legend	Reduced Level	Water	Test Result	Typs No	Depth
END OF BOREHOLE		with a little fine	y yellow fine to medium SAND wit	Loose oran							
		3	END OF BOREHOLE								
				1.							
	į		(-								
				ž							
		**									

Bo	ring Prog	ress and	Water C)bservatio	ons		Chiselling	3	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	То	REMARKS
23/1/95 23/1/95 24/1/95 24/1/95 25/1/95 25/1/95 26/1/95 16/2/95 30/1/95	13.10 14.40 am. p.m. a.m. p.m. a.m. p.m.	7.5 7.5 8.0 8.0 8.0 8.0 8.0	7.5 7.5 7.5	150 150 150	6.10 5.57 5.20 5.20 5.20 5.15 5.15 4.65 5.00				2.1	8.0	2 No falling head permeability tests carried out. Piezometer installed at 8.0m. Hole re-drilled on 07/02/95.
All din	nensions	in metre	s Clier	n Natio	nal River	e 1	Aethod			Logged	<u> </u>

All dimensions in metres | Client National Rivers | Method | Cable Percussion | Logged | By AF GILLEARD

Project	RIVER WISSEY	- HYDROMET	TRIC SCHEME		BOREHOLE No TF80/216
JEN Project No	A A X E P	0 4 2 S	B Date 25-1-95	Sheet 1 of 4	1180/210
Contracto	Soils Engineer		Ground Level (m.) 39.41	Co-Ordinates 0	

1.00-1.10 I	ype Vo	Test Result	Water	Reduced Level 39.31 39.01	Legend	Depth (Thick- ness) (0.10)10 (0.30)40	TOPSOIL Loose dark brown SAND with some gravel and roots. Loose orangey brown fine to coarse SAND with a little fine to coarse flint gravel.	бвогозу
2.00-2.10 I	D			39.01		(0.10)10 (0.30) ₄₀	Loose dark brown SAND with some gravel and roots. Loose orangey brown fine to coarse SAND with a little fine to	
2.00-2.10 I	D						Loose orangey brown fine to coarse SAND with a little fine to	
2.00-2.10 I	D			37 21		(1.70)		
				37 31				
3.00-3.10 I					===	210	Stiff brownish grey mottled orange CLAY with a little fine to	
3.00-3.10						(L.50)	medium chalk gravel and a little fine to coarse sand.	
	D			35.81		3.60	at 3.3m with rare coarse flint gravel. Soft yellow white occasionally orangey light brown CLAY with	
				13.5	===	(0.50)	much fine sand.	
4.00-4.10	D			35.31		(0.90)	Yellowish white fine SAND.	
5.00-5.10 I	D		ż		000		Loose yellowish orange fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL of flint and chalk.	
6.00-6.10	D		*		000	(3.50)		
7.00-7.10	D	-			0 0			

Box	ing Prog	ress and	Water C	Observation	ons		Chiselling	<u> </u>	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	То	REMARKS
25/1/95 25/1/95 25/1/95 26/1/95 27/1/95 27/1/95 27/1/95 30/1/95 16/2/95	10.55 11.25 14.20 8.45 8.45 13.45 15.30 9.15	9.4 9.4 17.0 12.1 19.0 28.5 30.0 30.0	8.85 8.85 11.85 11.85 11.85 15.5 15.5	150 150 150 150 150 150 150	9.40 5.80 6.80 5.90 5.80 5.20 5.20 5.26 4.70				5.0	5.5	Chalk fines settled overnight hence the 26/1 hole depth, 2 no. falling head permeability tests carried out.

	All dimensions in metres Scale 1:50	Client National Rivers Authority	Method Cable Percussion	Logged By AF GILLEARD
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BOREHOLE LOG

Project	a RIVER WISS		iss	EY	Y - HYDROMETRIC SCHEME									BOREHOLE No			
JEN Project No	A	A X E		P	0	4	2 S	S	В	Date	Date 25-1	5-1-95		Sheet 2 of 4		TF80/216	
Contracto)ar	So	ils I		neei	ring		•		Gro (m)	und Le	vel	39.41		Co-Ordinat	ies	
CALCO												==	•	CTTD A TTA			

SAMPLE	S & T	ESTS	4				STRATA				
Depth	Type	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geo logs	Instr		
8.00-8.10	D			30.91	°°°°	8.50	Loose yellowish orange fine to coarse SAND and fine to coarse subangular to subrounded GRAVEL of flint and chalk.				
9.00-9.10	D				о _ с	(0.90)	Stiff white grey occasionally stained orange CLAY with much fine sand to medium gravel sized chalk fragments and stiff grey clay.				
10.00-10.10	D		*	30.01	P P	9.40	White CHALK recovered as soft white clay containing up to cobble sized chalk fragments.				
11.00-11.10	D										
12.00-12.10	D						·•				
13.00-13.10	D										
14.00-14.10	D				P P P P P P P P P P P P P P P P P P P		From 14.0m with rare coarse flint gravel.				
15.00-15.10	D	ľ									

		1-		PP								
Во	ring Prog	ress and	Water C	bservatio	ons		Chiselling		Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
25/1/95 25/1/95 25/1/95 26/1/95 27/1/95 27/1/95 30/1/95 16/2/95	8.45 8.45	9.4 9.4 17.0 12.1 19.0 28.5 30.0 30.0 30.0	8.85 8.85 11.85 11.85 11.85 15.5 15.5	150 150 150 150 150 150 150	9.40 5.80 6.80 5.90 5.80 5.20 5.20 5.26 4.70				5.0	5.5	Chalk fines settled overnight hence the 26/1 hole depth, 2 no. falling head permeability tests carried out.	

All dimensions in metres Client National Rivers Scale 1:50 Client National Rivers Cable Percussion Cable Percussion By AF GILLEARD

Project	RIVER WISSEY - HYDROM	BOREHOLE No TF80/216			
JEN Project No	A A X E P 0 4 2 S	B Date 25-1-95	Sheet 3 of 4	11.80/210	
Contracto	Soils Engineering	Ground Level (m.) 39,41	Co-Ordinates 0		

SAMPLE	S & T	ESTS	4			STRATA						
Depth	Type No	Test Result	Nater	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geo logy	Instr			
16,00-16,10	D				P P		White CHALK recovered as soft white clay containing up to cobble sized chalk fragments and rare coarse flint gravel.					
17.00-17.10	D						COOOSE SEEM CHAIR TRAGENERIS AIM THE CORESE THIRE GRAVEL					
18.00-18.10	D				P P P		•					
19.00-19.10	D				P P	20.68	From 19.0m recovering more flint cobbles.					
20.00-20.10	D				P P P P P	(20.60)		•				
21.00-21.10	D				7 P							
22.00-22.10	D				р р р р р р		Becoming recovered as firm CLAY.	i				
23.00-23.10	D				P P							

Во	ring Prog	ress and	Water C	Observation	ons		Chiselling	ţ	Water	Added	GENERAL	
Date	Date Time Depth Casing Casing Dia Water Dpt					Prom	To	Hours	From	То	REMARKS	
25/1/95 25/1/95 25/1/95 26/1/95 27/1/95 27/1/95 27/1/95 30/1/95 16/2/95		9.4 9.4 17.0 12.1 19.0 28.5 30.0 30.0 30.0	8.85 8.85 11.85 11.85 11.85 15.5 15.5	150 150 150 150 150 150 150	9.40 5.80 6.80 5.90 5.80 5.20 5.20 5.26 4.70				5.0	5.5	Chalk fines settled overnight hence the 26/1 hole depth. 2 no. falling head permeability tests carried out.	

- 2						
	All dimensions in metres	Client	National Rivers	Method	Logged	1
	VII (IIII) TITLE III III III III III III III III III I	·	Mandhat Wight?			
	Cools 1.50		Authority	Cable Percussion	By	AF GILLEARD
- 1	Scale 1:50		Admoraty	Capic I de cussion	ر– ا	M GILLLAND

BOREHOLE LOG

Project RIVER WISSEY - HYDRO	BOREHOLE No				
JEN A A X E P 0 4 2	S B Date 25-1-95	Sheet 4 of 4	TF80/216		
Contractor Soils Engineering	Ground Level (m) 39.41	Co-Ordinates 0	<u>I</u>		
CAMPLES & TESTS		A.T.A.	50 (1 =		

SAMPLE	S & T	ESTS	ڍ				STRATA	71	15
Depth	Тура No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
24.00-24.10	D						White CHALK recovered as firm white clay containing up to cobble sized chalk fragments and occasional flint cobbles.		
25.00-25.10	D	_			P P P P P				
25.00-26.10	D		i						
27.00-27.10	D			c					
28.00-28.10	D				P P P P				
		4_			PP	1	Sec.		
29.00-29.10	D				P P				
29.90-30.00	D			9.41	F P P	<u>30.00</u>	END OF BOREHOLE		

		<u> </u>									
Box	Boring Progress and Water Observations						Chiselling Wat			Added	GENERAL
Date	Time	Depth		Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS
25/1/95 25/1/95 25/1/95 26/1/95 27/1/95 27/1/95 27/1/95 30/1/95 16/2/95	10.55 11.25 14.20 8.45 8.45 13.45 15.30 9.15 pm	9.4 9.4 17.0 12.1 19.0 28.5 30.0 30.0 30.0	8.85 8.85 11.85 11.85 11.85 15.5 15.5	150 150 150 150 150 150 150	9.40 5.80 6.80 5.90 5.80 5.20 5.20 5.26 4.70				5.0	5.5	Chalk fines settled overnight hence the 26/1 hole depth, 2 no. falling bead permeability tests carried out.
All din	nensions	in metre	S Clie	n Natio	nal River:	5	Method			Logged	

National Rivers Authority Logged By Scale 1:50 Cable Percussion AF GILLEARD

Project	RI	VER	W	LSSI	EY		HYDI	RO	MET			EME					BOREH	OLE	No
JEN Project No	A	A	x	E	P	0	4	2	S	В	Date	1-2-95	<u> </u>	Sheet	1 of 1		TF80)/21	.7
Contracto	9	Soil	s E	ngir	icer	in	8			Grou (m.)	nd Lev	rel 27,9	6	Co-Oz	rdinates		<u> </u>		
SAMPL	ES	& T	ES	TS	۲	Ī			<u> </u>				STRA	ΓA			<u> </u>	3	15
Depth		Type No	7	Cest esult	+		Reduce Level	dL	egend	(Th	epth ick- s)			DESCR	IPTION			Geo logy	Instr
1,00-1.10		D					27.80	41,141,14			14)	TOPSOII Dark bro	wn sandy ver	ry gravelly (JAY.				
					<u>\$</u>	Ż	25.9	9	0 0		70) 0200	Medium (subangula	lense orange ir to angular	ey brown ve	ery sandy fir VEL with o	ne to coarse eccasional c	e cobbles.		
2,00-2,10		D					25.9	0 00			206 04)	Medium	nish white v lense orange l angular GR	ey light bro		dy fine to o	coarse		
3.00-3.10		D					24.8				3.10	White Cl chalk frag	IALK (not fi ments and r	irm) recove are flint gra	red as firm wel.	white clay	with many		
4.00-4.10		D																	· 182
5.00-5.10		D								(3.	40)	,							
							21.4	6 🗆	<u>, , , , , , , , , , , , , , , , , , , </u>		6.50		<u> </u>	END OF I	BOREHOL	E			
Bo	ing	Pro	<u>↓</u> gre:	ss ar	nd V	Va	ter O	bse	rvati	ons			Chiselling	g	Water	Added	GENE		
Date 1/2/95 1/2/95 2/2/95 2/2/95 3/2/95 6/2/95	1: 1: 1: 1:	3.30 3.50 3.15 5.15 1.20 5.45	E	1.1 1.4 6.4 6.6	5 5 0 0	C	using	Casi	ng Dia	e Wa	1.50 1.50 1.45 1.83 1.80 1.82	From	То	Hours	1.5 3.5	To 2.5 4.5	REMA 2 No falling h permeability (ead	
All din		sions ale 1		met	res		Clien	ıt	Natio Auth	onal corit	Rive	#3	Method Cab	le Percus	ssion	Logged By	AF GILLEA	RD	

Project									
JEN Project No	JEN O A A X E P 0 4 2 S B Date 2-2-95 Sheet 1 of 3								
Contracto	Soils Engineer		Ground Level (m.)	31.86	Co-Ordinates 0				

SAMPLI	ES & T	ESTS_	۲				STRATA		٦٠
Depth	Type	Test Result	Water	Reduced Level	Legend	THC351	DESCRIPTION	Geology	Instr
				31.66		(0.28)20	TOPSOIL		
				31.46	0	(120)	Dark brown sandy gravelly CLAY.		
1.00-1.10	D						Stiff grey mottled orange CLAY with some sand to coarse gravel sized chalk fragments.		
2.00-2.10	D					(3.80)	•	;	
3.00-3.10	D		\$				Becoming dark grey and very stiff.		
4.30-4.40	D		¥	27.66	P P	4,20 (0.80)	White CHALK recovered as soft clay with chalk fragments.		
5.00-5.10	D			26.86	P -	5.00	Very stiff dark grey CLAY with some sand to rounded coarse gravel sized chalk fragments.		
6.00-6.10	D		\$						
7.00-7.10	D								
			<u> </u>			(6.00)	Becoming up to cobble sized chalk fragments.		

Во	ring Prog	ress and	Water C)bservatio	ากร		Chiselling		Water	Added	GENERAL
Date	Time	Depth	Casing		Water Dpt	Prom	То	Hours	From	То	REMARKS
2/2/95 2/2/95 2/2/95 3/2/95 6/2/95 6/2/95 6/2/95 7/2/95	12.00 12.20 14.00 09.00 12.45 13.05 15.00 08.45	4.3 4.3 9.0 9.0 10.0 17.8 17.8	1.5 1.5 5.3 5.3 13.5 13.5	150 150 150 150 150 150 150	4.30 3.57 dry dry 18.00 6.7 6.15 6.17	÷					Water sealed out at 5.0m. Scheduled depth 8.5m. Very slight seapage at 11.0m. Hole re-trilled at 8 inch dia to 10.5m, 6 inch to 13.5m. 2 No falling head permeahility tests carried out. Very fast inflow from 18m.

