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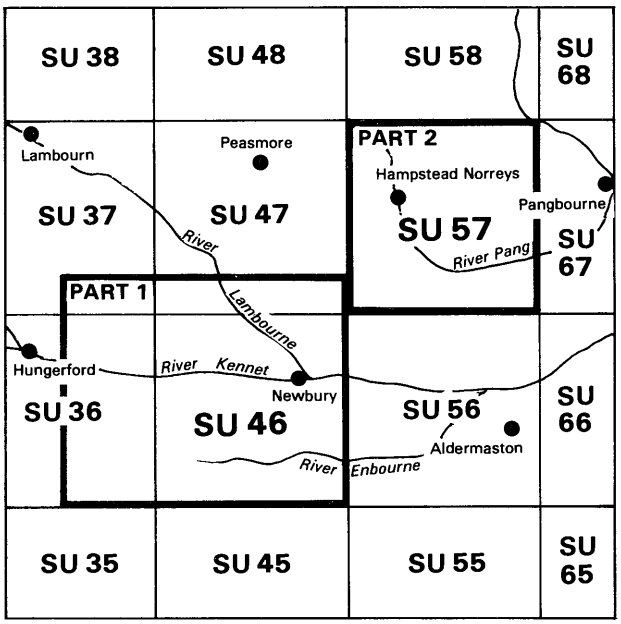

The sand and gravel resources of the country around Newbury, Berkshire

Part 1: Around Newbury
Description of 1:25 000
sheet SU 46 and parts of SU 36, 37 and 47

Part 2: North-east of Newbury
Description of 1:25 000
sheet SU 57

J. R. Gozzard

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The first twelve reports on the assessment of British sand and gravel resources appeared in the Report series of the Institute of Geological Sciences as a subseries. Report 13 and subsequent reports appear as Mineral Assessment Reports of the Institute.

Details of published reports appear at the end of this Report.

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The asterisk on the cover indicates that parts of sheets adjacent to those cited are described in this report.

PREFACE

National resources of many industrial minerals may seem so large that stocktaking appears unnecessary, but the demand for minerals and for land for all purposes is intensifying and it has become increasingly clear in recent years that regional assessments of the resources of these minerals should be undertaken. The publication of information about the quantity and quality of deposits over large areas is intended to provide a comprehensive factual background against which planning decisions can be made.

Sand and gravel, considered together as naturally occurring aggregate, was selected as the bulk mineral demanding the most urgent attention, initially in the south-east of England, where about half the national output is won and very few sources of alternative aggregates are available. Following a short feasibility project, initiated in 1966 by the Ministry of Land and Natural Resources, the Industrial Minerals Assessment Unit (formerly the Mineral Assessment Unit) began systematic surveys in 1968. The work is now being financed by the Department of the Environment and is being undertaken with the cooperation of the Sand and Gravel Association of Great Britain.

This report describes the resources of sand and gravel of 280 km^2 of country around and north-east of Newbury, Berkshire. The survey was conducted and the report written by Mr J. R. Gozzard. The work is based on six-inch scale geological surveys carried out by Messrs F. J. Bennett and J. H. Blake in 1886–98, published in part on new-series one-inch sheets 267 (Hungerford), 268 (Reading) and 283 (Andover).

Mr G. I. Coleman negotiated access to land for drilling. The ready cooperation of landowners and tenants is gratefully acknowledged.

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CONTENTS

The sand and gravel resources of the country around Newbury, Berkshire

Description of 1:25 000 sheet SU 46 and parts of SU 36, 37 and 47, and brief description of sheet SU 57

J. R. GOZZARD

SUMMARY

The geological maps of the Institute of Geological Sciences, pre-existing borehole information and 72 boreholes drilled for the Industrial Minerals Assessment Unit, form the basis of the assessment of sand and gravel resources of the country around and north-east of Newbury.

All deposits in the area which might be potentially workable for sand and gravel have been investigated and a simple statistical method has been used to estimate the volume. The reliability of the volume estimates is given at the symmetrical 95 per cent probability level.

The 1:25 000 map of the country around Newbury is divided into four resource blocks, containing between 4.7 and 18.4 km^2 of sand and gravel. For each block the geology of the deposits is described and the mineral-bearing area, the mean thicknesses of overburden and mineral and the mean gradings are stated. Detailed borehole data are also given. The geology, the position of the boreholes and the outlines of the resource blocks are shown on the accompanying map.

The sand and gravel deposits of the country north-east of Newbury are briefly described in Part 2 of this report. A simplified resource map of this area at a smaller scale is included in the report as a text-figure.

Bibliographical reference
GOZZARD, J. R. 1981. The sand and gravel resources of the country around Newbury, Berkshire: description of 1:25 000 sheet SU 46 and parts of SU 36, 37 and 47, and brief description of sheet SU 57. *Miner. Assess. Rep. Inst. Geol. Sci.*, No. 59.

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INTRODUCTION

The survey is concerned with the estimation of resources, which include deposits that are not currently exploitable but have a foreseeable use, rather than reserves, which can only be assessed in the light of current, locally prevailing, economic considerations. Clearly, both the economic and the social factors used to decide whether a deposit may be workable in the future cannot be predicted; they are likely to change with time. Deposits not currently economically workable may be exploited as demand increases, as higher grade or alternative materials become scarce, or as improved processing techniques are applied to them. The improved knowledge of the main physical properties of the resource and their variability, which this survey seeks to provide, will add significantly to the factual background against which planning policies can be decided (Archer, 1969; Thurrell, 1971; Harris and others, 1974).

The survey provides information at the 'indicated' level 'for which tonnage and grade are computed partly from specific measurements, samples or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to permit the mineral bodies to be outlined completely or the grade established throughout' (Bureau of Mines and Geological Survey, 1948, p. 15).

It follows that the whereabouts of reserves must still be established and their size and quality proved by the customary detailed exploration and evaluation undertaken by the industry. However, the information provided by this survey should assist in the selection of the best targets for such further work. The following arbitrary physical criteria have been adopted:

a The deposit should average at least 1 m in thickness.
b The ratio of overburden to sand and gravel should be no more than 3:1.
c The proportion of fines (particles passing the No. 240 mesh B.S. sieve, about $\frac{1}{16}$ mm) should not exceed 40 per cent.
d The deposit must lie within 25 m of the surface, this being taken as the likely maximum working depth under most circumstances. It follows from the second criterion that boreholes are drilled no deeper than 18 m if no sand and gravel has been proved.

A deposit of sand and gravel which broadly meets these criteria is regarded as 'potentially workable' and is described and assessed as 'mineral' in this report. As the assessment is at the indicated level, parts of such a deposit may not satisfy all the criteria.

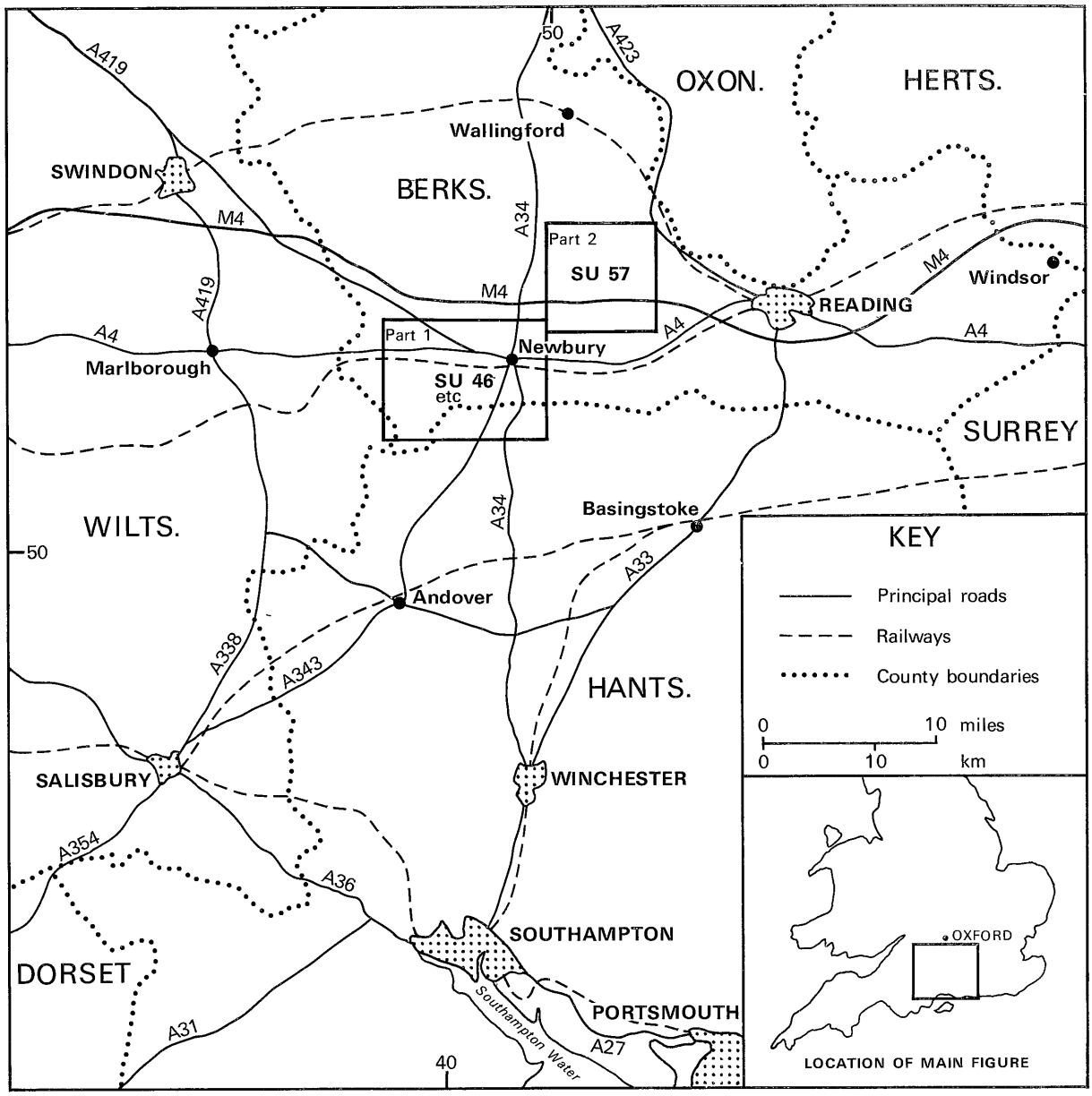


Figure 1 Map showing the location of the resource sheets

For the particular needs of assessing sand and gravel resources, a grain-size classification based on the geometric scale $\frac{1}{16}$ mm, $\frac{1}{4}$ mm, 1 mm, 4 mm, 16 mm has been adopted. The boundaries between fines (that is, the clay and silt fractions) and sand, and between sand and gravel material, are placed at $\frac{1}{16}$ mm and 4 mm respectively (see Appendix C).

The volume and other characteristics are assessed within resource blocks, each of which, ideally, contains approximately 10 km^2 of sand and gravel. No account is taken of any factors, for example, roads, villages and high agricultural or landscape value, which might stand in the way of sand and gravel being exploited, although towns are excluded. The estimated total volume therefore bears no simple relationship to the amount that could be extracted in practice.

It must be emphasised that the assessment applies to the resource block as a whole. Valid conclusions cannot be drawn about the mineral in parts of a block, except in the immediate vicinity of the actual sample points.

PART 1 AROUND NEWBURY

DESCRIPTION OF THE RESOURCE SHEET

GENERAL

The district described (Figure 1) is dominated by the wide, steep-sided valley of the eastward-flowing River Kennet, which is joined by its main tributary, the Lambourn, near Newbury. The misfit rivers follow meandering courses of low gradient; the Kennet, for example, falls from about 95 m (311 ft) in the west to about 70 m (230 ft) east of Newbury, a drop of only 25 m in 15 km. Above the river valley, there are remnants, recognised by their cover of Plateau Gravel, of the original surface on which the rivers were established, lying mainly between 122 m (400 ft) and 164 m (540 ft). The plateau areas are further dissected by numerous minor valleys, many of which are now dry.

Newbury is a commercial, residential and industrial centre, but the remainder of the area is devoted to agriculture and forestry.

GEOLOGY

The geological sequence is summarised in Table 1. The deposits are listed as far as possible in order of increasing age and their relationship is illustrated in the schematic cross-section (Figure 2).

Table 1 List of formations outcropping around Newbury

DRIFT	SOLID
Recent and **Pleistocene**	**Eocene**
Tufa	Upper Bagshot Beds
Alluvium	Middle Bagshot Beds
River Terrace Deposits (undifferentiated)	Lower Bagshot Beds
Clay-with-flints	London Clay
Plateau Gravel	**Palaeocene**
	Reading Beds
	Cretaceous
	Chalk (undivided)
	Upper Greensand

SOLID DEPOSITS

Upper Greensand: Upper Greensand crops out in a small area [350 630] north of Inkpen Hill. It consists of about 50 m of well-stratified, pale to rather dark, greyish green to yellowish brown, calcareous, glauconitic sand and sandstone. Bands of large concretions, or doggers, cemented by calcite, occur frequently. Scattered nodules and continuous layers of compact, greyish chert and cherty sandstone occur in the top 6 or 7 m.

Chalk (undivided)*:* Chalk crops out in the northern and western part of the district and is seen to comprise a highly uniform sequence of sediments with a maximum thickness of about 215 m. Almost the entire succession consists of pure white limestones: it is only occasionally interrupted by muddy layers or marls. Breaks in the sequence represented by 'hard grounds' are associated with secondary features, particularly nodular and tabular flint bands.

Reading Beds: Unconformably overlying the Chalk, the Reading Beds consist of about 18–20 m of variably coloured clays and sands. The sequence (Osborne-White, 1907) commences with up to 4 m of black, dark green, dark grey or brown, sandy clay containing flint pebbles in the basal metre. These are followed by 2 to 4 m of white, buff and green sand overlain by 10 to 12 m of red, blue, green, yellow and brown clay with beds of sand.

London Clay: Overlying the Reading Beds, the London Clay commences with a distinctive 'basement bed', which consists (Osborne-White, 1907, p. 65) of interstratified clays, silts and glauconitic sands containing concretions of clay-ironstone, and pebbles of flint and flaggy limestone. These basal beds are overlain by stiff, bluish grey, brown-weathering clay, which becomes sandy towards the top. The London Clay is about 18 m thick to the south of Newbury and thins northwards and westwards.

Lower Bagshot Beds: The London Clay passes by transition into the conformably overlying Lower Bagshot Beds, which consist of buff, orange-brown, grey, reddish brown and greyish yellow clays interstratified with similarly variegated silts and sands. The sands are commonly current-bedded and micaceous and contain a few thin beds of flint pebbles. The Lower Bagshot Beds are about 25 m thick.

Middle Bagshot Beds: Formerly termed the Bracklesham Beds, this formation outcrops at Burghclere [435 605]. The beds consist of reddish brown and grey clays with some silt and sand.

Upper Bagshot Beds: The Upper Bagshot Beds are confined to a small outlier south of Burghclere [462 600] where they are seen to consist of fine-grained yellow sands marked off by a pebble bed from the strata below.

DRIFT DEPOSITS

Plateau Gravel: The Plateau Gravel forms a number of isolated deposits generally occurring at the summits of flat-topped hills formed of Eocene strata. The deposits belong to two fairly distinct types – one of them a sandy gravel forming even and very gently inclined sheets; the other a clayey gravel forming sheets scarcely less even but always possessing a very pronounced slope.

The sandy gravels are believed to be of fluvial or fluvioglacial origin (Osborne-White, 1907, p. 91). The argillaceous Plateau Gravel found to the south of the Enborne Valley is a complex drift and seems to be as much a product of subaerial as fluviatile deposition (Osborne-White, 1907, p. 92).

Clay-with-flints: Clay-with-flints is typically developed on the plateau areas and the slopes of the chalk downs to the north of the Kennet. It consists of brown or reddish-brown, stiff, slightly sandy clay, containing unworn flints and a small proportion of unbroken flint nodules. It is considered to be a mixture of material derived from the Chalk and the Eocene deposits re-arranged by local snow or ice under the periglacial conditions occurring in this area during the last Ice Age.

River Terrace Deposits (undifferentiated)*:* Considerable spreads of alluvial deposits occur along the valleys of the rivers Kennet, Lambourn and Enborne. They are designated 'undifferentiated' since no attempt has been made in the present study to distinguish the various terrace levels in the Kennet valley or to correlate them with the terrace succession of the Thames valley succession downstream. Thomas (1962) indicated correlations with the terrace succession of the Thames established by previous authors. However, these can only be regarded as very tentative; a local nomenclature avoiding the implication of chronological correlations is thought more suitable.

Alluvium: Occupying the present-day floodplains, the Alluvium consists mainly of brown or grey silty clay, which is sandy in parts and includes peat layers, the whole sequence resting upon and filling shallow depressions in the River Terrace Deposits.

Tufa: Within the floodplain of the River Kennet at Marsh Benham [430 675] Tufa overlies the Alluvium. It is typically white or pale grey, friable and granular and consists very largely of the calcareous secretions of *Chara* (pond-weed) and the shells of present-day species of freshwater and land molluscs.

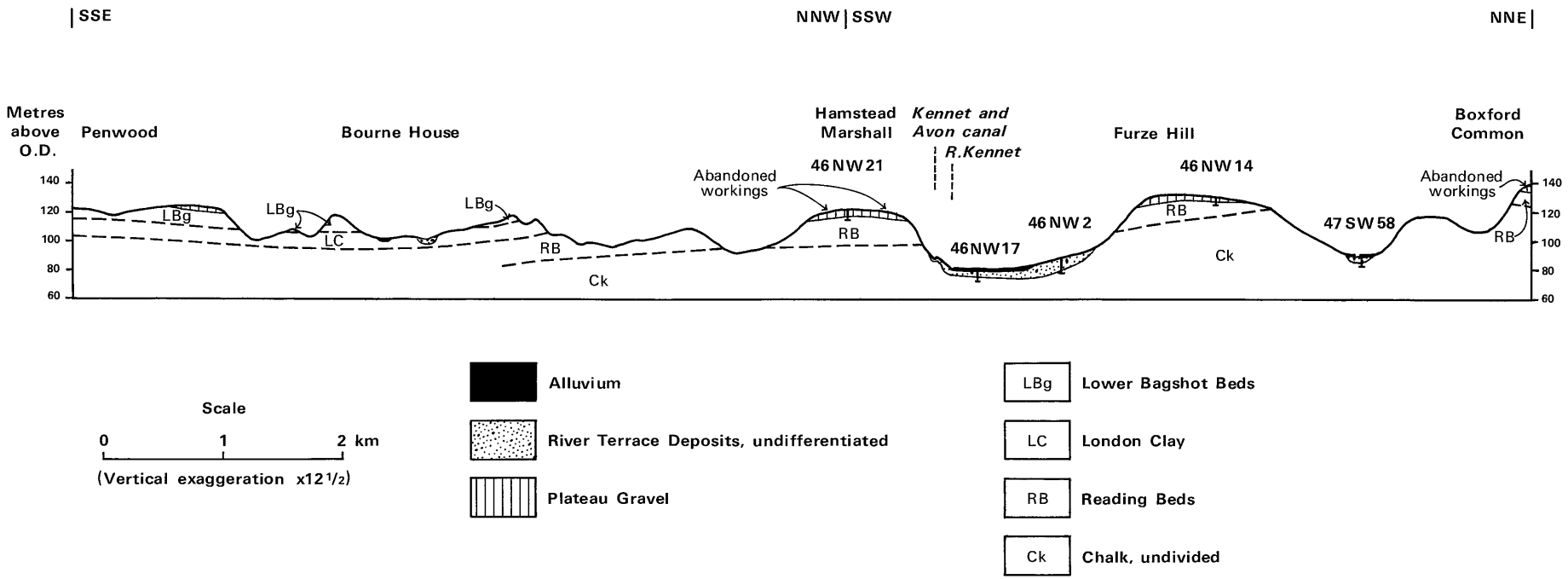


Figure 2 Cross-section illustrating the geology of the district

COMPOSITION OF THE SAND AND GRAVEL

Plateau Gravel: In the three resource blocks (A, C and D) in which it occurs, the Plateau Gravel has mean gradings of fines 14, 11 and 13 per cent, sand 26, 29 and 31 per cent and gravel 60, 60 and 56 per cent respectively. The gravel fraction consists dominantly of angular to rounded flint (usually in excess of 98 per cent), with rounded vein-quartz, sandstone and occasionally small pebbles of chalk (Table 2). The sand fraction is mainly of quartz and flint, the latter commonly being predominant in the coarse part. The fines fraction generally contains more clay than silt and, where the clay content is particularly high locally, the Plateau Gravel has the characteristics of a 'hoggin'.

