

Plate 1: View of typical farmers fields at Bicester, with 33kv overhead cable



**Plate 2**: One of four mobile telecommunications masts (all on Messrs. Malins' land). This one is located near the roundabout at Bicester Road and the A4095



**Plate 3**: Stone-faced drainage culvert crossing beneath Bucknell Road at a location some 500m NW of the junction (roundabout) with the A4095 (Lord's Lane)



**Plate 4**: Asbestos clad building along Bucknell Road, located some 950m NW of the junction (roundabout) with the A4095 (Lord's Lane)



Plate 5: Cattle grazing in fields



Plate 6: Most northerly of the two streams that feed the River Bure



**Plate 7**: Possible location of former quarry (see Reference D5 on the Envirocheck Information drawing in Appendix A)



Plate 8: Bed of the most southerly of the two streams that feed the River Bure



**Plate 9**: The London to Birmingham railway line as it passes within the cutting beneath Middleton Road to the south-west of Bucknell village



**Plate 10**: Water Abstraction Point located on Messrs. Malins' land, between two mobile telecommunications masts (see Reference B3 on the Envirocheck Information drawing in Appendix A)



Appendix E

Zetica UXO Datasheet

# **REGIONAL UNEXPLODED BOMB RISK**

## **OXFORDSHIRE**

DENSITY OF BOMBS PER BOROUGH			
Borough	High explosive	Anti-personnel	Incendiary
Oxford	1	0	1
Banbury	105	0	4
Witney	124	0	4
Bicester	0	0	4
Chipping Norton	187	0	4
Henley on Thames	162	0	4



The information in this regional UXB risk map is derived from a number of sources and should be read in conjunction with the "Users' Guide" (printed overleaf). Zetica cannot guarantee the accuracy or completeness of the information or data.

This map covers regions of coast with beaches, estuaries and alike. Further consideration of the bomb risk is required in these areas. The often inaccessible nature and changing ground conditions (e.g. movement of silt that may contain ordnance) means that historical bombing records for these areas are often poor or inaccurate and further assessment of the bomb risk may be required as part of a site specific study.



### A FOUR-STEP PROCESS

**e** 

Risk assessment and method statement from a qualified explosive ordnance clearance (EOC) operative.



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BOMB RISK

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MAGCONE detects UXBs and obstructions on piling layout to the no-risk depth.



Detected UXBs can be dealt with by our EOC engineers and a Clearance Certificate issued for the site.

For more details on this and related services, telephone: +44 (0) 1993 886682 or visit our website: www.zetica.com



## **BOMB MAP USERS' GUIDE**

## Sources of information and explanation of bomb risk

#### Why?

Unexploded bombs (UXB) still present a risk to construction projects long after the end of the Second World War (WWII). UXBs often entered the ground unnoticed at high velocity and penetrated to a depth of several metres. Here they remain - vulnerable to disturbances from construction work. Beyond the depth of shallow excavation work, the greatest risk is to piling, drilling and probing crews. A piling rig could repeatedly hit a UXBs with considerable force before the crew realises an obstruction has been impacted. It could then be up to 72 hours before the detonator activates.

#### Who?

The responsibility for avoiding UXB risk usually lies with construction companies or house builders particularly those who are redeveloping urban sites. In addition, project engineering or environmental consultants are expected to advise their clients of a site's history. Other interested parties include those organisations whose employees are physically at most risk from intrusive works, normally piling companies, drillers or probing operators.

#### How?

UXB risk should be assessed for every site, but especially those in known heavily bombed areas or those situated near war-time strategic installations that were priority targets for enemy aircraft, for example, airfields. Zetica's regional bomb risk map is therefore a first point of reference from which the relative, potential abundance of UXBs can be judged. Consultants then advise their clients that an ordnance-risk desk study is required, which they may obtain from external sources. Construction companies or house builders who assess their own risk could choose to come direct to Zetica.

#### When?

Do not wait for the piling or drilling company to be on site before thinking about UXB risk it will inevitably cause delays and higher costs. Request the regional bomb risk map from Zetica as soon as a site is being considered, and then use it to help you or your clients to decide if an ordnance-risk desk study is required.

#### Where?

Maps can be obtained for any county in England, Scotland, Wales or Northern Ireland - or for any London borough. They can help determine the areas that were most heavily bombed – but no part of the country should be considered 100% safe from UXB risk. Even remote rural areas can have a high risk if, for example, they were locations for decoy airfields or beacons that were lit to fool enemy pilots into thinking they had located a burning city that had been successfully hit by others in the raid.

#### How to use this regional map

This map is designed to give you an indication of the potential risk from UXBs in your area. If you are conducting work that involves excavation, piling or other disturbance of the ground, then you should use the map to identify the category of risk for your site. The risk boundaries are a guide, compiled from data based on the political areas for which records are held; being just outside a high-risk area does not mean there is no UXB risk. You should use the map to assist in your decision of whether to investigate the UXB risk further.

#### Information on the regional risk remaining from **UXBs in the UK**

Zetica has built the largest UXB database of its kind in the UK. It includes a unique digital library of bomb census data, and maps showing key strategic points and bombing densities from the First and Second World Wars. The main sources of information include records from central government (Public Records Office), the Ministry of Defence, and the German Luftwaffe.

Using information from this database, Zetica has published maps of UXB risk on a regional, county and borough scale. The maps indicate relative degrees of UXB risk based on available records for bombing densities and known targeted areas for regions within the UK. The risk is broken down into individual boroughs, towns or cities. The data are based on the historical boroughs and are then overlaid onto the modern map. It is important to note that more-detailed research may be required for individual sites, particularly where proximity to a potential WWII target means the local risk may be higher.

#### **High risk**

Areas designated as high risk are those that show a high density of bombing hits (50+ bombs per 1000 acres) and abundant potential WWII targets. In high-risk regions, further action to mitigate UXB risk is considered essential.

#### **Moderate risk**

Moderate-risk regions are those that show a bomb density of between 11 and 50 bombs per 1000 acres and that may contain potential WWII targets. Action to mitigate the risk is considered essential, albeit more likely that a reduced scope of work is required compared with that needed for high-risk regions.

#### Low risk

Low-risk regions are those with a bombing density of up to 10 bombs per 1000 acres. These areas are considered to have a significant but low UXB risk. In general, further action to mitigate the risk is considered prudent, although not essential. Care is required when assessing the risk for specific sites where the risk may be higher because of local wartime activity.

#### **Other WWII targets**

Other regions with the risk of UXBs are key strategic points as defined by the government during WWII as representing potential enemy targets. Where these exist outside areas mapped as high, moderate or low risk, a site-specific assessment of the UXB risk may be required.

#### **Relative UXB risk across UK**

#### What to do if... ...you have a site that has a potential UXB risk

In the absence of current legislation requiring you to address the risk from UXBs, your responsibilities under health and safety legislation and regulations such as construction design and management require that you address all identified risks. The first stage is to request further advice from a professional adviser such as Zetica, or to gain more sitespecific information by commissioning an ordnance-risk desk study. Then a strategy to deal with the risk can be established that is tailored to your proposed work.

#### ... you find a suspect item or require advice

If during site works you find a suspect (ordnance-related) item, it is very important that you do not touch or move it (even if it has already been moved by an excavator). If it is clearly ordnance related, then dial 999 and ask for the police. Ensure that the area around the item is kept as clear as possible without placing yourself at risk. If you are unsure and do not wish to cause undue alarm, or you just require some advice, then you can call Zetica. We have experienced qualified UXB specialists on hand who can offer support and advice during any site works.

More-detailed procedures should be established in advance if you are in an area where the risk of finding a UXB is shown to be significant (moderate to high).

#### Site-specific desktop studies

Zetica is able to provide high-quality, site-specific UXB risk information for any residential, industrial or commercial property in the UK. These desktop studies provide details of the bombing density within an area and for the site itself, in order to indicate the risks of UXBs still being present. A risk assessment is provided to facilitate informed decision making on whether any further risk mitigation measures are required.



Appendix F

## **BGS Borehole Logs**

(Refer to Drawing "Envirocheck Information" in Appendix A for borehole locations)

## **BGS Geological Site Assessment**

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18.00 N11. 12,00		END	75,82	14.50		14.50			$\frac{75}{53}$					3.08 3.12	76 76	0,39	107	
				-										-				a de <b>anna</b> an
			-														いせん	SP 52
			-					- ige									- 2000 2000	64/WS
	EZOMETER 12 Upwer seal SAMPLE O S		urbed same		stary core Blows N =	N vatue		A As	ne stre	ngth kN	/m <sup>2</sup>		Tipinde		5178 0		FIC 2	10 H
o za i ba za i kana zirize P U Subsoquent valer strikes OEPTH All dentaz, isvele and thicknes	ELOWETCH Coversed AND BE Responseingth AND BE Lowerseel TEST W X KEY U ( Imini Load Inde D tance is voo	Buik distu Nater sam Undistarbo n 1 MA an pintens	proved sample ple en esmolte n ren	le Tret Vini 8 Sid C Co K Pe I Ini	covery to acale 28/1 still vane teat drive andard ponetration teat 28°, ne ponetration teat who primeability test (28) still density teat biom	\$0, blows i s aller sesti blows for p la of seating Undisturber r count	or 1800mm ng artor solrive or solampie	CrCea Ny ROD 425	Nal Nen Rock q Sample 428,cm	iurai ivery % wellty de > % page i elave	ssignali sing	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	, ripindy Director Sastern Ro 9/83 Oold	ed Constructington Read	sion Uni	t. d.	*) 0 1 1	185 F 8

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LOCO	10.6%	11	111		EXCAVATION NET	THOOS	Регсия	sion Bo	ring - D	Pilcon	Wayfarer			COOR	DINATES	454	711	E	223	063	N	SHEET 1	0F 1		~
1 FIELD	жорх ву Гестыл	רין <sup>א</sup> איז איז	zpi o	instion Associates	150 mm diamete	er hole	cored t	:03,5 m	0.0.1	10.0				DATES	s 3.	7,79	to 4.	7.79	· · · · · · · · ·			FIGURE	A		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.
			ipin T	ration Associates	146 mm diamete	er Kou	iry Cori Sireis	ng Irom	Gri Gri	aphicai i	n Representat	on	i Samp	i İlog∕in s	iu Isalin	0		L	16. Te	ating		Additional Te	sia and Note	*6	
Dale/Tim	e Deptn pt	Deoth to	2	Description of 3	Strain		Reduced	Depth						δ. No	Blown	1-1-	-425	W   P	LLL		Cu	]			
Depth	Casing	Water	0.			L.8Q.	Fêxși		_				Vebrue	F	DIGWA	1000	%	* '	6 %	Mg/m	kN/m				
[	- <b>h</b> m		2			- <del>bxxx</del>	81,21.	- 0.00	HHH H	<del>TTTT</del> T		TTT	:									-			
			<u>م</u> م-	Sell to firm dark brown allty C1.A1	(Alluxium)	XXXX 	81.01	0,20	田田				0,25	-11 1	(15)		1 00	36 1	7   37	1.84	115				
			7	Below 6,50m clay becoming yello	wish bruwn serv silty		1					曲日	0.70	1 2			1 00	36		1.00	1				
		-	7	very samly,		155							0.95	ŝ	N -5							_			
			X.				70.91	1 40		<mark>┊╞┊┊╞╞</mark> ╼╎╸ ╺┦┊╴╿╺╋╸		<u> </u>	1.25		(20)			1	_			Failed 11	02		
2 7 70		}				1.		1,40					1,30	D 4								Fulled 01	. 04		
3,1,10			j.	SAND with some angular fine to me	a very silty clayey Atum limeatons grave).	14	•					<u> </u>	1,70	W 6											
					(Altuvium)		-	╇					1 90	w 7 S	N=29							F			
			<u>ц</u>				78.81	2.40						D 5	1. 20										
			Z.	Firm becoming firm to stiff light;	vellowish brown sitty	$\sigma$				╞╞┥┽┟╞	┥┥╺╆╌┥╸┨╺┿╸╽╸┆╴ ┥┥┥┝┥┥╶┿╵┝╴		2,50	S B	N=28			ł			ł				
			2	<ul> <li>epicorecut CLAY and angular GR of nucleorately weak light collowish</li> </ul>	AVEL and COBILES	ြို့ပို့							3 00	9	N-27							L			
1			T	funcatione, (Weathered White	Limestone)	200-		1				<b>1</b> 11	0.00	D 9	19-01		74	10 1	4 20		1	Γ			
18.00	3.50	1.70	N			Jv-0	77 61	3 60					3.50	S	24/75	-			-			Core diame	eter 114mı	'n	
08.00	3.50	1.70		Amburataly work to moderately ste	nee linkt wellowish		11.01	0.00		╞╢╧╪┼╴╄		<u>+++</u> +  ·	3.60	C7 10											
	-+-			brown initially highly fractured ber	coming moderately		d .	4			<mark>╞╪╞╪╏╪╡</mark> ╪┥					78						-			
				<ul> <li>Inactured thinly bedded fine grains</li> <li>LIMESTONE, (White Limeston</li> </ul>	ed mierilie pelieloidal e - Ardievi		r -							2		0									
				From 4.96 in 4.10m dense light	умка люозу зульзо					<mark>╞╶┧╅┝╞╞╺</mark> ╴	┥ ┥ ┥ ┥	╧╧╧╧╡	4.50	M	20*/	1									
				alightly clayey calcaremia allt.		<u> </u>								1 X	75	ľ									
4,7.79	+-			- Relow 4.50m limestone finely pell lexture.	letoidat with aandy		-	+								<u>83</u>						Γ			
Andre of				Below 5,20m (Imentone alightly a	Hiceous with											15									
				<ul> <li>abundant this wailed brachiopada i gastrooods.</li> </ul>	and high apined		ſ																		
		j i		ALT. 10m horizon of leached logati	si.		d -				┥┿┠┼┝╌┠╸╎╶╞╸╎	<u>₩</u>	6.00	H.								-			
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-	1						i.									$\frac{00}{40}$									
: 1			_				74.06	7:15								1.						-			÷
				Initially weak dark grey calcarence of carbon and owster shell debria b	SILTSTONE with speck	e   (3.47,7)	79 71	7 50			╡╋╻╌╌╴╸ ┝╍┲┺╸╴╴╴┝╶┍╸		7 6 0		16/75	ĺ		ļ						J	v 7
		]	lΝ	weakly comented silly slightly clay	the BAND more		1.1.1	1.00					1.00											Ŧ	2
				Verayev with nepth . (White Line)	scone - Shipton)		ų .	<b>.</b>  -		┝┫╢┾┨┺	┥┥┝┽╎╺╎╵┼╵╎ ┥╋╋╋╋╋╋╋╋					1.00			1			-		1	1
				herming thickly herkied line to me	diom grained micritic		t					• • • • • •			•	100					.				Š.
				pelletoidal extensively biolurbated (White Lime)	ELMESTONE, stone - Shiplos)		r								-									5	
				From 7,50 to 7,80m Himestone hi	ghly fossiliferous with		r												ļ					8	$\mathcal{O}$
				From 8,90 to 8,95m weak dark g	rey calcaraous		đ ·			<mark>┧╸┥┼╷╅╸┝╴</mark> ╆╸			9,00									Γ		J	$\infty$
				SILTSTONE,			Ч				╡╪╎ <u>┊</u> ╞┨╞┽╡					98									
											╅┙┝ <del>╡</del> ┝┥ ╅┨┪╅╎╢┿╿					98									
18,00	3,50	0,00				<u></u>	71.01	10.20	ETT 1	IIIII		uiii i	0.20									<b>-</b>			
* WATER	F Flret wa	i ter strike	L	PIEZOMETER [] Upper sest	SAMPLE D	unali dis	turbed ears	pla P B	etery cor	19	El ora (	N = N y	alus blace -		A A	ane elre	ingth k	Nt / FR		.) T	ntadu	BSC C Rea BIC	E FINE	13	i J
-	2 Subsequ	ent mater	sirik	ies 门 Response i S Lower ses	engih AND DI TEST Wi	Baritra Gi≄i Baritra Gi≄i	urbed samp nale	ota ∦ira Vin	ncovery in Nalla viene	4 1001 9 1001		ver 1950. Stive 85	lara a a ta t	un roumads Ing		कान् सकड़ी	neutid			Fairer.		Sear stengt in			
-					KEY UI	Undleturi	weed seamonie	5 SI C C	landarel » Une pona	menstratio Itration la	n tost Ist	7×*, bia whate o	ews for p I seating	अपन्ते सन् ह संस्थेषड राजाः	C C Ir ROD	2041 PM 124/14/1	notity v	ga s j Giù	ation	U118(				31	ő
022714	All ásalhs.	, ierrols a⊨	nd th	icknessus In matres				K P   In	ermenbili nitu dens	ily sest sfly test		(28) line bian co	disturbus Met	a suudis	- *ZS	38mpti 425µ®	1 2 <b>1</b> 9 4 8 1 <i>7</i> 6 4 1	nting		Eas) 89/8	ərn fic 3 Cloid	ng Construction Ington Road, Ba	dford.		