All dimensions in metres	Client	National Rivers	Method	Logge	ad
Scale 1:50		Authority	Cable Percussion	By	AF GILLEARD

Project									
JEN Project No	A A X E P	X E P 0 4 2 S B Date 2-2-95 Sheet 2 of 3							
Contract	or Soils Engineer	ring	Ground Lev (m)	el 31.86	Co-Ordinates 0				

SAMPLE	S & T	ESTS	4				STRATA	78	ļ.,
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geoloay	Instr
8.00-8.10	D						Very stiff dark grey CLAY with some sand to cobble gravel sized chalk fragments.		
9.00-9.10	D					بدوروا			
•					<u>-</u> -				
10.00-10.10	D				- a - a - a				
11.00-11.10	D			20.86		(0.50)	White CHALK recovered as very soft day.		
12.00-12.10	D			20.36	о - о - о	11.50	Very stiff dark grey CLAY with some sand to cobble sized chalk fragments.	- 1	
13.00-13.10	D				_ g	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
14.00-14.10	D				_g_ _g_	(6.30)			
15.00-15.10	D				 			į	

Во	ring Prog	ress and	Water C)bservatio	ns		Chiselling	3	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS
2/2/95 2/2/95 2/2/95 3/2/95 6/2/95 6/2/95 7/2/95	12.00 12.20 14.00 09.00 12.45 13.05 15.00 08.45	4.3 9.0 9.0 10.0 17.8 17.8	1.5 1.5 5.3 5.3 13.5 13.5	150 150 150 150 150 150 150	4.30 3.57 dry dry 18.00 6.7 6.15 6.17						Water sealed out at 5.0m. Scheduled depth 8.5m. Very slight seapage at 11.0m. Hole re-drilled at 8 inch dia to 10.5m, 6 inch to 13.5m, 2 No falling head permeability tests carried out. Very fast inflow from 18m.

All dimensions in metres Scale 1:50	Client National Rivers Authority	Method Cable Percussion	Logged By AF GILLEARD
			<u> </u>

Project	RIVER WISSE	Y - HYDROM	ETRIC SCHEME		BOREHOLE No
JEN Project No	A A X E	P 0 4 2 S	B Date 2-2-95	Sheet 3 of 3	TF80/218
Contractor	Soils Engin	eering	Ground Level (m) 31.86	Co-Ordinates 0	
SAMPL	ES & TESTS		STR	ATA	7 L.=

SAMPLE	S & T	ESTS	Č.	A			STRATA	76	3/=
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geo Logy	Instrument Back f
16.00-16.10 17.00-17.10	D D				о О		Very stiff dark grey CLAY with some sand to cobble sized chalk fragments.		
- 17.90-18.00	D		\$	14.06 13.86	P P	17.80 (0.20) 18.00	CHALK END OF BOREHOLE		
la de la companya de									<i>3</i> .

Во	ring Prog	ress and	Water C	Observatio	ons		Chiselling	g	Water	Added	GENERAL
Date	Time	Depth	Casing		Water Dpt	Prom	To	Hours	From	То	REMARKS
2/2/95 2/2/95 2/2/95 3/2/95 6/2/95 6/2/95 7/2/95	12.00 12.20 14.00 09.00 12.45 13.05 15.00 08.45	4.3 4.3 9.0 9.0 10.0 17.8 17.8	1.5 1.5 5.3 5.3 13.5 13.5	150 150 150 150 150 150	4.30 3.57 dry dry 18.00 6.7 6.15 6.17						Water sealed out at 50m, Scheduled depth 8.5m, Very slight seapage at 11.0m, Hole re-drilled at 8 inch dia to 10.5m, 6 inch to 13.5m, 2 No falling head permeability tests carried out. Very fast inflow from 18m,

All dimensions in metres	Client	National Rivers	Method	Logge	<u> </u>
Scale 1:50		Authority	Cable Percussion	By	AF GILLEARD

Project	RIVER	WISSE	Y -	HYDI	ROMET	TRIC SCE	REHOI IEME			0 2424		BOREH	
JEN roject No	A A :	X E	P) 4	2 S	B Date	2-3-95		Sheet	1 of 1		TL89	/118
Contractor		s Engin	erin	ıg		Ground Lev (m.)	el 19.48		Co-O1	rdinates			
SAMPL	ES & T	ESTS	۲			To a		STRA	TA	3.5			-17
Depth	Type No	Test Result	Water	Reduce Level	d Legend	Depth (Thick- ness)			DESCR	IPTION			Geology Instru-
1.00-1.10	D		1.1	18.50	00.0	(0.90)	Loose brow			EL.			
2.00-2.10	D		₹ \$			(2.60)			•				
3.00-3.10	D			15.99	8 00 0	3.50	Dense grey	SAND an	nd GRAVE	<u> </u>		J-12-	
4.00-4.10	D				0000	(1.50)	ŀ				1. 1		77
5.00-5.10	D			14.4		5.00	White CHA	LK recov	ered as soft	white clay.			
					PP	(1.50)			*				
6.00-6.10	D			12.9	P P P P P P P P P P P P P P P P P P P	6.50				4			
									END OF E	BOREHOL	E		
Bor	ing Prog	gress an	d Wa	ater O	bservati	ons		Chisellin	g	Water	Added	GENE	
Date 2/3/05	Time	Depth 15				aWater Dpt	Prom	To	Hours	From	To	REMA	
2/3/95 2/3/95 2/3/95 2/3/95	p.m. +20 p.m.	1.5 1.5 6.5		15 15 15	150 150 150	1.50				. 0 0	з. Г	2 No falling he permeability to out. Drillers' descriptions.	ad sis carried
All din	nensions Scale 1		es	Clien	t Nati	onal Rive	rs b	fethod Cat	ole Percus	sion -	Logged By R	I McDANIEL (d	triller)

Project	RIVER	WISSI	Y -	HYDE	ROME:	TRIC SCI	HEME				·	TT 90)/119
JEN roject No	A A	X E	P	0 4	2 S	B Date	2-3-95		Sheet	1 of 2		11.0	7113
Contractor		s Engin	eeri	ng		Ground Le	vel 21.32		Co-O	rdinates			
SAMPL	ES & T	ESTS	د					STRA	TA		100		76
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			DESCR	UPTION			Seo logy
						(0.50)	Loose brow	n sandy t	opsoil.			· - · · · · · · · · · · · · · · · · · ·	9
				20.82		0.50	Loose oran	ge mediu	m SAND.				
1.00-1.10	D												
200-210	D								9				
200 210						(3.50)							
3.00-3.10	D												
				4.5.5			1						
4.00-4.10	D		. 1	17.32	PP	4.00	Brownish w	hite CHA	LK recover	ed as chalk	fragments	in soft clay.	
			Ā₫		PP	<u>*</u>							
5.00-5.10	D				P P								
					PP	(3.00)							
6.00-6.10	D				PP	# #							
400 410					Р Р								
				14 32	PP	7.00							
7.00-7.10	D				P P		White CHA	LK recov	ered as chai	k fragmen	in firm cl	ay with	
					P P								
Bor	ing Pro	gress an	d W	ater Ol	oservati	ions		Chisellin	g	Water	Added	GENE	RAL
Date 2/3/95	Time	Depth 4.5				aWater Dpt	From	То	Hours	From	То	REMA	
2/3/95 2/3/95 2/3/95 10/3/95	a.m. +20 a.m. 10.00	4.5 10.5 10.0		4.50 4.50 9.00	150 150 150	4.45						2 No falling he permeability to out. Drillers' descriptions.	ead ests carri
Δ11 -4:	ensions	in		Client	Mari			fethod					
	Scale 1		. 🔾	CHEUI		onal Rive	25 N		le Percus	sion	Logged By R N	McDANIEL (driller)

BOREHOLE LOG

Project R	LIVER WISSEY - HYDROMI	ETRIC SCHEME		BOREHOLE No
JEN Project No	A X E P 0 4 2 S	B Date 2-3-95	Sheet 2 of 2	TL89/119
Contractor	Soils Engineering	Ground Level (m) 21.32	Co-Ordinates 0	

SAMPL	ES & T	ESTS	L				STRATA	28	5
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instrance Receive
8.00-8.10 9.00-9.10	D					(3.50)	White CHALK recovered as chalk fragments in firm clay with flints.		
9.00 9.10				10.82	P P P P P P P P P P P P P P P P P P P	10.50			
							END OF BOREHOLE		
		,	20			♦ •		e	
				3.					

Depth Casing	Casing Dia Water Dpt	To the state of					
	Danie Danie Dhe	From	To	Hours	From	To	REMARKS
4.5 4.50 4.5 4.50 10.5 9.00	150 4.50						2 No falling head permeability tests carried out. Drillers' descriptions.

All dimensions in metres
Scale 1:50

Client National Rivers
Authority

Method
Cable Percussion

Logged
By R McDANIEL (driller)

RODEHOLE LOC

Project	RIVER	WISSE	Y -	HYDR	OME	TRIC SC	неме		6.			BOREH	
JEN roject No	A A	хе	P	0 4	2 S	B Date	27-1-95		Sheet	1 of 4		11.89)/120
Contracto		s Engin	сегі	ng		Ground Le	rvel 12.70)	Co-O	rdinates			
SAMPL	ES & T	ESTS	L					STRA	TA				20 1
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick-	- 1		- Y2X/N	UPTION			Geology Instru-
7.7.5			-	20.00		ness) (0.40)	TOPSOIL						Ğ H
1.00-1.10	D			12 30		0.40		ngey brown at gravel.	n fine to coa	use SAND	with some	coarse	
200-210	р		ŤŢ			(4.10)	at 1.7m medium gr		fine to coar	se SAND v	rith some fi	ne to	
3.00-3.10	D												
4.00-4.10	D			8.20		450	Loose yelk	owish brow	va fine SAN	D,			
5.00-5.10	D												
						(3.70)							
7.00-7.10	D												
Box	ring Pro	gress an	d W	ater Ob	servati	ions		Chisellin	g	Water	Added	GENE	RAL
Date	Time	Depth	C	asing C		aWater Dp	⊣	To	Hours	From	То	REMA	
7/2/95 7/2/95 7/2/95 7/2/95 28/2/95 28/2/95 1/3/95 1/3/95	09.35 0 mins +20 14.00 09.10 10.15 a.m. 12.00	2.00 2.00 16.00 9.00 20.00 20.00 29.00		1.9 1.9 13.5 13.5 19.5 19.5 29.0	150 150 150 150 150 150 150	2.00 1.90 6.00 1.00 2.00 2.50				1.5 9.5	1.9 9.5	Fine sand setti overnight hen depth 28/2 an falling head pot tests carried of Scheduled dep	te hole 2 No 2 meshili
All din	nensions Scale 1		res	Client	Nati	onal Rive	ers I	Method Cal	le Percus	sion	Logged By	AF GILLEA	PD.

Project R	LIVER WISSEY -	HYDROME	TRIC SCI	неме		BOREHOLE No
JEN Project No	AXEP	4 2 S	B Date	27-1-95	Sheet 2 of 4	TL89/120
Contractor	Soils Engineerin		Ground Les (m)	12.70	Co-Ordinates 0	

SAMPLE	S&T	ESTS	4				STRATA		20	7
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION		Geology	Instr
				4.50		8.20	Loose yellowish brown fine SAND.		197	
8.50-8.60	D				X	(1.60)	Loose grey very fine sandy SILT.			
				2.90	* . * * . *	9.80 (u.zv) 10.00				
	-324			2.70	===	10 00	Very stiff grey CLAY.	<u> </u>	—	-
10.00-10.10	D						Dense orange brown fine to medium SAND.			
11.00-11.10	D								5	
									122	
12.50-12.60	D									
14.00-14.10	D									
15.50-15.60	D									

Bo	ring Prog	ress and	Water (Observation	ons	Chiselling			Water A	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
27/2/95 27/2/95 27/2/95 27/2/95 28/2/95 28/2/95 1/3/95 1/3/95	09.35 0 mins +20 14.00 09.10 10.15 a.m. 12.00	2.00 2.00 16.00 9.00 20.00 20.00 29.00	1.9 1.9 13.5 13.5 19.5 19.5 29.0	150 150 150 150 150 150 150 150	2.00 1.90 6.00 1.00 2.00 2.50 10.00				1.5 9.5	1.9 9.5	Fine sand settled out overnight hence hole depth 28/2 a.m. 2 No falling head permeability tests carried out. Scheduled depth 6m.	

		··-	
All dimensions in metres	Client National Rivers	Method	Logged By AF GILLEARD
Scale 1:50	Authority	Cable Percussion	

BOREHOLE LOG

Project	RIVE	R W	ISSE	3 Y -	HYD	RO	ME	TRI	IC SCI	HEME				-	BOREH	OLE 1
JEN Project No	A A	x	E	P	0 4	2	s	В	Date	27-1-95	;	Sheet	3 of 4	-	TL89	/120
Contracto		ls E	ngin	ести	ng	<u>:</u>		Gro (m.)	und Le	vel 12.7	70	Co-Oi	rdinates	-		
SAMPL	ES & T	TES	TS	4							STRA	TA		=-``.		3
Depth	Type No	R.	est esult	Water	Reduc Leve	ed L	egen	d (Ti	Depth hick- ss)			DESCR	UPTION			Geology
16.50-16.6	ם									Dense on	ange brown	fine to med	lium SAND	•		
18.00-18.1	ם										4					
19. 5 0-19.6	a								19.00)			*				
21. 5 0-21.6	0 D															-
22.50-22.6	0 D															
23.50-23.6	0 D															
	ing Pro	_				$\overline{}$					Chiselling		Water	Added	GENE	
Date 27/2/95 27/2/95 27/2/95 27/2/95 28/2/95 28/2/95 1/3/95 1/3/95	7me 09,35 0 mins +20 14,00 09,10 10,15 a.m. 12,00	1	2.00 2.00 16.00 9.00 20.00 20.00		1.9 1.9 13.5 13.5 19.5 19.5 29.0	Casi	150 150 150 150 150 150 150 150		2.00 1.90 6.00 1.00 2.00 2.50 10.00	From	То	Hours	1.5 9.5	1.9 9.5	REMA Fine sand sett overnight heat depth 28/2 ar falling head p tests carried of Scheduled dep	led out se hole n. 2 No someabil ut.
All din	nension Scale			res	Clie		Nat Aut	iona hori	al Rive	rs	Method Cab	le Percus	sion	Logged	AF GILLEA	PD.

Project RIVER WISSEY - HYDROI	METRIC SCHEME	BOREHOLE No
JEN A A X E P 0 4 2	S B Date 27-1-95 Sheet 4 of 4	TL89/120
Contractor Soils Engineering	Ground Level (m) Co-Ordinates 0	

SAMPLE	S&T	ESTS	L				STRATA	28	7
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instru
24.50-24.60	D						Dense orange brown fine to medium SAND.		
25.50-25.60	D	7							
26.50-26.60	D	:							
27.50-27.60	D								
28.50-28.60	D	.0		-16 30		29.00			
						377	END OF BOREHOLE		

Во	ring Prog	ress and	Water (Observation	ons	C	Chiselling	3	Water A	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS
27/2/95 27/2/95 27/2/95 27/2/95 28/2/95 28/2/95 1/3/95 1/3/95	09.35 0 mins +20 14.00 09.10 10.15 a.m. 12.00	2.00 2.00 16.00 9.00 20.00 20.00 29.00	1.9 1.9 13.5 13.5 19.5 19.5 29.0	150 150 150 150 150 150 150 150	2.00 1.90 6.00 1.00 2.00 2.50 10.00		4.		1.5	1.9 9.5	Fine sand settled out overnight hence hole depth 28/2 a.m. 2 No falling head permeability tests carried out. Scheduled depth 6m.