River Terrace Deposits: The River Terrace Deposits of the Kennet, Lambourn and Enborne lie within blocks A, B and C. The Lambourn deposits (Block A) were proved potentially workable in one borehole and one section only, where they have a mean grading of 11 per cent fines, 25 per cent sand and 64 per cent gravel. Flint dominates the gravel fraction with angular flint being twice as common as rounded flint. Small pebbles of 'sarsen' sandstone and chalk are occasionally found. The sand fraction consists entirely of quartz and flint. The matrix of these gravels is often clayey and occasionally chalky.

The Kennet deposits (Block B) are the most important source of potentially workable material in the district. These deposits exhibit considerable lateral variation (see description of Block B) with gravel accounting for between 52 and 80 per cent of the mineral; their mean grading is 8 per cent fines, 24 per cent sand and 68 per cent gravel. Their composition is similar to that of the Lambourn deposits but chalk is absent and 'sarsen' sandstone more common.

The Enborne deposits (Block C) have a mean grading of 6 per cent fines, 24 per cent sand and 70 per cent gravel and are fairly uniform throughout. As with the other River Terrace Deposits, flint dominates the gravel fraction but angular flint, a small percentage of which has been knapped by primitive Man (Osborne-White, 1907, p. 105), is about five times as common as rounded flint. In other respects the composition of the deposit is similar to that of the Lambourn and Kennet deposits.

PHYSICAL AND MECHANICAL PROPERTIES

Tests, in accordance with British Standard 812:1975, were carried out on samples from 25 boreholes proving mineral within the resource sheet area to determine the specific gravity and water absorption of the mineral-bearing horizons. Samples from individual boreholes were aggregated, thoroughly mixed and then coned and quartered until approximately 7 kg remained. The

Table 2 Analyses of pebble types

Type of deposit and borehole/ exposure number*	Angular flint	Rounded flint	Chalk	'Sarsen' sandstone	Quartz
River Terrace Deposits	wt %	wt %	wt %	wt %	wt %
Kennet					
36 NE 2	93	4	–	3	trace
36 NE 3	80	20	–	–	–
36 NE 8	65	35	–	trace	–
46 NW 18	68	32	–	–	trace
46 NW 20	73	27	–	–	–
46 NE 4	78	22	–	–	–
E 36 NE 1	44	47	–	9	–
E 46 NE 3	40	60	–	trace	trace
Enborne					
46 SW 1	84	16	–	–	–
46 SE 6	82	18	–	–	–
Lambourn					
47 SW 58	81	19	–	–	trace
E 47 SW 1	50	48	trace	1	1
Plateau Gravel					
North of Kennet					
46 NW 14	85	15	–	trace	–
47 SE 31	63	37	–	–	trace
E 46 NW 1	13	87	–	–	trace
North of Enborne					
46 SE 3	65	35	–	–	–
46 SE 12	83	17	–	–	–
E 46 NW 2	42	58	–	–	–
E 46 NW 3	14	85	–	–	1
E 46 NE 1	58	40	–	2	trace
E 46 NE 2	64	32	–	4	trace
South of Enborne					
46 SE 7	73	27	–	–	–
E 46 SE 1	53	46	trace	1	trace

* All fall within 100-km square SU

Table 3 Results of specific gravity and water absorption tests

Type of deposit and borehole number*		Specific gravity			Water absorption
		Apparent	Saturated and surface-dried	Oven-dried	
					%
River Terrace Deposits					
Kennet					
36 NE 1		2.41	2.33	2.27	2.5
2		2.62	2.55	2.51	1.7
3		2.63	2.57	2.53	1.5
6		2.56	2.53	2.50	1.0
7		2.58	2.52	2.48	1.5
8		2.60	2.59	2.58	0.2
46 NW 15		2.60	2.57	2.53	1.0
16		2.53	2.51	2.50	0.5
17		2.56	2.51	2.47	1.5
18		2.53	2.50	2.49	0.7
20		2.56	2.51	2.47	1.5
46 NE 4		2.60	2.57	2.55	0.8
5		2.56	2.53	2.50	1.0
7		2.58	2.54	2.51	1.0
	Mean	2.57 ± 0.03	2.52 ± 0.04	2.49 ± 0.04	1.2 ± 0.4
Enborne					
46 SE 4		2.62	2.47	2.39	3.7
6		2.48	2.41	2.36	2.0
	Mean	2.55	2.44	2.38	2.9
Plateau Gravel					
South of Kennet					
46 NW 21		2.58	2.52	2.48	1.5
46 NE 8		2.60	2.58	2.56	0.5
9		2.54	2.52	2.50	0.7
10		2.56	2.53	2.50	1.0
46 SE 3		2.60	2.52	2.48	2.0
12		2.58	2.53	2.49	1.3
	Mean	2.58 ± 0.03	2.53 ± 0.03	2.50 ± 0.03	1.2 ± 0.5
South of Enborne					
46 SE 7		2.56	2.52	2.49	1.0
9		2.53	2.50	2.47	1.0
11		2.57	2.47	2.40	2.7
	Mean	2.55	2.50	2.4	1.6

* All fall in 100-km square SU

results are given in Table 3; where possible confidence limits have been calculated at the 95 per cent confidence level.

The 10%-fines value was also determined for seven samples which were a mixture of two or three aggregated borehole samples. In this way it was hoped to obtain a result for an area of mineral-bearing ground rather than for a specific location. The results are shown in Figure 3, together with the Drift geology of the district.

THE MAP

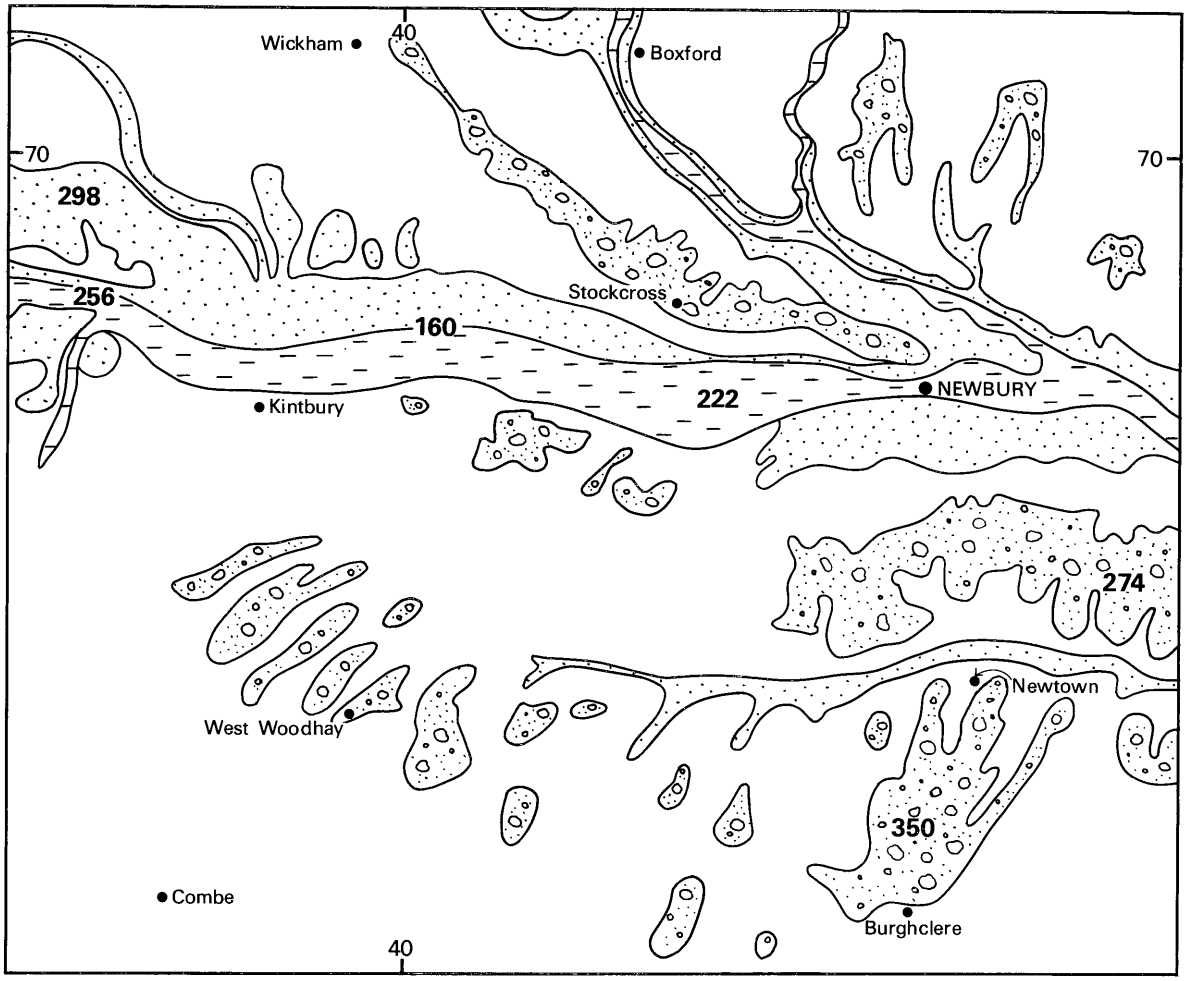
The sand and gravel resource map is folded into the pocket at the end of this report. The base map is the Ordnance Survey 1 : 25 000 Outline Edition in grey, on which the topography is shown by contours in green, the geological data in black and the mineral resource information in red.

Geological data

The geological boundary lines are based on six-inch geological surveys made between 1886 and 1898 and published on the one-inch scale on sheets 267 (Hungerford), 268 (Reading) and 283 (Andover).

Borehole data, which include the stratigraphical relations and mean particle-size distributions of sand and gravel samples collected during the assessment survey, are also shown.

The geological boundaries are the best available interpretation of information available at the time of the survey. However, it is inevitable that local irregularities



Alluvium
River Terrace Deposits
Plateau Gravel
Solid rocks and Clay-with-flints

160 Ten per cent fines value (kN)

Figure 3 Sketch-map of the Drift deposits with 10%-fines values

or discrepancies will be revealed by some boreholes; these are taken into account in the assessment of resources.

Mineral resource information

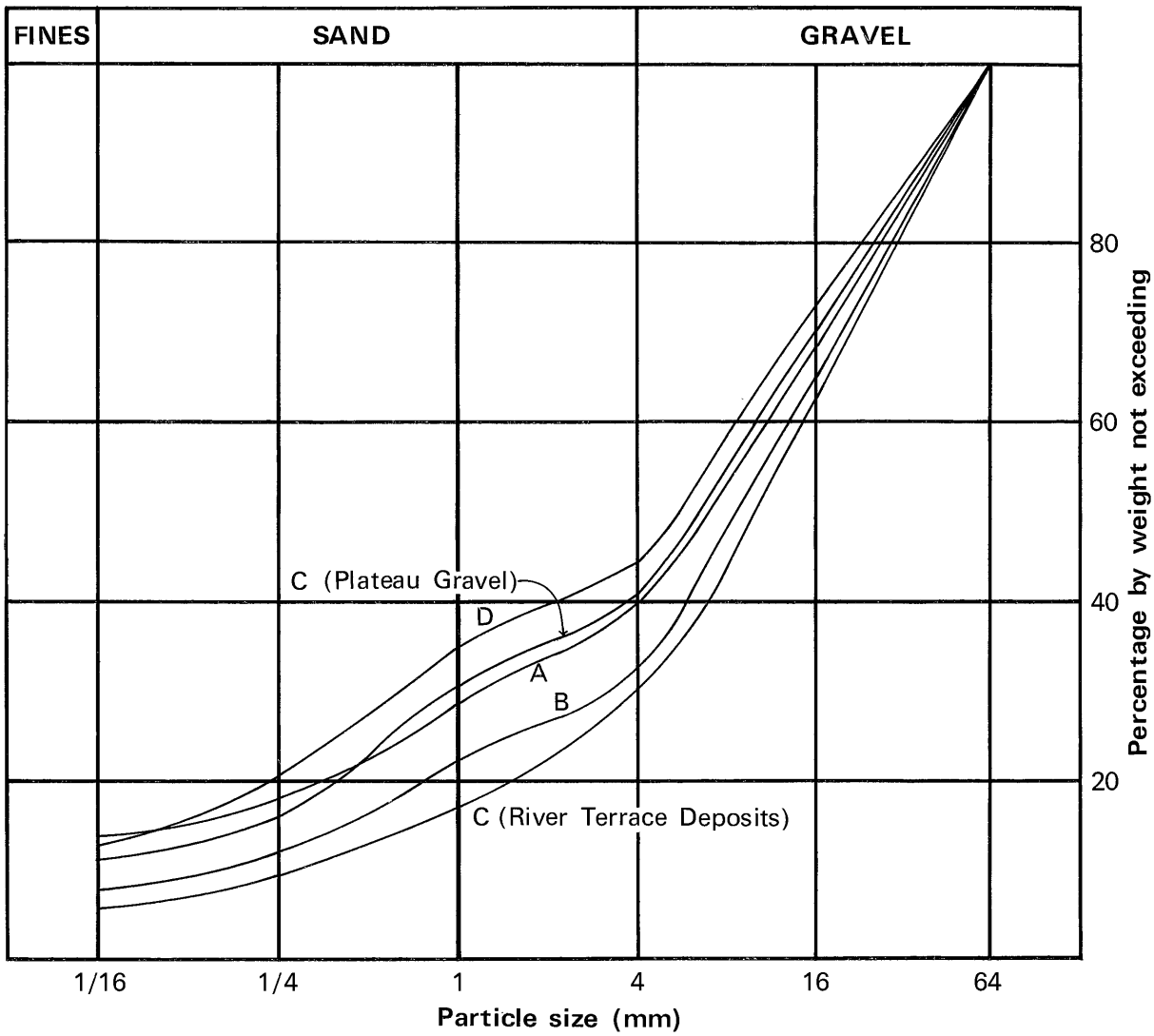
The mineral-bearing ground is subdivided into resource blocks (see Appendix A). Within a resource block the mineral is subdivided into areas where it is 'exposed' and areas where it is present in continuous (or almost continuous) spreads beneath overburden. The mineral is identified as 'exposed' where overburden, commonly consisting only of soil and subsoil, averages less than 1.0 m in thickness.

Areas where bedrock crops out or where evidence indicates the absence of potentially workable sand and gravel are uncoloured on the map. In such areas it has been assumed that the mineral is absent except, possibly, in infrequent and relatively minor patches, which can neither be outlined nor assessed in the context of this survey. Areas of unassessed sand and gravel, for example in built-up areas, are indicated by a red stipple.

For the most part the depicted distribution of the various categories of deposits is based on the mapped geological boundaries. Where there is transition from one category to another, which cannot be related to the geological map and which cannot be delineated accurately, inferred boundaries, shown by a distinctive symbol, have been inserted. The symbol is intended to convey an approximate location within a likely zone of occurrence rather than represent the breadth of the zone, its size being limited only by cartographic considerations. For the purpose of measuring area the centre line of the symbol is used.

RESULTS

The statistical results of the survey are summarised in Tables 2, 3 and 4. Further grading particulars are given in Figures 4 to 8 and Tables 5 to 10. All limits quoted in this report have been calculated at the symmetrical 95 per cent probability level.



Block	Percentages by weight					
	-1/16mm	+1/16mm -1/4mm	+1/4mm -1mm	+1mm -4mm	+4mm -16mm	+16mm
A	14	4	11	11	28	32
B	8	4	10	10	32	36
C (River Terrace Deposits)	6	3	8	13	33	37
C (Plateau Gravel)	11	5	14	10	31	29
D	13	7	15	9	29	27

Figure 4 Mean particle-size distribution for the assessed thickness of sand and gravel in resource blocks A to D

Table 4 The sand and gravel resources of the country around Newbury: summary of statistical results

Block	Area		Mean thickness		Volume of sand and gravel			Mean grading percentage		
	Block	Mineral	Over-burden	Mineral		Limits at the 95% confidence level		Fines $-\frac{1}{16}$ mm	Sand $+\frac{1}{16}$ -4 mm	Gravel +4 mm
	km^2	km^2	m	m	$m^3 \times 10^6$	±%	$\pm m^3 \times 10^6$			
A	50.5	7.5	0.4	3.6	27	44	12	14	26	60
B	19.8	18.4	0.6	4.6	85	12	10	8	24	68
C (River Terrace Deposits)		2.0	0.8	2.4	5	Speculative		6	24	70
C (Plateau Gravel)		6.1	0.6	2.7	16	19	3	11	29	60
C (Total)	26.1	8.1	0.6	2.6	21	22	5	9	27	64
A to C	86.4	34.0	0.6	3.9	133	37	49	10	25	65
D (inferred assessment)	74.4	4.7	1.0	1.8	8	Speculative		13	31	56

Accuracy of results

For the four resource blocks the accuracy of the results at the 95 per cent probability level varies between 12 per cent and 44 per cent (that is, it is probable that nineteen times out of twenty the true volumes present lie within these limits). However, the true values are more likely to be nearer the figures estimated than the limits. Moreover, it is probable that in each block approximately the same percentage limits would apply for the estimate of volume of a very much smaller parcel of ground (say, 1 km^2) containing similar sand and gravel deposits if the results from the same number of sample points (as provided by, say, ten boreholes) were used in the calculation. Thus, if closer limits are needed for the quotation of reserves of part of a block it can be expected that data from more than ten sample points will be required, even if the area is quite small.

However, it must be emphasised that the quoted volume of sand and gravel has no simple relationship with the amount that could be extracted in practice, as no allowance has been made in the calculations for any restraints (such as existing buildings and roads) on the use of the land for mineral working.

NOTES ON THE RESOURCE BLOCKS

Block A encompasses the Plateau Gravel north of the River Kennet and the River Terrace Deposits of the River Lambourn. Block B is defined mainly by the extent of the River Terrace Deposits of the River Kennet. Block C includes the Plateau Gravel deposits between the rivers Kennet and Enborne and the River Terrace Deposits of the River Enborne. The remainder of the assessed area, Block D, contains deposits of Plateau Gravel.