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#### BOREHOLE No. Two

SP52SE209

#### DATE OF BORING: 06.04.1989.

Description of	Strata	STRATA CHANGI LEGEND DEPTH M	H C R C C R C R C R C R C R C R C R C R C	TCR %	S C R %	Descript: Discontin	ion of nuities	STATE OF WEATHERING
TOPSOIL								
CORNBRASH Light brown grey, c LIMESTONE - moderat to strong	coarse grained tely strong		15					
Light brown slight] CLAY with limestone	ly sandy fragments		0	37	22	Non - intact w tal discontinu	ith horizon- ities.	W.II
Light grey, weather brown fossiliferous moderately strong t - pitted	red light s LIMESTONE - to strong		0 0	90	72	I, = 50mm, non from 2.30-2.90 discontinuitie	- intact m. Horizontal s	W.II- W.III
Mid grey, coarse gr LIMESTONE with occa lithic fragments -	rained asional black strong		8 0 30	100	100	I <sub>f</sub> = 6mm. Hori discontinuitie	zontal s.	W.II
Mid, dark grey, med LIMESTONE with a br sandy lens - strong - black with abunda shells - weak - mid grey, clayey moderately weak	lium grained cown weathered ant large - weak to		2 58	100	88	I <sub>f</sub> = 9mm. Hori vertical disco	zontal and ntinuities	W.II
			0					
BOREHOLE DIAME GROUND LEVEL WATER LEVEL REMARKS	TER: 46.30mm : : 0.90m a : Borehol ground	fter 22 days e drilled fro level	m existi	ing		DEPTH OF CASING DRILLING METHOD ORIENTATION OS GRID REFERENC	: :Rotary/Wato :Vertical EE:	er Flush
DATE April 1989		BOREH	OLE	LC	)G		REPORT S.929( :	NO.

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**SP52SE55** 



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NATURAL ENVIRONMENT RESEARCH COUNCIL

[SP52SE BJ 55 .]



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[SP52SE BJ 55 .]

4	ġ	þ	Soi	IM	ech	anics	SP5	2SE	55	BOI Shee	REHC	LE ! of :	No. 370/9 2	5
	Equip	ment	& Meth	ods			Locatio	on No.	7209/13	( RID R	FF .	59	080	24550
	Hand Cable	dug pi tool b	t to 1.00r oring, 15(	n )mm diam	oeter, 1.00	Im to 5.50m	Locatio	on	CAVERS	FIELD FOUL C	DUTFA	LLS	EWER	
	Carrie	d out	for				Ground	d Level		Coordi	nates			Date
	Thame	es Wat	er Autho	ority			81.61m			See site	plan			22.10.85
				Desc	rinting		/el	Pu	ness ness	Sar	nples/	Tests		Cield Baseda
				2030	inplicit.		Let	Lege	Der hick	Depth	Sar	nple	Test	riela Records
	Friable TOPS	e dark DIL. C	brown sa )ccasional	ndy slight i rootlets	ly gravelly	,	81.61		- 0.00 - (0.80)	0.50		1	1	
									Ē	0.50	ľ			
ļ							80.81		L 0.80	0.80 - 1.00	в	2		
	Recove oravel	ered as and co	subangul	ar to subr prown and	ounded Larev				F	1.00 - 1.45	в	3	C N=44	
	mediu	n grain	ned generation	ally mode	rately (F	Completely to highly			Ē					
	moder with va sand o	ately s ariable r clay	trong bec amounts	oming stro of calcare	ong Ious	weathered.			(2.25)	1.80	ws	11		Water struck at 1.80m
	(Proba	bly Hi	ghly Weat	hered Lin	nestone w	ith occasional								
	Clay D	011037								1.85 - 3.05	в	4		
									-					
ł					,		78.50	<u></u>	- 3.05 -					
									-	3.05 - 3.50	U	5		
	Very st becom	tiff gre	y calcare	ous CLAY	, I					3.55	D	6	\$ •	
	caicare	ous M	UDSTON	E weak					•					
									- (2.45			_		
									pen}	4.20 - 4.65	U	7		
						n			-	4.70	D	8	s	
						Bands of grey strong		┝┸╌┯┸┤	-	5.00 - 5.075	D	9	(100)	
.						límestone.			-	5,40 - 5,475	D	10	S (100)	
F		BOR	HOLE (	OMPLET	E AT 5.	50m	76,11	┝┸╼╺┻╌	_ 5.50 -					
ľ		<u> </u>					1			•				
·		W	ater Levo	el Observa	ations Du	ring Boring			-					
ſ			Depth of	Depth of	Depth to	· · · · · · · · · · · · · · · · · · ·	]		-					
	Date	Time	Hoie	Casing	Water	Remarks			-					
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	22.10	1530	1.80	0.00	1.80	Water struck			-					
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Mec	1. Chi	selling	1.85m to	3.05m, 4	1.50 hours	; 4.75m to 5.50m, 2.50 h	ours							TS
Soil														Scale 1:50
ية ش	Notes:													Fig
8 9/L	Materiai All depil	s are de hs and r	scribed in a aduced lev	accordance els in metre	with Appen s. Thicknesi	dices. For explanation of symb ses given in brackets in depth c	ols and abb olumn.	reviations	see Fig. 1.	,				7
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NATURAL ENVIRONMENT RESEARCH COUNCIL

[SP52SE BJ 55 .]

5 BICEST	TER URBAN I	DISTRICT C	JNCIL
Clerk to the Council LEONARD V. MURPHY Council Offices	From: - Consulting Engineer W. HERBERT BATEMAN M.C., M.Inst.C.E. Batheaston BATH	Clerk of Works A. P. BOUGHEN BICESTER WATERWORKS	W. HAILOS & SO. Tel. 239 CAMPDEN, GLOS.
The Causeway BICESTER Tel. : Bicester 49	Phone: Batheaston 8283-4 VICTORIA ST., S.W.1. Tel.: Victoria 0093 also ST. MICHAEL'S CHAMBERS, ST. ANDREW ST., NORWICH Tel.: Norwich 3688	BICESTER Tel. : Bicester 195	& BICESTER WATERWORKS BICESTER Tel. : Bicester 195
			SP52SE29

My Ref. EB/SM

Tuesday,

7th March, 1 9 3 9



Dear Sir,

I return herewith a form headed Record of Bore which Messrs Francois Cementation Company fowarded to me and asked me to complete. I have fully completed this form except for the information regarding pumping, which I have no doubt the Council will be able to give you. (e., I believe that the amount pumped daily is \$,000 galls over a 15 hour day.

In addition to the form, I attach a copy of a 6" Ordnance Sheet, a  $\frac{4}{3}$ th scale plant of the site and also a copy of the analysis of the water.

I trust that the information given meets your requirements.

R.V. Melville, Esq., Geological Survey and Museum, Exhibition Road, South Kensington, LONDON, S.W.7. Yours fa**At**hfully,

man

Consulting Engineer to the Council.

British Geolog

Geological Survey

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EB/SE 3. 7.3.39. THE COUNTIES PUBLIC HEALTH LABORATORIES, 91. QUEEN VICTORIA STREET, LONDON, E. C. 4 <u>Ref. L. 886</u> SP52SE29

Analysis of a sample of water received on 1.7.37 from Francois Cementation Co. Ltd., per W.H. Bateman, Esq., Bath.

Labelled Discharge main of Borehole via tank.

Taken by D.A. Derry. Witness W.J. Llewellyn. Date. 30.6.37. 5.25 p.m. Chemical Results in Parts per 100,000

Appearance. Slight film deposit of mineral matter.

Colour Faint yellowish white, odour nil. (settles clear and bright).

6**0**00

Reaction pH Neutral: 7.4. Free Carbonic Acid Electric Conductivity

40.0 Total Solids, 180 C. 1.8 Chlorine in Chlorides Nitrites absent. nil Nitrogen in Nitrates 0.0 Hardness. Permanent. Temporary. 22.0 Total. 22.0 Iron 0.022 Nil in solution Metals. Manganes, Zinc, Lead, etc., absent 0.0360 Ammoniacal Nitrogen. Free Ammonia Albuminoid Nitrogen 0.0360 Albuminoid Ammonia

Oxygen absorbed in 4 hrs at 80° F. 0.020

at 20<sup>0</sup> C.

Bacteriological Results.

No. on a The	of Bacter agar in 3 1 2 Bacillus	ia per days at day at days at Coli	<b>c.c.</b> 00 <sup>1</sup> ml 20 <sup>o</sup> C. 30 <sup>o</sup> C. 37 <sup>o</sup> C.	nl. Present	960 9 <b>60</b> 4 <b>50</b> 130 in -	Absent in	100 c.c.
Bac	illus Weld	hii					

(B Enteritidis Sporogenes) Present in - Absent in 100 c.c.

Report. This is a faintly opalescent water showing deposit in slight amount, of siliceous matter. It is of faint yellow colour, neutral reaction and contains an appreciable trace of free carbonic acid.

The water contains an appreciable trace of free carbonic acontains only a small trace of iron. It is hard in character, although not unduly so, and the hardness is entirely of a temporary nature. The water is of a high degree of Organic quality and with the

The water is of a high degree of Organic quality and with the exception of a large number of bacteria, none of which are of an objectionable character, and probably due to recent boring operations, it is of a high degree of bacterial purity.

With the exception of the suspended matter which unless diminution occurs on pumping, will require preliminary removal, we regard the water as pure and wholesome, suitable for drinking and domestic purposes.

> (Sgd) John F. <del>Bela</del> Beale. For Drs. Beale & Suckling.

British Geological Survey 2.2

る。  $\mathbb{N}(t)$ in March **SP52SE29** 1 1 and 2 mat da HERBERT BATEMAN, M.C., M.INST.C.E., 3 CONSULTING CIVIL ENGINEER, BATHEASTON, BATH. 1690 1.15 AT VICTORIA ST. S. W. 1. . . . . . ်ဘံု ရှုနှင့် & ST. WICHAEL'S CHAMBERS, NORWICH. . 041 いこうに立つて 7 MAR 1939 .5 ووافارها الاستكثار أأشاستها أسلاف 1.C 1107. الدف فالتالية فتأفيه رې دلو در د i i i u j .Jointhau. TCLO. - · c. 1 • · · • • · · 2. 1. 6-1 i i se i Col olinio du Secolity end 1.00 J.I 1 1 1 الالكان الأرسلا أتالا e í يري والأرد و . . . . . ÷ . laoin Maon adi 111. - **,** ( 1 Same ل..... . . . C 0° ° 15 K. and and the state of the C. 000000 20 **\*0**.0 ેલું . . . ÛC+-1. TE C. (これ JJJ LIF . ເພີ້ອ ເປັນເປັນແມ່ນ ---ince de los n an tha the That the the Home C CL 4 J + J 01:0 را به المشقف م e interior مرد مست ما ا · · n do tot. ことにより . 11:00 . C.: N. HERBERT BATEMAN, M.C., MINIST.O.E., DONGULTING CIVIL ENGINEER, BATHEASTON, BATH. AZ VICTORIA BT., S. W. 1. ST. MICHAEL'S CHAMBERS, NORWICH. n a teologi nella sela nastri a Balan gina 1939 MAR 1939 esser of the state of C. S. بالدفية ببيوشيد حادثتها ه

British

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RECORD OF STRATA - BICESTER URBAN

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		CD500500
Ft.	ins.	5P525E29
1.	6	Surface Soil
3.	0	Grey Rock.
ି <b>8</b> °∙	0.	Sandy Marl
3.	0.	Blue Rock
2.	6	Light Shale
2.	0	Limestone.
3.	6	Blue Shale.
7.	0	White Rock.
12.	6	Grey Shale with hard beds.
6.	0	Grey Rock.
1.	Ø	Dark Shale.
	6	Rock
2.	0	Blue Binds.
1.	6	Blue Shale.
3.	0	Grey Rock.
1.	0	Grey Shale.
1.	0	Grey Rock.
3.	6	Variegated Shale.
3.	0	Grey Rock.
7.	0	Dark Shale.
2.	0	Rock.
5.	0	Blue Clay.
2.	6	Blue Rock.
3.	0	Blue Shale with hard ribs.
1.	6	Limestone.
3.	0	Limestone with Shale beds.
1.	0	Blue Shale.
2.	0	Grey Sandy Shale.
2.	6	Grey Rock.
2.	6	Dark Sandy Shale.
2.	0	Light Sandy Shale.
2.	6	Grey Rock.
6. 1. 2.	0 3 8 4	Soft Rock. Peat. Light Sand. Dark Clay and Sand. Rock.