All dimensions in metres	Client	National Rivers	Method	Logge	
Scale 1:50		Authority	Cable Percussion	Ву	AF GILLEARD

BOREHOLE LOG

Project RIVER WISSEY - HYDRON	METRIC SCHEME		BOREHOLE No
JEN A A X E P 0 4 2	S B Date 24-2-95	Sheet 1 of 2	TL89/121
Contractor Soils Engineering	Ground Level (m) 19.41	Co-Ordinates 0	
SAMPLES & TESTS &	STI	RATA	6 5

SAMPLI	ES & T	ESTS	4				STRATA	9	5
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
				19.11		(0.30)	TOPSOIL		
			į	19.11		(0.80)	Dense orangey brown fine to medium SAND with a little fine gravel.		
L.00-1.10	D			18.31	0	1.10	Dense brownish white very clayey SAND with much fine to coarse flint gravel and some chalk fragments.		1
				17 41	o .	(0.90)			I
200-210	D				4 4 4 4 5 4		White CHALK recovered as up to cobble sized medium dense fragments in a matrix of soft to firm white clay.		
3.00-3.10	D								
4.00-4.10	D				P P P P P P				
5.00-5.10	D		:						
6.00-6.10	D		Ť	2	P P P P P P P P P P P P P P P P P P P	(8.50)			
7.00-7.10	D		\$		P P P P				

Bot	ing Prog	ress and	Water (Observation	ons	Chiselling			Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
24/2/95 24/2/95 24/2/95 24/2/95 24/2/95 27/2/95	09.10 09.45 10.05 10.35 14.25	0 6.7 6.7 10.5 10.0	1.5 1.5 1.5	150 150 150	6.70 6.30 6.40 6.20						2 No falling head permeability tests curried out.	

All dimensions in metres
Scale 1:50

Client National Rivers
Authority

Method
Cable Percussion

Logged
By AF GILLEARD

Project	RIVER	WISSE	Y -	HYDI	ROMET	TRIC SCI	HEME					BOREHOLE No		
JEN Project No	A A	X E I	PO	4	2 S	B Date	24-2-95	3 174	Sheet	2 of 2	-	TL89	0/121	
Contractor		s Engine	erin	g		Ground Lev (m.)	vel 19.4	1	Co-Or	rdinates				
SAMPL	ES & T	ESTS	er			_ <u>- · · ·</u>		STRAT	ΓA			7-10	8 5	
Depth	Type No	Test Result	Wate	Reduce Level	Legend	Depth (Thick- ness)			DESCR	IPTION			Geology Instru-	
9.00-9.10	D						White Cl- fragments	IALK recove	ured as up t of soft to fi	o cobble si	zed mediur lay.	n dense		
•				8.91	7	10.50		*	END OF E	BOREHOL	E			
						1	10			++ +**	• •			
2														
Bori	ing Prop	gress and	$\overline{}$			ons aWater Dp	t From	Chiselling	Y Hours	Water	Added To	GENE REM		
24/2/95 24/2/95 24/2/95 24/2/95 24/2/95 27/2/95	09.10 09.45 10.05 10.35 14.25	0 6.7 6.7 10.5 10.0		1.5 1.5 1.5	150 150 150		FIGH	10	120073	14 TOTA		2 No falling h permeability tout.	ead	
All dim	ensions Scale 1	in metr	es	Clien		onal Rive	ers	Method Cab	le Percus	sion	Logged By	AF GILLEA	.RD	

BOREHOLE LOG

Project	WISSI	Y -	HYDI	ROME	TRIC SC	HEME	Œ -					VIA		
JEN Project No	A A	X E	P	0 4	2 S	B Date	13-2-95		Sheet	1 of 2		TF7()/12	6
Contractor		s Engin	ceri	ng		Ground Le (m.)	vel 23.7.	3	0	rdinates	7			
SAMPL	ES & T	ESTS	ter					STRA	TA				7B	5
Depth	Type No	Test Result	- CI	Reduce Level	Legend	Depth (Thick- ness)		26	DESCR	IPTION			Seo logy	Instr
				23.23		(0.50)	Dark brow	n TOPSO	IL.				•	
1.00-1.10	D		-		N N	(0.80)	Soft olive sized chall	brown silty fragments	CLAY with	many san	d to mediu	m gravel		
				22.43		130 1	Off white matrix of i	CHALK re	covered as ite clay.	up to cobbi	e sized fra	ments in a		
200-210	D		<u>↓</u>		P P P P									
3.00-3.10	D				P P									
4.00-4.10	D				P P P P P P P P P P P P P P P P P P P	4 14 14 14								
5.00-5.10	D	-			P P P P P									
6.00-6.10	D				P P P P P P P P P P P P P P P P P P P	(9.20)	From 6.0m fragments	ı becomi with a little	ing recovere	ed up to col are flint col	bble sized (obles.	CHALK		
7.00-7.10	D					, Fed., Ped., Ped., Ped.	·			+				
Bor	ing Pro	gress an	d W	ater O	bservati	ions		Chiselling	<u> </u>	Water	Added	GENE	RAI	
Date	Time	Depth	C			a Water Dp	1 	To	Hours	From	То	REMA		
13/2/95 13/2/95 13/2/95 13/2/95 14/2/95	12.05 12.25 14.25 15.00 12.00	2.9 2.9 10.5 10.0 10.0		6.15	150	2.90 2.80 2.80 2.79 2.81			•			2 No falling h permeability to out.	ead	
All dim	ensions Scale 1		res	Client	Nati	onal Rive	rs I	Method Cab	ole Percus	sion	Logged By	AF GILLEA	DD.	

BOREHOLE No

BOREHOLE LOG

Project RIVER WISSEY - HYDRON									
JEN A A X E P 0 4 2	TF70/126								
Contractor Soils Engineering	Ground Level (m) 23.73	Co-Ordinates 0							

SAMPLE	S&T	ESTS	۲				STRATA	8	<u>ار</u> د
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
8.00-8.10	D				P P P P P P P P P P P P P P P P P P P		Off white CHALK recovered as up to cobble sized fragments with a little clay and rare flint cobbles.		
9.00-9.10	D				P P P			95	
10.00-10.10	D			13.23	P P P	10.50			3,538
							END OF BOREHOLE		
	×	- 10						•	-
	ı					•			

Bor	ing Prog	gress and	Water (Observation	ons	Chiselling			Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
13/2/95 13/2/95 13/2/95 13/2/95 13/2/95 14/2/95	12.05 12.25 14.25 15.00 12.00	2.9 2.9 10.5 10.0 10.0	6.15	150	2.90 2.80 2.80 2.79 2.81		*			-	2 No falling head permeability tests carried out.	

All dimensions in metres Scale 1:50 Client National Rivers Authority Method Cable Percussion By AF GILLEARD

BOREHOLE LOG

Project	RIVER WISSEY - HYDROMI		BOREHOLE No		
JEN Project No	A A X E P 0 4 2 S	B Date 14-2-95	TF70/127		
Contracto	Soils Engineering	Ground Level (m) 34.36	Co-Ordinates 0		

SAMPL	ES & T	ESTS	4				STRATA	99	7
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geo I ogy	Instr
				33.86		(0.50)	Dark brown TOPSOIL		
				33.36		(0.50)	Loose brown fine to coarse SAND.		
L00-1.10	D			33.30	0	(1.20)	White brown slightly clayey fine to coarse SAND with much fine to coarse gravel of flint and chalk.		
200-210	D			32.16	<u>-</u>	220			
					P P		Off white CHALK recovered as up to cobble sized fragments in a matrix of firm white day with occasional up to cobble sized flints.		
3.00-3.10	D				P P				
					PP		4		
4.00-4.10	D				P P		at 4.2m matrix of soft white clay.		
5.00-5.10	D				PP		ár	İ	
					P P		at 5.5 matrix of soft white clay.		
6.00-6.10	D				P P				
7.00-7.10	D								
					PP				

Boring Progress and Water Observations						Chiselling			Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
14/2/95 14/2/95 14/2/95 14/2/95 14/2/95 15/2/95 15/2/95	13.45 14.30 14.50 15.30 a.m. p.m.	11.20 12.70 12.70 14.00 14.00 20.00	15 15 15 15 15	150 150 150 150 150	dry 12.70 12.70 12.70 12.70 12.63				7.00	13.00	2 No falling head permeability tests carried out.	

All dimensions in metres Client National Rivers Scale 1:50 Client National Rivers Cable Percussion Cable Percussion By AF GILLEARD

Project	RIVER WISSEY	BOREHOLE No TF70/127							
JEN Project No	JEN Project No A A X E P 0 4 2 S B Date 14-2-95 Sheet 2 of 3								
Contracto	Soils Engineer	ring	Ground Lew (m.)	el 34.36	Co-Ordinates 0				

SAMPLE	S&T	ESTS	۷				STRATA	7B	-1
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
9.00-9.10	D						Off white CHALK recovered as up to cobble sized fragments in a matrix of firm white clay with occasional up to cobble sized flints.		
10.00-10.10	D		:		P P P P P P P P P P P P P P P P P P P	,			
12.00-12.10	D		1 2			(18.30)			
14.00-14.10	D				P P P P P P P P P P P P P P P P P P P		**		
15.00-15.10	D	-	- -		P P P P P				

Bor	ing Prog	ress and	Water (Observation	ons	Chiselling			Water	Added	GENERAL	
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS	
14/2/95 14/2/95 14/2/95 14/2/95 15/2/95 15/2/95	13.45 14.30 14.50 15.30 a.m. p.m.	11.20 12.70 12.70 14.00 14.00 20.00	15 15 15 15 15	150 150 150 150 150	dry 12.70 12.70 12.70 12.70 12.63				7.00	13.00	2 No falling head permeability tests carried out.	

All dimensions in metres	Client	National Rivers	Method	Logg	ed
Scale 1:50		Authority	Cable Percussion	Ву	AF GILLEARD

Project I	LIVER	WISSE	Υ -	HYDR	OME	TR	IC SC	неме						EHOLE	
JEN Project No	A	X E	P	0 4 3	2 S	В	Date	14-2-95		Sheet	3 of 3		TF	70/12	27
Contractor	Soil	s Engin	ceri	ng		Gro (m	ound Le	34.36		Co-Or	rdinates			7	9
SAMPLE	S&T	ESTS	£					S	TRAT	ΓA				20	5
Depth	Type No	Test Result	Water	Reduced Level	Lagar	य (त	Depth hick- ss)			DESCR	IPTION			Geology	Instr
17.00-17.10	D D			13.86		╒ ╌╊═╏┧╇╏┨╇╏┾╉╏╇╏┸╇╏╊╏╏╇┆┸╇╏	20.50	Firm off white							SHEAT STANFACES
									1	END OF E	OREHOI	E			
	ng Prog	ress an	_	ater Ob		_	S ater Dp		selling To	Hours	Water	Added To		NERAL MARKS	

Date	Time	Depth	Casing		Water Dpt	Prom	То	Hours	From	To	REMARKS
14/2/95 14/2/95 14/2/95 14/2/95 15/2/95 15/2/95	13.45 14.30 14.50 15.30 a.m. p.m.	11.20 12.70 12.70 14.00 14.00 20.00	15 15 15 15 15	150 150 150 150 150	dry 12.70 12.70 12.70 12.70 12.63				7.00	13.00	2 No falling head permeability tests carried out.
All din	nensions Scale 1:	in metre	s Clie	nt Natio	nal River:	3	Method Cab	le Percus	sion	Logged By	AF GILLEARD

BOREHOLE LOG

	DOIGNIOLE		
Project RIVER WISSEY - HYDR	BOREHOLE No		
JEN A A X E P 0 4 2	2 S B Date 17-2-95	Sheet 1 of 2	TF70/128
Contractor Soils Engineering	Ground Level (m) 19.25	Co-Ordinates 0	
SAMPLES & TESTS L	STR	ATA	7.Bo
	Denth		0 5.4

SAMPLI	ES & T	ESTS	4				STRATA	29	-5
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
				18.85		(0.40)	TOPSOIL		
				18.45	噩	(0.40)	Firm greenish orangey brown CLAY with a little fine to coarse sand.		
1.00-1.10	D				* ; * ; * ;		Stiff to very stiff brownish yellow silty CLAY.		
2.00-2.10	D				F - S- - X- - X-	(2.70)	at 2.0m becoming mottled orange brown, grey and brownish yellow.		
					- <u>x</u>				
3.00-3.10	D			15.75	- <u> </u>	3.50			
4.00-4.10	D				P P P P P P P P P P P P P P P P P P P		White CHALK with some orange staining, recovered as sand to coarse gravel sized fragments with a little soft white clay.		
5.00-5.10	D				P P P P P P P P P P P P P P P P P P P				
6.00-6.10	D				P P P P P				
					P P P P P P P P P P P P P P P P P P P		at 8.0m (approx) becoming recovered as stiff clay with many chalk fragments.		