Block A (Table 5, Figure 5)

The main mineral horizon in this block consists of Plateau Gravel in four separate areas. Around Stockcross the Plateau Gravel comprises 'clayey' gravel and is of limited extent because borehole information to the

Table 5 Block A: data from IMAU boreholes and from sections

Borehole/ section	Recorded thickness			Mean grading percentage					
	Mineral m	Over-burden m	Waste partings m	Fines $-\frac{1}{16}$ mm	Fine sand $+\frac{1}{16}-\frac{1}{4}$ mm	Medium sand $+\frac{1}{4}-1$ mm	Coarse sand $+1-4$ mm	Fine gravel $+4-16$ mm	Coarse gravel +16 mm
46 NW 13	absent								
46 NW 14	3.9	0.6	–	15	6	16	11	29	23
46 NE 2	absent								
46 NE 3	absent								
47 SW 54	absent								
47 SW 55	absent								
47 SW 56	absent								
47 SW 57	absent								
47 SW 58	3.6	1.8	–	4	2	6	11	35	42
47 SE 31	2.4	–	–	18	3	9	17	28	25
E 46 NW 1	1.1	0.4	–	11	2	9	6	18	54
E 47 SW 1	2.4	–	–	23	8	15	10	21	23

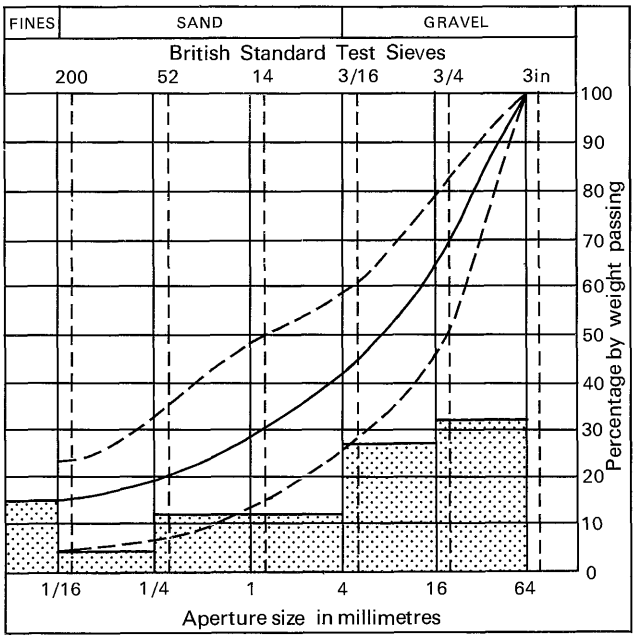


Figure 5 Grading characteristics of the mineral in Block A. The continuous line represents the weighted mean grading of the block; the broken lines indicate the envelope within which the mean grading curves for individual boreholes fall. The percentage of mineral in each size grade is indicated by the shaded bars.

north-west and south-west proved non-mineral. The three isolated deposits north of Newbury have the same classification as that of Stockcross. The mean thickness of 2 m for the Plateau Gravel of this block is calculated from information from four boreholes, one section and two hand auger holes. The mean grading of the deposit is 15 per cent fines, 26 per cent sand and 59 per cent gravel. The exposed River Terrace Deposits of the Welford area have a mean thickness of 2.8 m. Grading information is limited to one site, E 47 SW 1, where the mean grading was 23 per cent fines, 33 per cent sand and 44 per cent gravel. Borehole 47 SW 55 proved non-mineral despite its nearness to a worked-out gravel pit. Grading information for the sub-Alluvium River Terrace Deposits of the River Lambourn is also limited to one borehole, 47 SW 58, where it is 4 per cent fines, 19 per cent sand and 77 per cent gravel; other IMAU boreholes proved non-mineral. The mean thickness for this deposit of 6.4 m is, however, calculated from more than one site, as is the mean thickness of overburden of 1.0 m.

For the block as a whole the mean grading is 14 per cent fines, 26 per cent sand and 60 per cent gravel. The estimated volume of mineral is 27 ± 12 million m^3.

Block B (Table 6, Figure 6)

The mineral within this block consists entirely of River Terrace Deposits and their sub-Alluvium equivalents. The mean thickness of the mineral is 4.6 m, calculated from 27 data points; the thicknesses proved range from 1.0 m at 36 NE 1 to 7.8 m at 46 NE 4. Although boreholes 36 NE 4 and 46 NE 6 proved non-mineral, no attempt has been made, because of the limited extent of information, to identify an area of non-mineral around each borehole. The mineral shows little vertical variation of grade and only limited lateral variation with gravel percentages ranging from 52 to 80 per cent. The mean grading of the block is 8 per cent fines, 24 per cent sand and 68 per cent gravel.

Overburden consists of alluvial clays, silts and peats along the valley floodplain; elsewhere it is limited to thin sandy soil. Proved thicknesses range from nil to 2.6 m with a mean of 0.6 m.

Only one borehole, 36 NE 7, proved a waste parting within the mineral, of 0.2 m thickness; the waste proved in 36 NE 1 lies below the base of the mineral.

The estimated volume of mineral present in the block is 85 ± 10 million m^3.

Results of specific gravity and water absorption tests are given in Table 3 under the heading 'Kennet River Terrace Deposits'. The narrow confidence limits show the mineral deposits to be highly uniform, a function no doubt of the high (>98 per cent) flint content of the gravels. 10%-fines values (Figure 3) range from 160 kN to 298 kN.

Table 6 Block B: data from IMAU boreholes and from sections

Borehole/ section	Recorded thickness			Mean grading percentage					
	Mineral m	Overburden m	Waste partings m	Fines $-\frac{1}{16}$ mm	Fine sand $+\frac{1}{16}-\frac{1}{4}$ mm	Medium sand $+\frac{1}{4}-1$ mm	Coarse sand +1 – 4 mm	Fine gravel +4 – 16 mm	Coarse gravel +16 mm
36 NE 1	1.0	0.3	0.3	15	4	8	11	34	28
36 NE 2	4.4	0.6	–	11	3	6	10	37	33
36 NE 3	4.8	1.0	–	14	6	14	14	30	22
36 NE 4	absent								
36 NE 7	5.1	0.3	0.2	8	8	18	11	28	31
36 NE 8	5.8	0.2	–	4	1	8	14	34	39
46 NW 15	4.4	0.2	–	4	2	7	8	34	45
46 NW 16	4.2	2.3	–	19	3	10	11	29	28
46 NW 17	4.4	–	–	2	2	11	9	35	41
46 NW 18	2.7	0.3	–	12	4	11	9	33	32
46 NW 20	2.6	2.6	–	3	3	8	9	29	48
46 NE 4	7.8	–	–	7	6	16	8	38	25
46 NE 5	5.3	1.2	–	5	6	12	11	36	30
46 NE 6	absent								
46 NE 7	4.6	0.9	–	7	4	10	14	34	31
E 36 NE 1	6.5	–	–	11	3	6	8	27	45
E 46 NE 3	2.0	0.5	–	3	2	8	7	20	60

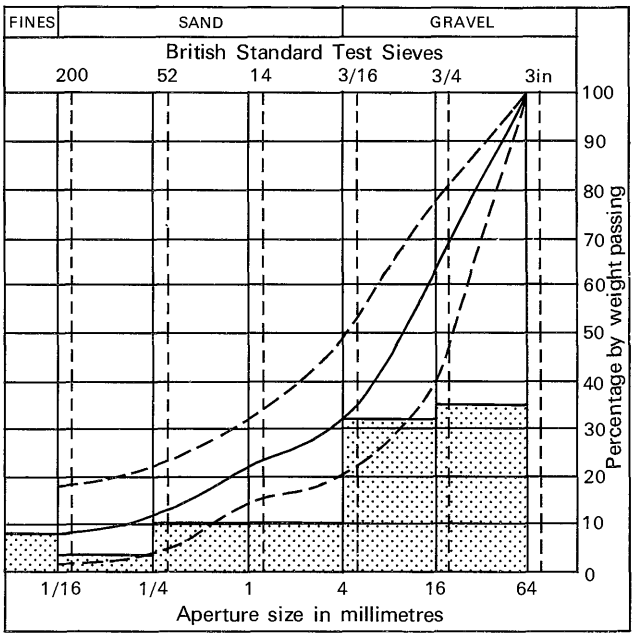


Figure 6 Grading characteristics of the mineral in Block B (for explanation see Figure 5)

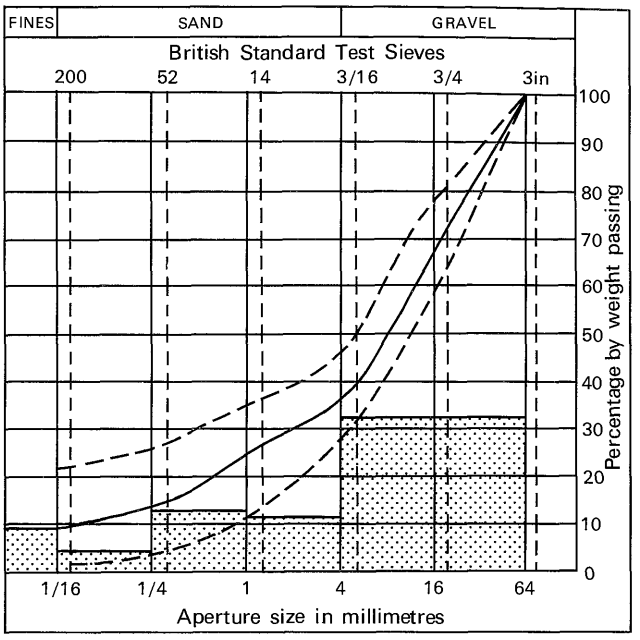


Figure 7 Grading characteristics of the mineral in Block C (for explanation see Figure 5)

Block C (Table 7, Figure 7)
This block encompasses the Plateau Gravel of the area between the Kennet and Enborne and the River Terrace Deposits of the River Enborne. The Plateau Gravel is the more extensive and has a mean thickness of 2.7 m, ranging from over 1.1 m at E 46 NW 3 to 3.6 m at E 46 NW 2 and 46 SE 3. The deposit is fairly uniform in grade throughout and has a mean grading of 11 per cent fines, 29 per cent sand and 60 per cent gravel. Overburden is everywhere limited to a thin sandy soil of 0.6 m mean thickness. The estimated volume of Plateau Gravel mineral is 16 ± 3 million m^3.

The IMAU boreholes in the River Terrace Deposits of the River Enborne prove mineral thicknesses ranging from 1.0 m at 46 SW 1 to 4.9 m at 46 SE 6; the mean thickness is 2.4 m. The inferred volume of mineral is 5 million m^3. The overburden varies in thickness from 0.3 m to 0.9 m; its mean thickness is 0.8 m.

Borehole 46 SE 6 was exceptional in proving a waste parting 0.3 m thick within the mineral. Waste proved in two other boreholes occurred below the base of the mineral. For the block as a whole the mean thickness of mineral is 2.6 m, and the mean grading 9 per cent fines, 27 per cent sand and 64 per cent gravel; the estimated volume of mineral present in the block is 21 ± 5 million m^3.

The specific gravity and water absorption data for the River Terrace Deposits of the River Enborne and the Plateau Gravel deposits of the area between the rivers Kennet and Enborne are given in Table 3. The results again show the consistency of the deposits and also the similarities between the Plateau Gravel and River Terrace Deposits.

10%-fines values for the Plateau Gravel range from 274 kN to 805 kN (Figure 3).

Table 7 Block C: data from IMAU boreholes and from sections

Borehole/ section	Recorded thickness			Mean grading percentage					
	Mineral m	Overburden m	Waste partings m	Fines $-\frac{1}{16}$ mm	Fine sand $+\frac{1}{16}-\frac{1}{4}$ mm	Medium sand $+\frac{1}{4}-1$ mm	Coarse sand $+1-4$ mm	Fine gravel $+4-16$ mm	Coarse gravel $+16$ mm
46 NW 21	3.4	0.3	–	8	3	9	15	34	31
46 NW 22	2.0	–	–	22	4	8	11	31	24
46 NE 8	3.1	0.5	–	9	4	16	10	28	33
46 NE 9	2.3	2.0	–	10	6	15	14	32	23
46 NE 10	2.9	1.1	–	16	7	13	8	30	26
46 SW 1	1.0	0.3	–	16	4	8	10	26	36
46 SE 3	3.6	1.7	–	11	6	16	8	34	25
46 SE 4	2.1	0.9	–	6	4	9	9	39	31
46 SE 5	1.6	0.3	–	17	4	6	10	25	38
46 SE 6	4.9	1.6	0.3	1	2	8	17	34	37
46 SE 12	2.0	–	–	15	4	11	11	36	23
E 46 NW 2	3.6	0.4	–	11	5	15	7	33	29
E 46 NW 3	1.1	0.3	–	11	6	8	7	29	39
E 46 NE 1	2.7	0.3	–	7	3	17	8	24	41
E 46 NE 2	3.0	–	–	11	4	15	8	25	37

Table 8 Block D: data from IMAU boreholes and from a section

Borehole/ section	Recorded thickness			Mean grading percentage					
	Mineral m	Overburden m	Waste partings m	Fines $-\frac{1}{16}$ mm	Fine sand $+\frac{1}{16}-\frac{1}{4}$ mm	Medium sand $+\frac{1}{4}-1$ mm	Coarse sand +1 – 4 mm	Fine gravel +4 – 16 mm	Coarse gravel +16 mm
36 NE 5	absent								
36 NE 6	absent								
36 SE 1	absent								
36 SE 2	absent								
36 SE 3	absent								
36 SE 4	absent								
46 SW 2	absent								
46 SW 3	absent								
46 SE 7	3.4	0.1	–	12	7	16	10	30	25
46 SE 8	absent								
46 SE 9	1.8	0.3	–	10	2	18	11	32	27
46 SE 10	absent								
46 SE 11	1.2	3.4	–	16	11	12	6	26	29
E 46 SE 1	0.6	0.3	–	25	16	9	6	18	26

Block D (Table 8, Figure 8)
This block has an area of 74.4 km^2 and contains a large area of solid rock outcrop and a number of small isolated deposits, mainly of Plateau Gravel, although River Terrace Deposits associated with the River Enborne are present. Thirteen boreholes were drilled but only three proved mineral. One section and a number of hand auger holes bring the total number of data points up to twenty. Only three of the numerous deposits of Plateau Gravel proved to be potentially workable and because of the limited information available only an inferred assessment has been made. The three deposits have an area of 4.7 km^2 and a mean grading of 13 per cent fines, 31 per cent sand and 56 per cent gravel. The average thickness of mineral is 1.8 m and the inferred assessment (Appendix B) suggests a mineral volume of about 8 million m^3. As only three of the deposits south of the River Enborne proved to be potentially workable, results of specific gravity and water absorption are given for only three data points. They are tabulated in Table 3

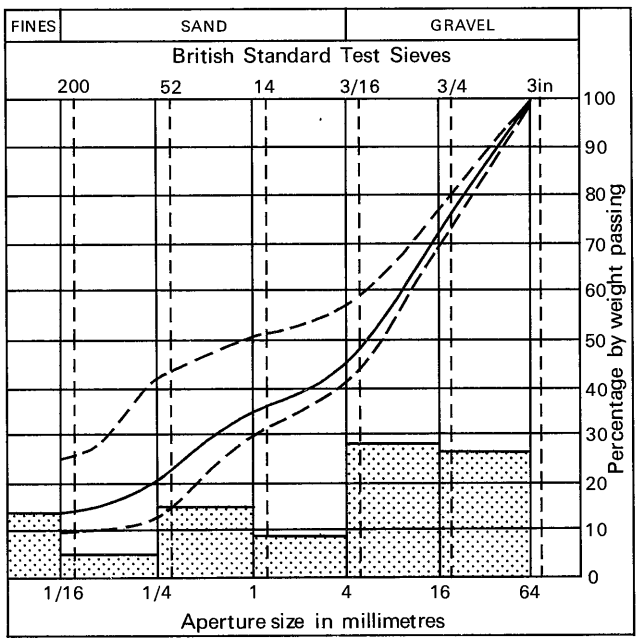


Figure 8 Grading characteristics of the mineral in Block D (for explanation see Figure 5)

and broadly agree with results from the other deposits of the district.

The 10%-fines value for the Plateau Gravel is 350 kN (Figure 3).

SAND IN THE READING BEDS
The beds of sand in the lower subdivision of the Reading Beds fall within the definition of mineral, but they have not been included in the above assessments because a comprehensive investigation would have necessitated an unjustified amount of drilling. However, where sands were found to underlie gravel-bearing deposits closely, drilling was continued in order to investigate their grading characteristics, as they have been used as moulding sands and for making mortars.

Three boreholes and one section proved the sands in the Reading Beds but the data are incomplete because drilling was normally stopped before the base of the Reading Beds was reached. The data are given in Table 9.

Grading analyses of the four samples of Reading Beds sands give a mean grading of 24 per cent fines, 31 per cent fine sand, 41 per cent medium sand, 1 per cent coarse sand and 3 per cent gravel. Thus most of the deposit is a ('clayey') fine to medium sand. The small gravel percentage may be due to contamination from the overlying gravel deposits during drilling operations. The fines fraction is predominantly of silt, with clay occurring in small amounts only.

SAND IN THE LOWER BAGSHOT BEDS
Drilling was also continued in boreholes which proved sands in the Lower Bagshot Beds to underlie gravel-bearing deposits, in order to investigate their grading characteristics. Five boreholes proved sands in the Lower Bagshot Beds up to 15.1 m in thickness (46 SW 2). The data are given in Table 10.

Grading analyses were obtained for 25 samples of Lower Bagshot Beds sand and the results are given separately in the borehole records (Appendix F). The mean grading of the 25 samples is 38 per cent fines, 55 per cent fine sand and 7 per cent medium sand. The deposit is therefore mostly a 'very clayey' fine sand. The fines fraction is almost entirely silt with clay occurring occasionally.

Table 9 The thicknesses and mean grading percentages of Reading Beds sands proved in IMAU boreholes and in a section

Borehole/ section	Recorded thickness	Mean grading percentage					
		Fines	Fine sand	Medium sand	Coarse sand	Fine gravel	Coarse gravel
	m	$-\frac{1}{16}$ mm	$+\frac{1}{16}-\frac{1}{4}$ mm	$+\frac{1}{4}-1$ mm	+1 – 4 mm	+4 – 16 mm	+16 mm
46 NE 4	0.8	16	3	76	2	3	–
46 NE 6	1.1	52	31	12	1	2	4
47 SE 31	1.0	15	40	45	–	–	–
E 46 NW 2	0.9	11	49	39	1	–	–

Table 10 The thicknesses and mean grading percentages of Lower Bagshot Beds sands proved in IMAU boreholes

Borehole	Recorded thickness	Mean grading percentage					
		Fines	Fine sand	Medium sand	Coarse sand	Fine gravel	Coarse gravel
	m	$-\frac{1}{16}$ mm	$+\frac{1}{16}-\frac{1}{4}$ mm	$+\frac{1}{4}-1$ mm	+1 – 4 mm	+4 – 16 mm	+16 mm
36 SE 1	2.0	70	29	1	–	–	–
36 SE 4	0.6	44	52	3	1	–	–
46 SW 2	15.1	33	64	3	–	–	–
46 SE 11	4.7	50	45	5	–	–	–
46 SE 12	2.0	13	33	53	1	1	–

PART 2: NORTH-EAST OF NEWBURY (Sheet SU 57)

GENERAL

The district described (Figure 1) lies to the north-east of Newbury and lies largely within the drainage basin of the River Pang, although the River Thames enters the district in the extreme north-east. The rolling topography and numerous dry valleys with villages nestling in their folds are typical of the chalk downlands of this area. The main lines of communication follow the valleys with the exception of the M4 motorway, which crosses the area from west to east.

GEOLOGY AND RESOURCES

SOLID DEPOSITS

Chalk (undivided)*:* Chalk is the bedrock of over half the district described and crops out mainly in the northern part of the district. It is a pure white limestone sequence broken only by occasional muddy layers and bands of nodular and tabular flint.

Reading Beds: Lying unconformably on the Chalk, the Reading Beds consist of variegated clays overlying equally variegated basal sands. The basal sands are an important resource but at present are being worked only near Hermitage, where a working face over 24 m high is seen.

London Clay: Overlying the Reading Beds, the London Clay commences with a distinctive 'basement bed' representing a discontinuity. These clays, silts and sands are overlain by stiff bluish grey, brown-weathering clay, which becomes sandy towards the top.