British

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At Water orlesHowse have         Town or VillageD) < E < T E R         County Six-inch quarter sheet SP52SE29         For Mr TB < U.D <.         Exact site of well (Attach a tra a map, or map, if pos         Level of ground surface above sea-level (O.D.) feet.         Is well-top at ground level ? If not, state how far above ; feet.         Shaft ft., diameter ft. Details of headings	ring from a sketch- sible. (B)
Town or Village       D)CESTER         County       Six-inch quarter sheet       SP52SE29         For Mr.       Towster       Attach a trae a map, or map, if pos         Exact site of well       (Attach a trae a map, or map, if pos         Level of ground surface above sea-level (O.D.)       feet.         Is well-top at ground level ?       If not, state how far above ; feet.         Shaft       ft., diameter	75 cing from a sketch- sible. (B)
County	cing from a sketch- sible. (B)
For Mr.       BicasE U.BC.         Exact site of well       Attach a tra a map, or map, if pos         Level of ground surface above sea-level (O.D.)       feet.         Is well-top at ground level ?       If not, state how far above ; feet.         Shaftft., diameterft.       Details of headings	cing from a sketch- sible. (B)
Exact site of well	cing from a sketch- sible.
Level of ground surface above sea-level (O.D.)	a sketch- sible.
Level of ground surface above sea-level (O.D.)feet. Is well-top at ground level ? If not, state how far above ;feet. Shaftft., diameterft. Details of headings	(B)
Is well-top at ground level ?	
Shaftft., diameterft. Details of headings	
	*****
Bore 140 <sup>2</sup> ft.; diameter of bore: at top 26 ins.; at bottom 23 <sup>1</sup> / <sub>2</sub> ins.	
Lengths, diameters, perforations, etc., of lining tubes 24" to 100; 42 x 232	en fonded
Tribus inserted to the them of bin.	1944 - 14 - 1991 (14 - 14 - 1994 (14 - 14 - 14 - 14 - 14 - 14 - 14 - 14
Water struck at depths, below well-top, of (feet)	
TEST DETAILS Rest-level of water 75 ft. above below well-top. Suction at 99 ft. Yield on 14	<b>↓ <del>hours</del>'</b> days'
Month pumping 6,500 gallons per (max. capacity of pump	g.p.h.),
Year >>>> (with depression of 20 feet. Recovery toinhours.	
(Rest-level of water in(month),(year),ft. above below we	ell-top.
Highest in (wear), the store of	
WORKING	
Conditions Lowest ,, in	"
Suction atft. Rate of pumpinggalls. perforhours p	per day.
with average depression offt. Recovery toininhours	
Quality of water (attach copy of analysis if available)	1970-1980-1980-1980-1980-1980-1980-1980-198
Well made by Frances is Commutation 6 Date of well	937
Information from	4 4941999999999999999999999999999999999
ADDITIONAL NOTES	
At yourse, yourd was 8-5,0000, that there arough	, e.e.t.
to tais gigune.	
IOC OF STRATA OVEL	RI TE A F
LUG UF SIKAIA UVER	
DateG.S.M. Office1" N.S. Map1" O.S. MapSite marked (useGEOLOGICAL SURVEY AND MUSEUM,received.File No.No.No.on 1" Map.or	e symbol) n 6″ Map.
South Kensington, 3.,	
LONDON, S.W.7.	
(17208) Wt.42901/0877 10,000 2/41 A.& E.W.Ltd. Gp.686	



14- (Ear Service and)	NATURE OF STRATA	Тнісь	INESS	De	PTH	h. con
GEOLOGICAL CLASSIFICATION	SP52SE29 If measurements start below ground surface, state how far	Feet	Inches	Feet	Inches	
	?			.3	6	F
	Ben very	7	-	20	6	-
• •	Gray rock	31	۲	32	- :	
	Groken	5	-	37	-	
	, u. vert. jouints	L L	6	38	<	
	Gray mech	37	6	76	-	
	Rock; sandy chay	4	· •.	80	•	
• • • • •	Shale w. Gands of gray rock	6	-	86		
	CCay	1	6	87	6	
	Gray rock w. saft joints	2		>0	-	
	Say rock	5	6.*	95	6	
	·· ·· denk	)1	-	) ۵ 6	6	
	Sift vock	5	-	111	G	· ·
	Sigt sand		-	110		
	Light gry sand	-		124		
	Light sandsume	-	_			
	Darie " a. Gemas of stray	4	-	30	6	
	Dark clay	) 0	-	140	6	
•						
			÷ .			
		n - Andrean				
				-		
~						,
British						

[SP52SE BJ 29 .]

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Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL © All rights are reserved by the copyright proprietors.

210 5h 5h In" from Isler Feb1042 219 Copy. **SP52SE29** 13 - Nov, 19 - 0 Tab. refort No 121135/1 13 Nov. 19 U Sample of water from Billster Water works - No 3 famping at 6740 gph. Total solido 31.6 parts/100,000 Chlornie 2.2 - -Stido ansist of Magnissim hicarborate & solfhate Traces of soching + chlorie. No callinin salto present. No 3a fumping at 6740 pph 39.6 parto/100,000 Ital solido Chlorine *3*•2 & Schas as above 39.0 parts/100,000 2.1 . Ital solids Chlorine Shits as about <u>No 4a proprio at 7020 gph</u> 40.6 parts/100,000 2.3 - " Total shids Chlorine Solido as about No 5 pm prig at 6420 gbh, 40.0 pato/100,000 Istal solids Chlorine 2.2 Solido as above . (In Bell & Crypton

British Geological Survey

16 Inf from Isler Feb1962 219, 219 Copy . **SP52SE29** 50 - 52 Wigner Fr Laboratory refort No 71135/2-Sample quester from Bielster Water Works . 21 at Bet. 1935. (D. W. pamp) Resulto in Parts per 100,000 very shafty faque White aflearance " of solids on ignition Ital solids 30 Chlorine 1.30 Attites nil Nitratis 0.002 Intal hardness 21.4 Prisonons metals lifter a lead about Fre anmoria 0.02 Eugen absorbed 1.56 allaminoid ammoria 8.001 a perfectly good sample of drinking water Opinion In Bell & Goyden Basteridogical Examistion 10. Jorgansis capable of growth on gelating platis at 22°C after 72 hos nieubation 116 per c.C. B. whi absent in 100 c. c

logical Survey

Town or Village	e 6 inch & ± inch s	County <b>Öxen</b> . Cale plans attach	Six-inch o	uarter sh	neetXX	
Exact site		Bicester U.	D.C.	or a	tracing	fro
Level of ground su	in parish of $\frac{1}{2}$	50 ft. If well starts below a	ground surface	J map state how	is very	3 <b>1</b>
Shaft 40 ft., d	ameter ## "ft. Bore 142	ft. Diameter of bore : a	t top <b>26</b> in	s.; at bo	ttom	<b>3</b>
Details of permanen	t lining tubes (internal diameters Rema	s preferred) 24 inch inder 223 inch	inside dia inside di	<u>am. to</u> iam. t	187. 0 141	<u>34 (</u>
Water struck at de	ths of (feet)		SP.	5715	238	8
Rest-level of water $7.069$	below top of well 226.00 fee	t. $\circ \cdot d$ -Suction at <u>141, 69</u>	eet. <sup>0</sup> •.d•Yield	1 on 124	he da	ays' t
gallons j	ernour (with pump of ca	apacityg.p.h.);	depressing water	r level to	7 4	f
Ouality (attach cor	of analysis if available)	smount normany pumped	ually	g.p.n. 101		
Sunk by France	Cementing Calla for the	Bicintor U.D.	C. Date of	of well	1936,	
Information from	Bicister U.J.C. + Fre	ncois Commutation (	Co, & W.H. Bel	Eman,	Eng. M.	<u>c. M</u> /
(For Survey use only).	NATIPE	OF STRATA		KNESS	DE	РТН
GEOLOGICAL CLASSIFICATION.	(and any add	litional remarks).	Feet.	Inches.	Feet.	Inch
Pade ground day	0, •1					
trough day onsite	Surface sol			0		0
Jold Commet	Yellow clay		10	0	//	0
many	15the clay		6	0		0
Wychurod Gedo I'	White work		<u> </u>	0	19	0
	Ifue day				26	0
Kemble Sedo }	jny shale		(	0	<b>4</b> /	0
15.6.	my win		<b></b>	6	31	0
2:1:4	grey succe		6	0	34	0
+uninale -	grey my min				<del>70</del> 41	0
(	yrey care cay		7		40	6
1.1-1-1. #21/13	grey ma			0	46	6
while way Stor	Sancy Suite	2 decla	(7		77	6
Ľ	grey mark and venue		· · · · · · · · · · · · · · · · · · ·	6	73	0
7	prey sandy cray			0	70	
Hamladen Mark	<u>Yrey</u> Marin		3	6	<b>9</b>	6
Bedo 13'	Shile it had a D al	han som he	4	6	96	5
Tax de CT. (	Con cook with Lido	D. chala	4	0	50	0
agar since 1	Cry, nech	<i>7</i>	. (2	0	102	0
C. L. L. L.	Light any sead.		16	0	118	0
Name Reda	hight sudstare		6	0	124	0
25' (	Dark sandoline		3	0	127	0
1 - Lias & 15 '6 "	Dark clay		15-	6	142	6
••••••	Se letter for loci	t. Son Augur Brick	Cr U.D.C			
	date 7/ 11 1/ 0500/19					
RV.M.	Pisi Od his Audi	1083 lito				
RN.M. 39	I.w.L. St with Survey	Autu Go				
R.1.M. 39 16.3.39						·
R.1.M. 3.39 16.3.39		1110-225-01:40.				
<u>RN.M.</u> 16.3.39		110-25-01-46				

GEOLOGICAL SURVEY AND MUSEUM. South Kensington. London. S.W.7.

Date received G.S.M. Office File No. 

(7993) Wt.36064/0349 5,000 12/38 A.&E.W.Ltd. **Gp.686** 



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[SP52SE BJ 29 .]



	Depth ft Thi	ckness m	Depth m
Forest Marble Formation	17.00	5.18	5.18
White Limestone Formation: Bladon Member and			
Ardley Member	49.50	9.91	15.09
Shipton Member	66.50	5.18	20.27
Rutland Formation	90.00	7.16	27.43
Taynton Limestone Formation	102.00	3.66	31.09
Sharp's Hill Formation and 'White Sands'	124.00	6.71	37.80
Northampton Sand Formation	127.00	0.91	38.71
Whitby Mudstone Formation	142.50	4.72	43.43

#### **SP52SE29** [5715 2388] Bicester Town No 2 Well (1936) Datum +85.3 (Ground level)

Stratigraphical classification by M G Sumbler, May 1999.



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**SP52SE29** 249 1" N.S. ..... RECORD OF WELL (SHAFT OR BORE) 0 Gowell Farm wo2. A ( 14 Town or Village Briester County Oxa Six-inch quarter shee inch scale plans attached See 6 inch & (A rough sketch-ma or a tracing from map is very resirved Exact site.... in parish of 55 Bicester U.D.C. Level of ground surface above sea-level (O.D.200.50ft. If well starts below ground surface, state how far\_\_\_\_\_ 31 Shaft the ft., diameter at top 20 ins.; at bottom 23 ins Details of permanent lining tubes (internal diameters preferred) 24 inch inside diam. to 187.34 0. 22<sup>3</sup>/<sub>A</sub> inch inside diam. to 141.00 C Remainder 5P 5715 2388 Water struck at depths of (feet).... Rest-level of water below top of well 226.00 feet.<sup>0.d</sup> Suction at 141.69 feet.<sup>0.d</sup> Yield on 14 -hours' tes days' fee Time of recovery\_\_\_\_hrs. Amount normally pumped daily\_\_\_\_\_g.p.h. for\_\_\_\_\_hours below top. Quality (attach copy of analysis if available). Sunk by Francis Cementing Calla for the Beciation U.D.C. Date of well 1836. Information from Bicisto U.D.C. + Francois Comentation Co. + W.H. Beliman Esc. 7. C. MIC THICKNESS DEPTH (For Survey use only). GEOLOGICAL CLASSIFICATION. NATURE OF STRATA (and any additional remarks). Feet Inches. Feet. Inches. Pala jornal de Surface soil 1 0 1 0 trongh day mit FMb **0** 5.18 Yellow day 10 0 11 2 old Comments 6 17 Õ 0 Blue clair O<sup>5.78</sup> Wychurod Beds 2' 2 0 19 White work 7 0 26 Blue clay 0 whh 6 8.38 6 27 chale Kemble Bedo (Bloom) 3 1316" 6 3.1 0 985 with Sorry Arthing) iz shele 6 32 69.91 612.36 Ð 40 0 Fundmata -Grey star mh walteri belo 9' 41 612.65 0 1 Sour sale clay 2 0 48 614.78 frey meh 615.09 1 Site 15 316 0 49 Sandy shale while (shyle ) 17 0 66 62027 my rock with bunds of shale 6 6 73 022.24 frey sarly clay 0 78 02377 5fry mit RIA Hampoden Kin 3 81 624.8+ 6 Clay Pedo 13 4 6 86 026.4 Shele with bands of alan vock 4 0 80 fry who with budo of shale. 027.43 frey work 12 アツ 0 102 031.03 16 0 118 hight your sa 035.97 find a hout hight suidstone 6 0 (24 A37.80 1.15 3 0 127 035.71 Dank sandoline Who 4-Lin & 15'5" 15-142 6 6' Dark cley 43.43m See Letter from It's Smith Esq. Bicesky U.D.C dated 26. VI. 40, in 9509/28. <u>39</u> 1083 lup 3 Juction 94' lup. 6. Aww.