Box	ring Prog	gress and	Water (Observation	ons		Chisellin	g	Water	Added	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	То	REMARKS
17/2/95 17/2/95 20/2/95 21/2/95	11.00 15.00 09.15 13.30	0.0 13.0 13.0 12.5			8.00 8.18				6.00	13.00	Water entry not evident due to added water. 2 No falling head permeability tests carried out. Hole scheduled as 10m.
All din	nensions	in metre	s Clie	nt Natio	nal River	. 1	Method			Logged	Mary Town

All dimensions in metres
Scale 1:50

Client National Rivers
Authority

Method
Cable Percussion

Logged
By AF GILLEARD

BOREHOLE LOG

Project	RIVE	N S	/ISSE	Y -	HY	DR	OME'	TRIC	SCI	IEME					DOREIT		
JEN Project No	A A	x	E	P	0 4	2	S	В	Date	17-2-95		Sheet	2 of 2		TF70	/ 1.4	20
Contractor		ls l	Engin	eeri	ng			Groun (m)	nd Lev	rel 19.2	5	Co-Or	rdinates				
SAMPL	ES & 7	ſΕ	STS	۲							STRA	TA				36	<u>ار</u> =
Depth	Type No	1	Test Result	Water	Redu Lev	ced el	Legene	Do (This ness)	epth ck-			DESCR	UPTION			Geo I ogy	Instrument Back +
8.00-8.10 10.00-10.10	D							(9.5		White CH with many	ALK with chalk frag	some orangements.	e staining, r	recovered a	s stiff clay		
11,00-11.10	D							┧┙ ╒╸╶╒╸ ╌				*					
- 12.90-13.00	D				6	25	P	#: #	13.00			END OF E	3OREHOL	E			
Bori Date 17/2/95 17/2/95 20/2/95 21/2/95	Ing Pro Time 11.00 15.00 09.15 13.30		ess an Depth 0.0 13.0 12.5	C	ater	_	servati	ia Wate	8.00 8.18	-	Chisellin To	Hours	Water From 6.00	Added To 13.00	GENE REMA Water entry in due to added of falling head put tests carried of scheduled as I	RKS ot evid seater, ermeal	lent 2 No
All dim	ension Scale			res	Cli	ent	Nati Auth	onal nority	Rive	rs	Method Cal	ole Percus	sion	Logged By	AF GILLEA	RD	-

BOREHOLE No

Project	RIVER	WISSE	Y -	HYDR	OMET	RIC SCI	неме					BOREH	OLE	. No
	A A	X E	P () 4	2 S	B Date	20-2-95	;	Sheet	1 of 1		TF7 0	/12	9
Contractor	Soil	s Engine	! erir	_:: ıg		Ground Le (m.)	vel 9.12	2	Co-Or	rdinates	_	.1		
SAMPLI	ES & T	ESTS						STRAT	ΓA				20	三
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			DESCR	IPTION			Geo I ogy	Instr
0.50-0.60	D			8.82 7.92	0 0	(0.90)	Orangey	brown and you to coarse gr	ellowish bro ravel of flin	own fine to t and chalk	coarse SAN	VD with		
1.50-1.60	D		₹₽		P P P P P P P P P P P P P P P P P P P P		Off white fragment	CHALK, res	covered as irm white c	fine sand to	ocarse gra	wel sized		
2.50-2.60	D				P P P P P				4.					
3.50-3.60	D					(5.30)	at 4.0m fragment	recovered a	s high dens	sity gravel t	o cobble siz	zed .		
5.00-5.10	D			262		6.50				le:				
									END OF E	OREHOL	E			
Bori	ng Proj	gress and	ı W	ater Ob	oservati	ons		Chiselling	3	Water	Added	GENE		
Date 20/2/95 20/2/95 20/2/95 20/2/95 21/2/95 22/2/95 22/2/95 27/2/95	Time 12.15 12.25 12.40 13.30 08.45 09.00 12.30 14.45	Depth 0.0 2.00 2.00 4.50 4.50 4.5 6.5		1.3 1.3 1.3	150 150 150 150	2.00 1.90 dry 2.27 2.10 1.89 1.92	t From	То	Hours	From	Ta	Water sealed of 2 No falling he permeability to out. Chisel us advance from 33 minutes. Cused from 4.0 minutes.	out at lead ests cand to 4.5 to large cut	1.3m mied 6.5 is
	ensions Scale 1	in metr	es	Client	Natio Auth	onal Rive	T 3	Method cab	le Percus	sion	Logged By	AF GILLEA	RD	

BOREHOLE LOG

JEN	A A	v P	,	0		2	e :	B 5	22-2-95		GL	1 of 2		TF70	/130
roject No		A E	P	U	4	2	S				74 (24	20.00			
Contractor		s Eng	ineeri	ng				iround Le m)	10.00	2	Co-Or	dinates			- 4,0
SAMPL	ES & T	ESTS	ra La					1		STRAT	r A				780
Depth	Type No	Test Resul	Water	R ₄	educed Lovel	Leg		Depth (Thick- ness)			DESCR	PTION			Geo logy
				T	9.67		- 13	(0.40)	TOPSOIL						
						:		(0.70)	Loose ora	ngey brown	fine to coar	se SAND.			
1.00-1.10	D			H	8.92	6	ا و ا	- 1.10		tish brown o			ND with s	ome fine	
2.00-2.10	D					6.1.6	1,1	(1.20)							
75			7	Ż	7.72	0	-	2.30		sh brown fir lint and cha		AY with so	me fine to	coarse	
3.00-3.10	D		3			01,1,01		(1.20)							
					6.57	P P	P P	3.50		ense off whi ed fragment		recovered a	s fine grav	rel to	
4.00-4.10	D					P P	P P P P								
6.00-6.10	D					PPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPPP	P P P P P P P P P P P P P P P P P P P	(5.00)							52.5
7.50-7.60	D					P			at 7.5m _	. some chalk	fragments	have black i	dark brow	wn coating.	
	ing Pro	1					_	T		Chiselling		Water		GENE	
Date 22/2/95 22/2/95 22/2/95 22/2/95 23/2/95 27/2/95	Time 13.10 13.25 13.45 15.15 09.40 14.45	2. 2. 8. 8.	80 80 50 00		7.90		150	2.80 2.52 6.00 2.53		То	Hours	From	То	REM. 2 No falling h permeability out.	ead
All din	nension Scale		etres		Clien	a 1	Nati	onal Riv	ers	Method	le Percus		Logged By	AF GILLEA	

BOREHOLE No

Project RIVER WISSEY - HYDRO	OMETRIC SCHEME		BOREHOLE No
JEN A A X E P 0 4 2	TF70/130		
Contractor Soils Engineering	Ground Level (m) 10.02	Co-Ordinates 0	

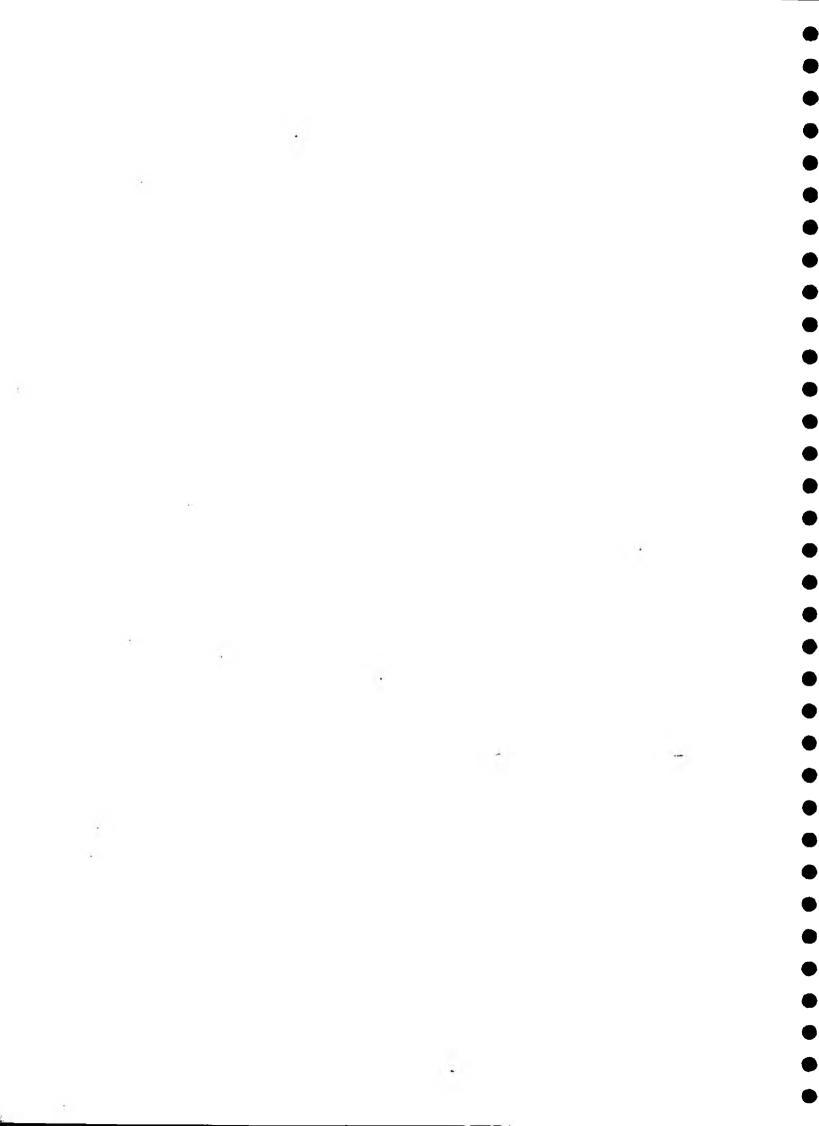
SAMPLI	ES & T	ESTS					STRATA	FB.	7
Depth	Type No	Tes Resu	_ 0	Reduce	Legend	Depth (Thick- ness)	DESCRIPTION	Geology	Instr
				1.5	PP	8.50	Medium dense off white CHALK recovered as fine gravel to cobble sized fragments.		
							END OF BOREHOLE		
							et e		
						<u> </u> 	0.		,
						:	4.0	163 173	•
				. (-			4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4		
7				-	0.71.5				
	:		:						
			l:						
		,							
			:						
									1

Во	ring Prog	ress and	Water C	Observation	ons		Chiselling	\$.	Water	Added_	GENERAL
Date	Time	Depth	Casing	Casing Dia	Water Dpt	From	To	Hours	From	To	REMARKS
22/2/95 22/2/95 22/2/95 22/2/95 23/2/95 27/2/95	13.10 13.25 13.45 15.15 09.40 14.45	0.00 2.80 2.80 8.50 8.00 8.00	7.90	150	2.80 2.52 6.00 2.50 2.53						2 No falling head penneability tests carried out.

All dimensions in metres Scale 1:50	National Rivers Authority	Method Cable Percussion	Logge By	d AF GILLEARD	
Scale 1.50	 		L <u></u>		

			Т			RIC SC						TF70)/13	1
roject No Contractor		X E	P	0 4	2 S	B Date	23-2-95			1 of 2		<u> </u>		
		s Engin	eeri	ng		(m)	7.22		0					
SAMPL	ES & T	ESTS	er			1 12 112		STRA	TA				66a	5
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick- ness)			DESCR	IPTION			Geo I ogy	Inst
						(0.60)	TOPSOIL							
				6.62		0.60	F		sandy CLA	/_lab a lisa	la Guada u		<u> </u>	
							flint gravel		samy CLA	will a little	e une w n	extrum.		
1.00-1.10	D			-1										
						(1.80)								
					===									
200-210	D	3				-								
				4.87	0	2.40	Firm broad	nich antica	sandy CLA	V with fire	. to cooree	(moeth)	-	1
			1	4.40	, ===	(0.40)	chalk) grav	el.	salely Clar	1 WILL III	to coarse	(musuy		
3.00-3.10	D		4	9	===	-(0.50)	Firm brown	nish yellor	fine sandy	CLAY.				
200 210				397	7	130	Off white (THALK	covered as i	irm friable	clay		<u> </u>	
		2			PP		OL WILL				cay.			
			1		PP	<u>†</u> ⊩								ı
4.00-4.10	D	1		100	PP	T. I			+					
					PP	r L								
					P P	<u>t</u>								
5.00-5.10	D				PP	<u> </u>	Becoming	recovered	as firm brow	vnish yellov	day with	sand to		
					PP		have orang	e and dark	h yellow cha brown cost	ing / surfa	ce staining.	igments		
					PP	(5.20)								
6.00-6.10	D				PP	-(320)								
					PP	<u>‡</u>								25
					FF	!								
0.110		}			PP	<u>.</u>								
7.00-7.10	D				PP	ŧ								
					PP	ŧ								
					PP		<u> </u>		1 -					4
Bor	ing Pro	gress ar	nd V	Vater O	bservati	ons		Chisellin	g	Water	Added	GENI		
Date 23/2/95	Time 10.15	Depth 0.00		Casing	Casing Di	a Water Dy	rom From	To	Hours	From	То	REM	_	
23/2/95	10.35	4.00	0			4.00		-				initial water : out, 2 No fall	ine hea	d
23/2/95 23/2/95	10.55 13.00	4.00 8.50	9	7.50	150	2.90 5.20	S					permeability out.	tests ca	uried
23/2/95 27/2/95	15.00 14.45	7.80	0		Y	1.39 2.35								
						- 727								
411 11		<u> </u>	1	1000					<u> </u>	<u> </u>	1.	<u> </u>		
אוו מומ	Scale 1	in met	res	Clien		onal Riv	C1.2	Method	ble Percus	eion	Logged	AF GILLE	DD	

Project	RIVER	WISSE	γ.	HYD	ROME	TRI	C SCI	IEME					BOREH		
JEN Project No	A A	X E	P	0 4	2 S	В	Date	23-2-95		Sheet	2 of 2		TF70	1/13	1
Contracto		s Engine	erir	ıg		Gro	und Les	^{el} 7.22		Co-Or	dinates				4_
SAMPL	ES & T	ESTS	_						STRA	TA				7	5/=
Depth	Type	Test Result	Water	Radio	Legen	d (T	Depth hick-			DESCR	IPTION			Seo logy	Instru ment
8.00-8.10	D			-12	7 P 7 P	nes	8.50	sand to cob	ble sized l	covered as f brownish yel	low chalk f	ragments.	Some	9	HEC
										END OF B	ACT ACT				
								- 160	•					Kitham (
		gress and				_	_		Chisellin	g	Water	Added	GENE		
Date 23/2/95 23/2/95 23/2/95 23/2/95 23/2/95 27/2/95	Time 10.15 10.35 10.55 13.00 15.00 14.45	0.00 4.00 4.00 8.50 7.80 7.80		7.50	Casing D		4.00 2.90 5.20 1.39 2.35	From	То	Hours	From	То	REMA Initial water st out. 2 No fallin permeability to out.	rike se	aled i
All din	nensions Scale 1	in metr	es	Clier		iona hori	l Rive	rs M	(ethod	ole Percus	****	Logged By	AF GILLEA	D.P.	_



FALLING HEAD TEST RESULTS



SUMMARY OF FALLING HEAD PERMEABILITY TESTS

Borehole Ref	Permeability in Borehole (m/sec)	Permeability in Standpipe (m/sec)
TF 80/211	1.10 E-6	1.26 E-5
TF 80/212	**	4.03 E-4
TF 80/213	**	4.03 E-4
TF 80/214	8.20 E-6	4.66 E-5
TF 80/215	6.00 E-7	**
TF 80/216	7.00 E-7	4.40 E-6
TF 80/217	4.00 E-7	5.20 E-6
TF 80/218	1.89 E-5	2.69 E-4
TL 89/118	1.90 E-6	3.55 E-4
TL 89/119	2.40 E-5	1.27 E-4
TL 89/120	3.10 E-6	2.5 E-6
TL 89/121	1.11 E-5	6.67 E-5
TF 70/126	**	1.61 E-4
TF 70/127	**	4.87 E-5
TF 70/128	5.00 E-7	5.20 E-6
TF 70/129	3.27 E-4	2.69 E-4
TF 70/130	3.00 E-7	2.69 E-4
TF 70/131	8.00 E-7	6.30 E-6

^{** =} Very high permeability. Could not raise water level in borehole /standpipe above equilibrium water table level.