Lower Bagshot Beds: These beds cap the high ground in the south around Cold Ash and to the south of Stanford Dingley. They consist of buff, orange-brown and grey and yellow clays, interstratified with similarly variegated silts and sands.

DRIFT DEPOSITS

Plateau Gravel: The Plateau Gravel occurs as a number of isolated deposits generally occurring at the summits of flat-topped hills formed of Eocene strata. Eight boreholes were sited on these deposits; they proved between 1.1 m (SW 29) and 5.4 m (SE 75) of mineral beneath up to 2.0 m (NE 30) of overburden. For assessment purposes the combined area of these deposits has been used.

Clay-with-flints: This is typically developed on the plateau areas of the Chalk downs, where it consists of brown or reddish brown, slightly sandy clay containing unworn flints and a smaller proportion of angular flints. It may be the result of a mixing of Chalk and Eocene derivatives rearranged by local snow or ice during periglacial conditions or a terra-rossa (remanié deposit) derived by solution of the underlying Chalk.

Valley Gravel: The continuous spreads of alluvial deposits that occur along the valley of the River Pang form the most important source of potentially workable sand and gravel in the area. Fourteen boreholes were drilled along this valley to determine their characteristics. Thicknesses of sand and gravel proved range from 0.7 m (NW 19) to 4.4 m (SE 70 and SE 72) with a mean of 2.7 m. Overburden is mainly of thin sandy soil, although borehole SW 27 proved 0.9 m of made ground. Compositionally the gravels are indistinguishable from the River Terrace Deposits of the Kennet Valley described in Part 1 of this report.

Alluvium: Alluvium is confined to the Pang Valley in the areas around Hampstead Norris, Stanford Dingley

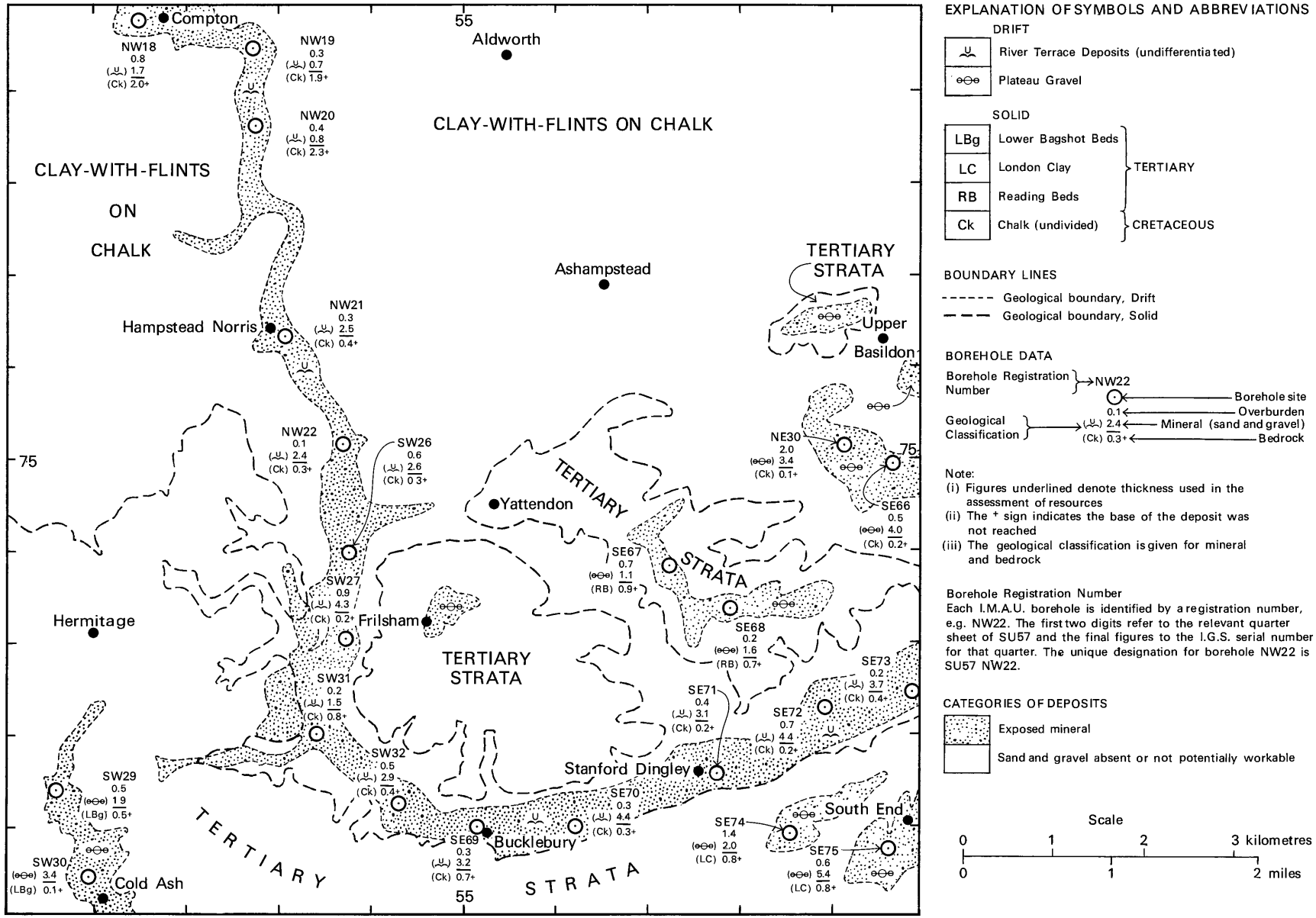


Figure 9 The sand and gravel resources of the country north-east of Newbury, Berkshire (sheet SU 57)

Table 11 List of formations outcropping north-east of Newbury

DRIFT	SOLID
Recent and **Pleistocene**	**Eocene**
Alluvium*	Lower Bagshot Beds*
Valley Gravel	London Clay*
Clay-with-flints	
Plateau Gravel	**Palaeocene**
	Reading Beds*
	Cretaceous
	Chalk (undivided)

* not differentiated on Figure 9

Table 12 The sand and gravel resources of the country north-east of Newbury: summary of statistical results

Deposit	Number of boreholes	Area of mineral km^2	Mean thickness		Volume of sand and gravel			Mean grading percentage		
			Over-burden m	Mineral m	$m^3 \times 10^6$	Limits at the 95% confidence level ± %	$\pm m^3 \times 10^6$	Fines $-\frac{1}{16}$ mm	Sand $+\frac{1}{16}$ -4 mm	Gravel +4 mm
Valley Gravel	14	8.2	0.4	2.7	22	28	6	8	28	64
Plateau Gravel	8	3.6	0.7	2.8	10	44	4	12	35	53
Total	22	11.8	0.6	2.7	32	20	6	9	31	60

Table 13 Data from IMAU boreholes: Sheet SU 57

Borehole	Recorded thickness		Mean grading percentage					
	Mineral m	Over-burden m	Fines $-\frac{1}{16}$ mm	Fine sand $+\frac{1}{16}-\frac{1}{4}$ mm	Medium sand $+\frac{1}{4}-1$ mm	Coarse sand $+1-4$ mm	Fine gravel $+4-16$ mm	Coarse gravel +16 mm
VALLEY GRAVEL								
57 NW 18	1.7	0.8	17	5	12	14	28	24
57 NW 19	absent							
57 NW 20	absent							
57 NW 21	2.5	0.3	6	3	9	11	30	41
57 NW 22	2.4	0.1	7	4	10	9	28	42
57 SW 26	2.6	0.6	7	–	9	13	28	43
57 SW 27	4.3	0.9	7	6	19	9	36	33
57 SW 31	1.5	0.2	12	7	11	8	27	35
57 SW 32	2.9	0.5	4	2	8	11	30	45
57 SE 69	3.2	0.3	9	3	14	13	29	32
57 SE 70	4.4	0.3	8	3	14	8	29	38
57 SE 71	3.1	0.4	4	4	26	10	28	28
57 SE 72	4.4	0.7	10	5	14	10	26	35
57 SE 73	3.7	0.2	8	4	13	8	33	34
Mean	2.7	0.4	8	4	14	10	29	35
PLATEAU GRAVEL								
57 NE 30	3.4	2.0	14	15	21	6	20	24
57 SW 29	1.9	0.5	14	5	10	12	34	25
57 SW 30	3.4	–	13	4	10	12	31	30
57 SE 66	4.0	0.5	14	3	13	15	31	24
57 SE 67	1.1	0.7	9	6	19	9	35	22
57 SE 68	1.6	0.2	18	6	10	5	28	33
57 SE 74	2.0	1.4	7	7	46	10	22	8
57 SE 75	5.4	0.6	9	6	17	14	41	13
Mean	2.8	0.7	12	7	17	11	31	22

and Bradfield, where thin (less than 0.3 m) clays and silts with peat were proved.

THE RESOURCE DIAGRAM (Figure 9)

The geological boundary lines shown in Figure 9 are based upon the 1:63 360-scale Geological Sheets 267 (Hungerford) and 268 (Reading), which are derived from 1:10 560-scale surveys by F. S. Bennett and S. H. Blake in 1893–1894. Geological and mineral resource information is displayed in the same way as on the adjacent Newbury 1:25 000 resource sheet described in Part 1 of this report, except that, to maintain clarity, the grading diagrams and certain geological boundaries (see Table 11) have been omitted, whilst the mineral-bearing areas are indicated by a stipple pattern rather than by shades of red.

MINERAL RESOURCE INFORMATION AND GRADING DATA

The resources of sand and gravel in the Plateau Gravel, which has been dissected into a number of widely scattered deposits amounting to 3.6 km^2 in all, have been assessed separately from those of the Valley Gravel, which forms continuous spreads amounting to 8.2 km^2. Assessments of the resources are given in Table 12. Grading data for individual boreholes are tabulated in Table 13. *For results see p. 7.*

APPENDIX A

FIELD AND LABORATORY PROCEDURES

Trial and error during initial studies of the complex and variable glacial deposits of East Anglia and Essex showed that an absolute minimum of five sample points evenly distributed across the sand and gravel are needed to provide a worthwhile statistical assessment, but that, where possible, there should be not less than ten. Sample points are any points for which adequate information exists about the nature and thickness of the deposit and may include boreholes other than those drilled during the survey and exposures. In particular, the cooperation of sand and gravel operators ensures that boreholes are not drilled where reliable information is already available; although this may be used in the calculations, it is held confidentially by the Institute and cannot be disclosed.

The mineral shown on each 1:25 000 sheet is divided into resource blocks. The arbitrary size selected, 10 km^2, is a compromise to meet the aims of the survey by providing sufficient sample points in each block. As far as possible the block boundaries are determined by geological boundaries so that, for example, glacial and river terrace gravels are separated. Otherwise division is by arbitrary lines, which may bear no relationship to the geology. The blocks are drawn provisionally before drilling begins.

A reconnaissance of the ground is carried out to record any exposures and inquiries are made to ascertain what borehole information is available. Borehole sites are then selected to provide an even pattern of sample points at a density of approximately one per square kilometre. However, because broad trends are independently overlain by smaller scale characteristically random variations, it is unnecessary to adhere to a square grid pattern. Thus such factors as ease of access and the need to minimise disturbance to land and the public are taken into account in siting the holes; at the same time it is necessary to guard against the possibility that ease of access (that is, the positions of roads and farms) may reflect particular geological conditions, which may bias the drilling results.

The drilling machine employed should be capable of providing a continuous sample representative of all unconsolidated deposits, so that the in-situ grading can be determined, if necessary, to a depth of 30 m (100 ft) at a diameter of about 200 mm (8 in), beneath different types of overburden. It should be reliable, quiet, mobile and relatively small (so that it can be moved to sites of difficult access). Shell and auger rigs have proved to be almost ideal.

The rigs are modified to enable deposits above the water table to be drilled 'dry', instead of with water added to facilitate the drilling, to minimise the amount of material drawn in from outside the limits of the hole. The samples thus obtained are representative of the in-situ grading, and satisfy one of the most important aims of the survey. Below the water table the rigs are used conventionally, although this may result in the loss of some of the fines fraction and the pumping action of the bailer tends to draw unwanted material into the hole from the sides or the bottom.

A continuous series of bulk samples is taken throughout the sand and gravel. Ideally samples are composed exclusively of the whole of the material encountered in the borehole between stated depths. However, care is taken to discard, as far as possible, material which has caved or has been pumped from the bottom of the hole. A new sample is commenced whenever there is an appreciable lithological change within the sand and gravel, or at every 1 m (3.3 ft) depth. The samples, each weighing between 25 and 45 kg (55 and 100 lb), are despatched in heavy duty polythene bags to a laboratory for grading. The grading procedure is based on British Standard 812 (1975). Random checks on the accuracy of the grading are made in the Institute's laboratories.

All data, including mean grading analysis figures calculated for the total thickness of the mineral, are entered on standard record sheets, abbreviated copies of which are reproduced in Appendix F.

Detailed records may be consulted at the appropriate offices of the Institute, upon application to the Head, Industrial Minerals Assessment Unit.

APPENDIX B

STATISTICAL PROCEDURE

Statistical assessment

1 A statistical assessment is made of an area of mineral greater than 2 km^2, if there is a minimum of five evenly spaced boreholes in the resource block (for smaller areas see paragraph 12 below).

2 The simple methods used in the calculations are consistent with the amount of data provided by the survey. Conventional symmetrical confidence limits are calculated for the 95 per cent probability level, that is, there is a 5 per cent or one in twenty chance of a result falling outside the stated limits.

3 The volume estimate (V) for the mineral in a given block is the product of the two variables, the sampled areas (A) and the mean thickness ($\bar{l}_m$) calculated from the individual thicknesses at the sample points. The standard deviations for these variables are related such that

$$S_V = \sqrt{(S_A^2 + S_{\bar{l}_m}^2)} \quad . \qquad [1]$$

4 The above relationship may be transposed such that

$$S_V = S_{\bar{l}_m}\sqrt{(1 + S_A^2/S_{\bar{l}_m}^2)} \quad . \qquad [2]$$

From this it can be seen that as $S_A^2/S_{\bar{l}_m}^2$ tends to 0, S_V tends to $S_{\bar{l}_m}$.

If, therefore, the standard deviation for area is small with respect to that for mean thickness, the standard deviation for volume approximates to that for mean thickness.

5 Given that the number of approximately evenly spaced sample points in the sampled area is n with mineral thickness measurements $l_{m_1}, l_{m_2}, \ldots l_{m_n}$, then the best estimate of mean thickness, l_m, is given by

$$\Sigma(l_{m_1} + l_{m_2} \ldots l_{m_n})/n \quad .$$

For groups of closely spaced boreholes a discretionary weighting factor may be applied to avoid bias (see note on weighting below). The standard deviation for mean thickness $S_{\bar{l}}$, expressed as a proportion of the mean thickness, is given by

$$S_{\bar{l}} = (1/\bar{l}_m)\sqrt{[\Sigma(l_m - \bar{l}_m)^2/(n-1)]}$$

where l_m is any value in the series l_{m_1} to l_{m_n}.

6 The sampled area in each resource block is coloured pink on the map. Wherever possible, calculations relate to the mineral within mapped geological boundaries (which may not necessarily correspond to the limits of deposit). Where the area is not defined by a mapped boundary, that is, where the boundary is inferred, a distinctive symbol is used. Experience suggests that the errors in determining area are small relative to those in thickness. The relationship $S_A/S\bar{l}_m \leq \frac{1}{3}$ is assumed in all cases. It follows from equation [2] that

$$S_{\bar{l}_m} \leq S_V \leq 1.05\, S_{\bar{l}_m} \quad . \qquad [3]$$

7 The limits on the estimate of mean thickness of mineral, $L_{\bar{l}_m}$, may be expressed in absolute units $\pm(t/\sqrt{n}) \times S_{\bar{l}_m}$ or as a percentage $\pm(t/\sqrt{n}) \times S_{\bar{l}_m} \times (100/\bar{l}_m)$ per cent, where t is Student's t at the 95 per cent probability level for $(n-1)$ degrees of freedom, evaluated by reference to statistical tables. (In applying Student's t it is assumed that the measurements are distributed normally).

8 Values of t at the 95 per cent probability level for values of n up to 20 are as follows:

n	t	n	t
1	infinity	11	2.228
2	12.706	12	2.201
3	4.303	13	2.179
4	3.182	14	2.160
5	2.776	15	2.145
6	2.571	16	2.131
7	2.447	17	2.120
8	2.365	18	2.110
9	2.306	19	2.101
10	2.262	20	2.093

(from Table 12, Biometrika Tables for Statisticians, Volume 1, Second Edition, Cambridge University Press, 1962). When n is greater than 20, 1.96 is used (the value of t when n is infinity).

9 In calculating confidence limits for volume, L_V, the following inequality corresponding to equation [3] is applied: $L_{\bar{l}_m} \leq L_V \leq 1.05\, L_{\bar{l}_m}$

10 In summary, for values of n between 5 and 20, L_V is calculated as

$$[(1.05 \times t)\bar{l}_m] \times [\sqrt{\Sigma(l_m - \bar{l}_m)^2/n(n-1)}] \times 100$$

per cent, and when n is greater than 20, as

$$[(1.05 \times 1.96)/\bar{l}_m] \times [\sqrt{\Sigma(l_m - \bar{l}_m)^2/n(n-1)}] \times 100$$

per cent. (Weighting factors may be included: see paragraph 15.)

11 The application of this procedure to a fictitious area is illustrated in Figures 10 and 11.

Inferred assessment

12 If the sampled area of mineral in a resource block is between 0.25 km^2 and 2 km^2 an assessment is inferred, based on geological and topographical information usually supported by the data from one or two boreholes. The volume of mineral is calculated as the product of the area, measured from field data, and the estimated thickness. Confidence limits are not calculated.

13 In some cases a resource block may include an area left uncoloured on the map, within which mineral (as defined) is interpreted to be generally absent. If there is reason to believe that some mineral may be present, an inferred assessment may be made.

14 No assessment is attempted for an isolated area of mineral less than 0.25 km^2.

15 *Note on weighting* The thickness of a deposit at any point may be governed solely by the position of the point in relation to a broad trend. However, most sand and gravel deposits also exhibit a random pattern of local, and sometimes considerable, variation in thickness. Thus the distribution of sample points need be only approximately regular and in estimating the mean thickness only simple weighting is necessary. In practice, equal weighting can often be applied to thicknesses at all sample points. If, however, there is a distinctly unequal distribution of points, bias is avoided by dividing the sampled area into broad zones, to each of which a value roughly proportional to its area is assigned. This value is then shared between the data points within the zone as the weighting factor.

APPENDIX C

CLASSIFICATION AND DESCRIPTION OF SAND AND GRAVEL

For the purposes of assessing resources of sand and gravel a classification should take account of economically important characteristics of the deposit, in particular the absolute content of fines and the ratio of sand to gravel.

The terminology commonly used by geologists when describing sedimentary rocks (Wentworth, 1922) is not entirely satisfactory for this purpose. For example, Wentworth proposed that a deposit should be described as a 'gravelly sand' when it contains more sand than gravel and there is at least 10 per cent of gravel, provided that there is less than 10 per cent of material finer than sand (less than $\frac{1}{16}$ mm) and coarser than pebbles (more than 64 mm in diameter). Because deposits containing more than 10 per cent fines are not embraced by this system a modified binary classification based on Willman (1942) has been adopted.

When the fines content exceeds 40 per cent the material is not considered to be potentially workable and falls outside the definition of mineral. Deposits which contain 40 per cent fines or less are classified primarily on the ratio of sand to gravel but qualified in the light of the fines content, as follows: less than 10 per cent fines—no qualification; 10 per cent or more but less than 20 per cent fines—'clayey'; 20 to 40 per cent fines—'very clayey'.