(For Survey use only) GEOLOGICAL CLASSIFICATION	NATURE SP52SE29 If m	OF STRATA	THICK Feet	Inches	De: Feet	PTH Inches	• •
	gro	und surface, state now far	••••   			6	
	Ben very		7	-	20	<	
	gray rock		31	۲	32	-	
• •	~~, ~	rokan	ล้	-	37	-	
		, u. vert. jour of		6	38	۲ -	
	Back so to		3/	e _	5	-	
	Shall w. County a	and mele	6	-	85	-	
	Can	9 9 7	1	6	87	6	
	Gray wock w. satt	sints	2	6	30	-	
	Gray rock		5	. 6	95	6	-
	····· denk		- 31	-	)06	۲	
	Sigt rack		-5	-	111	6	
	Sigt sound		7		. 118	د ۵	
	Light gray sand		-4		122	<	
	Light soudslime		4	· -	126	۲	
	Darile	w. Councils of soundy	•		\$		
	·	Clay	4	<del></del> .	)30		
	Dark clay		19		.140	6	
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[SP52SE BJ 29 .]

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	· · ·	SP52SE29 ZY
		Town or Village Sizes i Ele
		County Six-inch quarter sneet SP 52 19 B
		For pr (Attach a tracing from
		a map, or a sketch- map, if possible.
		Level of ground surface above sea-level (O.D.)feet.
	•	Is well-top at ground level ? If not, state how far above ;feet.
		Shaftft., diameterft. Details of headings
		Bore 1402 ft. ; diameter of bore : at top 26 ins. ; at bottom 23 1/2 ins.
		Lengths, diameters, perforations, etc., of lining tubes 24" (= 133 , 42 x 23 2 )
		(Res cisaria B Gallon of Bin.
		Water struck at depths, below well-top, of (feet)
		TEST DETAILS Rest-level of water 75 ft. above well-top. Suction at 39 ft. Yield on 14 hours' days' pumping 6,500 gallons per 2 (max. capacity of pumpg.p.h.),
		Year 1937 with depression of 20 feet. Recovery to in hours.
9		
		(Rest-level of water in(month),(year),ft. above well-top.
		Highest " in (month), (year), ft. above below "
		WORKING CONDITIONS       Lowest       ,,       in(month),(year),ft.       above below       ,,
a i		Suction atft. Rate of pumpinggalls. perforhours per day.
·		with average depression offt. Recovery toinhours
		Quality of water (attach copy of analysis if available)
		Well made by France is Communication Co Date of well 1937
		Information from
		ADDITIONAL NOTES.
		At guist, yied was 8-9,000, Cut chipped
		te tais gigner.



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RECORD OF WEE	E GAL	HINE	LAGRE)							
the france	To a m	DA TA	, noch	esee pu	191	- Area -				
At how faim	-140	24 29		-	16					
Town or Village		7	1 00-1	-  ´						
County Orfortshine Siz	k-inch quarte	r sheet	1-DOI		14 A.	• 1				
For the line 170 w	d ir F	a Loro	1 Francis	- L	(Attach a	tracing from				
Exact site of well $40 - 4$	k g vh	Lam		,	a map,	or a sketch-				
Level of ground surface above sea-	level (O.D.)	260 f	eet.	<u></u>	SP52SE9					
Is well-top at ground level ?	If not, s	tate how far	above ; below ;	feet.	•					
Shaftft., diameter	ft. Details	of headings								
Dama the diameter of her	at top	ine : at	+ bottom	6 <sub>ins</sub>	****					
Lengths, diameters, perforations, e	etc., of lining	tubes 8	137 /r ×	-15 i,	for Juy	lace				
Water struck at depths, below w	ell-top, of (fe	et)			1999-1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -					
To Develop Rest level of wate	er ft	above well-t	op Suction	at ft.	Yield on	hours				
Month	gallons	below "en t	(max. ca	pacity of r		days g.p.h.).				
Year with depression o	ffeet	. Recovery	to	in	mins. hours.	01 /				
(										
Rest-level of water in		.(month),	(ye	ar),	ft above	well-toph				
Highest " m	L	. (montn) ,	(ye	ar),	below	بر س				
CONDITIONS Lowest ,, in	L	.(month),	(ye	ar),	ft. felov	t »				
Suction atft.	. Rate of pum	ping	galls. pe	rfor.	10 mins.	rs per day.				
Quality of water (attach copy of analysis if available)										
Nuality of watch (unune copy of unuryses of unuryses of another of the										
Information from										
	4 D		NOTES							
	AD.	$\neg n$	NUIES.	/						
Julo from dep	16 9 13		000 //**	- •						
				LOG OF S	TRATA OV	ERL <b>E</b> AF.				
Geological Survey and Museum,	Date received.	G.S.M. Office File No.	1" N.S. Map No.	1" O.S. Map No.	Site marked on 1" Map.	(use symbol) on 6" Map.				
South Kensington, London, S.W.7.	3/8/и1	53/36	219	45.9E	Ø	G				
	-		1							

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SP52SE9 NATURE OF STRATA TRAHE DEPTH THICKNESS or Survey use only Feet Inches Feet Inches GEOLOGICAL If measurements start below CLASSIFICATION ground surface, state how far... Clay, liniestre fragmento Lemesterie Þ Combran Lemes time 6 6 13 Clay 14 6 / Limes time 17 6 3 Jorn markle ruh Marthe 2 616 20 Kars the clay web 2 9 Jahr 18 22 Markle Inch 23 Haw clay and with fragen 5 6 28 White Limes Ine limes line 32 Less! 4 alternating hero of fray shale reach 6 33 66 ampe is Bhu rich 5 6 6 9 6 0 V She clay bands of soch 73 4 6 ayul alternating band of the uch the 17 6 90 Haw Jaureline 6 5 95 6 alternation band of grun 2nd Bard 126 121 6 6 137 Haw day and flut 15 inger Rew The day & day stone ` ک 142 uffer . 6 She day 158-6 hias 16 Blue day Stine 13 6 172 Rained to make Marlo Ine 173 Kaid fry roch 3 densities 126 Miste Bhu clay 234 58 hover Roch cong tomerate 242 8 hias Blue lias 246 4 Conglomerate S 254 Clarfor & 5 the clay and bands of mail 162 THE and Ann. \* p. Prohally 16 - 6. a difly bors is concel at 262 p Mr conglomerati, but meddy lime the : spece × hen in field by tob. 3/5/41 #. Mi P.A. H & Hawkies clamific this recend 6 44 6 Air marine Jani form ac

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At	DICEDIER.			1997 - Areno La Mandalaria	•	1	0
Town or Vill	lageBicester	• Oxon		****			77
County_OX	fordshire.	Six-inch quarte	er sheet			Ţ	han fa
For Mr.	No.ll. Area,	Abingdor	Berks.	-rks			
Exact site of	well Lord	is Farm, Biceste		<b>بر</b>		$-\int Attach a t a map, c$	racing fro or a skete
		· DICESCE	51. •	. <del>44.44.49</del> <b></b>		_ ( map, if p	ossible.
Level of grou	ind surface above se	ea-level (O.D.)	fee	t.	SP	52/1	8
Is well-top a	t ground level ?	If not,	state how far <mark>a</mark>	bove ; elow ;	feet.	-	
Pit No	4 • 				. • 14 J - 37		
Shaft 6	ft., diameter 6	<b>x 6.</b> Details	of headings		ه جند ه منبع المراجع ا		************************************
	• • • • • • • • • • • • • • • • • • •		0	16		********	*****
Bore 262	ft. ; diameter of b	ore: at top	ð ins.; at l	bottom			
Lengths, dia	meters, perforations	s, etc., of lining	tubes <u>20</u>	י <u>ר</u> י רי	15 <sup>8</sup> to	ייר יר כ	b.s.
	0. 01 T8, 00						
Water struc	k at depths, below	well-top, of (f	eet)	30 9 64	•		
		181 0	above	n Sustion a	• • • ft	Vield on	hou
Test Detail	LS Rest-level of w	36'	below well-to	p. Suction a			day
Month Month	pumping	gallon	s per <b>nou</b>	(max. ca	pacity, of I	mins.	g.p.
Year <b><u>1</u>9</b> 4	<b>L</b> (with depression	ı of <b>OV</b> fee	t. Recovery	to	_ <u></u>	hours.	
			· · ·	(- <b>*</b>	)	<sub>r</sub> , above	mall top
	Rest-level of water	: in	(montn),	(yea	J. J	below	wentop
	Highest "	in	(month),	(yea	ur),	ft. above below	,,
Working	Lowest "	in	(month),	(yea	 ۲),	ft. above	· · · ·
CONDITIONS	Curation at	ft Pote of pur	noing	galle per	for	hout	s per da
	Suction at		npmg		*	mins	- F
	with average depre	ession of	ft. Recove	ery to	in	hours	
1		f analysis if av	ailable)	******	•		
Quality of v	water (anach copy of					<b>A</b>	pril
Quality of v	water (auach copy o				5	/ <i>T / <i>I</i> / <i>I / I / I / I / I / I / I / I / I / </i></i>	
Quality of w	byLoG	rand Sute Sout	liff & Ge	HLtd.	D	ate of well	1241
Quality of v Well made I Information	byLoG:	rand Sute Sout	Liff & Ge nall.	LI Ltd.	D	ate of weil	1941.
Quality of v Well made I Information	byLoG:	rand Sute Sout AI	Liff & Ge nall. DDITIONAL N	LI Ltd.	D		
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Quality of v Well made I Information	by <b>LoG</b>	rand Sute Sout AI	Liff & Ge nall. DDITIONAL N	LI Ltd.	D		1941
Quality of v Well made I Information	by <b>LeG</b>	rand Sute Sout AI	Liff & Ge hall. DDITIONAL N	LI Ltd.	D		1941
Quality of v Well made I Information	by <b>LoG</b>	rand Sute Sout AI	Liff & Ge hall. DDITIONAL N	IT Ltd.	D		1941
Quality of v Well made I Information	by <b>LoG</b>	rand Sute Sout AI	Liff & Ge hall. DDITIONAL N	IT Ltd.	Ð		1941
Quality of v Well made I Information	by <b>LoG</b>	rand Sute Sout AI	Liff & Ge hall. DDITIONAL N	LI Ltd.	D		1241
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Quality of v Well made I Information	byLoG:	rand Sute Sout AI	DITIONAL N	LT Ltd.	LOG OF S	STRATA OV	'ERLEAN
Quality of v Well made I Information	SURVEY AND MUSEUM,	AI	G.S.M. Office File No.	LT Ltd.	D <i>LOG OF S</i> 1″ O.S. Map No.	STRATA OV Site marked on 1" Map.	ERLEA (use symbol on 6" Ma
Quality of v Well made I Information Geological South	Survey and Museum, KENSINGTON,	AI	G.S.M. Office File No.	IT Ltd.	D 	STRATA OV Site marked on 1" Map.	ERLEA (use symbol on 6" Ma

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(For Survey use only)	NATURE OF STRATA	Тніс	KNE <b>SS</b>	De	PTH	~ <b>*</b>
GEOLOGICAL CLASSIFICATION	SP52SE9 If measurements start below ground surface, state how far	Feet •	Inches 	Feet	Inches	
	Clay and Limestone Flints	. 6	6	6	ß	
	(very hard)			U	0	
	Hard Clay	6	6	13	0	
	Limestone Rock.	L Z	. 0	14	0	
	Marble Rock Formations.	3	0 0	20	0	
,	Hard Blue clay and flints	2	Ō	22	ŏ	
	Marble Rock Formation.	1	0	23	0	
	Limestone Formation.	5	6	28	6	
	Grey shale.	4	0	32	6	
	Grey Rock.	2	ŏ	37	6	
	Greyshale.	2	6	40	ŏ_	
	Hard Clay	2	0	42	0	
	Grey Shale with hard bands.		0	43	0	
	Grey Rock.	2	0	47	6	
	Hard Clay.	6	ŏ	55	6	
<b>x</b> ·	Grey Hock.	2	6	5 <b>8</b>	0	
	Hard Clav.	4	0	62	0	
	Grey Rock.	2	6	65	0	
	Grey Shale.	ī	ŏ	66	6	
	Blue Rock.	З	6	70	Ō	
	Blue rock.	4	0	74	0	
	Greyshale.	2	6	76	0	
	Hard clay with hard bands	3	6	84	ŏ	
	Dark Grey Rock( not too hard)	6	0	90	0	
	Dark Grey Book	5	6	95	6	
	Hard Sandstone.	2 3	0 6	97	6	
	Dark Grey Rock.	3	0	101	ŏ	
	Sandstone.	5	ŏ	109	ŏ	
	Dark Grey Rock.	2	0	111	0	
	Dark Grev Bock	2	0	113	0	
	Sandstone.	2	6 6	117	6	
•	Dark grey Rock.	ĩ	ŏ	118	ŏ	
	Sandstone.	1	6	119	6	
	Clay and flinte. ( small)	0	6	120	0	
	Clay and Claystones.	11	ő	137		
	Blue Lias Clay & claystones.	5	ŏ	142	ŏ	
	Blue lias Clay.	16	6	158	6	
1	Maristone.	13	6	172	0 0	
	Hard Grey Rock.	3	ŏ	176	ŏ	
	Blue Lias Clay	58	ŏ	234	ŏ	
	Rock formation.	. R	0	235	0	
	clav.	2	0	249		
	Blue Lias Clay.	4	ŏ	242	ŏ	
	Conglomerate rock, Ironstone, Marlstone				_	
	Conglomenation of importance manlaters	3	0	249	0	
	& clav.	5	0	254		
	Blue lias clay & bands of marlstone			207	ĭ	
	about every 3"	8	0	262	0	
	-					
		262	0	060		
· · ·		<u>euc</u>		202	<u> </u>	
	LeGrand, Sutcliff & Gell Ltd.,					
			2 · · .	2 - X -		
		Í	ſ			
	ار به این از میهاند. ارام این مراجع در میهاند <sup>رو</sup>	i an a side	an stal	an frank an de	sa, la g	
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British Geological Survey

(EULHITHE MORE) RECORD 5746 24 24 nt break Town or Village Horsthe Six-inch quarter sheet 23 M County\_ and Muer to B.DC SP52S Minit-For the 9 Lotte IVE (Attach a tracing from 170 yds Exact site of well\_\_\_\_ a map, or a sketch-20 y do Sout g . h can map, if possible. 79:24m) 260 Level of ground surface above sea-level (O.D.)..... Is well-top at ground level ? 74 If not, state how far above ; below ; Shaft\_\_\_\_\_ft., diameter\_\_\_\_\_ft. Details of headings\_\_\_ 6 ins. Bore\_\_\_\_\_ft.; diameter of bore: at top\_\_\_\_\_\_ ins.; at bottom\_\_\_\_ Lengths, diameters, perforations, etc., of lining tubes 137 /2 x15 4 Water struck at depths, below well-top, of (feet)\_\_\_\_\_ TEST DETAILS Rest-level of water\_\_\_\_\_ft. above well-top. Suction at\_\_\_\_\_ft. Yield on hours' 'davs' \_\_\_\_\_gallons per\_\_\_\_\_(max. capacity of pump\_\_\_ .g.p.h.), Month \_ pumping\_\_\_\_ mins. Year..... with depression of \_\_\_\_\_feet. Recovery to \_\_\_\_ \_in\_ hours. ft. above well-top Rest-level of water in\_\_\_\_\_(month),\_\_\_\_\_(year),\_\_\_\_ above k ft. below in\_\_\_\_(month),\_\_\_\_(year),\_\_\_ Highest above 0" ...ft. below WORKING \_\_\_\_(month),\_\_\_\_(year),\_\_\_ Lowest in\_\_\_\_\_ CONDITIONS for y diours per day. Suction at\_\_\_\_\_ft. Rate of pumping\_\_\_\_\_galls. per\_\_\_\_ mins. with average depression of \_\_\_\_\_\_ft. Recovery to \_\_\_\_\_ in hours Quality of water (attach copy of analysis if available)\_\_\_\_\_ \_Date of well\_ Well made by\_\_\_\_ . Information from\_\_\_\_\_ ADDITIONAL NOTES. Yeilo from Depto 2 137 p, 1000 yph.