Site RIVER WISSEY (NORTH PICKENHAM)

Client NATIONAL RIVERS AUTHORITY

Date 09/02/95 Type of Test Falling Head

Level mOD

Depth of borehole during test, a : 4.00 m

Depth to equilibrium watertable, b : 0.55 m Measured

Height of casing above ground level, c: 0.00 m

Depth of casing below ground level, d : 3.00 m

Length of response zone, Z : 1.00 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 2.4205

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

Firm grey clay with chalk fragments and flint

PERMEARII ITY(after	Hyorsley	1951)

Basic Time Lag Approach

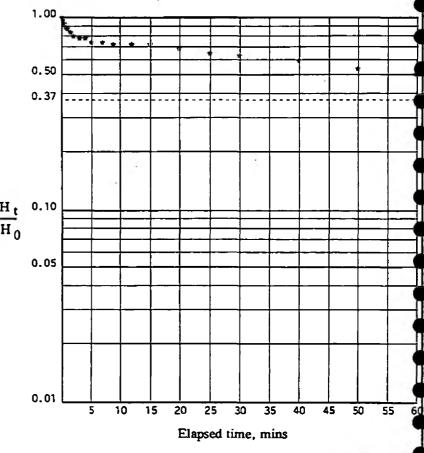
Plot log Ht v t *-----*

then

 $k = \frac{A}{60FT}$ m/sec

k = 1.10E-6 m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H	Ht/Ho
0.16	0.01	0.54	1.000
0.33	0.03	0.52	0.963
0.50	0.05	0.50	0.926
0.75	0.07	0.48	0.889
1.00	0.08	0.47	0.870
1.50	0.10	0.45	0.833
2.00	0.12	0.43	0.796
3.00	0.13	0.42	0.778
4.00	0.13	0.42	0.778
5.00	0.15	0.40	0.741
7.00	0.15	0.40	0.741
9.00	0.16	. 0.39	0.722
12.00	0.16	0.39	0.722
15.00	0.16	0.39	0.722
20.00	0.18	0.37	0.685
25.00	0.20	0.35	0.648
30.00	0.21	0.34	0.630
40.00	0.23	0.32	0.593
50.00	0.26	0.29	0.537
60.00	0.28	0.27	0.500

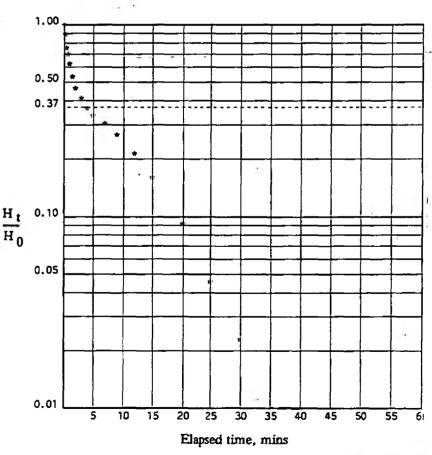


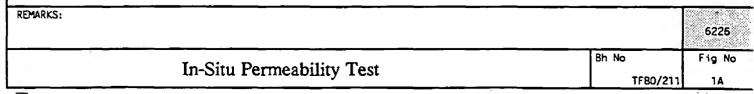
In-Situ Permeability Test

Bh No Fig No TF80/211 1A

RIVER WISSEY (NORTH PICKENHAM) Site Client NATIONAL RIVERS AUTHORITY 09/02/95 Type of Test Falling Head Date Depth of borehole during test, a : 4.00 m Depth to equilibrium watertable, b : 0.55 m Height of casing above ground level, c Depth of casing below ground level, d Length of response zone, Z : 3.00 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D : 0.15 m Basic Time Lag-Approach Plot log Ht v t Intake factor, F : 5.8134 (From Figure 8, Note 5, BS5930:1981) then m/sec $k = \frac{A}{60FT}$ Soil Type at test level Soft mottled sandy clay with gravel to 2.6m, firm clay with chalk fragments and flints to 4.0m k = 1.26E-5 m/sec

Elapsed time, t mins	Depth to water, e m	Head of water, H m	Ht/Ho
0.16	0.09	1.31	1.000
0.33	0.23	1.17	0.893
0.50 -	0.41	0.99	0.756
0.75	0.48	0.92	0.702
1.00	0.58	0.82	0.626
1.50	0.70	0.70	0.534
2.00	0.79	0.61	0.466
3.00	0.86	0.54	0.412
4.00	0.92	0,48	0.366
5.00	0.96	0.44	0.336
7.00	1.00	0.40	0.305
9.00	1.05	0.35	0.267
12.00	1.12	0.28	0.214
15.00	1.19	0.21	0.160
20.00	1.28	0.12	0.092
25.00	1.34	0.06	0.046
30.00	1.37	0.03	0.023
40.00	1.40	0.00	0.000
50.00	1.40	0.00	0.000
60.00	1.40	0.00	0.000





RIVER WISSEY (NORTH PICKENHAM) Site NATIONAL RIVERS AUTHORITY Leve 1 10/02/95 Falling Head Type of Test Depth of borehole during test, a : 20.50 m Depth to equilibrium watertable, b : 12.50 m Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d Length of response zone, Z : 8.00 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D : 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 10.7639 (From Condition D of fig. 7 BS5930:1981) then m/sec Soil Type at test level Firm white putty chalk and rock chalk with large k = m/sec

Elapsed time, t _mins	Depth to water, e	Head of water, H m	Ht/Ho
0.16	12.45	0.05	1.000
0.33	12.50	0.00	0.000
0.50	12.50	0.00	0.000
0.75 1.00	12.50 12.50	0.00	0.000 0.000

	1.00										•
	1.00										
	0.50		-								3
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REMARKS: Could not raise water level above 12.45m due to flow rate

6226

In-Situ Permeability Test

8h No Fig No TF80/212 18

RIVER WISSEY (NORTH PICKENHAM) Site NATIONAL RIVERS AUTHORITY 13/02/95 Type of Test Falling Head Depth of borehole during test, a : 19.80 m Depth to equilibrium watertable, b : 12.50 m Height of casing above ground level, c Depth of casing below ground level, d Langth of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec $k = \frac{A}{60FT}$ Soil Type at test level Firm white putty chalk and rock chalk with large flints k = 4.03E-4 m/secElapsed Depth to Head of Ht/Ho time, t water, H water, e mins m 1.00 12.10 0.40 1.000 0.16 0.05 0.125 0.33 12.45 0.00 .0.000 0.50 12.50 0.50 0.75 12.50 0.00 0.000 1.00 12.50 0.00 0.000 0.10 0.05 Elapsed time, mins REMARKS: Could not raise water above 12.1m due to flow rate 6226 Fig No In-Situ Permeability Test TF80/212 18

Site RIVER WISSEY (LITTLE CRESSINGHAM) NATIONAL RIVERS AUTHORITY Client

07/02/95 Type of Test Falling Head Date

Level mOD

Depth of borehole during test, a

: 10.50 m

Depth to equilibrium watertable, b

: 6.56 m

Measured

Height of casing above ground level, c : 0.00 m

PERMEABILITY (after Hvorslev 1951)

Depth of casing below ground level, d

Length of response zone, Z

4.00 m

Diameter of response zone, D

* 0.15 m

Intake factor, F

: 6.3197

(From Condition D of fig. 7 BS5930:1981)

Basic Time Lag Approach Plot log Ht v t

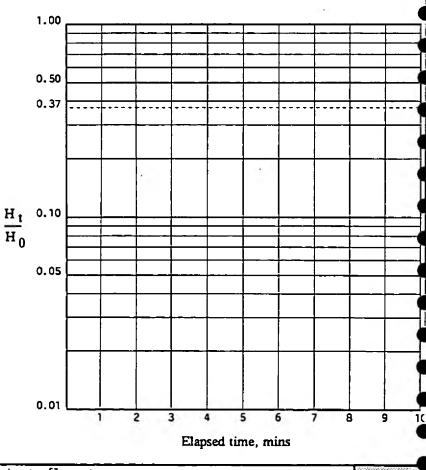
then m/sec

Soil Type at test level

Firm white rock chalk

k		m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H m	Ht/Ho
0.16	6.56	0.00	1.000
0.33	6.56	0.00	1.000
0.50	6.56	0.00	1.000
0.75	6.56	0.00	1.000
1.00	6.56	0.00	1.000
1.50	6.56	0.00	1.000
			1.



REMARKS:

Could not raise water level above 6.56m due to flow rate

6226

In-Situ Permeability Test

Bh No TF80/213 Fig No

RIVER WISSEY (GREAT CRESSINGHAM) NATIONAL RIVERS AUTHORITY Client 08/02/95 Falling Head Type of Test Depth of borehole during test, a 9.80 m Depth to equilibrium watertable, b : 6.55 m Height of casing above ground level, c : Depth of casing below ground level, d Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F 3.3187 (From Figure 8, Note 5, BS5930:1981) then Soil Type at test level Firm white rock chalk k = 4.03E-4 m/sec

	Elapsed time, t mins	Depth to water, e m	Head of water, H m	Ht/Ho		1.00							i e		-		
	0.16	5.90	0.65	1,000]	1.00										\equiv	
ľ	0.33	6.50	0.05	0.077			-	10-3	4.3		 	+	-	-			-
-	0.50	6.54	- 0.01	-0.015-		0.50		_		_	 		 		+-	_	-
	0.75	6.55	0.00	0.000							_		<u> </u>		1-	\neg	- !
ŀ	1.00 1.50	6.55 6.55	0.00 0.00	0.000 0.000		0.37				 							
	*****	3.33	5.55	0,000					,							+	
					$\frac{H_t}{H_0}$	0.10											
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REMARKS: Could not raise water level above 5.9m due to flow rate

6226

In-Situ Permeability Test

Bh No Fig No TF80/213 2

Site RIVER WISSEY (NORTH PICKENHAM)

Client NATIONAL RIVERS AUTHORITY

Date 31/01/95 Type of Test Falling Head

mOD

d

Depth of borehole during test, a : 30.50 m

Depth to equilibrium watertable, b : 6.53 m Assumed

Height of casing above ground level, c : 0.10 m

Depth of casing below ground level, d : 18,00 m

Length of response zone, Z : 12.50 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 15.3517

(From Condition D of fig. 7 BS5930:1981)

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t *----

then

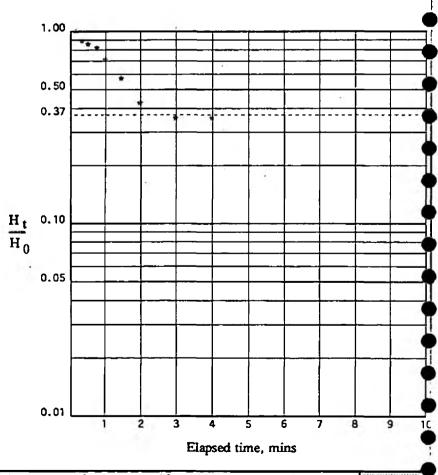
 $k = \frac{A}{60FT}$ m/sec

Soil. Type at test level

Firm white putty chalk and rock chalk with flints

k = 8.20E-6 m/sec

				_
Elapsed time, t mins	Depth to water, e m	Head of water, H	Ht/Ho	
0.16	6.35	0.28	1.000	1
0.33	6.38	0.25	0.893	l
0.50	6.39	0.24	0.857	١
0.75	6.40	0.23	0.821	ı
1.00	6.43	0.20	0.714	ı
1.50	6.47	0.16	0.571	ı
2.00	6.51	0.12	0.429	ı
3.00	6.53	0.10	0.357	l
4.00	6.53	0.10	0.357	ł



REMARKS:

Could not raise water level above 6m with water supply on site. After 4 minutes water began to rise to 6.24m at 25 minutes due to water leaking in through casing joints

6226

In-Situ Permeability Test

Bh No TF80/214 Fig No

RIVER WISSEY (WATTON) Site Client NATIONAL RIVERS AUTHORITY Falling Head 01/02/95 Date Type of Test Depth of borehole during test, a : 30.00 m VAN. Depth to equilibrium watertable, b : 6.53 m Assumed Height of casing above ground level, c Depth of casing below ground level, d : 28.65 m Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then $k = \frac{A}{60FT}$ m/sec Soil Type at test level Firm white putty chalk and rock chalk with flints k = 4.66E-5 m/sec**Elapsed** Depth to Head of Ht/Ho time, t water, e water, H กว่าร m m 1,00 6.83 1.000 0.16 0.50 0.33 0.65 6.68 0.978 0.50 1.40 5.93 0.868 0.50 0.75 2.15 5,18 0.758 1.00 2.75 4.58 0.671 0.37 0.495 1.50 3.95 3,38 2.35 0.344 2.00 4.98 3.00 6.04 1.29 0.189 4.00 6.40 0.93 0.136 5.00 6.50 0.83 0.122 0.81 7.00 6.52 0.119 0.81 0.119 9.00 6.52 0.10 12.00 6.52 0.81 0.119 15.00 6.52 0.81 0,119 0.05 Elapsed time, mins REMARKS: 6226 Fig No In-Situ Permeability Test TF80/214

Site RIVER WISSEY (WATTON)

Client NATIONAL RIVERS AUTHORITY

Date 24/01/95 Type of Test Falling Head

mOD [Leve]

Depth of borehole during test, a

Depth to equilibrium watertable, b : 5.20 m Measured

: 8.00 m

Height of casing above ground level, c : _0.25 m

Depth of casing below ground level, d : 7.90 m

Length of response zone, Z : 0.10 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 1.0051

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

:Loose orange fine sand and small gravel

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t

then H

 $k = \frac{A}{60FT}$ m/sec

k = 6.00E-7 m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H	Ht/Ho
0.16	0.00	4.95	1.001
0.33	0.01	4.94	0.999
0.50	0.01	4.94	0.999
. 0.75	0.02	4.94	0.99 9
1.00	0.02	4.93	0.997
1.50	0.02	4.93	0.997
2.00	0.02	4.93	0.997
3.00	0.04	4.92	0.995
4.00	0.06	4.89	0.989
5.00	0.08	4.87	0.985
7.00	0.11	4.84	0.979
9.00	0.13	4.82	0.975
12.00	0.16	4.79	0.968
15.00	0.18	4.77	0.964
20.00	0.20	4.75	0.960
25.00	0.22	4.73	0.956
30.00	0.24	4.71	0.952
40.00	0.29	4.67	0.944
50.00	0.33	4.63	0.936
60.00	0.37	4.59	0.928
105.00	0.50	4.45	0.900
	:		

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REMARKS: Sand settled, from water already in hole, during test, after test, hole depth was 7.0m