The term 'clay' (as written, with single quote marks) is used to describe all material passing $\frac{1}{16}$ mm. Thus it has no mineralogical significance and includes particles falling within the size range of silt. The normal meaning applies to the term clay where it does not appear in single quotation marks.

The ratio of sand to gravel defines the boundaries between sand, pebbly sand, sandy gravel and gravel (at 19:1, 3:1 and 1:1).

Thus it is possible to classify the mineral into one of twelve descriptive categories (see Figure 12). The procedure is as follows:

1 Classify according to ratio of sand to gravel.
2 Describe fines.

For example, a deposit grading 11 per cent gravel, 70 per cent sand and 19 per cent fines is classified as 'clayey' pebbly sand. This short description is included in the borehole log (see Note 9, Appendix D).

Many differing proposals exist for the classification of the grain size of sediments (Atterberg, 1905; Udden, 1914; Wentworth, 1922; Wentworth, 1935; Allen, 1936; Twenhofel, 1937; Lane and others, 1947). As Archer (1970a, b) has emphasised, there is a pressing need for a simple metric scale acceptable to both scientific and engineering interests, for which the class limit sizes correspond closely with certain marked changes in the natural properties of mineral particles. For example, there is an important change in the degree of cohesion between particles at about the $\frac{1}{16}$-mm size, which approximates to the generally accepted boundary between silt and sand. These and other requirements are met by a system based on Udden's geometric scale and a simplified form of Wentworth's terminology (Table 14),which is used in this Report.

The fairly wide intervals in the scale are consistent with the general level of accuracy of the qualitative assessments of the resource blocks. Three sizes of sand are recognised, fine ($+\frac{1}{16}$ $-\frac{1}{4}$ mm), medium ($+\frac{1}{4}$ -1 mm) and coarse ($+1$ -4 mm). The boundary at 16 mm distinguishes a range of finer gravel ($+4$ -16 mm), often characterised by abundance of worn tough pebbles of vein-quartz, from larger pebbles often of notably different materials. The boundary at 64 mm distinguishes pebbles from cobbles. The term 'gravel' is used loosely to denote both pebble-sized and cobble-sized material.

The size distribution of borehole samples is determined by sieve analysis, which is presented by the laboratory as

Block calculation **1:25 000 Block** } Fictitious

Area
Block: 11.08 km^2
Mineral: 8.32 km^2

Mean thickness
Overburden: 2.5 m
Mineral: 6.5 m

Volume
Overburden: 21 million m^3
Mineral: 54 million m^3

Confidence limits of the estimate of mineral volume at the 95 per cent probability level: ±20 per cent
That is, the volume of mineral (with 95 per cent probability): 54 ± 11 million m^3

Thickness estimate measurements in metres
l_o = overburden thickness l_m = mineral thickness

Sample point	Weighting w	Overburden l_o	Overburden wl_o	Mineral l_m	Mineral wl_m	Remarks
SE 14	1	1.5	1.5	9.4	9.4	IMAU boreholes
SE 18	1	3.3	3.3	5.8	5.8	
SE 20	1	nil	-	6.9	6.9	
SE 22	1	0.7	0.7	6.4	6.4	
SE 23	1	6.2	6.2	4.1	4.1	
SE 24	1	4.3	4.3	6.4	6.4	
SE 17	½	1.2	1.6	9.8	7.2	Hydrogeology Unit record
123/45	½	2.0		4.6		
1	¼	2.7	2.6	7.3	5.8	Close group of four boreholes (commercial)
2	¼	4.5		3.2		
3	¼	0.4		6.8		
4	¼	2.8		5.9		
Totals	$\Sigma w = 8$	$\Sigma wl_o = 20.2$		$\Sigma wl_m = 52.0$		
Means		$\overline{wl_o} = 2.5$		$\overline{wl_m} = 6.5$		

Calculation of confidence limits

wl_m	$\lvert(wl_m - \overline{wl_m})\rvert$	$(wl_m - \overline{wl_m})^2$
9.4	2.9	8.41
5.8	0.7	0.49
6.9	0.4	0.16
6.4	0.1	0.01
4.1	2.4	5.76
6.4	0.1	0.01
7.2	0.7	0.49
5.8	0.7	0.49

$\Sigma(wl_m - \overline{wl_m})^2 = 15.82$
$n = 8$
t = 2.365
L_V is calculated as
$1.05(t/\overline{wl_m})\sqrt{[\Sigma(wl_m - \overline{wl_m})^2/n(n-1)]} \times 100$
$= 1.05 \times (2.365/6.5)\sqrt{[15.82/(8 \times 7)]} \times 100$
$= 20.3$
$\simeq 20$ per cent

Figure 10 Example of resource block assessment: calculation and results

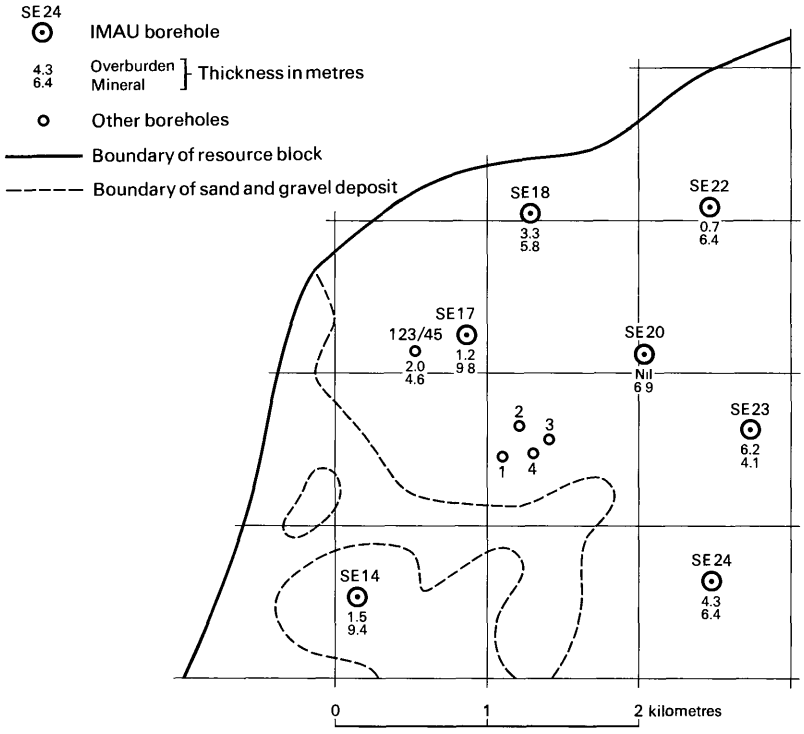


Figure 11 Example of resource block assessment: map of a fictitious block

logarithmic cumulative curves (see, for example, British Standard 1377: 1967). In this report the grading is tabulated on the borehole record sheets (Appendix F), the intercepts corresponding with the simple geometric scale $\frac{1}{16}$ mm, $\frac{1}{4}$ mm, 1 mm, 4 mm, 16 mm and so on as required. Original sample grading curves are available for reference at the appropriate office of the Institute.

Each bulk sample is described, subjectively, by a geologist at the borehole site. Being based on visual examination, the description of the grading is inexact, the accuracy depending on the experience of the observer. The descriptions recorded are modified, as necessary, when the laboratory results become available.

The relative proportions of the rock types present in the gravel fraction are indicated by the use of the words 'and' or 'with'. For example, 'flint and quartz' indicates very approximate equal proportions with neither constituent accounting for less than about 25 per cent of the whole; 'flint with quartz' indicates that flint is dominant and quartz, the principal accessory rock type, comprises 5 to 25 per cent of the whole. Where the accessory material accounts for less than 5 per cent of the whole, but is still readily apparent, the phrase 'with some' has been used. Rare constituents are referred to as 'trace'.

The terms used in the field to describe the degree of rounding of particles, which is concerned with the sharpness of the edges and corners of a clastic fragment and not the shape (after Pettijohn, 1957), are as follows.

Angular: showing little or no evidence of wear; sharp edges and corners.

Subangular: showing definite effects of wear. Fragments still have their original form but edges and corners begin to be rounded off.

Subrounded: showing considerable wear. The edges and corners are rounded off to smooth curves. Original grain shape is still distinct.

Rounded: original faces almost completely destroyed, but some comparatively flat surfaces may still remain. All original edges and corners have been smoothed off to rather broad curves. Original shape is still apparent.

Well-rounded: no original faces, edges or corners left. The entire surface consists of broad curves; flat areas are absent. The original shape is suggested by the present form of the grain.

Table 14 Classification of gravel, sand and fines

Size limits	Grain size description	Qualification	Primary classification
	Cobble		
64 mm –			
		Coarse	Gravel
16 mm –	Pebble		
		Fine	
4 mm –			
		Coarse	
1 mm –			
	Sand	Medium	Sand
$\frac{1}{4}$ mm –			
		Fine	
$\frac{1}{16}$ mm –			
	Fines (silt and clay)		Fines

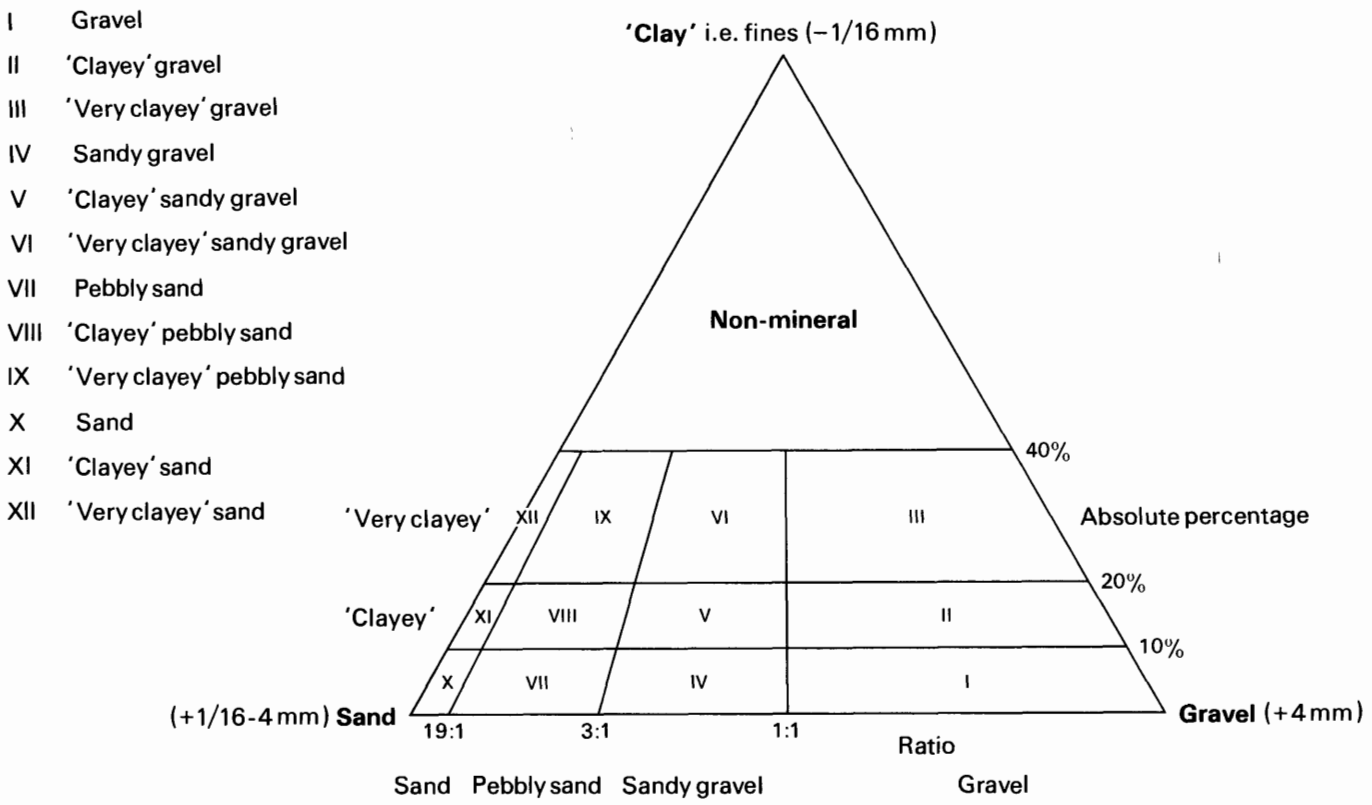


Figure 12 Diagram showing the descriptive categories used in the classification of sand and gravel

APPENDIX D

EXPLANATION OF THE BOREHOLE RECORDS

SU 36 NE 7[1] **3872 6798**[2] **Barton Grove** **Block B**[3]

Surface level (+90.6 m) +297 ft[4]
Water struck at (+86.2 m) +283 ft[5]
November 1978[6]

Overburden[7] 0.3
Mineral 3.9
Waste 0.2
Mineral 1.2
Bedrock 0.4+[8]

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	**a** [9]Gravel, 'clayey' in part Gravel: fine and coarse, subangular to well rounded flint Sand: fine to coarse, subangular to rounded quartz and flint	3.9	4.2
	Pebbly silt, grey (7.5 YR 6/0) with common subangular flint pebbles	0.2	4.4
	b Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: coarse with medium, subangular quartz and flint	1.2	5.6
Upper Chalk	Chalk, white, soft	0.4+	6.0

GRADING

	Mean for deposit[12] *percentages*			Depth below surface (m)		*percentages*[11]						
	Fines	Sand	Gravel			Fines	Sand			Gravel		
						$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
a	9	37	54	[10]0.3	1.3	0	9	17	9	28	34	3
				1.3	1.5	12	7	12	9	34	26	
				1.5	2.5	20	8	12	6	19	33	2
				2.5	3.5	5	13	22	6	30	24	
				3.5	4.2	13	11	21	17	19	19	
				Mean		9	10	18	9	25	28	1
b	5	20	75	4.4	5.6	5	0	3	17	37	38	
a+b	8	33	59	Mean		8	8	18	11	28	30	1

The numbered paragraphs below correspond with the annotations given on the specimen record above.

1 Borehole Registration Number
Each Industrial Minerals Assessment Unit (IMAU) borehole is identified by a Registration Number. This consists of two statements.

1 The number of the 1:25 000 sheet on which the borehole lies, for example SU 36.

2 The quarter of the 1:25 000 sheet on which the borehole lies and the number of the borehole in a series for that quarter, for example NE 7.

Thus the full Registration Number is SU 36 NE 7. Usually this is abbreviated to 36 NE 7 in the text.

2 The National Grid reference
All National Grid references in this publication lie within the 100-km square SK unless otherwise stated. Grid references are given to eight figures, accurate to within 10 m for borehole locations. (In the text, six-figure grid references are used for more approximate locations, for example, for farms).

3 Location
The position of the borehole is generally referred to the nearest named locality on the 1:25 000 base map and the resource block in which it lies is stated.

4 Surface level
The surface level at the borehole site is given in metres and feet above Ordnance Datum. All measurements were made in feet; approximate conversions to metres are given in brackets.

5 Groundwater conditions
Two kinds of entry are made: the record indicates the level at which groundwater stood on completion of drilling (in metres and feet above or below Ordnance Datum); or that water was not encountered.

6 Type of drill and date of drilling
Unless otherwise stated, all boreholes were drilled by a shell and auger rig using 6-in casing. The month and year of completion of the hole are stated.

7 Overburden, mineral, waste and bedrock
Mineral is sand and gravel which, as part of a deposit, falls within the arbitrary definition of potentially workable material (see p. 1). Bedrock is the 'formation', 'country rock' or 'rock head' below which potentially workable sand and gravel will not be found. Waste is any material other than bedrock or mineral. Where waste occurs between the surface and mineral it is classified as overburden.

8 The plus sign (+) indicates that the base of the deposit was not reached during drilling.

9 Lithological description
When sand and gravel is recorded a general description based on the grading characteristics (for details see Appendix C) is followed by more detailed particulars of the sand and/or gravel fraction. Where more than one mineral horizon is recognised each is designated by a letter e.g. (a), (b) etc. The description of other rocks is based on visual examination, in the field. Rock colour descriptions conform as far as possible with those recommended by the Geological Society of America which are based on the Munsell Color Chart. In these logs, the Munsell nomenclature for describing colour is used. It comprises the colour name supplemented by the Munsell alpha-numeric notation, which provides the reader with greater precision by reference to the colour chips of the Munsell Soil Color Chart.

10 Sampling
A continuous series of bulk samples is taken throughout the thickness of sand and gravel. A new sample is commenced whenever there is an appreciable lithological change within the sand and gravel or at every 1 m of depth.

11 Grading results
The limits are as follows: gravel, +4 mm; sand, $-4+\frac{1}{16}$ mm; fines, $-\frac{1}{16}$ mm.

12 Mean grading
The grading of the full thickness of the mineral horizon identified in the log is the mean of the individual sample gradings weighted by the thicknesses represented, if these vary. The classification used is shown in Table 12.

Fully representative sampling of sand and gravel is difficult to achieve particularly where groundwater levels are high. Comparison between boreholes and adjacent exposures suggests that in borehole samples the proportion of sand may be higher and the proportions of fines and coarse gravel (+16 mm) may be lower.

APPENDIX E

LIST OF BOREHOLES AND SECTIONS USED IN THE ASSESSMENT OF RESOURCES

1 IMAU BOREHOLES

Borehole number*	Grid reference†	Resource block	Borehole number*	Grid reference†	Resource block
(pp. 24–69)					
36 NE 1	3502 6968	B	5	4767 6395	C
2	3633 6946	B	6	4903 6376	C
3	3523 6861	B	7	4747 6285	D
4	3720 6881	B	8	4840 6281	D
5	3571 6784	D	9	4959 6254	D
6	3670 6785	D	10	4696 6195	D
7	3872 6798	B	11	4626 6119	D
8	3942 6749	B	12	4598 6422	C
36 SE 1	3820 6435	D	47 SW 54	4011 7132	A
2	3889 6382	D	55	4134 7185	A
3	3931 6349	D	56	4263 7183	A
4	3956 6321	D	57	4100 7040	A
46 NW 13	4201 6970	A	58	4338 7024	A
14	4315 6900	A	47 SE 31	4620 7093	A
15	4042 6788	B	57 NW 18	5148 7983	—
16	4121 6825	B	19	5268 7957	—
17	4189 6745	B	20	5269 7818	—
18	4316 6755	B	21	5307 7635	—
19	4436 6823	A	22	5365 7517	—
20	4416 6701	B	57 NE 30	5915 7514	—
21	4140 6646	C	57 SW 26	5381 7394	—
22	4310 6570	C	27	5375 7294	—
46 NE 2	4533 6915	A	29	5059 7142	—
3	4636 6841	A	30	5096 7033	—
4	4946 6754	B	31	5343 7195	—
5	4576 6670	B	32	5429 7128	—
6	4804 6649	B	57 SE 66	5970 7499	—
7	4930 6675	B	67	5732 7377	—
8	4658 6516	C	68	5785 7338	—
9	4786 6517	C	69	5514 7093	—
10	4859 6542	C	70	5622 7097	—
46 SW 1	4365 6336	C	71	5769 7163	—
2	4050 6258	D	72	5886 7228	—
3	4342 6040	D	73	5996 7263	—
46 SE 3	4955 6455	C	74	5885 7087	—
4	4533 6329	C	75	5968 7074	—

* By sheet quadrant.
† All fall in 100-km square SU.

2 SECTIONS

Section number*	Grid reference†	Resource block
(pp. 70–78)		
E 36 NE 1	3839 6837	B
E 46 NW 1	4270 6870	A
2	4172 6638	C
3	4025 6691	C
E 46 NE 1	4782 6503	C
2	4761 6528	C
3	4999 6630	B
E 46 SE 1	4767 6172	D
E 47 SW 1	4156 7184	A

3 OTHER BOREHOLES

Records of 22 boreholes registered in the files of the Institute's East Anglia and South-eastern England Unit and Hydrogeological Unit were also used in the assessment of resources.