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INC OF STRATA OVEDIEAE

NATURE OF STRATA WICKNESS. UNERTER (For Survey use only CEOLOGICAL CLASSIFICATION Feet Inches Feet Inches If measurements start below ground surface, state how far ... Clay timesting fragme Ą SP52SE more 'ourty Lemes time 6 .6 73 126-00 For Mc Ctay 14 and Guzz Limes true 17 3 6 for Marthe millin 20 marthe ruh ≈ or**Z**fe lo leva Kars the clay 2 or land a 22 of law Marthe Inch ,23 мліб .n.de COMMENT. 28-Haw way and with frequents 5 6 6 white Let a the trade of diama en para : et ter 113.2 600 himes line noits. SS 76 76 engths alternation hers of fray Shale Boil Ľ Blue into **S**low depths Water stirke a weli-top, of (feet)... The day bands of each 73 6 -4 39 07 2 1 183 ol-**Z**oył alternating band of the lick of 115400 **6** Haw Jaurita 95 6 alternation based of gruy and Bar 5:26 121 15.0 1400137 Kaid day and Hente The day of May stone 142 · 5 uffer hias - 1- a the day 15 80 16 an **b** 6., Mue clay themes /3 6 172 Rate of parages. Marlo Ine" 173 ายข้าง Kew fry rach yr yrger \$,7,6 (aliach Quality in an in meridian nest 254 58 the clay N ab wileV Rock constance ate # mun 8-242 inform: hum Blue lias 246 4 SHOW FAROURDER Inglumenate-254 : F--Clean 4 s the clay and bands of mark 1.62 Tim and 1122 1 ¥ p. Probally 16. 1. an Dyll & bors is conced at 262 p medde line har Mr constructedo, but ⊀ : spe teen in field to tob. 3/2/20 Prop. H & hawkins clamifor the le 44 Air K The Same



·. \$.	RECORD OF WELL (SHAFT OR BORE) 910
٢.	BICESTER. SP52SE9
	Town or Village Bicester. Oxon
	County_OxfordshireSix-inch quarter sheet
	Level of ground surface above sea-level (O D ) feet
	above of ground surface above sea-rever (0.15.)
	Is well-top at ground level? If not, state how far above ; feet. Pit
	Bore 262 ft. ; diameter of bore : at top 18 ins. ; at bottom 15 ins.
	Lengths, diameters, perforations, etc., of lining tubes
	<u>33' 6" of 18" top 2' 0" b.s.</u> 89 ' 1" of 15" top 1' 1" b.s.
	Water struck at depths, below well-top, of (feet) 13', 90', 246'.
	TEST DETAILS Rest-level of water 131 ft. above well-top. Suction at ft. Yield on hours' days'
1	Month April pumping 1,350 gallons per hour (max. capacity, of pump g.p.h.),
unitati	Year 1941 (with depression of <u>60</u> feet. Recovery to <u>in</u> hours.
	(Rest-level of water in(month),(year),ft. above well-top.
	Highest ,, in(month),(year),ft. above helow "
	WORKING CONDITIONS Lowest ,, in (month), (year), ft. above below ,,
	Suction atft. Rate of pumpinggalls. perforhours per day.
	with average depression offt. Recovery toinhours
	Quality of water (attach copy of analysis if available)
	April   Well made by LoGrand Sutcliff & Gell Ltd. Date of well 1941   Information from Southall.
· · ·	ADDITIONAL NOTES.
	*
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LOG OF STRATA OVEDIEAE

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BGS 3

British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL

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[SP52SE BJ 9 .]

	GEOBOGICAL	If measurements summer s	Feet	Inches	Feet	Inches	•
•	CLASSIFICATION	ground surface, state how far	•				• *
	F-ML	Clay and Limestone Flints (man)	6	6	6	6	(.94
	whL	Limestone Rock. Hard Clay. Limestone Rock. Marble Rock Formations. Hard Blue clay and flints Marble Rock Formation. Hard Clay and Flints. Limestone Formation. Grey shale. Grey Rock. Grey Rock. Hard Clay. Grey Shale with hard hands	.61332154322214	000000000000000	13 14 17 20 22 23 28 32 35 37 40 42 43	000000000000	3.96 4.27 5.18 6.1 6.71 7.01 8.69 9.91 10.82 11.43 12.19 12.8 13.11 13.11
		Grey Rock.	2	0	49	6	15.07
	<b>1</b> 2	Hard Clay. Grey Rock. Grey Shale. Hard Clay.	6 2 4 2	0 6 0 0	55 58 62 64	6 000 0	16.92 17.68 18.90 18.51
	RW	Grey Rock. Grey Shale. Blue Rock. Hard blue Clay with hard bands. Blue mock	1 1 3 4	6 0 6 0	65 66 70 74	6 6 0 0	19.96 20.27 21.36 22.56
,		Greyshale. Hard clay with hard bands Dark Grey Rock( not too hard)	4 3 6	6 6 0	80 84 90	0 6 0 0	43.16 26.54 25.60 27.43
	Sitr,	Dark Grey Rock.	5 2	6	95 97	6	29.11
and the second se	~~~s	Hard Sandstone.	3	6	101	ŏ	30.78
	NS	Dark Grey Rock. Sandstone. Dark Grey Rock.	3 5 2	0	104 109 111	000	31.70 33.22 32.82
		Sandstone.	2	0	113	0	34.46
		Sandstone.	- 1 2	6	114	0	35.66
2		Dark grey Rock.	1	. 0	118	Ō	3597
		Hard Clay and Flints. ( small)	0 I	6	119	6	20140
	why.	Clay and flints.	6	Ö	126	Ō	
		Clay and Claystones. Blue Lias Clay & claystones.		0	137 142	0	
		Blue lias Clay.	16	6	158	6	
	7 M22	Blue flas clay and claystones. Marlstone.	13	6 0	172 173	0	
		Hard Grey Rock.	3	Ŏ	176	Õ	
		Blue Lias Clay Bock formation	58 10-	0	234	0	51.63
	chin	Conglomeration of ironstone, rock &	<b>.</b>	U	200		C1.02
•		clay.	7.	0	242	0	73.76
		Conglomerate rock, Ironstone, Marlstone	4 <u>4</u>	U	240		16.10
		' clay Conglomeration of ironstone, marlstone	3	0	249	0	75.90 (2)
		α clay. Blue lias clay & bands of marlstone	5		254	0	
		about every 3"	8	0	262	0	79.46
T	vi-low Artfens in	n min respectie from much - written version	262	0	262		
			1	1	et i i i i i i i i i i i i i i i i i i i	5	1

LeGrand.Sutcliff & Gell Ltd.

SP52SE9 [c. 5919 2048] Graven Hill Well (1941).	Datum +88	(Ground level)	
	Depth ft	Thickness m	Depth m
Oxford Clay Formation	128.00	39.01	39.01
Kellaways Formation	146.00	5.49	44.50
Great Oolite Group and Inferior Oolite Group			
undifferentiated	281.00	72.24	85.65
Whitby Mudstone Formation	290.00	2.74	88.39

#### E010 00 401 (10.41) T 00 (0 1.1

Stratigraphical classification by M G Sumbler, May 1999.



P52SE5

BICESTER TOWN SUPPLY.

Gowell Farm, near Bicester, 11 miles N.W. of Market Place. Communicated by Mr. Edgar F. WILLSON, Surveyor to the Urban District Council.

Height above O.D. 277 feet.

A pit, 8 feet square and 11 feet deep, was lined with brickwork and floored with concrete 1 ft. 6 in. tbick. A steel tube 11 inches diam. was taken to 112 ft. 4 in. from surface, with perforation at 77 feet. No water worth mentioning was met with until 92 feet, when it rose to the surface. At 105 feet the bulk was struck, and overflowed at the rate of 6,000 gallons per hour when not pumping. The water will rise 3 feet above the surface. Thickness. Depth.

						T11.	T	· Du	Pun.
	Surface soil					Pτ.	Ins.	Ft.	In.
	Grou reals (Com			•••	•••	1	6	1	6
	Sanda week (Corr	iorasi	1)	•••	•••	3	0	4	6
Forest	Dimensional (D			•••	•••	8	0	12	6
Marble 994+	J DIUE FOCK (FOF	st Ma	(eldri	•••	•••	3	0	15	6
marble 2210.	Light shale	•••	•••	*****		2	- 6	18	0
	Limestone	•••	•••	•••	•••	2	0	20	0
	Blue clay or sha	le			•••	3∽	<u> </u>	23	6
•	White rock		•••		•••	- 7	0	30	6
	Grey shale with	hard	beds	•••	•••	12	6	43	0
	Grey rock	•••	•••	•••		6	0	49	0
	Dark shale	•••	•••	•••		1	0	50	0
	Rock	•••	•••	•••		0	6	50	6
	Blue binds					2	0	52	6
	Blue shale				•••	1	6	54	.0
Great Onlite	Grey rock					3 .	Õ	57	õ
84 ft 6 in	Grey shale					1	õ	58	õ
от то, о щ,	Grey rock					1	õ	59	0
	Variegated rock					3.	Ř	62	ĕ
	Grey rock					ă	. õ	65	ő
	Dark shale					7	ŏ	79	ĕ
	Rock				•••	2	ă	71	ß
	Blue clay			•••	•••	ភី	ň	70	e
	Blue rock		•••	•••	•••	õ	ĥ	00	0
	Dark shale with	hard	hoda	•••	•••	2	Å	04	0
	Limestone		ocus	•••	•••	1	é	00	ě
	Limestone with a	hala I		•••	•••	2	0	00	0
	Blue shale	<b>UAIS</b> 1	Jeus	•••	•••	0 1	Ň	89	6
· · · · · · · · · · · · · · · · · · ·	Grev sandy shale	 i+h		•••	•••	1	0	90	0
	Grew roak	WIUI	water	•••	•••	Z	0	92	6
	Dark sandy shale	•••	•••	•••	•••	z	0	95	0
	Light condinate			•••	•••	2	6	97	6
	Crommer l	•	•••	•••	•••	z	0	99	6
	Grey FOCK		•••	•••	•••	2	6	102	0
	Boit rock, water,	bulk	here	•••	•••	6	0	108	0
Estuarine	Peat	•••	•••		•••	1	3	109	3
Beds 4 ft. 4 iu.	Light sand		•••	•••	•••	0	8	109 📜	11
(penetrated)	Dark clay and sar	ıd	• • •	•••	•••	2	4	112	3
- / L	Kock, 1 inch only	' into	it	•••	•••	0	1	112	4
Analysis by 1	Mr. W. W. Fisher	in "7	The Sa	linity -	of We	ter fr	om +	ha Oal	iton "
" The Analyse"	Waharan 1004	~ ~			01 11 a	OU II	uш u	ne 001	Trea

" The Analyst," February, 1904. See p. 92.

Mr. E. Foster Tanner, Clerk to the Urban District Council, has kindly added the following particulars :--

"The deep well pump has been fixed. Motive power supplied by Crossley's 13-h.p. gas engines in duplicate, either capable of driving the pumping plant, which has the capacity for raising 8,000 gallons per hour. The water is pumped into tanks, constructed of steel, on the top of a tower, immediately adjoining the well. The tanks are in duplicate, *i.e.*, an inner and an outer tank. Their combined holding capacity is about 45,000 gallons. Height from ground to bottom of tanks, 40 feet. There is a 7-inch main from the water tower to the town, and the distribution mains in the town are respectively 6-inch, 5-inch, 4-inch, and 3-inch. The cost of the works was £7,000."

O.D. given as +287 by H.T. Smith Esq. Surveyor & Bicester U.D.C. Letter in 9509/28.

Bore caved in; pump removed.

# Published in 'The Water Supply of Oxfordshire', Page 29,30

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SP52SE5

#### BICESTER WATER WORKS.

### Well at Gowell Farm. Present supply, 1909.

*Yield.*—140,000 to 212,000 gallons per day. Water reduced by 14 days test-pumping to 70 feet from surface, but rose again to surface in two hours after cessation of pumping.

Report on analysis of water received 30th September, 1905, at end of pumping test. By Mr. W. W. Fisher, F.I.C.

Description.—The sample is slightly cloudy and contains a little sand. The residue left on evaporation is alkaline and contains a little sodium carbonate.

Odour.-None.

Appearance in two-foot tube.-Pale-yellowish.

The results of the analysis are s	stated in	grains	per gall	lon.					
Total dissolved solid matter	• •••	·	•••			26.6			
Chlorine in chlorides						1.1			
Ammonia, free and saline			•••			· 028			
" albuminoid …	•••	•••	•••	•••	•••	003	7		
Nitrogen in nitrates	•••	•••	•••	•••	•••	·014			
", in nitrites	•••	•••	•••	•••	•••	0			
Oxygen required to oxidise organic matter (in 3 hours) (007									
Hardness in Clark's degree	•••		••••			14.5			
Remarks The total dissolved a	alia	- 1 * 1							

*Remarks.*—The total dissolved solid constituents are normal for water from the Oolite. The chlorides are not in excess of the natural amount; the nitrates are small, and the proportion of organic matter is extremely small. The water is of a moderate degree of hardness.