In-Situ Permeability Test

Bh No TF80/215 Fig No (

6225

Client NAT	ONAL RIVERS	AUTHORITY				Lova
Date 24/01/	/95 Type o	of Test Fa	11ing Head			Level mOD
Depth of bore	ehole during	test, a	: 7.00	m		C To
Depth to equi	ilibrium wat	ertable, b	: 5.20	m Meas	sured	
Height of cas	sing above g	round level,	c : 0.00	m		•
Depth of cas	ing below gr	fevel bnuc	d : 5.85	m		\(\frac{1}{2} \)
_ength of re:	ponse zone,	Z	: 1.35	m		1 ''1
Diameter of r	response zon	e, D	: 0.15	m		PERMEABILITY (after Hvorslev 1951) Basic Time Lag Approach
Intake factor	-, F		: 3.318	37		Plot log Ht v t *
From Figure	8. Note 5,	BS5930:1981)	(C)			then Ho
Soil Type at	test level					$k = \frac{A}{60FT}$ m/sec
Medium de	ense orange	sand and gra	vel			
						k = m/sec
Elapsed	Depth to	Head of]		
time, t	water, e	water, H	Ht/Ho			1 4.7
					1.00	
						an certain entre
					0.50	
į					0.37	
!			£	Нt	0.10	
	-			H ₀		
					0.05	
		4			-	
1.3						1.
					0.01	
					J. V	
						Elapsed time, mins
REMARKS:	Not possib	le to fill p	ipe, with ho	ose pipe ru	nning aw	Elapsed time, mins ay to fast. Level stayed at 5.20m 62

RIVER WISSEY (WATTON) Site

NATIONAL RIVERS AUTHORITY Client

27/01/95 Type of Test Falling Head Date

Depth of borehole during test, a : 30.00 m

Depth to equilibrium watertable, b : 5.80 m Measured

Height of casing above ground level, c: 0.60 m

Depth of casing below ground level, d

Length of response zone, Z : 14.00 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 16.8213

(From Condition D of fig. 7 B\$5930:1981)

Soil Type at test level

Firm white putty chalk and rock chalk with flints

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

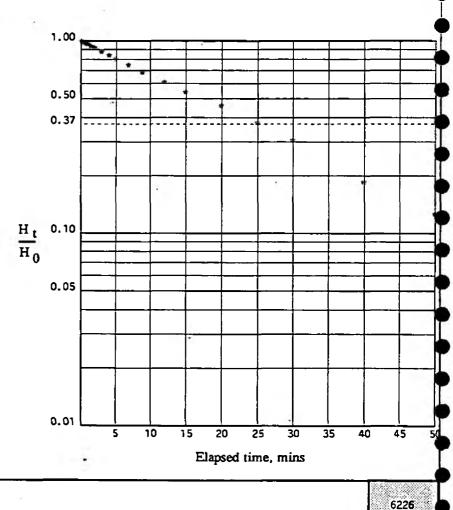
Plot log Ht v t

then

 $k = \frac{A}{60FT}$ m/sec

k = 7.00E-7 m/sec

Elapsed	Depth to	Head of	
time, t	water, e	water, H m	Ht/Ho
0.16	0.04	6.36	1.000
0.33	0.10	6.30	0.991
0.50	0.14	6.26	0.984
0.75	0.23	6.17	0.970
1.00	0.29	6.11	0.961
1.50	0.43	5.97	0.939
2.00	0.55	5.85	0.920
3.00	0.81	5.59	0.879
4.00	1.05	5.35	0.841
5.00	1.28	5.12	0.805
7.00	1.65	4.75	0.747
9.00	2.03	4.37	0.687
12.00	2.52	3.88	0.610
15.00	2.95	3.45	0.542
20.00	3.46	2.94	0.462
25.00	4.00	2.40	0.377
30.00	4.46	1.94	0.305
40.00	5.22	• 1.18	0.186
50.00	5.60	0.80	0.126
		·	
t .			
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REMARKS:

Bh No

TF80/216

Fig No

In-Situ Permeability Test

Site RIVER WISSEY (WATTON) NATIONAL RIVERS AUTHORITY Client 30/01/95 Falling Head Type of Test Date Depth of borehole during test, a : 29.30 m Depth to equilibrium watertable, b : 5.80 m Height of casing above ground level, c : 0.35 m Depth of casing below ground level, d Length of response zone, Z : 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Firm white putty chalk and rock chalk with flints k = 4.40E-6 m/secElapsed Depth to Head of Ht/Ho time, t water, e water, H mins m П 1.00 0.16 0.11 6.04 1.000 0.33 0.19 5.96 0.987 0.50 0.28 5.87 0.972 0.50 0.75 0.34 5.81 0.962 1.00 0.44 5.71 0.945 0.37 1.50 0.57 5.58 0.924 5.46 2.00 0.69 0.904 0.854 3.00 0.99 5.16 4.00 1.25 4.90 0.811 5.00 1.52 4.63 0.767 7.00 0.679 2.05 4.10 9.00 2.46 3.69 0.611 0.10 12.00 2.99 3,16 0.523 15.00 3.39 2.76 0.457 20.00 3.94 2.21 0.366 0.05 25.00 4.39 1.76 0.291 30.00 4.68 1.47 0.243 40.00 5:05 1.10 0.182 50.00 5.26 0.89 0.147 60.00 5.36 0.79 0.131 0.01 Elapsed time, mins REMARKS: 6226 Bh No Fig No In-Situ Permeability Test TF80/216 3B(II)

RIVER WISSEY (LITTLE CRESSINGHAM) Site NATIONAL RIVERS AUTHORITY Client 01/02/95 Falling Head Date Type of Test Depth of borehole during test, a

: 6.50 m

Depth to equilibrium watertable, b : 1.50 m Measured

Height of casing above ground level, c : 0.00 m

Depth of casing below ground level, d 4.50 m

Length of response zone, Z 2.00 m

Diameter of response zone, D 0.15 m

Intake factor, F 3.8256

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

Firm white putty chalk

+	Г	2.1	е	11/1	1
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PERMEABILITY (after Hvorslev 1951)

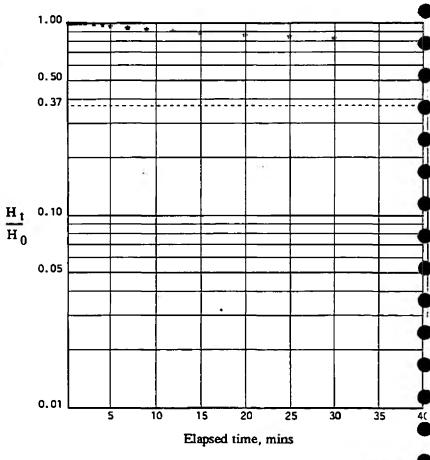
Basic Time Lag Approach

Plot log Ht v t

m/sec

k = 4.00E-7 m/sec

Elapsed time, t mins	Depth to water, e m	Head of water, H m	Ht/Ho
0.16	0.00	1.50	1.000
0.33	0.00	1.50	1.000
0.50	0.00	1.50	1.000
0.75	0.00	1.50	1.000
1.00	0.00	1.50	1.000
1.50	0.00	1.50	1.000
2.00	0.00	1.50	1.000
3.00	0.02	1.48	0.987
4.00	0.04	1.46	0.973
5.00	0.06	1.44	0.960
7.00	0.09	1.41	0.940
9.00	0.11	1.39	0.927
12.00	0.14	1.36	0.907
15.00	0.17	1.33	0.887
20.00	0.21	1.29	0.860
25.00	0.23	1.27	0.847
30.00	0.26	1.24	0.827
40.00	0.30	1.20	0.800



REMARKS: 6226 Bh No Fig No In-Situ Permeability Test TF80/217

RIVER WISSEY (LITTLE CRESSINGHAM) Site NATIONAL RIVERS AUTHORITY Client 02/02/95 Falling Head Type of Test Depth of borehole during test, a : 6.00 m Depth to equilibrium watertable, b : 1.45 m Measured Height of casing above ground level, c : 0.10 m Depth of casing below ground level, d : 4.65 m Length of response zone, Z : 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, 0 : 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Firm white putty chalk k = 5.20E-6 m/secElapsed Depth to Head of Ht/Ho time, t water, e water, H antm m m 1.00 0.16 0.10 1.45 1.000 0.33 0.17 1.38 0.952 0.50 0.23 1.32 0.910 0.50 0.75 0.28 1.27 0.876 0.33 1.00 1.22 0.841 0.37 1,50 0.42 1,13 0,779 2.00 0.49 1.06 0.731 3.00 0.59 0.96 0.662 4.00 0.65 0.90 0.621 5.00 0.70 0.85 0.586 7.00 0.78 0.77 0,531 9.00 0.85 0.70 0.483 0.10 12.00 0.91 0.64 0.441 0.97 15.00 0.58 0.400 20.00 1.06 0.49 0.338 0.05 25.00 1.13 0.42 0.290 30.00 1.19 0.36 0.248 40.00 0.32 0.221 1.23 50.00 0.24 1.31 0.166 60.00 1.35 0.20 0.138 0.01 25 Elapsed time, mins REMARKS: 6226 Bh No Fig No In-Situ Permeability Test TF80/217

RIVER WISSEY (LITTLE CRESSINGHAM) Site

NATIONAL RIVERS AUTHORITY Client

06/02/95 Type of Test Falling Head Date

Depth of borehole during test, a : 18.00 m

Depth to equilibrium watertable, b : 6.15 m Measured

Height of casing above ground level, c:

Depth of casing below ground level, d

Length of response zone, Z 4.50 m

Diameter of response zone, D 0.15 m

Intake factor, F 6.9052

(From Condition D of fig. 7 BS5930:1981)

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t

then

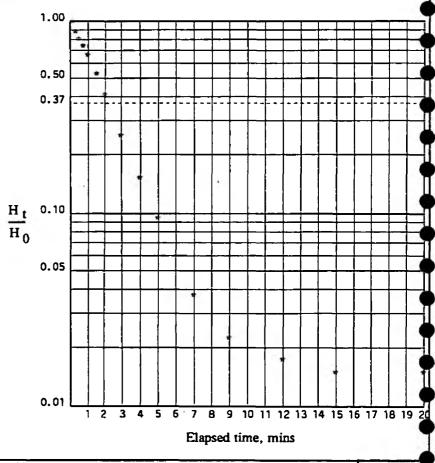
m/sec

Soil Type at test level

Stiff grey clay with chalk fragments to 17.8m and firm white putty chalk to 18.0m

k = 1.89E-5 m/sec

Elapsed time, t mins	Depth to water, e m	Head of water, H	Ht/Ho
0.16	2.30	4.00	1.000
0.33	2.75	3.55	0.888
0.50	3.06	3.24	0.810
0.75	3.32	2.98	0.745
1.00	3.63	2.67	0.668
1.50	4.18	2.12	0.530
2.00	4.65	1.65	0.413
3.00	5.29	1.01	0.253
4.00	5.69	0.61	0.153
5.00	5.92	0.38	0.095
7.00	6.15	0.15	0.038
9.00	6.21	0.09	0.023
12.00	6.23	0.07	0.018
15.00	6.24	0.06	0.015
20.00	6.24	0.06	0.015



Only managed to raise water level upto 2.30m with water supply on site

6226

In-Situ Permeability Test

Bh No TF80/218 Fig No **4B**

RIVER WISSEY (LITTLE CRESSINGHAM) Client NATIONAL RIVERS AUTHORITY Type of Test 06/02/95 Falling Head Depth of borehole during test, a : 18.00 @ Depth to equilibrium watertable, b : 6.15 m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t *-----Intake factor, F (From Figure 8, Note 5, BS5930:1981) then $k = \frac{\Lambda}{60FT}$ m/sec Soil Type at test level Stiff grey clay with chalk fragments to 17.8m and firm white putty chalk to 18.0m k = 2.69E-4 m/secElapsed Head of Depth to Ht/Ho time, t water, e water. H กว่าร m 1.00 0.16 5.60 0.55 1,000 0.33 5.95 0.20 0.364 6.04 0.50 0.11 0.200 0.50 0.75 6.09 0.06 0.109 1.00 6.10 0.05 0.091 0.055 1.50 6.12 0.03 2.00 6.13 0.02 0.036 0.01 0.018 3,00 5.14 4.00 6.15 0.00 0.000 5.00 0.00 0.000 5.15 7.00 6.15 0.00 0.000 0.10 0.05 Elapsed time, mins REMARKS: Could not raise water level above 5.6m due to flow rate 6226

In-Situ Permeability Test

Bh No

TF80/218

Fig No

48

RIVER WISSEY (BODNEY BRIDGE) Site NATIONAL RIVERS AUTHORITY Client Level mOD 02/03/95 Type of Test Falling Head Date Depth of borehole during test, a : 6.50 m **//////** Depth to equilibrium watertable, b : 0.59 m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d : 6.00 m Length of response zone, Z : 0.50 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D : 0.15 m Basic Time Lag Approach Intake factor, F Plot log Ht v t *----* : 1.6372 Ho (From Condition D of fig. 7 BS5930:1981) then m/sec Soil Type at test level Soft white putty chalk k = 1.90E-6 m/secElapsed Head of Depth to Ht/Ho time, t water, H water, e m mins m 1.00 0.75 0.01 0.58 1.000 1.00 0.03 0.56 0.966 0.55 1.50 0.04 0.948 0.50 2.00 0.05 0.54 0.931 3.00 0.06 0.53 0.914 0.37 4.00 0.08 0.51 0.879 5,00 0.09 0.50 0.862 7.00 0.12 0.47 0.810 9.00 0.13 0.46 0.793 12.00 0.14 0.45 0.776 15.00 0.15 0.44 0.759 20.00 0.17 0.42 0.724 0.10 Ht 25.00 0.19 0.40 0.690 30.00 0.21 0.38 0.655 0.05 0.01 Elapsed time, mins REMARKS: 6226 Bh No Fig No In-Situ Permeability Test TL89/118

RIVER WISSEY (BODNEY BRIDGE) Site NATIONAL RIVERS AUTHORITY Client 02/03/95 Falling Head Type of Test Depth of borehole during test, a : 6.50 m Depth to equilibrium watertable, b 0.59 m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d 4.65 m Length of response zone, Z 1.35 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t *----* Intake factor, F 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Dense grey sand and gravel to 5.0m and soft white putty chalk to 6.5m k = 3.55E-4 m/secHead of Elapsed Depth to Ht/Ho water, H time, t water, e mins m 1.00 0.14 0.16 0.45 1.000 0.55 0.04 0.286 0.33 0.56 0.03 0.214 0.50 0.50 0.143 0.75 0.57 0.02 1.00 0.57 0.02 0.143 0.37 1.50 0.58 0.01 0.071 2.00 0.59 0.00 0.000 3.00 0.59 0.00 0.000 0.000 0.00 4.00 0.59 0.000 5.00 0.59 0.00 0.000 7.00 0.59 0.00 9.00 0.59 0.00 0.000 0.10 0,59 0.00 0.000 12.00 0.00 0.000 15.00 0.59 0.05 Elapsed time, mins REMARKS: 6226 Fig No In-Situ Permeability Test TL89/118