APPENDIX F

INDUSTRIAL MINERALS ASSESSMENT UNIT BOREHOLE AND SECTION RECORDS

SU 36 NE 1 3502 6968 Peaked Lot **Block B**

Surface level (+128.4 m) +421 ft
Water not struck
December 1978

Overburden 0.3
Mineral 1.0
Waste 0.3
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular to rounded quartz and flint	1.0	1.3
?Head	Pebbly clay, brown clay matrix with common pebbles of chalk and subangular flints	0.3	1.6
Upper Chalk	Chalk, white, hard	0.4+	2.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
15	23	62	0.3–1.3	15	4	8	11	34	28

SU 36 NE 2 3633 6946 Denford Park **Block B**

Surface level (+129.9 m) +426 ft
Water not struck
December 1978

Overburden 0.6
Mineral 4.4
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits	Pebbly clay, brown (7.5 YR 5/6) clay with common fine and coarse, subangular flint pebbles	0.4	0.6
	'Clayey' gravel Gravel: fine and coarse with a trace of cobble, subangular to well rounded flint Sand: coarse with medium and fine, subangular quartz Fines: brown (7.5 YR 5/6) clay matrix	4.4	5.0
Upper Chalk	Chalk, white, with some fine and coarse subangular flints	0.2+	5.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
11	19	70	0.6–1.6	21	1	4	13	36	25	
			1.6–2.6	8	4	10	9	37	32	
			2.6–3.6	10	1	4	7	33	45	
			3.6–4.6	7	4	7	10	39	29	4
			4.6–5.0	6	3	7	10	44	30	
			Mean	11	3	6	10	37	32	1

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*							
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone	Quartz
2.6–3.6	29	1	38	1	26	2	3	trace

SU 36 NE 3 3523 6861 Denford Manor Farm **Block B**

Surface level (+95.8 m) +314 ft
Water struck at (+92.5 m) +303 ft
November 1978

Overburden 1.0
Mineral 4.8
Bedrock 0.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits	Pebbly clay, brown (7.5 YR 4/4) with common fine and coarse, angular to subrounded flint pebbles	0.6	0.8
	Sandy silt, brown (7.5 YR 5/6), laminated	0.2	1.0
	'Clayey' gravel Gravel: fine with coarse subangular to rounded flint Sand: medium and coarse, subangular to rounded quartz and flint Fines: as small nodules of clay	4.8	5.8
Upper Chalk	Chalk, white, soft	0.7+	6.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
14	34	52	1.0–2.0	17	7	10	8	37	21
			2.0–3.0	16	5	11	10	31	27
			3.0–4.0	8	6	10	9	35	32
			4.0–5.0	3	12	30	37	11	7
			5.0–5.8	30	0	3	7	34	26
			Mean	14	6	14	14	30	22

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*					
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint
3.0–4.0	37	11	31	7	12	2

SU 36 NE 4 3720 6881 Radley Bottom **Block B**

Surface level (+121.4 m) +398 ft
Water not struck
November 1978

Waste 2.0
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
River Terrace Deposits	Pebbly clay, brown (7.5 YR 4/4), stiff, with common fine and coarse subangular flints and subrounded chalk pebbles	1.4	2.0
Upper Chalk	Chalk, white, hard	0.4+	2.4

SU 36 NE 5 3571 6784 Kintbury Gate **Block D**

Surface level (+107.2 m) +352 ft
Water not struck
November 1978

Waste 2.5
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
River Terrace Deposits	Pebbly silt, brown (7.5 YR 5/4), clayey in part with fine and coarse unworn flint nodules	2.0	2.5
Upper Chalk	Chalk, white, soft, some subangular to rounded flints	0.4+	2.9

SU 36 NE 6 3670 6785 Home Farm **Block D**

Surface level (+92.0 m) +302 ft
Water struck (+91.7 m) +301 ft
November 1978

Waste 3.8
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
Alluvium	Silt, brown (7.5 YR 4/6) occasionally streaked grey, some fine subangular flint pebbles	1.7	1.7
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to rounded flint Sand: coarse with medium and fine, subangular quartz and flint	0.8	2.5
	Silt, dark brown (7.5 YR 3/2) streaked light grey (7.5 YR 7/0)	0.9	3.4
	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium, subangular, quartz and flint	0.4	3.8
Upper Chalk	Chalk, white, soft, some subangular flints	0.6+	4.4

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
6	18	76	1.7–2.5	6	2	4	12	33	43

SU 36 NE 7 3872 6798 Barton Grove **Block B**

Surface level (+90.6 m) +297 ft
Water struck at (+86.2 m) +283 ft
November 1978

Overburden 0.3
Mineral 3.9
Waste 0.2
Mineral 1.2
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	**a** Gravel, 'clayey' in part Gravel: fine and coarse, subangular to well rounded flint Sand: fine to coarse, subangular to rounded quartz and flint	3.9	4.2
	Pebbly silt, grey (7.5 YR 6/0) with common subangular flint pebbles	0.2	4.4
	b Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: coarse with medium, subangular quartz and flint	1.2	5.6
Upper Chalk	Chalk, white, soft	0.4+	6.0

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
	Fines	Sand	Gravel		Fines	Sand			Gravel		
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
a	9	37	54	0.3–1.3	0	9	17	9	28	34	3
				1.3–1.5	12	7	12	9	34	26	
				1.5–2.5	20	8	12	6	19	33	2
				2.5–3.5	5	13	22	6	30	24	
				3.5–4.2	13	11	21	17	19	19	
				Mean	9	10	18	9	25	28	1
b	5	20	75	4.4–5.6	5	0	3	17	37	38	
a+b	8	33	59	Mean	8	8	18	11	28	30	1

SU 36 NE 8 3942 6749 The Wilderness **Block B**

Surface level (+86.5 m) +284 ft
Water struck at (+86.5 m) +284 ft
November 1978

Overburden 0.2
Mineral 5.8
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: coarse with medium, subangular quartz and flint	5.8	6.0
Upper Chalk	Chalk, white, hard	0.5+	6.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
4	23	73	0.2–1.2	7	2	9	11	33	38	
			1.2–2.2	5	4	11	10	38	32	
			2.2–3.2	3	1	10	12	32	42	
			3.2–4.2	1	1	10	22	36	30	
			4.5–5.2	3	1	7	10	28	47	4
			5.2–6.0	2	0	1	17	39	41	
			Mean	4	1	8	14	34	38	1

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone
2.2–3.2	13	18	24	7	28	10	trace

SU 36 SE 1 3820 6435 Hell Corner **Block D**

Surface level (+135.5 m) +445 ft
Water struck at (+128.5 m) +422 ft
December 1978

Waste 5.8
Bedrock 2.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Plateau Gravel	Sandy gravel Gravel: fine and coarse, subangular to well rounded flint Sand: fine to coarse, subangular to rounded quartz and flint	0.3	0.5
	Pebbly clay, strong brown (7.5 YR 5/8) and light grey (7.5 YR 7/0) with fine and coarse, subangular to rounded flint and chalk	2.5	3.0
	Pebbly silty clay, strong brown (7.5 YR 5/8) with common fine, subangular flints	2.8	5.8
Lower Bagshot Beds	Sandy clay, brownish yellow (10 YR 6/8) clay with fine rounded quartz sand in matrix	2.0	7.8
	Clay, strong brown (7.5 YR 5/6)	0.2+	8.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*		
Fines	Sand	Gravel		Fines	Sand	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$
			(Sands in Lower Bagshot Beds not included in the assessment)			
70	30		5.8–6.8	68	31	1
			6.8–7.8	73	26	1
			Mean	70	29	1

SU 36 SE 2 3889 6382 Green Farm **Block D**

Surface level (+136.9 m) +449 ft
Water not struck
December 1978

Waste 2.0
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Clay, strong brown (7.5 YR 5/8)	0.6	0.9
	Pebbly clay, strong brown (7.5 YR 5/8) with common fine and coarse, subangular to well rounded flints	1.1	2.0
London Clay	Clayey silt, light grey (5 YR 7/1), sandy at base	0.8+	2.8

SU 36 SE 3 3931 6349 Green Farm **Block D**

Surface level (+147.5 m) +484 ft
Water not struck
December 1978

Waste 3.9
Bedrock 1.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/8) mottled grey, some fine and coarse, subangular to rounded flint	3.6	3.9
Lower Bagshot Beds	Clay, brownish yellow (10 YR 6/8), stiff	1.1+	5.0

SU 36 SE 4 3956 6321 West Woodhay **Block D**

Surface level (+148.0 m)+486 ft
Water not struck
December 1978

Waste 4.4
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Sandy gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium, subangular quartz and flint	0.3	0.6
	Pebbly clay, strong brown (7.5 YR 5/8), common fine and coarse, subangular flints	3.8	4.4
Lower Bagshot Beds	Very clayey sand, fine, subangular quartz	0.6+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*			
Fines	Sand	Gravel		Fines	Sand		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$
			(Sand in Lower Bagshot Beds not included in the assessment)				
44	56		4.4–5.0	44	52	3	1

SU 46 NW 13 4201 6970 Wickham Heath **Block A**

Surface level (+141.3 m) +464 ft
Water not struck
November 1978

Waste 3.1
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium, subangular to rounded quartz and quartzite	0.5	0.8
	Clayey silt, yellowish brown (10 YR 5/8), vaguely laminated	0.3	1.1
	Pebbly clay, grey (10 YR 6/1) mottled brown, abundant subangular to well rounded flint and chalk	2.0	3.1
Reading Beds	Clay, brownish yellow (10 YR 6/8), stiff	0.4+	3.5

SU 46 NW 14 4315 6900 Stockcross **Block A**

Surface level (+131.6 m) +432 ft
Water not struck
November 1978

Overburden 0.6
Mineral 3.9
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil and forest litter	0.6	0.6
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint and subrounded chalk Sand: medium and coarse, subangular to rounded quartz and flint Fines: strong brown (7.5 YR 4/6) clay matrix	3.9	4.5
Reading Beds	Clayey silt, brownish yellow (10 YR 6/8) mottled black and grey	0.5+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
15	33	52	0.6–1.6	20	7	13	13	28	19	
			1.6–2.6	15	8	19	8	26	24	
			2.6–3.6	13	6	15	14	33	19	
			3.6–4.5	11	4	15	10	31	26	3
			Mean	15	6	16	11	29	22	1

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
2.6–3.6	21	10	29	3	35	2	trace

SU 46 NW 15 4042 6788 Halfway **Block B**

Surface level (+85.6 m) +281 ft
Water struck at (+85.6 m) +281 ft
November 1978

Overburden 0.2
Mineral 4.4
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to well rounded flint and some subrounded chalk Sand: medium and coarse, subangular quartz and flint	4.4	4.6
Upper Chalk	Chalk, white, hard	0.4+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
4	17	79	0.2–1.2	6	2	5	9	30	48
			1.2–2.2	3	4	9	10	31	43
			2.2–3.2	3	1	4	4	42	46
			3.2–4.2	2	3	7	9	33	46
			4.2–4.6	7	4	11	11	31	36
			Mean	4	2	7	8	34	45

SU 46 NW 16 4121 6825 Benham Grange **Block B**

Surface level (+90.9 m) +298 ft
Water not struck
November 1978

Overburden 2.3
Mineral 4.2
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	Gravel Gravel: fine and coarse, well rounded flint Sand: medium, subangular to rounded quartz and flint	0.3	0.3
	Clayey silt, strong brown (7.5 YR 5/6), with some fine, angular flints. More pebbly at base	2.0	2.3
	'Clayey' gravel Gravel: fine and coarse with a trace of cobbles, subangular to well rounded flint Sand: medium and coarse, subangular quartz and flint Fines: strong brown (7.5 YR 5/6) clay	4.2	6.5
Upper Chalk	Chalk, white with subangular flints	0.5+	7.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
19	24	57	2.3–3.3	26	4	7	8	19	36	
			3.3–4.3	18	0	6	19	34	23	
			4.3–5.3	14	5	16	5	33	24	3
			5.3–6.5	17	4	11	13	28	24	3
			Mean	19	3	10	11	29	26	2

SU 46 NW 17 4189 6745 Bradfords Farm **Block B**

Surface level (+82.4 m) +270 ft
Water struck at (+81.9 m) +267 ft
November 1978

Mineral 4.4
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	Gravel Gravel: fine and coarse with trace of cobbles, subangular to well rounded flint Sand: medium and coarse, subangular quartz and flint with fine subrounded tufa at top	4.4	4.4
Upper Chalk	Chalk, white, hard	0.6+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
2	22	76	0.0–1.0	2	1	25	8	31	33	
			1.0–2.0	1	3	8	5	39	44	
			2.0–3.0	1	2	7	11	35	39	5
			3.0–4.0	2	1	6	9	36	38	8
			4.0–4.4	11	1	6	17	31	34	
			Mean	2	2	11	9	35	38	3

SU 46 NW 18 4316 6755 Marsh Benham **Block B**

Surface level (+85.0 m)+279 ft
Water not struck
November 1978

Overburden 0.3
Mineral 2.7
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	'Clayey' gravel Gravel: fine and coarse with trace of cobble, subangular to well rounded flint and well rounded chalk Sand: medium and coarse with fine, subangular quartz and flint	2.7	3.0
Upper Chalk	Chalk, white, abundant coarse flint nodules	0.3+	3.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
12	24	64	0.3–1.3	10	5	13	7	36	29	
			1.3–2.3	19	2	9	9	27	30	4
			2.3–3.0	5	4	13	13	33	32	
			Mean	12	4	11	9	33	29	2

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
1.3–2.3	13	11	29	13	26	8	trace

SU 46 NW 19 4436 6823 Deanwood Farm **Block A**

Surface level (+120.8 m) +397 ft
Water not struck
November 1978

Waste 1.8
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, yellowish brown (10 YR 5/6), abundant coarse flint nodules	0.7	1.0
	'Very clayey' gravel Gravel: fine and coarse, rounded to well rounded flints Sand: medium with coarse and fine, subangular quartz and flint Fines: yellowish brown (10 YR 5/6) clay	0.8	1.8
Reading Beds	Clayey silt, brownish yellow (10 YR 6/8) mottled grey	0.5+	2.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
20	25	55	1.0–1.8	20	3	14	8	29	26

SU 46 NW 20 4416 6701 Benham Valance Park **Block B**

Surface level (+79.0 m) +259 ft
Water struck at (+77.4 m) +254 ft
November 1978

Overburden 2.6
Mineral 2.6
Bedrock 1.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Alluvium	Silt, dark grey (10 YR 4/1), peaty with small nodules of tufa	1.8	2.3
	Peat, black and dark brown (10 YR 2/2)	0.3	2.6
River Terrace Deposits	Gravel Gravel: coarse with fine, subangular to well rounded flint Sand: medium and coarse with fine, angular to rounded quartz, quartzite and flint	2.6	5.2
Upper Chalk	Chalk, white, abundant coarse flint nodules	1.0+	6.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
3	20	77	2.6–3.6	4	2	5	7	32	50	
			3.6–4.6	2	2	9	10	23	52	2
			4.6–5.2	4	4	13	9	35	35	
			Mean	3	3	8	9	29	47	1

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*					
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint
3.6–4.6	25	6	38	14	10	7

SU 46 NW 21 4140 6646 Hamstead Marshall **Block C**

Surface level (+121.5 m) +399 ft
Water not struck
December 1978

Overburden 0.3
Mineral 3.4
Bedrock 14.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Gravel Gravel: fine and coarse with trace of cobble, subangular to rounded flint Sand: medium and coarse, subangular flint and quartz	3.4	3.7
Reading Beds	Clay, reddish brown (5 YR 5/4)	1.8	5.5
	Clay, dark brown (7.5 YR 5/6) mottled grey with common thin sand and silt bands	9.5	15.0
	Clay, red (2.5 YR 4/6)	3.5+	18.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
8	27	65	0.3–1.3	10	2	12	16	35	25	
			1.3–2.3	9	3	10	12	31	33	2
			2.3–3.3	6	1	6	20	34	33	
			3.3–3.7	8	4	7	11	40	25	5
			Mean	8	3	9	15	34	30	1

SU 46 NW 22 4310 6570 Enborne **Block C**

Surface level (+123.1 m) +404 ft
Water not struck
April 1979

Mineral 2.0
Bedrock 1.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	'Very clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint Fines: brown (7.5 YR 5/6) and grey (7.5 YR 4/0) silty clay matrix	2.0	2.0
Lower Bagshot Beds	Clay, yellow-brown (10 YR 6/8), silty	1.0+	3.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
22	23	55	0.0–1.0	26	4	5	7	30	28
			1.0–2.0	19	4	11	14	32	20
			Mean	22	4	8	11	31	24

SU 46 NE 2 4533 6915 Bagnor **Block A**

Surface level (+81.5 m) +267 ft
Water not struck
November 1978

Waste 0.8
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	'Very clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse, subangular to rounded quartz and flint	0.8	0.8
Upper Chalk	Chalk, white, common coarse flint nodules	0.6+	1.4

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
35	22	43	0.0–0.8	35	4	11	7	17	26

SU 46 NE 3 4636 6841 Donnington **Block A**

Surface level (+80.1 m) +263 ft
Water not struck
November 1978

Waste 2.1
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	Pebbly sandy silt, strong brown (7.5 YR 4/6), common coarse flint pebbles and some medium quartz sand in matrix	0.6	0.9
	Clayey silt, yellowish brown (10 YR 5/6), vaguely laminated	1.2	2.1
Upper Chalk	Chalk, white, common fine flint nodules	0.3+	2.4

SU 46 NE 4 4946 6754 Hambridge **Block B**

Surface level (+73.8 m) +242 ft
Water struck at (+67.8m) +222 ft
November 1978

Mineral 7.8
Bedrock 1.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	Gravel Gravel: fine and coarse, angular to rounded flint Sand: medium with fine and coarse, subrounded quartz and flint Fines: yellowish brown (10 YR 5/6) clay nodules	7.8	7.8
Reading Beds	Sandy silt, strong brown (7.5 YR 5/6) and pinkish grey (5 YR 7/2)	0.2	8.0
	'Clayey' sand, medium, subangular to well rounded quartz and flint with trace of fine flint pebbles	0.8	8.8
	Clay, dark grey (7.5 YR 4/0), occasionally sandy	0.4+	9.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	30	63	0.0–1.0	7	5	20	11	44	13
			1.0–2.0	15	6	18	6	37	18
			2.0–3.0	7	7	21	8	41	16
			3.0–4.0	7	7	20	7	38	21
			4.0–5.0	6	6	14	9	36	29
			5.0–6.0	7	6	16	9	40	22
			6.0–7.0	5	7	14	8	41	25
			7.0–7.8	5	2	3	3	25	62
			Mean	7	6	16	8	38	25
			(Sand in Reading Beds not included in the assessment)						
16	81	3	8.0–8.8	16	3	76	2	3	

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*					
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint
4.0–5.0	5	1	23	9	60	2

SU 46 NE 5 4576 6670 Enborne Bridge **Block B**

Surface level (+83.3 m) +273 ft
Water not struck
November 1978

Overburden 1.2
Mineral 5.3
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits	Sandy silt, strong brown (7.5 YR 5/8) with rounded quartz sand and trace angular flint pebbles	0.8	1.2
	Gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse with fine, angular to rounded quartz and flint	5.3	6.5
Upper Chalk	Chalk, white, some fine flint nodules	0.8+	7.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
5	29	66	1.2–2.2	1	8	13	8	43	27
			2.2–3.2	6	4	12	11	40	27
			3.2–4.2	6	7	14	7	33	33
			4.2–5.2	6	8	15	9	33	29
			5.2–6.2	7	2	8	17	32	34
			6.2–6.5	8	2	8	19	36	27
			Mean	5	6	12	11	36	30