Published in 'The Water Supply of Oxfordshire', Pages 92,93



British Geological Survey

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[SP52SE BJ 5 .]

Oxon. N. No. 17. 2,000. L. D. 2/18. C. ISLER & Co., Ltd., Ð ARTESIAN & CONSULTING WELL ENGINEERS, SP52SE5 BEAR LANE, SOUTHWARK, S.E.1. Α Telegraphic Address: "ISLER, LONDON." 219 Telephone No.: Hop 4460 (3 Lines). Ż BIRMINGHAM BRANCH: 58 Summer Row. CHART Showing the Soils passed through at

The Bicester Haterworks

M essre

Surface Soil G 6 1 Grey Rock. 6 3 4 Sandy albart 6 8 12 Blue Rock. 6 15 3 Light Shale 18 2 6 Lemestone 2 20 Blue Shale 6 23 6 3 White Rock. 6 30 7 Grey Shale with hard Bed 43 12 6 Gray Rock. 6 49 Dark Shale 50 1 Rock 50 6 6 Blue Bindo 52 2 6 Blue Shale 6 54 1 Sruy Rock. 3 57 Grey Shale 56 1 Grey Rock 59 1 Varugated Shale 62 6 3 6 Grey Rock З 65 6 Dark Lhale 72 6 1 Rock 2 14 6 Blue blay 79 5 6 Blue Rock. 2 6 82 Dark Shale with hand ribs 3 85 Semes Tone 6 86 6 Linestone with Shale bedo 3 89 6 Blue Shale. This must agree with report. 6 90

Ţ



C. ISLER & Co., Ltd., ARTESIAN & CONSULTING WELL ENGINEERS, BEAR LANE, SOUTHWARK, S.E.1.

Telegraphic Address: "ISLER, LONDON." Telephone No.: Hop 4460 (3 Lines).

BIRMINGHAM BRANCH: 58 Summer Row.

# CHART

Showing the Soils passed through at

(2)

SP52SE5

Bicester Waterworks M Bicester Sowell Farm Grey Sandy Phale (with water) 92 0 6 2 Grey Rock. 2 6 95 0 Dark Sandy Shale R 97 6 6 Light " Grey Pock. 99 2 0 6 R 6 102 0 Soft Rock 108 6 0 Peat 109 9 3 Light Sand 8 109 11 Dark blay & Land 4 112 2 4 Rock. 6 15'6" of 15" 8 ft below 97 ft 11" Tubes level inthe surface 15 " 101/2" " 97ft below perforated from 77ft below perforations 12" on 31/2" pitch covered with fine mech brass wire gauge Web Overflow 12,000 gph. at P.WL. of 70 ft Dug Well Pum Bored by J. Thom.



						7	he	e en S	91	
er "	Inland	Wate	r Su	rve	<b>y</b> 1	lor	Gr	eat	Bri	tajr 70
Name or Auth	Description of ority or Undert	aking	<u> </u>		, ,	Bice	ster	S Urba	P52SE n Dist	5 rict
Postal A	ddress		· · · · · · · · · · · · · · · · · · ·			r	The (	Cause	way,	
	·							Bice	ster,	Oxon.
·	ι		(A) OVE	ER-GRC	UND	WAT	ER.			
(I) (a)	Do you take s water in :	ystematic re	ecords of l	evels of						
	(1) 111010 .									/
	(2) streams.		• •		•••	•••		•••	•••••	
	(3) reservoirs	5	••• •••	•••	•••				•••••	
	(4) lakes .		···· ···			•••	•••		••••	
	(5) canals or	r navigable	rivers	•••	•••	• •	•••	•••	• • · · · · • • • • • · · ·	
(c) (d)	How often are Exact points a	the reading t which the	gs taken? records are	e taken.						
	(A map or ske	tch would b	oe helpful.)							۲
, (e)	Have the leve Datum Level of the latter case	ls been rel or to some please spec	ated to Or other stand cify standa	rdnance dard (in .rd)?			,			
(f)	Are all the lev covered satisfa	els (e.g., h ctorily by t	ighest and he records	lowest) taken?						y
(g)	Are arrangeme during rise and	ents made f d fall of floo	for extra r ods, etc.?	eadings						
(II) Wh oth reg	nat types of sys er than recor ards: (1) rivers .	stematic rec ds of leve	cords of di els are k 	scharge æpt as 	••••		•••		,	
	(2) streams .				/	/			•	
	(3) reservoir	•			/	•		•••		
	(0) 100011011		•••	•••	·/·	• • •	•••		•••••	· · · · · · · · · · · · · · · · · · ·
	(4) lakes .	3 1 	····	···· ···· /	/	• •	•••	•••		

BES 5

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		<b>S</b> I	0529E	÷ 5										· · · · · · · · · · · · · · · · · · ·
(III) (	(a) ]	Have: the of record	measurer data for ds of disc	nents beer levels ca harge of :-	made n be o	from convert	which ted to		•			ŝ		
	e f.	. *(1)	rivers ar	nd streams			•••				• •	••••••••••	•••••	
		(2)	reservoir	s				•••		••••			, /	<i>[</i>
		, (3)	lakes .	••••••						•••	••••	•••••	, '  ,	
		(4)	canals o	r navigabl	e wate	rways						•••••		
	(b)	If so made floats weirs etc.)?	, how h (e.g., by , survey , records	ave these current s of secti of water	measur neters, ons, ca used	rements veloci alibrati for lo	s been ties of on of ocking,	X				/		
(IV)	<i>(a)</i>	Are break yielde	records 1 ing overg ed?	cept in the round of t	ie case he amo	e of s ount of	prings water							
	(b)	If so,	what fo	rm of reco	rding is	s used?	?	r						
	(c)	How	often are	readings	taken?						/	/		
	( <i>d</i> )	Éxac sketc	t locatior h would	ı of the s be helpful.	pring. )	(A m	nap or							•
2		x									/			
(V)	Sin IV	ce wh been	en have t kept?	he records	under 1	I, II, I	II and							T
										/				
(VI)	Are	e pașt	records a	vailable?				÷				ć.		
/= == = :	~			5	3		t	s. ,					-	
(VII)	Ren	ARKS (Pleas or pa to as	se indicato rticulars sist in the	e here any which ma e survey.)	further y be th	r inforr lought	mati <b>on</b> likely	/	/					¢
in ,	ł							1					-	



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	<b>919</b>
(B) UNDERGROUND WATER-(WELLS AND BORING	
(In each case please state whether a well and/or boring is in que	stion.)
SP529	
I. GENERAL.'	(A)
1. Exact site of well or boring	Well and boring at Gowell Farm, Near Bicester, Oxon.
c	
2. Surface level of ground above Ordnance Datum	277 ft.
3. Date of construction	1905.
	• •
WELLS.	
4. Depth of well from surface level of ground (i.e., 2 above). If top of well is below the surface level of the ground ( <i>i.e.</i> , 2 above) state how much	268 <b>.</b> 25 ft.
5. Depth of floor of galleries at site of well: also dimension and direction of galleries	None. fr.
<b>a</b>	= O.D Gottom
Borings.	Converg
6. Depth of boring from surface level of ground ( <i>i.e.</i> , 2 above). If boring is in bottom of well, state depth of well	164.66 ft.
7. (a) Diameter of top of boring ( $g'0''$ .b.s. to .97'.b.s.)	<b>11</b> in.
(b) Diameter of bottom of boring (97. $b_{\bullet}s_{\bullet}$ to 11.2 '0"b_ $s_{\bullet}$	) $10\frac{1}{2}$ in.
8. Tubed from top of boring to	full depth. 4.
9. Lining tubes perforated at depths of	77 <b>'</b> 0" ft.
10. Water struck during boring at depths of $\dots \dots \dots \dots$	105 <sub>ft</sub>
11. What was rest level on completion of boring? 3	'O" above surface.
Wells and Borings.	

12. Is the water raised by pump or	air lift?	•••			 Pump
			i de la composición d La composición de la c		
13. Depth from top of well or boring	to bottom	of su	ction p	ipe	 95 ft.



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British Geological Survey

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*	SP52SE5
II. If systematic measurements of water levels are made, state whether these include :	
(a) Pumping levels	(b) Rest levels overflowed.
(c) Time of recovery to rest level on cessation o <b>Test</b> 2 hours.	f pumping 4 hours
(d) Changes in pumping level, if rate of pumping is altered.	
Also state : (e) at what intervals records are take etc.)	n ( <i>i.e.</i> , daily, weekly, <b>Daily</b>
Please furnish a specimen graph of records taken over as long a period as available (up to 1 year).	Taken by hour's pumping.
III. If measurements are made only occasionally, please indicate what is, or has been, done in this respect and furnish examples of any graphs or forumes available.	Test taken twice in one day in July last - average per hour 6563 gallons
	Test taken twice in one day in March last - 7854 gallons.
IV. Yields.	
(1) Number of gallons pumped per hour	At present 7854 gallons.
(2) Is pumping continuous?	No.
(3) If not, how many hours pumping per day?	Average - 9 hours.
(4) Maximum daily yields available (Test. 1	40,000 to 212,000) in 1905. See above (With old pump
n n n n n n n n	Estimated 300,000 gallons per day.
e	Based on actual tests Further test proposed in near future.
V. If a section or record of strata can be given please attach to this form.	Herewith.
VI. (1) If a chemical analysis can be given please attach.	
(2) If not state hardness (19)	20.)
• (3) For what purpose is the water used?	Mainly Domestic.



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210 5th St. Int from Isler Feb 1042 219 Copy. SP52SE5 13 The 19 0 Lab. refort No 121135/1 13 Nov. 19# U Sample of water from Billster Water works - No 3 famping at 6740 gph. Total solido 31.6 parts/100,000 Chlornie 2.2 - -Stido ansist of Magnissim hicarborate & solfhate Traces of soching + chlorie. No callinin salto present. No 3a fromping at 6740 gph 39.6 parto/100,000 Ital solido Chlorine 3.2 & Schas as above 39.0 parts/100,000 2.1 . Ital solids Chlorine Shits as about <u>No 4a fumping at 7020 pph</u> 40.6 pats/100,000 2.3 . Total shids Chlorine Solido as about No 5 pm frig at 6420 gbh, 40.0 pato/100,000 Istal solids Chlorine 2.2 Solido as alone. (In Bell & Crypton

16 Inf from Isler Feb1962 219,219 Copy. SP52SE 50 - 52 Wigune Fr Laboratory refort No 71135/2-Sample quester from Bielster Water Works . 21 at Bet. 1935. (D. W. pamp) Resulto in Parts per 100,000 very shafty faque White Aflearance " of solids on ignition Ital solids 30 Chlorine 1.30 Attites nil Nitratis 0.002 Intal hardness 21.4 Prisonons metals lifter a lead about Fre anmoria 0.02 Eugen absorbed 1.56 allaminoid ammonia 8.001 a perfectly good sample of drinking water Opinion In Bell & Gogden Basteridogical Examistion 10. Jorgansis capable of growth on gelating platis at 22°C after 72 hos nieubation 116 per c.C. B. whi absent in 100 c. c







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[SP52SE BJ 5 .]



BICESTER TOWN SUPPLY.

Gowell Farm, near Bicester, 11 miles N.W. of Market Place. Communicated by Mr. Edgar F. WILLSON, Surveyor to the Urban District Council.

SP52SE5

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5709

Height above O.D. 277 feet. (34.4.2.m)A pit, 8 feet square and 11 feet deep, was lined with brickwork and floored with concrete 1 ft. 6 in, thick. A steel tube 11 inches diam. was taken to 112 ft. 4 in. from surface, with perforation at 77 feet. No water worth mentioning was met with until 92 feet, when it rose to the surface. At 105 foot the bulk was struck, and overflowed at the rate of 6,000 gallons per hour when not pumping. The water will rise 3 feet above the surface. Thickness. Depth.

			Thick	ness.	Det	pth.
			Ft.	Ins,	$\mathbf{Ft}$	In.
	Surface soil	 •••	1	6	1	6
1	Grev rock (Cornbrash)	 	3	0	4	6 1.3-7
	Sandy marl	 	8	0	12	6 3-001
Forest	Blue rock (Forest Marble)	 •••	3	0	15	6 4.72
Marble 2014.	Light shale	 •••	2	6	18	0 5 17
	Limestone	 	2	0	<b>20</b>	0 6.10
WhL Bloken	Blue clay or shale	 	3	6	23	6 7.16
	White rock	 	7	0	30	6 9.30
WhL Araley	Grev shale with hard beds	 	12	6	43	0 13-11
	Grev rock	 	6	0	49	0 14-96
- /	Dark shale	 	1	0	50	0 15.2%
	Rock	 	0	6	50	6 15-59
	Blue binds	 	2	0	52	6 16-00
WKL Shops	Blue shale	 	1	6	54	0 15.60
	Grev rock	 	<u> </u>	Ó	57	0 1-2-2
Great Oonte	Grev shale	 	1	Ō	58	0 17 56
<del>0<b>1</b> 15. 6 1</del> 0.	Grev rock	 	ī	ŏ	59	0 17.90
لكرميناءيرد	Variegated rock	 	3	6	62	6 18-0-5
( )	Grev rock	 	3	0	65	6
	Dark shale	 	7	0	72	6 22.10
	Bock	 	2	0	74	6 2 2 7
i	Blue clay	 	5	0	79	6
0 54 4	Blue rock	 	$\tilde{2}$	6	82	0
10, row 1	Dark shale with hard beds	 	3	Ō	85	025.71
Fm	Limestone	 	1	6	86	62007
	Limestone with shale body	 	3	õ	89	6 Z7 2%
	Blue shale	 	1	Ō	90	62/
(	Grev sandy shale with water	 	$\overline{2}$	ō	92	6 78.19
	Grev rock	 	$\overline{2}$	Ğ	95	0 78.90
	Dark sandy shale	 	$\overline{2}$	Ğ	97	6 22.72
	Light sandy shale	 	$\overline{2}$	ō	99	6 ×0.33
	Grev rock	 	2	6	102	03109
TuynuLit	Soft rock, water, bulk here	 	6	õ	108	031.91
	Peat	 	ĩ	š	109	3 33.2.7
, Listuarine	Light sand	 	ō	8	109 -	11 33.50
Beas 411, 410.	Dark clay and sand	 	$\tilde{2}$	4	112	334.20
(penetrated)	Rock, 1 inch only into it	 	õ	ī	112	4 34.11
· · ·		 	~	-		

Analysis by Mr. W. W. Fisher in "The Salinity of Water from the Oolites" "The Analyst," February, 1904. See p. 92.