RIVER WISSEY (BODNEY BRIDGE) Site

Client NATIONAL RIVERS AUTHORITY

02/03/95 Falling Head Type of Test

Depth of borehole during test, a : 10.50 m

Depth to equilibrium watertable, b : 3.14 m

Height of casing above ground level, c: 0.00 m

Depth of casing below ground level, d

Length of response zone, Z

Diameter of response zone, D : 0.15 m

Intake factor, F : 3.1435

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

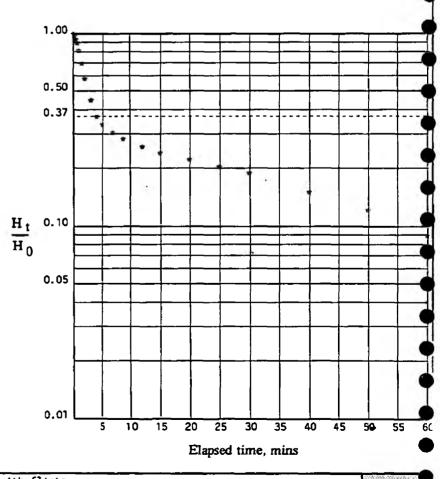
Plot log Ht v t

then

 $k = \frac{A}{60FT}$ m/sec

k = 2.40E-5 m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H m	Ht/Ho
0.16	0.34	2.80	1.000
0.33	0.41	2.73	0.975
0.50	0.52	2.62	0.936
0.75	0.64	2.50	0.893
1.00	0.87	2.27	0.811
1.50	1.19	1.95	0.696
2.00	1.52	1.62	0.579
3.00	1.89	1.25	0.446
4.00	2.11	1.03	0.368
5.00	2.20	0.94	0.336
7.00	2.29	0.85	0.304
9.00	2.35	0.79	0.282
12.00	2.42	0.72	0.257
15.00	2.47	0.67	0.239
20.00	2.52	0.62	0.221
25.00	2.57	0.57	0.204
30.00	2.61	0.53	0.189
40.00	2.72	0.42	0.150
50.00	2.80	0.34	0.121
60.00	2.89	0.25	0.089



REMARKS: Soft white putty chalk and rock chalk with flints

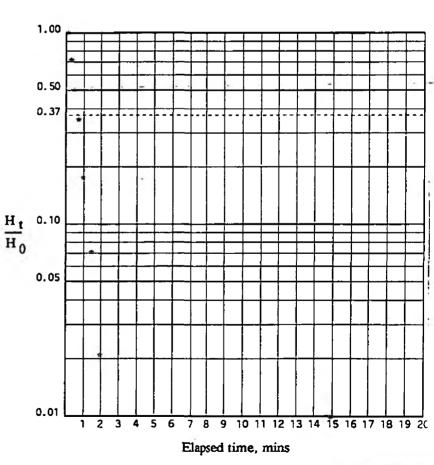
6226

In-Situ Permeability Test

Fig No TL89/119

RIVER WISSEY (BODNEY BRIDGE)_ Site Client NATIONAL RIVERS AUTHORITY 02/03/95 Type of Test Falling Head Depth of borehole during test, a : 10.00 m Depth to equilibrium watertable, b Height of casing above ground level, c Depth of casing below ground level, d Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then Soil Type at test level Firm white putty chalk and rock chalk with flints k = 1.27E-4 m/sec1.00 0.50 0.37

Elapsed time, to mins	Depth to water, e	Head of water, H m	Ht/Ho	G.
0.16 0.33 0.50 0.75 1.00 1.50 2.00 3.00 4.00 5.00 7.00 9.00 12.00	0.75 1.42 1.94 2.30 2.72 2.97 3.09 3.14 3.14 3.14 3.14 3.14 3.14 3.14	2.39 1.72 1.20 0.84 0.42 0.17 0.05 0.00 0.00 0.00 0.00	1.000 0.720 0.502 - 0.351 0.176 0.071 0.021 0.000 0.000 0.000 0.000	<u>н</u> ,
	3.17	F.	0.000	



REMARKS:

In-Situ Permeability Test

Bh No Fig No TL89/119 58

Site RIVER WISSEY (MUNDFORD)

Client NATIONAL RIVERS AUTHORITY

Date 01/03/95 Type of Test Falling Head

Depth of borehole during test, a : 29.00 m

Depth to equilibrium watertable, b : 0.70 m Measured

Height of casing above ground level, c : 0.00 m

Depth: of casing below ground level, d : 29.00 m

Length of response zone, Z : 0.00 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 0.4125

(From Condition B of fig. 7 BS5930:1981)

Soil Type at test level

Dense orange medium sand

PERMEABILITY (after Hyorslev 1951)

Basic Time Lag Approach
Plot log Ht v t *----

then Ho

 $k = \frac{A}{60FT}$ m/sec

k = 3.10E-6 m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H	Ht/Ho
0.16	0.01	0.69	1.000
0.33	0.01	0.69	1.000
0.50	0.01	0.69	1.000
0.75	0.01	0.69	1.000
1.00	0.01	0.69	1.000
1.50	0.01	0.69	1.000
2.00	0.01	0.69	1.000
3.00	0.01	0.69	1.000
4.00	0.01	0.69	1.000
5.00	0.02	0.68	0.986
7.00	0.02	0.68	0.986
9.00	0.03	0.67	0.971
12.00	0.03	0.67	0.971
15.00	0.04	0.66	0.957
20.00	0.06	0.64	0.928
25.00	0.08	0.62	0.899
30.00	0.10	0.60	0.870

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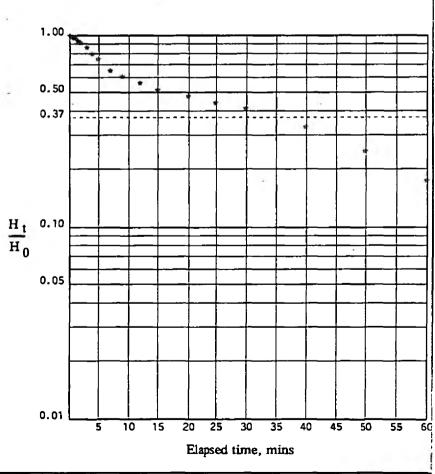
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In-Situ Permeability Test

Bh No Fig No TL89/120 6A

RIVER WISSEY (MUNDFORD) Site NATIONAL RIVERS AUTHORITY Client 01/03/95 Type of Test Falling Head Depth of borehole during test, a Depth to equilibrium watertable, b : 0.70 m Measured Height of casing above ground level, c: 0.40 m Depth of casing below ground level, d Length of response zone, Z : 1.35 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t : 3.3187 (From Figure 8, Note 5, BS5930:1981) then Soil Type at test level Dense orange medium sand k = 2.5E-6 m/sec0.50

Elapsed time, t mins	Depth to water, e m	Head of water, H m	Ht/Ho
0.15	0.01	1.09	1.000
0.33	0.02	1.08	0.991
0.50	0.03	1.07	0.982
0.75	_ 0.04	_ 1.06	- 0.972-
1,00	0.05	1.05	0.963
1.50	0.08	1.02	0.936
2.00	0.11	0.99	0.908
3.00	0.16	0.94	0.862
4.00	0.23	0.87	0.798
5.00	0.28	0.82	0.752
7.00	0.39	0.71	0.651
9.00	0.44	0.66	0.606
12.00	0.49	0,61	0.560
15.00	0.54	0.56	0.514
20.00	0.58	0.52	0.477
25.00	0.62	0.48	0.440
30.00	0.65	0.45	0.413
40.00	0.74	0.36	0.330
50.00	0.83	0.27	0.248
60.00	0.91	0, 19	0.174
1			



REMARKS:

6226

In-Situ Permeability Test

Bh No Fig No TL89/120 6A

Site RIVER WISSEY (MUNDFORO)

Client NATIONAL RIVERS AUTHORITY

Date 24/02/95 Type of Test Falling Head

Leve 1 mOD

Depth of borehole during test, a : 10.50 m

Depth to equilibrium watertable, b : 6.40 m Measured

Height of casing above ground level, c : 0.00 m

Depth of casing below ground level, d : 1.65 m

Length of response zone, Z : 8.85 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 11.6556

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

Firm white putty chalk and rock chalk

PERMEABILITY (after Hyorslev 1951)

Basic Time Lag Approach

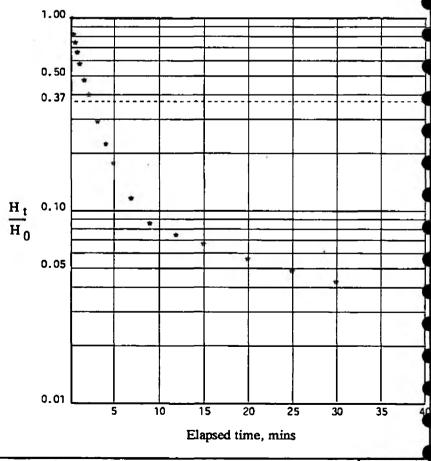
Plot log <u>Ht</u> v t *-----*

then Ho

 $k = \frac{A}{60FT}$ m/sec

k = 1.11E-5 m/sec

Elapsed time, t mins	Depth to water, e m	Head of water, H	Ht/Ho
0.16	1.04	5.36	1.000
0.33	2.00	4.40	0.821
0.50	2.40	4.00	0.746
0.75	2.85	3,55	0.662
1.00	3.30	3.10	0.578
1.50	3.85	2.55	0.476
2.00	4.25	2.15	0.401
3.00	4.83	1.57	0.293
4.00	5.20	1.20	0.224
5.00	5.45	0.95	0.177
7.00	5.78	0.62	0.116
9.00	5.94	0.46	0.086
12.00	6.00	0.40	0.075
15.00	6.04	0.36	0.067
20.00	6.10	0.30	0.056
25.00	6.14	0.26	0.049
30.00	6.17	0.23	0.043
40.00	6.20	0.20	0.037



REMARKS: Could not raise water level above 1.04m due to flow rate

6226

In-Situ Permeability Test

Bh No TL89/121 Fig No 68

2 SOILS ENGINEERING LIMITED, NEWARK ROAD, PETERBOROUGH.

Tel: (0733) 68153/4

RIVER WISSEY (MUNDFORD) Site NATIONAL RIVERS AUTHORITY Client mOD Falling Head 24/02/95 Type of Test Date Depth of borehole during test, a : 10.00 m Depth to equilibrium watertable, b : 6.40 m Measured d Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d 8.65 m Length of response zone, Z 1.35 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t *-----Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Firm white putty chalk and rock chalk k = 6.67E-5 m/sec Elapsed Head of Depth to Ht/Ho time, t water, H water, e m mins m 1.00 1.08 5.32 1.000 0.16 0.33 1.90 4.50 0.846 3.80 0.714 0.50 2.60 0.50 2.94 0.553 0.75 3.46 0.445 1.00 4.03 2.37 0.37 0.308 4.76 1.64 1.50 2.00 5.18 1.22 0.229 3.00 5.86 0.54 0.102 4,00 6.12 0.28 0.053 0.036 5.00 6.21 0.19 7.00 6.23 0.17 0.032 0.17 0.032 9.00 6.23 H t 0.10 0.032 12.00 6.23 0.17 0.05

REMARKS:		6226
L. Cit. Down addition Took	Bh No	Fig No
In-Situ Permeability Test	TL89/121	6B

8

Elapsed time, mins

9 10 11 12 13 14 15 16 17 18 19 20

Site RIVER WISSEY (COCKLEY CLEY)

Client NATIONAL RIVERS AUTHORITY

Date 13/02/95 Type of Test Falling Head

| Leve |

Depth of borehole during test, a : 10.50 m

Depth to equilibrium watertable, b : 2.80 m Measured

Height of casing above ground level, c : 0.00 m

Depth of casing below ground level, d : 5.20 m

Length of response zone, Z : 4.30 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 6.6724

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

'Firm whte putty chalk and rock chalk fragments

PERMEABILITY(after Hyorsley 19:	:1)

Basic Time Lag Approach

Plot log Ht v t *----*

then Ho

 $k = \frac{A}{60FT}$ m/sec

k = m/sec

Elapsed time, t mins	Depth to water, e m	Head of water, H	Ht/Ho
0.16 0.33 0.50 0.75 1.00	2.80 2.80 2.80 2.80 2.80	0.00 0.00 0.00 0.00	1.000 1.000 1.000 1.000

	1.00										
	0.50									<u> </u>	
	0.37	****									
						-					
H _t	0.10										
0	0.05										
				-							- 4
	0.01		1	2	3	4	5	6	7	8	9 1
					El	apsed	time, m	ins			

REMARKS: Could not raise water level above 2.80m due to flow rate

6226

In-Situ Permeability Test

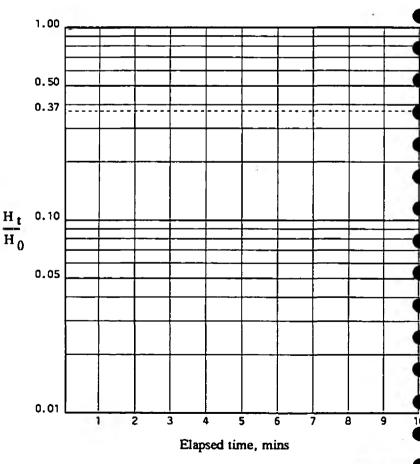
Bh No Fig No TF70/126 7A

RIVER WISSEY (COCKLEY CLEY) NATIONAL RIVERS AUTHORITY Date - 13/02/95 Type of Test Falling Head Depth of borehole during test, a : 10.00 m Depth to equilibrium watertable, b : 2.79 m Measured Height of casing above ground level, c : Depth of casing below ground level, d 8.65 m Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, 8S5930:1981) then m/sec $k = \frac{A}{60FT}$ Soil Type at test level: Firm white putty chalk and rock chalk fragments k = 1.61E-4 m/secElapsed Depth to Head of Ht/Ho time, t water, H water, e mins m 1,00 0.16 1.49 1.30 1.000 0.33 1.69 1.10 0.846 0.50 0.79 2.00 0.608 0.50 0.75 2.60 0.19 0.146 1.00 2.77 0.02 0.015 1.50 0.02 0.015 2.77 2.00 0.02 0.015 2.77 3.00 0.02 0.015 2.77 4.00 2.77 0.02 0.015 0.10 0.05 Elapsed time, mins Could not raise water level above 1.49m due to flow rate REMARKS: 6226 Fig No In-Situ Permeability Test

TF70/126

RIVER WISSEY (COCKLEY CLEY) Site NATIONAL RIVERS AUTHORITY Client 15/02/95 Falling Head Type of Test Depth of borehole during test, a : 20.50 m Depth to equilibrium watertable, b : 12.70 m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d Length of response zone, Z 8.50 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 11.2901 (From Condition D of fig. 7 BS5930:1981) then m/sec $k = \frac{A}{60FT}$ Soil Type at test level Dense white rock chalk with flints m/sec k =

Elapsed time, t .mins	Depth to water, e m	Head of water, H	Ht/Ho
0.16	12.00	0.70	1.000
0.33	12.70	0.00	0.000
0.50	12.70	0.00	0.000
0.75	12.70	0.00	0.000
1.00	12.70	0.00	0.000
1.50	12.70	0.00	0.000
2.00	12.70	0.00	0.000
5			