SU 46 NE 6 4804 6649 Race Course **Block B**

Surface level (+78.3 m) +257 ft
Water struck at (+75.5 m) +248 ft
November 1978

Waste 1.5
Bedrock 3.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	1.0	1.0
River Terrace Deposits	Pebbly sandy silt, strong brown (7.5 YR 5/6) with common fine and coarse subangular to rounded flint pebbles	0.5	1.5
Reading Beds	Clay, yellowish brown (10 YR 5/8) with some fine, angular flint and quartz pebbles	1.3	2.8
	Sand, fine and medium, subangular to rounded quartz	1.1	3.9
	Clay, dark grey (5 YR 4/1)	0.7+	4.6

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
			(Sand in Reading Beds not included in the assessment)						
52	42	6	2.8–3.9	52	31	12	1	2	4

SU 46 NE 7 4930 6675 Race Course **Block B**

Surface level (+73.2 m) +240 ft
Water struck at (+69.8 m) +229 ft
November 1978

Overburden 0.9
Mineral 4.6
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.9	0.9
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse, subangular to rounded quartz and quartzite	4.6	5.5
Reading Beds	Clay, dark grey (5 YR 4/1)	0.6+	6.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
7	28	65	0.9–1.9	14	11	16	7	28	24	
			1.9–2.9	9	5	15	8	32	29	2
			2.9–3.9	6	0	5	24	33	32	
			3.9–4.9	2	2	12	12	40	32	
			4.9–5.5	1	1	1	16	44	37	
			Mean	7	4	10	14	34	31	

SU 46 NE 8 4658 6516 Wash Hill **Block C**

Surface level (+122.4 m) +402 ft
Water not struck
December 1978

Overburden 0.5
Mineral 3.1
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly silt, strong brown (7.5 YR 5/6) silt with common fine and coarse, subangular to rounded flints	0.2	0.5
	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse, subangular quartz and flint	3.1	3.6
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8)	0.4+	4.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
9	30	61	0.5–1.5	5	2	12	6	18	57
			1.5–2.5	9	10	27	6	29	19
			2.5–3.6	12	1	9	18	35	25
			Mean	9	4	16	10	28	33

SU 46 NE 9 4786 6517 Sandleford Close **Block C**

Surface level (+118.6 m) +389 ft
Water not struck
December 1978

Overburden 2.0
Mineral 2.3
Bedrock 0.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/6) mottled grey, common fine and coarse, subangular flints and chalk	1.7	2.0
	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse, subangular quartz and flint	2.3	4.3
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8)	0.7+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
10	35	55	2.0–3.2	12	3	11	19	33	22
			3.2–4.0	9	10	21	7	29	24
			4.0–4.3	8	6	15	9	37	25
			Mean	10	6	15	14	32	23

SU 46 NE 10 4859 6542 Greenham **Block C**

Surface level (+121.3 m) +398 ft
Water not struck
January 1979

Overburden 1.1
Mineral 2.9
Bedrock 6.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.7	0.7
Plateau Gravel	Silty clay, grey (7.5 YR 6/0)	0.4	1.1
	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flints Sand: medium with fine and coarse, subangular flint and quartz Fines: grey (7.5 YR 6/0) clay	2.9	4.0
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8), mottled black	3.2	7.2
London Clay	Silt, pale brown (10 YR 6/3)	2.7	9.9
	Clay, very dark grey (2.5 YR 3/0)	0.4+	10.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
16	28	56	1.1–2.1	23	7	26	9	27	18
			2.1–3.1	12	5	12	10	36	25
			3.1–4.0	13	8	11	5	30	33
			Mean	16	7	13	8	30	26

SU 46 SW 1 4365 6336 Bourne House **Block C**

Surface level (+100.2 m) +329 ft
Water not struck
December 1978

Overburden 0.3
Mineral 1.0
Waste 0.2
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse with fine, subangular quartz and flint Fines: strong brown (7.5 YR 5/6) clay matrix	1.0	1.3
	Pebbly clay, strong brown (7.5 YR 5/6) clay with common fine and coarse, subangular flints	0.2	1.5
London Clay	Clay, dark grey (5 YR 4/1)	0.8+	2.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
16	22	62	0.3–1.3	16	4	8	10	26	36

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 −32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
0.3–1.3	31	trace	13	9	40	7	trace

SU 46 SW 2 4050 6258 North End **Block D**

Surface level (+146.3 m) +480 ft
Water struck at (+134.3 m) +441 ft
December 1978

Waste 5.7
Bedrock 17.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/6), common fine and coarse, subangular to rounded flints and some fine subangular chalk	4.7	5.0
	'Very clayey' gravel Gravel: fine and coarse, subangular to rounded flints Sand: coarse with medium and fine, subangular quartz and flint Fines: brown clay	0.7	5.7
Lower Bagshot Beds	Silt, light grey (10 YR 7/1), sandy in places	1.5	7.2
	'Very clayey' sand Sand: fine, subangular to rounded quartz Fines: brownish yellow (10 YR 6/8) clay and silt	15.1	22.3
	Clay, yellowish brown (10 YR 5/8), mottled black and grey	0.4+	22.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
20	27	53	5.0–5.7	20	4	7	16	26	27
			(Sand in Lower Bagshot Beds not included in the assessment)						
			7.2–8.2	34	65	1			
33	67		8.2–9.2	23	75	2			
			9.2–10.2	47	52	1			
			10.2–11.2	45	44	1			
			11.2–12.2	28	71	1			
			12.2–13.2	32	67	1			
			13.2–14.2	37	62	1			
			14.2–15.2	48	51	1			
			15.2–16.2	22	77	1			
			16.2–17.2	23	71	6			
			17.2–18.2	17	75	8			
			18.2–19.2	35	57	7			
			19.2–20.2	36	59	5			
			20.2–21.2	42	53	5			
			21.2–22.3	25	69	6			
			Mean	33	64	3			

SU 46 SW 3 4342 6040 Coedmore **Block D**

Surface level (+128.0 m) +420 ft
Water not struck
December 1978

Waste 6.0
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/8) mottled light grey (7.5 YR 7/0), common fine and coarse, subangular to rounded flint and chalk	5.4	6.0
Middle Bagshot Beds	Clay, dusky red (2.5 YR 3/2), stiff, vaguely laminated	0.5+	6.5

SU 46 SE 3 4955 6455 Greenham **Block C**

Surface level (+118.7 m) +389 ft
Water struck at (+115.0 m) +377 ft
December 1978

Overburden 1.7
Mineral 3.6
Waste 1.0
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	1.7	1.7
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular quartz and flint Fines: strong brown (7.5 YR 5/6) clay matrix	3.6	5.3
	Pebbly clay, strong brown (7.5 YR 5/6) clay with abundant fine and coarse subangular to rounded flints	1.0	6.3
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8)	0.5+	6.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
11	30	59	1.7–2.7	13	7	21	6	31	22
			2.7–3.7	12	7	17	10	33	21
			3.7–4.7	12	7	15	8	33	25
			4.7–5.3	5	2	6	9	43	35
			Mean	11	6	16	8	34	25

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*					
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint
2.7–3.7	22	15	14	15	29	5

SU 46 SE 4 4533 6329 Wash Water Bridge **Block C**

Surface level (+91.3 m) +300 ft
Water struck at (+90.1 m) +296 ft
December 1978

Overburden 0.9
Mineral 2.1
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
Alluvium	Clay, strong brown (7.5 YR 4/6) and grey (7.5 YR 5/0)	0.9	0.9
River Terrace Deposits	Gravel Gravel: fine and coarse with trace of cobbles, subangular to rounded flint Sand: medium and coarse with fine, subangular quartz and flint	2.1	3.0
London Clay	Clay, dark grey (5 YR 4/1)	0.4+	3.4

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
6	24	70	0.9–1.9	8	5	9	8	34	36	
			1.9–3.0	4	4	9	13	43	23	4
			Mean	6	4	9	9	39	29	2

SU 46 SE 5 4767 6395 Ye Swan Inn **Block C**

Surface level (+83.3 m) +273 ft
Water not struck
December 1978

Overburden 0.3
Mineral 1.6
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: coarse with medium and fine, subangular quartz and flint Fines: brown clay	1.6	1.9
London Clay	Clay, blue and brown, stiff	0.8+	2.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
17	20	63	0.3–1.9	17	4	6	10	25	38

SU 46 SE 6 4903 6376 Aldern Bridge **Block C**

Surface level (+78.7 m) +258 ft
Water struck at (+77.1 m) +253 ft
December 1978

Overburden 1.6
Mineral 3.6
Waste 0.3
Mineral 1.3
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Silt, strong brown (7.5 YR 5/6), sandy in places	1.4	1.6
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to rounded flint Sand: coarse with some medium and fine, subangular quartz and flint	3.6	5.2
	Pebbly silt, dark grey (7.5 YR 4/0), common fine, angular to well rounded flints	0.3	5.5
	Gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse with a trace of fine, subangular quartz and flint	1.3	6.8
London Clay	Clay, dark grey (5 YR 4/1), stiff	0.4+	7.2

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
a	1	27	72	1.6–2.6	3	5	15	23	31	23
				2.6–3.6	1	2	5	18	28	46
				3.6–4.6	0	0	3	17	41	39
				4.6–5.2	2	1	4	10	34	49
				Mean	1	3	7	17	34	38
b	1	29	70	5.5–6.5	1	1	10	18	33	37
				6.5–6.8	3	1	9	17	37	33
				Mean	1	1	10	18	34	36
a+b	1	28	71	Mean	1	2	8	17	34	37

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
2.6–3.6	32	4	14	13	36	1	trace

SU 46 SE 7 4747 6285 Newtown Common **Block D**

Surface level (+119.3 m) +391 ft
Water not struck
December 1978

Overburden 0.1
Mineral 3.4
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse with fine, subangular quartz and flint Fines: brown clay	3.4	3.5
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8), clayey in part	0.6+	4.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
12	33	55	0.1–1.1	21	8	14	13	15	29
			1.1–2.1	7	4	14	11	36	26
			2.1–3.5	9	8	17	7	37	22
			Mean	12	7	16	10	30	25

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
1.1–2.1	11	11	3	14	59	2	trace

SU 46 SE 8 4840 6281 Adbury Park **Block D**

Surface level (+110.2 m) +362 ft
Water not struck
December 1978

Waste 0.6
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/6) abundant fine and coarse, subangular to rounded flints	0.4	0.6
Lower Bagshot Beds	Clay, light grey (10 YR 7/1) mottled brownish yellow (10 YR 6/8)	0.6+	1.2

SU 46 SE 9 4959 6254 Sydmonton Common **Block D**

Surface level (+112.5 m) +369 ft
Water not struck
December 1978

Overburden 0.3
Mineral 1.8
Waste 0.2
Bedrock 0.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse with some fine, subangular quartz and flint	1.8	2.1
	Pebbly clay, strong brown (7.5 YR 5/6) mottled grey, abundant fine and coarse subangular to well rounded flint	0.2	2.3
Lower Bagshot Beds	Clay, light grey (10 YR 7/1) and brownish yellow (10 YR 6/8) stiff	0.7+	3.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
10	31	59	0.3–1.3	11	1	15	14	28	31
			1.3–2.1	8	15	21	8	35	23
			Mean	10	2	18	11	32	27

SU 46 SE 10 4696 6195 Heatherwold Farm **Block D**

Surface level (+125.1 m) +410 ft
Water not struck
December 1978

Waste 2.0
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	Silt, dark brown (7.5 YR 3/2), occasional fine and coarse subangular flints	0.9	0.9
	Clay, strong brown (7.5 YR 5/8), some fine and coarse subangular flints	1.1	2.0
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8) mottled light grey (10 YR 7/1), stiff	0.5+	2.5

SU 46 SE 11 4626 6119 Burghclere **Block D**

Surface level (+140.7 m) +462 ft
Water struck at (+130.7 m) +429 ft
January 1979

Overburden 3.4
Mineral 1.2
Bedrock 10.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	1.2	1.2
Plateau Gravel	Pebbly clay, reddish yellow (7.5 YR 6/8) mottled grey, some fine to coarse subangular to rounded flint	2.2	3.4
	'Clayey' gravel Gravel: fine and coarse, subangular to rounded flint and trace of 'sarsen' sandstone Sand: fine and medium with coarse, subangular quartz and flint	1.2	4.6
Lower Bagshot Beds	Very clayey sand Sand: fine, subangular quartz Fines: brownish yellow (10 YR 6/8) clay	4.7	9.3
	Clay, grey (5 YR 6/1) mottled brownish yellow (10 YR 6/8), silty in part	4.4	13.7
	Clay, dark grey (5 YR 4/1), stiff	1.6+	15.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
16	29	55	3.4–4.6	16	11	12	6	26	29
			(Sand in Lower Bagshot Beds not included in the assessment)						
50	50		4.6–5.6	63	35	2			
			5.6–6.6	60	38	1			
			6.6–7.6	55	41	1			
			7.6–8.6	30	61	9			
			8.6–9.3	37	55	8			
			Mean	50	45	5			

SU 46 SE 12 4598 6422 Wash Cannon **Block C**

Surface level (+121.3 m) +398 ft
Water not struck
December 1978

Mineral 2.0
Bedrock 2.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse, subangular quartz and flint Fines: strong brown (7.5 YR 5/6) clay matrix	2.0	2.0
Lower Bagshot Beds	'Clayey' sand, fine and medium, subangular quartz	2.0+	4.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
15	26	59	0.0–1.0	7	4	9	10	33	37
			1.0–2.0	23	4	12	14	38	9
			Mean	15	4	11	11	36	23
			(Sand in Lower Bagshot Beds not included in the assessment)						
13	86	1	2.0–3.0	16	30	52	1	1	
			3.0–4.0	10	36	54			
			Mean	13	33	53	1	1	

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*					
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint
1.0–2.0	44	5	11	10	28	2

SU 47 SW 54 4011 7132 Wormstall Wood **Block A**

Surface level (+165.1 m) +542 ft
Water not struck
November 1978

Waste 1.2
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, yellowish brown (10 YR 5/8) mottled grey, abundant fine and coarse subrounded to well rounded flints	0.9	1.2
Reading Beds	Clayey silt, yellowish brown (10 YR 5/8), mottled grey	0.8+	2.0

SU 47 SW 55 4134 7185 Showells **Block A**

Surface level (+129.1 m) +424 ft
Water not struck
November 1978

Waste 3.6
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	Pebbly clay, strong brown (7.5 YR 5/6) mottled grey, common subrounded to well rounded flint and fine, subrounded chalk	1.8	1.8
	Clayey silt, strong brown (7.5 YR 5/6), much black carbonaceous material	1.8	3.6
Upper Chalk	Chalk, white, hard, coarse flint nodules	0.4+	4.0

SU 47 SW 56 4263 7183 Knapps Farm **Block A**

Surface level (+95.7 m) +314 ft
Water not struck
November 1978

Waste 2.6
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse, subangular to rounded quartz and flint	0.4	0.6
	Pebbly clay, strong brown (7.5 YR 5/6), common fine and coarse, subangular to well rounded flints	2.0	2.6
Upper Chalk	Chalk, white, hard, common coarse flint nodules	0.3+	2.9

SU 47 SW 57 4100 7040 Benham Burslot **Block A**

Surface level (+154.3 m) +506 ft
Water not struck
November 1978

Overburden 0.3
Bedrock 3.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Reading Beds	Clayey silt, yellowish brown (10 YR 5/8) mottled grey (10 YR 6/1), band of well rounded coarse flints 2.6 m	3.7+	4.0

SU 47 SW 58 **4338 7024** **Hunts Green** **Block A**

Surface level (+86.7 m) +284 ft
Water struck at (+85.7 m) +281 ft
November 1978

Overburden 1.8
Mineral 3.6
Bedrock 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Silt, pinkish grey (7.5 YR 7/2), plastic	1.3	1.5
	Peat, dark brown (10 YR 3/3), fibrous	0.3	1.8
River Terrace Deposits	Gravel Gravel: fine and coarse with some cobbles, subangular to well rounded flint and fine chalk Sand: coarse with medium and fine, subangular quartz and flint	3.6	5.4
Upper Chalk	Chalk, white, hard	0.6+	6.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
4	19	77	1.8–2.8	2	1	5	7	28	57	
			2.8–3.8	3	2	8	9	46	27	5
			3.8–4.8	3	0	3	16	31	47	
			4.8–5.4	13	5	12	9	36	23	2
			Mean	4	2	6	11	35	40	2

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
2.8–3.8	34	16	31	1	16	2	trace

SU 47 SE 31 **4620 7093** **Snelsmore Common** **Block A**

Surface level (+138.0 m) +453 ft
Water not struck
November 1978

Mineral 2.4
Bedrock 1.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint and chalk Sand: coarse with medium and fine, subangular quartz and flint Fines: brown clay	2.4	2.4
Reading Beds	Clayey silt, strong brown (7.5 YR 5/6) mottled grey	0.7	3.1
	'Clayey' sand Sand: fine and medium, subrounded quartz Fines: brownish yellow (10 YR 6/8) clay	1.0+	4.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
18	29	53	0.0–0.6	17	8	12	23	19	21
			0.6–1.6	20	2	8	12	28	30
			1.6–2.4	15	2	8	18	34	23
			Mean	18	3	9	17	28	25
			(Sand in Reading Beds not included in the assessment)						
15	85		3.1–4.1	15	40	45			

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 −32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
0.0–0.6	22	13	11	11	30	13	trace

SU 57 NW 18 5148 7983 Mayfield Farm

Surface level (+102.6 m) +336.6 ft
Water not struck
April 1979

Overburden 0.8
Mineral 1.7
Waste 1.5
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
Valley Gravel	Pebbly silt, brown silt with common fine subangular to rounded flint pebbles	0.8	0.8
	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint with some subrounded limestone and chalk Sand: medium and coarse with some fine subangular quartz and flint	1.7	2.5
?Head	Pebbly clay, pale brown, with common fine and coarse, subrounded chalk and flints	1.5	4.0
Upper Chalk	Chalk, white, hard	0.5+	4.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
17	31	52	0.8–1.8	17	2	10	14	27	30
			1.8–2.5	18	9	13	14	31	15
			Mean	17	5	12	14	28	24

SU 57 NW 19 5268 7957 Church Farm

Surface level (+96.6 m) +316.9 ft
Water not struck
April 1979

Waste 2.8
Bedrock 0.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.3	0.3
Valley Gravel	'Very clayey' gravel Gravel: fine and coarse with cobbles, subangular to well rounded flint Sand: coarse with fine and medium, subangular quartz and flint	0.7	1.0
? Head	'Silty' gravel Gravel: abundant fine and coarse, subrounded chalk with some subrounded flint Fines: grey silt matrix	1.8	2.8
Upper Chalk	Chalk, white, hard	0.1+	2.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
23	19	58	0.3–1.0	23	3	5	11	19	23	16

SU 57 NW 20 5269 7818 Woodend Farm

Surface level (+92.1 m) +302.2 ft
Water not struck
April 1979

Waste 3.4
Bedrock 0.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Valley Gravel	'Very clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular quartz and flint Fines: dark brown silt matrix	0.8	1.2
? Head	Pebbly clay, pale brown clay matrix with common fine to coarse subrounded chalk and flint pebbles	2.2	3.4
Upper Chalk	Chalk, white, soft	0.1+	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
33	22	45	0.4–1.2	33	5	10	7	20	25