Mr. E. Foster Tanner, Clerk to the Urban District Council, has kindly added the following particulars :—

"The deep well pump has been fixed. Motive power supplied by Crossley's 13-h.p. gas engines in duplicate, either capable of driving the pumping plant, which has the capacity for raising 8,000 gallons per hour. The water is pumped into tanks, constructed of steel, on the top of a tower, immediately adjoining the well. The tanks are in duplicate, *i.e.*, an inner and an outer tank. Their combined holding capacity is about 45,000 gallons. Height from ground to bottom of tanks, 40 feet. There is a 7-inch main from the water tower to the town, and the distribution mains in the town are respectively 6-inch, 5-inch, 4-inch, and 3-inch. The cost of the works was  $\pounds 7,000$ ."

O.D. given as +287 by Dr.T. Smill Eeq. Surveyor & Bicester U.D.C. Sa Letter ~ 9509/28. Bore coved is; pump removed.

Published in

The Motore Creation

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British **Geological Survey** NATURAL ENVIRONMENT RESEARCH COUNCIL

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[SP52SE BJ 5 .]

SPSZSE 5

SP52SE5

C. ISLER & Co., Ltd., ARTESIAN & CONSULTING WELL ENGINEERS, BEAR LANE, SOUTHWARK, S.E.1.

Telegraphic Address: "ISLER, LONDON." Telephone No.: Hop 4460 (3 Lines).

BIRMINGHAM BRANCH: 58 Summer Row.

# CHART

Showing the Soils passed through at

Q

Bicester Waterworks M. Gowell Farm Bicester Grey Sandy Phale (with water) 92 2 0 6 Grey Rock. 6 95 2 Ø Dark Sandy Shale R 97 6 6 Light " 99 6 2 0 Grey Pock. 102 0 6 Soft Mock 6 108 0 0 Peat . **3**` 109 Ξ. Light Sand s 109 11 Dark blay & Land 2 4 112 4 Rock. 2 15'6" of 15" 8 ft below 97 for 11" Lubes level with surface 15 " 101/2" " 97ft below perforated from 77ft below perforations & on 31/2" pitch covered with fine mech brass wire gauge W.L Greeflow 12,000 gpL at P.WL. of 70ft Dug Well Pump. Bored by J. Thom.



alma

SP 5709 2384

BICESTER WATER WORKS.

Well at Gowell Farm. Present supply, 1909.

*Field.*—140,000 to 212,000 gallons per day. Water reduced by 14 days test-pumping to 70 feet from surface, but rose again to surface in two hours after cessation of pumping.

Report on analysis of water received 30th September, 1905, at end of pumping test. By Mr. W. W. Fisher, F.I.C.

Description.—The sample is slightly cloudy and contains a little sand. The residue left on evaporation is alkaline and contains a little sodium carbonate.

Odour .- None.

Appearance in two-foot tube .--- Pale-yallowish.

The results of the analysis as	o sta	ted in s	rains	per gall	08.	······	_
Total dissolved solid mat	ter		•••	۰۰۰ میں ۰۰۰		26.6	
Ammonia free and saling	***	•••		••	***	11	
" slbuminoid			•••	***	•••	028	
Nitrogon in nitrates	***	•••				014	
Oxygen required to oxidi		 Annia m	***	a_135.		0	
Hardness in Clark's degre	10 (A) 10	***	wover.	(10.3.14	ure)	14:5	
Remarks The total disal-	امع ا	:4					

*Remarks.*—The total dissolved solid constituents are normal for water from the Oolite. The chlorides are not in excess of the natural amount; the nitrates are small, and the proportion of organic matter is extremely small. The water is of a moderate degree of hardness.  $\mathbf{E} \mathbf{e}$ 

> . Published in 'The Water Supply of Oxtordshire'. Pages 92,93

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[SP52SE BJ 5 .]

RECORD OF STRATA - BICESTER URBAN

OUNCI

See SP32SE/S

### SP52SE5

<u>Ft.</u>	ins.	
1.	6	Surface Soil
3.	0	Grey Rock.
8	0.	Sandy Marl
3.	0.	Blue Rock
2.	6	Light Shale
2.	0	Limestone.
3.	6	Blue Shale.
7.	0	White Rock.
12.	6	Grey Shale with hard beds.
6.	0	Grey Rock.
1.	Ø	Dark Shale.
	6	Rock
2.	0	Blue Binds.
1.	6	Blue Shale.
3.	0	Grey Rock.
1.	0	Grey Shale.
1.	0	Grey Rock.
3.	6	Variegated Shale.
3.	0	Grey Rock.
7.	0	Dark Shale.
2.	0	Rocko
5.	0	Blue Clay.
2.	6	Blue Rock.
3.	0	Blue Shale with hard ribs.
1.	6	Limestone.
3.	0	Limestone with Shale beds.
1.	0	Blue Shale.
2.	0	Grey Sandy Shale.
2.	6	Grey Rock.
2.	6	Dark Sandy Shale.
2.	0	Light Sandy Shale.
2.	6	Grey Rock.
6. 1.	0 3	Soft Rock. Peat.
2.	8 4	Light Sand. Dark Clay and Sand, Rock



## SP52SE5

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## SP 52 SE/6 [5851 2319] Bicester Station Well (19--) Datum +77.7 (Ground level)

	Depth ft Thi	ickness m	Depth m
Cornbrash Formation	8.50	2.59	2.59
Forest Marble Formation and			
White Limestone Formation: Bladon Member	<i>29.75</i>	6.48	9.07
Ardley Member and Shipton Member	76.00	14.10	23.16
Rutland Formation and			
Taynton Limestone Formation	100.00	7.32	30.48
Sharp's Hill Formation, 'White Sands' and			
Northampton Sand Formation	120.00	6.10	36.58

Stratigraphical classification by M G Sumbler, May 1999.



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ENGINI	LR O	VE AF	UP (	a /	OAFORD TO BINN		UNI INE W	ROUTE	-UAPORD TO BANBURT SI	CHON		UND LEV	EL	108	95		m Q.O.	HOLENO. Y3
FIELD	D BY: (ORK B)	Y: (	20	) [		rHODS an bola	Percus	sion Boi	ing - Pilcon Wayfarer		coo	RDINATE	\$ 4{	54971	E	22	15919 N	SHEET 1 OF 2
LAD. T	ESTING	BY: \	וכ		146 and 100 mm	<u>1 diame</u>	eter Rote	ry Cori	ng (rom 0,4 to 19,4 m		DAT	<b>ES</b> 20	5.6.7	9 to 2	.7.79	a.		FIGURE A
ate/Time	Depih	Dept	N				Streta		Graphical Representation	Samp	ling/In	situ testi	٦ġ	T	L	b. Te	sting	Additional Tests and Notes
at Depih	of Casing	to Wate	a		Description of Strata	Leg.	Reduced Level	Depth		Depths	Å No	. Blows	1/2	<425	₩ P1 % %		Ka/m <sup>3</sup> kN/m	<sup>J</sup> h d l d
6.79 -	-		Ā			-	1 08 . 95	- 0.00			11-		1	1		1	+	-
. 00	NIL.	DRY	14	Υ.	TOPSOL	শিক্ষ	108.75	0.20			S							SPT no penetration.
.00	NIL.	DRY	1:1	Su	negular to subrounded CONBLES and BOULDERS of te micritic limestone with some firm dark roddish	Ky				0,40	121		75					Core diameter 114 mm.
			<b>P</b>	hr	wn silty clay, (Colluvium)	62				0.00			50					
	-			_		500	107.75	1.20	╞╴┿╍┿╻┍┽┑┖┿┥╘┿╡╴╋╏╄╘┥╸╋┥┝╡╴				100					F
0,79		1		М	lensicly strong white highly fractured becoming slightly					1.30	L.		83					
		ľ.		ir:	threat thinky bedded (ne grained fined collife and					1.60	<b>F</b> -		0					Core diameter reduced
_	-				(White Limestone - Bladon)			_	╞┊┊┊╡╪╏┊╎╡╌╎╴╡╴┼╴╪╴╡╴╴╴╴									Detow 1.00m
		1		Fr	m 2,75 to 2,85m weak light orange brown clumeratic calcarecus allistope.		T	-					14					
00	1,50	0,00	- 11	Fr	m 2,85 to 2,50m Hardground/erosion layer with								l .					3.46 77 3.34 77
00	1,50	DRY			ed micritic pendies and wispy tron staining.	Ē			<u> </u>	2.60								
-	-			M	locately weak to purferately strong thinks and medium		106.00	2.90					00					-
				he	ied initially moderately fractured fine grained		1			1			19					
				pe	etolial micritic bioturbated LIMESTONE, (White Limestone - Ardiev)		1						1					
		1		Fr	m 1.10 to 4.00m irregular vertical solution weathered					3.80								
-	-			Fr	n 3,40 to 3,90m limentone very fine grained almost		+	-			Ś.							F
				po Fr	evolutions with this walled gestropole.								95					
.79				n,	to motion grained very pelletoidal with some	<b></b>							34					0.85 75
_	-			*p [le	rry walled shells. ow 6 50m limistone becoming very compact modium	<b>H</b>	1	_		4.80			11					* 1,25 78
				to	blocky bedded and increasingly allicents,	<b>F</b>							95			1		Γ
			14	wi	h edution casts of shells.	<b>H</b>	1						45					
			И	P.	ow 7,80m weak initially weathered orange becoming					5 90								
-	-		1A	С я	R Ries self milly chickletion balanciate,	F	-+	-	╘╋╌╽┙╎╡┥┥╎╞╺┨╽┥┙┥┥┿┥┤┿ <u>┥</u> ┤┲┥	0.00		1						0.20 /5
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		1	R	L	(White Limestone - Shipton)		1 00.65	8,30					95				1.	1 24
6.79		1		M	storately weak to moderately strong grey medium to								40					
+	-		Ы	ы	VENTONE. (White Limestone - Shipton)		+			0.00								L1.32 77 1.47 67 N 7
				F	om 4,55 to 4,65m weak to moderately weak clayby								00					1
00	3,00	0.00							₹ <u>    </u>				01			1		
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FIELD	NORK	: BY:	S	P	52		EXCAVATION ME	THODS	Per	Cussion	Boring - Pile	on Wayfarer		COOR	DINATE	<b>s</b> 45	4971	1	E 225	919	N	SHEE	T 2	0F	2	
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Date/Time	Depi	1h   C	epth"						Stret	•	Graphical F	epresentation	Sam	pling/In e	itu testi	ng	T	L	ab. Te	sting	-+	Addi	ionel 1	Fests an	d Notes	
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2.7.79	1					(White Limestone - Shipto	m AR Rivove)			1			H								- Fi	0.12	77	0.27	69	
					From	to.80 to 11,85m alternating	weak to moderately	⊨ <u>⊢</u>	1	1			Ħ			97			1					•		
	+				Unice	ime.	and fine grained silly		].	L			Ħ			75										
					F.com Auth	11,45 to 11,75m hard dark thin finications interfacia.	grey silly clayey with	╞┰╬		T											F					
					Freen	12.68 to 12,80m hard very	dark greenish grey	H	1				11.30		1							٠				
	L.				and fi	the and luminan and abund	very silly clay with sill ant small syster shells	⊨ <u>⊢</u>					H													
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				h	Hard Vertici	green very silly CLAY and al black carbonized rowtete	clayer SILT with		95.30	13.65						77	1 00	18 2	1 48							
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					Cali ar	THE SANISTONE,	(Hampen Marly Bods)	信書								95										
					wery f	ossillerous CLAY,	(finnyen Mariy Reda)	4								62										
-	-				From clay (r	11,95 to 11,00m bard black Smoot jets.	very carbonacemus		-	-			14.80			1 '					L					
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													15.90		61*/13	0.2					F					
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	_				LIMES	TONE, (Tayaton Stone)	rtmant IOBSIII(FFOUD	E					17.80				1									25
T		1			From '	17.56 to #.50m limestone th and calcarenttic.	inly to medium false	日	1	-					:						F					5.5
								따리													1.	59	77	2.73	62	55
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						Lower seat	TERT W We KEY LI Lin	ler samp disturbed	le Leompir	V Inci S Sian	lu vone test dard genetration to	drive at 2P*	after seating			fiema	uid			J. Tipledy BSC. C.Eng.			g.FICE	,FHHE	ត	3 <u>8</u> - 2
								1 MN/	'm <sup>4</sup>	C Carl	penetration test	whole (241 1)	of setting a	drive enty	RODR	inck que	elity de	12)gn0(	Ion	Director					8 8	
DEPTH AH	depths	, leve	te and	Ihic	knesee	s in motres	Distance bringen v = vertical h -	platinia o	al locating	1 Inali	a density test	blew o	teunt		4	25µm 1	n pasa Ileve	198		Essiem E 59/63 Gel	Joed C Idinate	ionetru m Roa	ction U d, Bedi	nit, ord.	ľ	•
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BORED & COMMUNICATED BY LE GRANDSUTCLIFF & GELL LTD, SOUTAN
BORED FOR ; Archibald Nicholson Esqu. Manor Farm, Bucknell, Nr, Bicester,
DISTRICT : Bicester IN THE COUNTY OF :Offord.
POSITION OF BORING: At Manor Farm just N.E. of Bucknell
MAPSI 6" Ordnance Oxford 17 1" Geo. Old Series45.N.E. O.D.OF SITE : 320'
WATER LEVEL BELOW SURFACE: 26' 0" YIELD OF WATER: 360 gallons per hour.
TUBING REMAINING IN BOREHOLE. 25' 0" of 4" top 1' 0 below surface 5' 5" of 5" top 1' 6" "

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4	STRATA	THICK	INESS	DEPTH	
		Ft.	Ins.	Ft.	Ins.
	Blue Clay	5	9	5	9) 2
	Grey Clay	3	3	9	Of Wychwood Beds.
ſ	Blue Clay	1	ō	10	oj (
h lle	Blue Rock	4	0	14	0)
- p/Yhanna	Grey Rock	4	6	18	BIKenble Beds?
pros pro	Green Clay		6	19	0 Nerroule metro
	Grey Rock	5	Ō	24	0.
a fat a	Coloured Clays & Rock	15	6	39	6
/	Grey Rock	2	6	42	0
	Blue Clay	2	Ō	44	0 ) by le fimettere
	Blue Rock	3	0	47	0
	Green Clay	2	Ō	49	0
	Blue Rock	2	0	51	す
	" Clay	5	0	56	<b>5</b>
	Rock	. 3	0	59	0
	" Clay	5	0	64	O Stampen Marly )
	" Rock	3	0	67	Of Beds
1	" Clay (dark)	4	0	71	
· /	" Rock	ซิ	0	74	<b>3</b>
· · · /	Whitish Clay	1	0	75	OT to She
lir	White Rock	5	0	80	of laymon sime
Julie	Blue Rock	3	0	83	0
J V	Grey Green Clay	6	0	89	OL TING Strain Con
Mip. L	H H Stones	4	0	93	O sucre till Bede
VM V.	Black Sandy Clay	34	9	127	9
1 NY	Black Rock		5	128	Of Swerford Hook
$\gamma$	Blue Rock		3	128	3 Notton Beds ?
	Green Rock	1	3	129	ള്
	Gault Clay	23	6	153	Of Upper dias
	Gault	26	0	179	d The
(	Rock	2	9	181	9]
	Clay & Shale	2	3	184	0
	Bands of Rock & Loamy Shale	4	6	188	6
	Rock, Elay & Pebbles	5	0	193	61 Middle dias
	Loany Clay & Shales	21	6	215	0
	- - -	215	0	215	

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BOREHOLE SECTION

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SP52NE6

March 18th 1925

DISTRICT : Bicester. IN THE COUNTY OF: Oxford.