REMARKS: Could not raise water level above 12.0m due to flow rate

6226

In-Situ Permeability Test

Bh No Fig No TF70/127 7B

RIVER WISSEY (COCKLEY CLEY) Client NATIONAL RIVERS AUTHORITY 15/02/95 Type of Test Falling Head Date Depth of borehole during test, a : 20.00 m Depth to equilibrium watertable, b : 12.70m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d Length of response zone, Z : 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D : 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Dense white rock chalk with flints k = 4.87E-5 m/sec**Elapsed** Head of Depth to Ht/Ho water, H time, t water, e mins m 1.00 0.16 1.10 11.60 1.000 0.33 1,80 10.90 0.940 0,50 3.00 9.70 0.836 0.50 0.75 3.51 9.19 0.792 0.638 1.00 5.30 7.40 0.37 1.50 7.52 5.18 0.447 9.00 0.319 2.00 3.70 3.00 11.20 1.50 0.129 4.00 12.70 0.00 0.000 12.70 0.000 5.00 0.00 H t 0.10 0.05 Elapsed time, mins REMARKS: 6226 Fig No In-Situ Permeability Test TF70/127 2 SOILS ENGINEERING LIMITED, NEWARK ROAD, PETERBOROUGH. Tel: (0733) 68153/4

RIVER WISSEY (GOODERSTONE) Site

NATIONAL RIVERS AUTHORITY Client

20/02/95 Type of Test Falling Head

Depth of borehole during test, a : 13.00 m

Depth to equilibrium watertable, b : 8.00 m

Height of casing above ground level, c : 0.00 m

Depth of casing below ground level, d

Length of response zone, Z

Diameter of response zone, D # 0.15 m

Intake factor, F : 10.0185

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

Dense white putty chalk and rock chalk

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

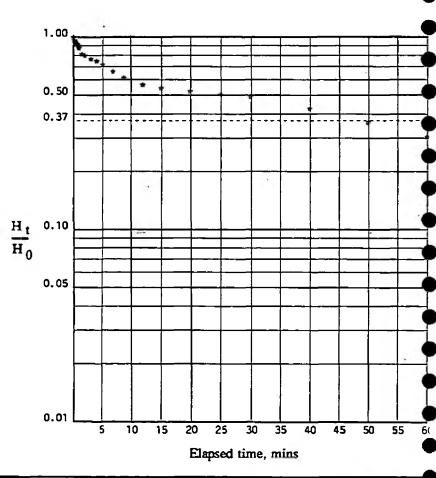
Plot log Ht v t

then

 $k = \frac{A}{60FT}$ m/sec

k = 5.00E-7 m/sec

			
Elapsed	Depth to	Head of	
time, t	water, e	water, H	Ht/Ho
mins	m	m	
0.16	5.70	2.30	1.000
0.33	5.79	2.21	0.961
0.50	5.84	2.16	0.939
0.75	5.89	2.11	0.917
1.00	5.99	2.01	0.874
1.50	6.13	1.87	0.813
2.00	6.16	1.84	0.800
3.00	6.24	¹ 1.76	0.765
4.00	6.28	1.72	0.748
5.00	6.35	1.65	0.717
7.00	6.48	1.52	0.661
9.00	6.59	1.41	0.613
12.00	6.70	1.30	0.565
15.00	6.75	1.25	0.543
20.00	6.80	1.20	0.522
25.00	6.84	1.16	0.504
30.00	6.87	1.13	0.491
40.00	7.02	0.98	0.426
50.00	7.17	0.83	0.361
60.00	7.30	0.70	0.304
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REMARKS: Could not raise water level above 5.70m with the water supply on site

> Bh No Fig No TF70/128

6226

In-Situ Permeability Test

RIVER WISSEY (GOODERSTONE) Site NATIONAL RIVERS AUTHORITY Client 20/02/95 Falling Head Type of Test Depth of borehole during test, a : 12.50 m Depth to equilibrium watertable, b : 8.00 m Measured Height of casing above ground level, c : Depth of casing below ground level, d Length of response zone, Z 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec $k = \frac{A}{60FT}$ Soil Type at test level Dense white rock chalk with some putty chalk k = 5.20E-6 m/secElapsed Depth to Head of Ht/Ho time, t water, e water, H mins m 1.00 0.10 7.90 1,000 0.16 0.33 0.22 7.78 0.985 0.50 - 0:34 7.66 0.970 0.50 0.75 0.47 7.53 0.953 1.00 0.60 7.40 0.937 1.50 0.84 7.16 0.906 2.00 1.10 6.90 0.873 3.00 1.59 0.811 6.41 4.00 0.758 2.01 5.99 5.00 2.43 5.57 0.705 7,00 3.01 4.99 0.632 9.00 3.56 4.44 0.562 0.10 12.00 4.19 3.81 0.482 15.00 4.72 3.28 0.415 20.00 5.48 2.52 0.319 0.05 25.00 6.00 2.00 0.253 30.00 6.52 1.48 0.187 1.05 40.00 6.95 0.133 50.00 7.40 0.60 0.076 60.00 7.75 0.25 0.032 Elapsed time, mins REMARKS: 6226 Fig No In-Situ Permeability Test

RIVER WISSEY (FURZE HILL) Site NATIONAL RIVERS AUTHORITY Client Level mOD 22/02/95 Type of Test Falling Head Date Depth of borehole during test, a : 6.50 m **!/**\\ Depth to equilibrium watertable, b : 2.10 m Measured d Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d Length of response zone, Z 0.50 m PERMEABILITY (after Hvorslev 1951) Diameter of response zone, D : 0.15 m Basic Time Lag Approach Plot log Ht v t *-----Intake factor, F : 1.6372 (From Condition D of fig. 7 BS5930:1981) then $k = \frac{A}{60FT}$ m/sec Soil Type at test level Dense white rock chalk k = 3.27E-4 m/secElapsed. Head of Depth to time, t Ht/Ho water, H water, e m mins m 1.00 0.16 0.34 1.76 1.000 0.33 1.35 0.75 0.767 0.50 1.15 0.95 0.540 0.50 0.75 1.65 0.45 0.256 1.00 0.35 1.75 0.199 0.37 1.50 0.30 1.80 0.170 2.00 1.80 0.30 0.170 3.00 1.80 0.30 0.170 4.00 1.81 0.29 0.165 5.00 1.82 0.28 0.159 7.00 1.83 0.27 0.153 9.00 1.85 0.25 0.142 0.10 12.00 1.85 0.25 0.142 15.00 0.23 1.87 0.131 20.00 1.87 0.23 0.131 0.05 25.00 1.87 0.23 0.131 0.01 Elapsed time, mins REMARKS: 6226 Bh No Fig No In-Situ Permeability Test - TF70/129 9A

RIVER WISSEY (FURZE HILL) NATIONAL RIVERS AUTHORITY Client 22/02/95 Type of Test Falling Head Depth of borehole during test, a : 6.00 m Depth to equilibrium watertable, b : 2.10 m Measured Height of casing above ground level, c : 0.00 m Depth of casing below ground level, d : 4.65 m : 1.35 m Length of response zone, Z PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t *-----Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then m/sec Soil Type at test level Dense white rock chalk k = 2.69E-4 m/secElapsed Depth to Head of Ht/Ho time, t water, e water, H mins m m 1.00 1.35 0.75 1.000 0.16 0.33 1.72 0.38 0.507 0.21 0.280 0.50 .1.89 0.50 0.75 1.89 0.21 0.280 1.00 1.89 0.21 0.280 1.50 1.89 0.21 0.280 2.00 1.89 0.21 0.280 3.00 1.89 0.21 0.280 4.00 1.89 0.21 0.280 5.00 1.89 0.21 0.280 7.00 1.89 0.21 0.280 9.00 1.89 0.21 0.280 0,10 12.00 1.89 0.280 0.21 15.00 1.89 0.21 0.280 20.00 1.89 0.21 0.280 0.05 25.00 1.89 0.21 0.280 30.00 1.89 0.21 0.280 Elapsed time, mins REMARKS: 6226 Bh No Fig No In-Situ Permeability Test TF70/129 🗐 🕯 SOILS ENGINEERING LIMITED, NEWARK ROAD, PETERBOROUGH.

Tel: (0733) 68153/4

RIVER WISSEY (FURZE HILL) Site

NATIONAL RIVERS AUTHORITY Client

22/02/95 Type of Test Falling Head Date

Depth of borehole during test, a : 8.50 m

Depth to equilibrium watertable, b

2.50 m

Measured

Height of casing above ground level, c :

Depth of casing below ground level, d

Length of response zone, Z 0.50 m

Diameter of response zone, D 0.15 m

Intake factor, F 1.7997

(From Condition D of fig. 7 BS5930:1981)

PERMEABILITY (after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t

then

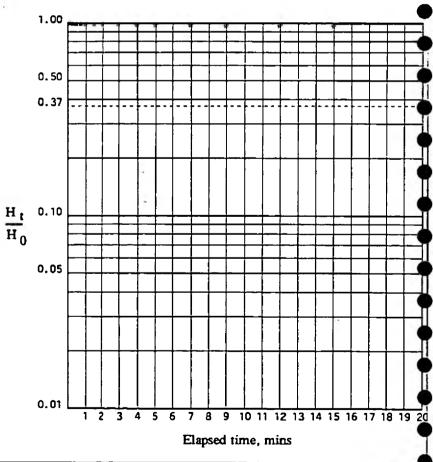
 $k = \frac{A}{60FT}$ m/sec

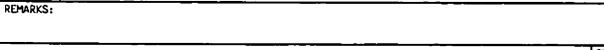
Soil Type at test level

Dense white rock chalk

k = 3.00E-7 m/sec

Elapsed	Depth to	Head of	
time, t	water, e	water, H	Ht/Ho
การ	m	m	
0.16	0.05	2.45	1.000
0.33	0.06	2.44	0.996
0.50	0.07	2.43	0.992
0.75	0.07	2.43	0.992
1.00	0.07	2.43	0.992
1.50	0.07	2.43	0.992
2.00	0.07	2.43	0.992
3.00	0.08	2.42	0.988
4.00	0.09	2.41	0.984
5.00	0.10	2.40	0.980
7.00	0.11	2.39	0.976
9.00	0.13	2.37	0.967
12.00	0.13	2.37	0.967
15.00	0.14	2.36	0.963
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In-Situ Permeability Test

Bh No

TF70/130

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6226

Fig No

RIVER WISSEY (FURZE HILL) Site NATIONAL RIVERS AUTHORITY Client Type of Test 23/02/95 Falling Head Date Depth of borehole during test, a : 8.00 m **//////** Depth to equilibrium watertable, b : 2.50 m Measured Height of casing above ground level, c : Depth of casing below ground level, d Length of response zone, Z : 1.35 m PERMEABILITY(after Hvorslev 1951) Diameter of response zone, D 0.15 m Basic Time Lag Approach Plot log Ht v t *----* Intake factor, F : 3.3187 (From Figure 8, Note 5, BS5930:1981) then $k = \frac{A}{60FT}$ m/sec Soil Type at test level Dense white rock chalk k = 2.69E-4 m/secElapsed Depth to Head of Ht/Ho time, t water, e water, H mins m 1.00 0.55 1.000 1.95 0.16 0.33 2.15 0.35 0.636 0.50 2.48 0.02 0.036 0.02 0.036 0.50 0.75 2.48 1.00 2.48 0.02 0.036 . 0.37 1.50 2.48 0.02 0.036 2.00 2.50 0.00 0.000 H_t 0.10 \overline{H}_0 0.05 ..

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-	In-Situ Permeability Test	TF70/130	98

Elapsed time, mins

Site RIVER WISSEY (STRINGSIDE DROVE)

Client NATIONAL RIVERS AUTHORITY

Date 23/02/95 Type of Test Falling Head

Depth of borehole during test, a : 8.50 m

Depth to equilibrium watertable, b : 2.35 m Measured

Height of casing above ground level, c: 0.00 m

Depth of casing below ground level, d : 7.50 m

Length of response zone, Z : 1.00 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 2.4205

(From Condition D of fig. 7 BS5930:1981)

Soil Type at test level

Firm brown white putty chalk

PERMEABILITY(after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t *----*

then

 $k = \frac{A}{60FT}$ m/sec

k = 8.00E+7 m/sec

Elapsed time, t mins,	Depth to water, e	Head of water, H m	Ht/Ho
0.16	0.01	2.34	1.000
0.33	0.02	2.33	0.996
0.50	0.03	2.32	0.991
0.75	0.04	2.31	0.987
1.00	0.05	2.30	0.983
1.50	0.05	2.29	0.979
2.00	0.07	2.28	0.974
3.00	0.09	2.26	0.966
4.00	0.11	2.24	0.957
5.00	0.15	2.20	0.940
7.00	0.19	2.16	0.923
9.00	0.23	2.12	0.906
12.00	0.29	2.06	0.880
15.00	0.35	2.00	0.855
20.00	0.41	1.94	0.829
25.00	0.48	1.87	0.799
30.00	0.50	1.85	0.791

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In-Situ Permeability Test

Bh No Fig No TF70/131 10

Site RIVER WISSEY (STRINGSIDE DROVE)

Client NATIONAL RIVERS AUTHORITY

Date 23/02/95 Type of Test Falling Head

Depth of borehole during test, a : 8.00 m

Depth to equilibrium watertable, b : 0.63 m Measured

Height of casing above ground level, c: 0.00 m

Depth of casing below ground level, d : 6.65 m

Length of response zone, Z : 1.35 m

Diameter of response zone, D : 0.15 m

Intake factor, F : 3.3187

(From Figure 8, Note 5, BS5930:1981)

Soil Type at test level

Firm brown white putty chalk

PERMEABILITY(after Hvorslev 1951)

Basic Time Lag Approach

Plot log Ht v t *-----

then

 $k = \frac{A}{60FT}$ m/sec

k = 6.30E-6 m/sec

Elapsed time, t mins	Depth to water, e	Head of water, H	Ht/Ho
0.16	0.02	0.61	1.000
0.33	0.03	0.60	0.984
0.50	0.04	0.59	0.967
0.75	0.05	0.58	0.951
1.00	0.06	0.57	0.934
1.50	0.07	0.56	0.918
2.00	0.08	0.55	0.902
3.00	0.10	0.53	0.869
4.00	0.12	0.51	0.835
7.00	0.21	0.42	0.689
9.00	0.26	0.37	0.607
12.00	0.35	0.28	0.459
15.00	0.42	0.21	0.344
20.00	0.57	0.06	0.098
25.00	0.69	-0.06	-0.098
30.00	0.78	-0.15	-0.246
40.00	0.98	-0.35	~0.574
50.00	1.13	-0.50	-0.820
60.00	1.39	-0.76	-1.246

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In-Situ Permeability Test

| Bh No | Fig No | TF70/131 | 10