THICKNESS DEPTH STRATA Ft, Ins. Ft. Ins. C/F215 215 0 0 Loany Clay & Shales, hard Mille Great Servis Lies? Up 6 221 0 bands..... 0 Loamy Clay & Shales.... White Rock Loamy Clay & Shales.... Blue Clay (<u>Gault</u>) 227 0 6 0 and 6 227 6 12 240 0 6 Has 247 0 7 0 Blue Ulay Rock 0 1 0 248 0 251 0 3 251 0 Total depth of boring. 251 0 A.W.W. 1. 11.39. Based on Arkell: Jur. Syr. " OIGS 1931

GENERAL REMARKS

Richardson GeolMay 1910: Probably not a great deal of water at this site W.L. dropped considerably during boring about 190-200 ft.

ORING FINISHED: 26th April 1924.

LE GRAND SUTCLIFF & GELL LTD.,

Signature.....

Our Ref, S.B.4/17. Our Order No. 1150. 23/1/24.

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STRATA	THIC Ft.	RNESS Ins.	DEPTH Ft.	<u>fus.</u>
Blue Clay	5	9	5	9)
Grey Clay	3	3	9	Of Wychwood Ber
	Į.	0	10	0, 0
A Must Blue Rock	4	0	14	02
free Grey Rock	Ä	6	18	6 Kemble Bed
	-	6	19	0
(aloumod Claure & Bools	<u>-</u>	0	24	02
(nor Dool	10	6	39	61
	2	6	42	
Dine Book	2	0	44	O T While Finest
Angen Clay	3	0	47	0
Rine Book	. చ ర్	0	49	2
	<u>8</u> -	0	51	a de la companya de l
i Bock	0. 12	0	00 E0	0
	5	0	59	O Hampen Mart
P Bock	2 2	0	67	O stampentiture
" Clay (dark)	4	0	07 177	Of seas
" Rock	<u>ج</u>	Ô	74	×
Whitish Clay	1	ň	75	
White Rock	5	õ	80	J Taynton Ste
Blue Rock	3	ñ	83	
Levy Shr Grey Green Clay	6	õ	89	ត័
"" " " Stones	4	õ	93	O Upper Esturme
U UN ANS Black Sandy Clay	34	õ	127	a smark will b
Als Black Rock	-	3	128	Ol Swerfort + Ho
Blue Rock		3	128	3/ Noton Bedo
Green Rock	1	3	129	6
Gault Clay	23	6	1.53	a un dias
Gault	26	Õ	179	a) upper and
Rocht	2	9	181	<b>9</b>
Clay & Shale	2	5	184	ol
Bunds of Rock & Loany Shale	4	. 6	188	6
Rock, Clay & Pebbles	5	0	193	6 Middle Jo
Loary Olay & Shales	21	$\epsilon$	215	0
-				
C/F	215	0	815	0

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March 18th 1925

#### BOREHOLE SECTION

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BORED FOR : Achibald Nicholson Esq., Manor Farm, Bucknell Nr,Bicester.

SP52NE 6

DISTRICT : Bicester. IN THE COUNTY OF: Oxford.

	STRATA	THIO Ft,	KNESS Ins.	DEPTH Ft.	Ins.
	0/F	215	0	215	0   Middle
Great Serves Liss? (1)	bands Loamy Clay & Shales White Rock Loamy Clay & Shales Blue Clay (Goult) Rock Gault	6 6 12 7 1 3	0 6 6 0 0	221 227 227 240 247 248 251	o 6 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	Total depth of boring.	251	0	251	0 A.W.W.
GLME. ORT	RAL RELARKS Probably not a great deal of W.L. dropped considerably dur NG FINISHED: 26th April 1924.	water a ing bor	t this ing abo	site ut 190-20	1. 11.39 Based on Arkall: Jur, Si " 0JGS 19: Richardson Geell 19t.
	LE GRAND S	UICLIFF	& GELL	LTD.,	

Signature

Our Ref, S.B.4/17. Our Order No. 1150. 25/1/24.

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BOREHOLDE SECTION SP52NE6
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BURED FOR ; Archibald Nicholson Esqn. NGR SP 5635 2625 Hanor Farn,
Bucknell, Nr, Bicester, SP52 NF/6
DISTRICT : Bicester IN THE COUNTY OF :Ozford.
POSITION OF BORING: At Hanor Farm just N.H. or Bucknell
$\frac{1.\text{APS: 6" Ordnance Oxford 17}}{1" \text{ Geo. Old Series45.N.E. } 0.D.OF SITE : 320'(97.53m)}$
MATER LEVEL BELOW SURFACE: 26' 0" YIELD OF WATER: 360 gallons per hour.
TUBING REMAINING IN BOREHOLE. 25' O" of 4" top 1' 0 below surface 5' 5" of 5" top 1' 6" "

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STRATA	THIC Ft.	KNESS Ins.	DEPTH Ft.	<u>Ins.</u>
FML Blue Clay Grey Clay Blue Clay Blue Clay Hutter Blue Rock Grey Rock Green Clay	5 3 14 4	9 3 0 6 6	5 9 10 14 18 19	0) Wychwrod Bed. 0) 6 Kemble Beds
Coloured Clays & Rock Grey Rock Blue Clay Blue Rock	9 <mark>15</mark> 2 2 8 2	6 6 0 0	24 39 42 44 47 49	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
Rid Blue Rock Clay Rock Ulay Rock Clay Cla	ຊ ໄດ້ 19 <b>5 3 4</b>	0 0 0 0 0	51 56 59 64 67 71	0 Hampen Mark 0 Bedo
Whitish Clay Whitish Clay Shite Rock Blue Rock ShF Grey Green Clay Stopes	3 1 5 -3 6 4		74 75 80 83 89	O Tayuton Star O Upper restrictine C
NS Black Sandy Clay NS Black Rock. Blue Rock. Green Rock. Gault Clay	1 23	0 3 3 6	127 128 128 129 153	0 = Surfarts Hill Ber 0 Sweetford - Hoot 3 Norton Beds 0 Upper/dias
Rock. Clay & Shale. Bands of Rock & Loamy Shale Rock,Elay & Pebbles. Loamy Clay & Shales.	26 2 2 4 5 21	0 9 3 6 0 6	179 181 184 188 193 215	Middle dia.
C/F	215	0	215	0

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## SP52NE6

March 18th 1925

BOREHOLE SECTION

BORED & COLLUNICATED BY LE GRAND BUTCLIPP & GELL, LTD. Achibald Nicholson Esq., Annor Farn, Bucknell Nr,Bicester. BORED FOR :

SPSZME 6

DISTRICT : Bicester. IN THE COUNTY OF: Oxford.

	STRATA	THIC Ft,	KNESS Ins.	DEPTH Ft.	Ins.
Great Borres Lino? Op	C/F Loany Clay & Shales, hard bands Loany Clay & Shales White Rock Loany Clay & Shales Blue Clay (Gault) Rock Gault	215 6 6 12 7 1 3	0 0 6 6 0 0 0	215 221 227 227 240 247 248 251	O (Mikile O Lower O Jias
	Total depth of boring.	251	0	251	0 A.W.W 1. VI.39 Based on
GEME	RAL REMARKS				Arkell : Jur. Sy OJGS 193

Richardson GeolMe Probably not a great deal of water at this site (910 W.L. dropped considerably during boring about 190-200 ft.

ORING FINISHED: 26th April 1924.

LE GRAND SUTCLIFF & GELL LTD.,

Signature.....

Our Ref, S.B.4/17. Our Order No. 1150. 23/1/24.

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## **Geological Assessment - Detailed**



Dr Richard Earl TurfTrax Ground Management Systems Limited Unit 1, Highfield Park Highfield Road Oakley Bedfordshire MK43 7TA

# **Geological Assessment - Detailed**

This report is aimed at customers and clients carrying out preliminary site assessments, who require a detailed assessment of the geology, hydrogeology and any geological hazards around the site.

The report, prepared by BGS geologists, is based on analysis of records and maps held in the National Geoscience Data Centre (NGDC), and includes descriptions of rock types, natural subsidence hazards and mining & quarrying hazard if present. It also contains geological map extracts taken from the BGS Digital Geological Map of Great Britain at the 1:50,000 scale (DiGMapGB-50) and a listing of the key geoscience data sets held in the NGDC for the area around the site. The report also considers radon hazard (in terms of the level of radon protection required in the construction of new dwellings) and the detailed hydrogeology of the site.

Note that for some sites, the latest available records may be quite historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

Client's Reference: NW Bicester





## Geological Assessment - Detailed

## Section 1: Location and extent of report area

Site Address: Site A: NW Bicester

Area centred at: 455853,225060 Radius of site area: 2500 metres

This report is based on the above location details. However, where the client has submitted a site plan, it is used for the assessment in Sections 2, 3 and 4.









## Geological Assessment - Detailed

### Section 2: Geological Factors for the site

This table lists some of the principal geological factors that may affect a site, and is based on interpretation of data available to BGS at the time of compilation; additional information may be available in BGS files. The information is designed to act as a checklist and should not be used in place of a detailed site investigation.

Factor	May be significant within site area (Y/N)?	Comments
Shrink-Swell Clay Hazard	No	
Landslide Hazard	Yes	Mudstone beds in the <b>Bladon Member</b> and <b>Forest Marble</b> <b>Formation</b> may be unstable on steep slopes or in excavations. The <b>Cornbrash</b> may be affected by cambering along valley sides, and valley bulging may affect the <b>Forest Marble</b> mudstones in valley bottoms.
Ground Dissolution Hazard	Yes	The White Limestone Formation, limestone beds in the Forest Marble Formation and the Cornbrash Formation may be prone to dissolution along joints, leading to minor cavity formation.
Compressible Ground Hazard	Yes	Alluvium may include compressible organic-rich layers.
Collapsible Ground Hazard	No	
Running Sand Hazard	Yes	Alluvium may include sandy layers with a low running sand hazard potential.
Shallow mining	No	
Aquifer vulnerability		The alluvium and Cornbrash and Forest Marble Formations beneath the site are classified as Minor Aquifers with high soil leaching potential on the Environment Agency's Groundwater Vulnerability map, Sheet 30, Northern Cotswolds. The underlying White Limestone Formation is a Major Aquifer.
Shallow groundwater		Likely within possibly 0.5 m of the ground surface in the Cornbrash; possible artesian conditions in deep boreholes or excavations.
Artificial ground	Yes	Landfill site.
Natural land gas	No	
Level of Radon Protective Measures	Yes	BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.







### Section 3: Description of the Geology & Hydrogeology for the site

#### Topography and surface drainage (see Section 4):

Site elevation ranges from 75 metres above Ordnance Datum (OD) in the stream valley in the south to 120 m in the north-west of the search area.

The slope and principal drainage direction is to the south-east. The drainage is dendritic in pattern and tributaries run in other directions. Two stream networks traverse the search area.

### Artificial Ground (see Section 4):

There is an extensive worked ground site in the north-west of the search area, which has been partially backfilled as a landfill site. Elsewhere, there are other small pits, worked mainly for limestone, that are often backfilled. Main roads and railways have cuttings and embankments.

### Superficial Deposits (see Section 4):

The streams are flanked by narrow tracts of **alluvium** of late Quaternary age, comprising sandy silty calcareous clay overlying gravelly sandy silty clay, with limestone clasts. The alluvial deposits are up to 150 m wide, are generally between 1 to 2 m in thickness (rarely exceeding 3 m in thickness). They may locally include highly compressible, organic-rich (peaty) layers.

Locally, hollows in these valley sides are floored by thin deposits of **head**, formed by soil creep or hill wash. Their composition reflects that of the local materials from which they were derived, either the bedrock or other types of superficial deposit, or both in combination. Head deposits typically are poorly stratified and poorly sorted, and can be variable in composition. Locally, they are typically composed of variably stony sandy silty clay. Head deposits may be more extensive than shown on the geological map, but if so, probably only as a layer between 0.3 m and 1 m in thickness, and possibly discontinuous.

### Rockhead Depth (see Section 4):

Where covered by alluvium or head, rockhead is at 1 to 3 m depth. Its depth beneath the Artificial Ground (especially under landfill sites) is unknown. Over the remainder of the search area, rockhead is close to the surface.

### Bedrock Geology (see Section 4):

The search area is underlain at rockhead by various formations and members of the Great Oolite Group, of Mid-Jurassic age, which are dominated by limestones with subordinate mudstone beds.

The oldest exposed formation is the **White Limestone Formation**, forming a broad plateau in the north-west of the search area, and where complete, comprises 10 to 18 m thickness of white to yellow, bedded, peloidal and bioclastic limestone (see **Additional Geological Considerations** below). There may be less than 5 m thickness of beds present in the extreme north-west. Thin calcareous mudstone beds are present in the basal part and dark, carbonaceous mudstones predominate over limestone in the upper part, which is distinguished on the map extracts (see Section 5) as the **Bladon Member**, up to 3 m thick.

The White Limestone Formation is overlain with an erosive contact by the **Forest Marble Formation**, to the extent that the Bladon Member is locally absent. The Forest Marble Formation forms a narrow outcrop between the White Limestone and Cornbrash Formations, and also crops out on the flanks of the stream valleys. The Formation is composed of 3 to 5 m of grey calcareous mudstone with lenticular beds of bioclastic, ooidal limestone, particularly common at the base, where they are widely distinguished on the map extracts.