SU 57 NW 21 5307 7635 Hamstead Norris

Surface level (+84.6 m) +277.6 ft
Water struck at (+84.3 m) +276.6 ft
April 1979

Overburden 0.3
Mineral 2.5
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Valley Gravel	Gravel Gravel: fine and coarse with a trace of cobbles, subangular to well rounded flint Sand: medium and coarse with some fine, subangular quartz and flint	2.5	2.8
Upper Chalk	Chalk, white, soft	0.4+	3.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
6	23	71	0.3–1.3	4	1	6	18	32	35	4
			1.3–2.3	10	4	13	10	21	42	
			2.3–2.8	3	2	9	9	32	45	
			Mean	6	3	9	11	30	40	1

SU 57 NW 22 5365 7517 Everington Barn

Surface level (+80.3 m) +263.5 ft
Water struck at (+79.3 m) +260.2 ft
April 1979

Overburden 0.1
Mineral 2.4
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Valley Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint	2.4	2.5
Upper Chalk	Chalk, white, soft	0.3+	2.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	23	70	0.1–1.1	7	4	6	7	20	56
			1.1–2.1	7	4	14	10	35	30
			2.1–2.5	6	3	11	14	28	38
			Mean	7	4	10	9	28	42

SU 57 NE 30 5915 7514 Buckholdhill Farm

Surface level (+96.2 m) +315.6 ft
Water not struck
April 1979

Overburden 2.0
Mineral 3.4
Bedrock 0.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/8) clay containing some fine, subangular flints	1.7	2.0
	'Clayey' gravel Gravel: fine and coarse with some cobbles, subangular to well rounded flint Sand: fine and medium with coarse, subangular quartz and flint	3.4	5.4
Upper Chalk	Chalk, white, soft	0.1+	5.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
14	42	44	2.0–3.0	22	19	18	5	14	16	6
			3.0–4.0	13	12	20	7	26	22	
			4.0–5.4	10	13	17	6	21	25	2
			Mean	14	15	21	6	20	21	3

SU 57 SW 26 5381 7394 Frilsham

Surface level (+78.1 m) +256.2 ft
Water struck at (+77.1 m) +253.0 ft
April 1979

Overburden 0.6
Mineral 2.6
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
Valley Gravel	Gravel Gravel: fine and coarse, subangular to rounded flint Sand: medium and coarse, subangular quartz and flint	2.6	3.2
Upper Chalk	Chalk, white, soft	0.3+	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	22	71	0.6–1.6	11	2	10	13	24	40
			1.6–2.6	2	0	8	12	28	50
			2.6–3.2	7	0	9	14	32	38
			Mean	7	0	9	13	28	43

SU 57 SW 27 5375 7294 Parsonage Farm

Surface level (+75.1 m) +246.4 ft
Water struck at (+73.6 m) +241.5 ft
April 1979

Overburden 0.9
Mineral 4.3
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.9	0.9
Valley Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular quartz	4.3	5.2
Upper Chalk	Chalk, white, soft	0.2+	5.4

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	34	59	0.9–1.9	16	6	24	11	25	18
			1.9–2.9	4	5	17	9	29	36
			2.9–3.9	4	3	11	7	28	47
			3.9–4.9	6	7	23	7	25	32
			4.9–5.2	7	4	12	15	26	26
			Mean	7	6	19	9	36	33

SU 57 SW 29 5059 7142 Downe House

Surface level (+156.6 m) +513.8 ft
Water not struck
April 1979

Overburden 0.5
Mineral 1.9
Bedrock 0.5+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.5	0.5
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint and chalk Sound: medium and coarse with fine, subangular quartz and flint	1.9	2.4
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8)	0.5+	2.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
14	27	59	0.5–1.5	15	6	11	10	38	20
			1.5–2.4	13	3	10	14	30	30
			Mean	14	5	10	12	34	25

SU 57 SW 30 5096 7033 Cold Ash

Surface level (+154.1 m) +505.6 ft
Water not struck
April 1979

Mineral 3.4
Bedrock 0.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular to rounded flint and quartz	3.4	3.4
Lower Bagshot Beds	Silt, brownish yellow (10 YR 6/8)	0.1+	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
13	26	61	0.0–1.0	9	3	5	6	34	43
			1.0–2.0	17	4	8	12	21	28
			2.0–3.0	15	4	14	12	30	25
			3.0–3.4	11	4	16	21	37	11
			Mean	13	4	10	12	31	30

SU 57 SW 31 5343 7195 Marlston Farm

Surface level (+73.7 m) +241.8 ft
Water not struck
April 1979

Overburden 0.2
Mineral 1.5
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Valley Gravel	'Clayey' gravel Gravel: fine and coarse with cobbles, subangular to well rounded flint Sand: medium with fine and coarse, subangular to rounded flint and quartz	1.5	1.7
Upper Chalk	Chalk, white, soft	0.8+	2.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
12	26	62	0.2–1.2	8	7	10	7	28	33	7
			1.2–1.7	20	7	12	10	26	25	
			Mean	12	7	11	8	27	30	5

SU 57 SW 32 5429 7128 River Barn

Surface level (+67.9 m) +222.8 ft
Water struck at (+66.9 m) +219.5 ft
April 1979

Overburden 0.5
Mineral 2.9
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Valley Gravel	Gravel Gravel: fine and coarse with cobbles, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint	2.9	3.4
Upper Chalk	Chalk, white, soft	0.4+	3.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
4	21	75	0.5–1.5	6	2	10	12	31	39	
			1.5–2.5	1	1	7	12	31	40	8
			2.5–3.4	6	1	8	9	27	49	
			Mean	4	2	8	11	30	42	3

SU 57 SE 66 5970 7499 Buckhold Farm

Surface level (+92.7 m) +304.1 ft
Water not struck
April 1979

Overburden 0.5
Mineral 4.0
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse with some cobbles, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint Fines: strong brown (7.5 YR 5/6) silt in matrix	4.0	4.5
Upper Chalk	Chalk, white, soft	0.2+	4.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
14	31	55	0.5–1.5	16	3	9	13	33	26	
			1.5–2.5	12	2	15	19	31	17	4
			2.5–3.5	14	4	16	14	33	19	
			3.5–4.5	13	4	12	16	27	24	4
			Mean	14	3	13	15	31	22	2

SU 57 SE 67 5732 7377 Burnthill House

Surface level (+118.2 m) +387.8 ft
Water not struck
April 1979

Overburden 0.7
Mineral 1.1
Bedrock 0.9+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.7	0.7
Plateau Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint, rounded Bunter quartzite and subrounded chalk Sand: medium with fine and coarse, subangular to rounded quartz and flint	1.1	1.8
Reading Beds	Silt, brownish yellow (10 YR 6/8)	0.9+	2.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
9	34	57	0.7–1.8	9	6	19	9	35	22

SU 57 SE 68 5785 7338 Scratchface Lane

Surface level (+118.1 m) +387.5 ft
Water not struck
April 1979

Overburden 0.2
Mineral 1.6
Bedrock 0.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular flint and quartz	1.6	1.8
Reading Beds	Silt, brownish yellow (10 YR 6/8)	0.7+	2.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
18	21	61	0.2–1.0	15	8	9	5	25	38
			1.0–1.8	21	5	10	5	32	27
			Mean	18	6	10	5	28	33

SU 57 SE 69 5514 7093 Bucklebury

Surface level (+65.8 m) +215.9 ft
Water not struck
April 1979

Overburden 0.3
Mineral 3.2
Bedrock 0.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Valley Gravel	Gravel Gravel: fine and coarse with some cobbles, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint	3.2	3.5
Upper Chalk	Chalk, white and soft	0.7+	4.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
9	30	61	0.3–1.3	5	0	8	16	29	37	5
			1.3–2.3	6	2	16	14	32	23	7
			2.3–3.5	15	7	16	10	28	24	
			Mean	9	3	14	13	29	28	4

SU 57 SE 70 5622 7097 Hurfoot Farm

Surface level (+63.2 m) +207.3 ft
Water struck at (+60.6 m) +198.8 ft
April 1979

Overburden 0.3
Mineral 4.4
Bedrock 0.3+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Valley Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint	4.4	4.7
Upper Chalk	Chalk, white, soft	0.3+	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
8	25	67	0.3–1.3	16	2	15	11	26	30	
			1.3–2.3	7	2	13	9	28	41	
			2.3–3.3	6	3	14	6	32	39	
			3.3–4.3	2	4	16	5	27	46	
			4.3–4.7	9	2	9	16	34	28	2
			Mean	8	3	14	8	29	38	

SU 57 SE 71 5769 7163 Stanford Dingley

Surface level (+58.3 m) +191.3 ft
Water struck at (+57.9 m) +190.0 ft
April 1979

Overburden 0.4
Mineral 3.1
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Valley Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular to rounded flint and quartz	3.1	3.5
Upper Chalk	Chalk, white, soft, some flint nodules	0.2+	3.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
4	40	56	0.4–1.4	2	3	25	21	32	27
			1.4–2.4	4	3	25	7	24	37
			2.4–3.5	6	7	27	10	29	21
			Mean	4	4	26	10	28	28

SU 57 SE 72 5886 7228 Folly Bridge

Surface level (+60.9 m) +199.8 ft
Water not struck
April 1979

Overburden 0.7
Mineral 4.4
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.7	0.7
Valley Gravel	'Clayey' gravel Gravel: fine to coarse with trace of cobble, subangular to well rounded flint and 'sarsen' sandstone Sand: medium and coarse with fine, subangular quartz and flint	4.4	5.1
Upper Chalk	Chalk, white, soft	0.2+	5.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
10	29	61	0.7–1.7	15	8	16	10	32	19	
			1.7–2.7	9	4	13	10	23	41	
			2.7–3.7	6	7	12	8	22	45	
			3.7–5.1	10	2	15	11	27	30	5
			Mean	10	5	14	10	26	34	1

SU 57 SE 73 5996 7263 Bradfield

Surface level (+53.2 m) +174.5 ft
Water struck at (+52.2 m) +171.3 ft
April 1979

Overburden 0.2
Mineral 3.7
Bedrock 0.4+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Valley Gravel	Gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular quartz and flint	3.7	3.9
Upper Chalk	Chalk, white, soft	0.4+	4.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
8	25	67	0.2–1.2	11	4	11	9	35	30
			1.2–2.2	12	7	20	4	33	24
			2.2–3.2	0	2	12	12	32	42
			3.2–3.9	12	1	6	6	33	42
			Mean	8	4	13	8	33	34

SU 57 SE 74 5855 7087 Tutts Clump

Surface level (+107.4 m) +351.0 ft
Water struck at (+106.4 m) +349.0 ft
April 1979

Overburden 1.4
Mineral 2.0
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
Plateau Gravel	Pebbly clay, strong brown (7.5 YR 5/8) and grey (7.5 YR 5/0) clay with common pebbles of flint	0.4	1.0
	Sandy silt, strong brown (7.5 YR 5/8) silt with some medium flint sand in matrix	0.4	1.4
	Sandy gravel Gravel: fine with some coarse, subrounded flint Sand: medium with some fine and coarse, subangular quartz and flint	2.0	3.4
London Clay	Clay, strong brown (7.5 YR 5/6)	0.8+	4.2

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	63	30	1.4–1.9	12	7	52	10	15	4
			1.9–2.9	5	9	51	8	24	3
			2.9–3.4	2	3	23	14	31	27
			Mean	7	7	46	10	22	8

SU 57 SE 75 5968 7074 South End

Surface level (+94.4 m) +309.7 ft
Water not struck
April 1979

Overburden 0.6
Mineral 5.4
Bedrock 0.8+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Made ground	0.6	0.6
Plateau Gravel	Gravel, 0.2 m silt band at 2.4 m Gravel: fine with coarse, subangular to well rounded flint Sand: medium and coarse with fine, subangular quartz and flint	5.4	6.0
London Clay	Clay, grey (10 YR 6/1), weathered brown at top	0.8+	6.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
9	37	54	0.6–1.6	14	5	13	11	36	21
			1.6–2.6	11	7	21	14	35	12
			2.6–3.6	10	5	24	24	42	5
			3.6–4.6	2	6	15	18	49	10
			4.6–5.6	7	8	15	10	45	15
			5.6–6.0	9	5	17	19	38	12
			Mean	9	6	17	14	41	13

E 36 NE 1 3839 6837 Barton Court **Block B**

Surface level (+97.5 m) c+320 ft

Mineral 6.5
Bedrock 0.2+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	**a** 'Very clayey' gravel Gravel: fine with coarse, subangular to well rounded flint Sand: medium with coarse and some fine, subangular flint and quartz, some brown and grey clay in matrix	2.1	2.1
	b Gravel Gravel: coarse with some fine and trace of cobbles, subangular to well rounded flint and trace of rounded chalk Sand: coarse with medium, subangular quartz and flint	4.4	6.5
Upper Chalk	Chalk, white, rubbly	0.2+	6.7

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	*percentages*						
	Fines	Sand	Gravel		Fines	Sand			Gravel		
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
a	20	26	54	0.0–1.0	25	7	13	8	33	14	
				1.0–2.1	16	5	10	10	33	26	
				Mean	20	6	11	9	33	21	
b	5	11	84	2.1–3.1	No grading available						
				3.1–4.1	8	1	4	8	14	52	17
				4.1–5.1	4	2	4	7	24	59	
				5.1–6.5	4	1	2	6	29	58	
				Mean	5	1	3	7	23	57	4
a+b	11	17	72	Mean	11	3	6	8	27	43	2

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4–32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone
3.1–4.1	19	29	14	12	11	6	9

E 46 NW 1 **4270 6870** **Furze Hill** **Block A**

Surface level (+129.5 m) c+425 ft

Overburden 0.4
Mineral 1.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Plateau Gravel	'Clayey' gravel Gravel: coarse with some fine, subangular to well rounded flint Sand: medium with coarse, subangular to rounded quartz and flint	1.1+	1.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
11	17	72	0.4–1.5	11	2	9	6	18	54

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
0.4–1.5	9	87	1	1	2	trace	trace

E 46 NW 2 4172 6638 Hamstead Marshall **Block C**

Surface level (+118.9 m) c+390 ft

Overburden 0.4
Mineral 3.6
Bedrock 0.9+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Plateau Gravel	'Clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium, subangular quartz and flint, some brown silty clay in matrix	3.6	4.0
Reading Beds	'Clayey' sand, fine with medium, subangular to rounded quartz, variegated colours	0.9+	4.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
11	27	62	0.4–1.4	11	5	8	7	43	26
			1.4–2.4	7	5	19	8	25	36
			2.4–3.4	13	5	19	5	29	29
			3.4–4.0	17	7	13	7	34	22
			Mean	11	5	15	7	33	29
			(Sand in the Reading Beds not included in the assessment)						
11	89	0	4.0–4.9	11	49	39	1		

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*							
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone	Quartz
2.4–3.4	13	41	11	12	18	5	trace	trace

E 46 NW 3 4025 6691 Irish Hill **Block C**

Surface level (+121.9 m) c+400 ft

Overburden 0.3
Mineral 1.1+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	'Clayey' gravel Gravel: coarse with fine, subangular to well rounded flint Sand: medium with fine and coarse, subrounded quartz and flint, some grey-brown clay in matrix	1.1+	1.4

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
11	21	68	0.3–1.4	11	6	8	7	29	39

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*						
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Quartz
0.3–1.4	2	55	7	17	5	13	1

E 46 NE 1 4782 6503 Greenham **Block C**

Surface level (+118.9 m) c+390 ft

Overburden 0.3
Mineral 2.7+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	Gravel, black carbonaceous horizon at 1.0 m Gravel: coarse with fine, subangular to well rounded flint Sand: medium, subangular to rounded quartz and flint	2.7+	3.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
7	28	65	0.3–1.0	3	3	10	8	27	49
			1.0–2.0	10	2	25	9	27	27
			2.0–3.0	7	4	13	8	20	48
			Mean	7	3	17	8	24	41

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*							
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone	Quartz trace
1.0–2.0	16	27	13	4	35	1	4	trace

E 46 NE 2 4761 6528 Greenham **Block C**

Surface level (+125.0 m) c+410 ft Mineral 3.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
Plateau Gravel	'Clayey' gravel Gravel: coarse with fine, subangular to well rounded flint and trace of sarsen Sand: medium, subangular to rounded quartz and flint, some grey and brown clay in matrix	3.0	3.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
11	27	62	0.0–1.0	15	6	15	9	26	29
			1.0–2.0	10	3	18	8	30	31
			2.0–3.0	7	4	13	8	20	48
			Mean	11	4	15	8	25	37

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*							
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone	Quartz
1.0–2.0	26	33	16	6	16	1	2	trace

E 46 NE 3 4999 6630 Lowes Farm **Block B**

Surface level (+76.2 m) c+250 ft

Overburden 0.5
Mineral 2.0+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
River Terrace Deposits	Gravel	2.0+	2.5
	Gravel: coarse with some fine, subangular to well rounded flints with a trace of sarsen Sand: medium and coarse, subangular quartz and flint		

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
3	17	80	0.5–1.5	3	1	8	8	21	59
			1.5–2.5	2	2	8	7	20	61
			Mean	3	2	8	7	20	60

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*							
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	'Sarsen' sandstone	Quartz
1.5–2.5	10	43	11	11	19	6	trace	trace

E 46 SE 1 **4767 6172** **Great Gravels** **Block D**

Surface level (+118.9 m) c+390 ft

Soil 0.3.
Mineral 0.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Plateau Gravel	'Very clayey' sandy gravel Gravel: coarse with fine, subrounded flint Sand: fine with medium and coarse, subrounded quartz, some brown and grey clay in matrix	0.6+	0.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
25	31	44	0.3–0.9	25	16	9	6	18	26

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*								
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Chalk	'Sarsen' sandstone	Quartz
0.3–0.9	27	40	5	5	21	1	trace	1	trace

E 47 SW 1 4156 7184 Showells **Block A**

Surface level (+126.5 m) c+415 ft

Mineral 2.4
Bedrock 3.6+

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits	'Very clayey' gravel Gravel: fine and coarse, subangular to well rounded flint Sand: medium with fine and coarse, subangular quartz and flint	2.4	2.4
	Chalk, white, hummocky surface with thin clay cover	3.6+	6.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	*percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$
23	33	44	0.0–1.0	31	10	13	7	16	23
			1.0–2.0	20	6	17	13	24	20
			2.0–2.4	11	5	18	10	26	30
			Mean	23	8	15	10	21	23

COMPOSITION

Depth below surface (m)	*Percentage by weight in +4 – 32 mm fraction*								
	Angular white flint	Rounded white flint	Angular black flint	Rounded black flint	Angular brown flint	Rounded brown flint	Chalk	'Sarsen' sandstone	Quartz
1.0–2.0	27	33	13	12	10	3	trace	1	1

APPENDIX G

LIST OF WORKINGS

In 1979 there were five working pits in the district around Newbury; working had been discontinued in a sixth pit. There are also numerous small disused workings scattered throughout the area.

Location and grid reference	*Formation*	*Company*
Working pits		
Welford [416 718]	Plateau Gravel	Hills of Swindon Limited
Kintbury [384 684]	River Terrace Deposits	Hills of Swindon Limited
Thatcham [500 663]	River Terrace Deposits	Hills of Swindon Limited
Sandleford [478 650]	Plateau Gravel	Newbury Sand and Gravel Limited
Sandleford [476 653]	Plateau Gravel	Newbury Sand and Gravel Limited
Disused pit		
Hamstead Marshall [417 664]	Plateau Gravel	—

APPENDIX H CONVERSION TABLE, METRES TO FEET (to nearest 0.5 ft)

m	ft	m	ft	m	ft	m	ft	m	ft
0.1	0.5	6.1	20	12.1	39.5	18.1	59.5	24.1	79
0.2	0.5	6.2	20.5	12.2	40	18.2	59.5	24.2	79.5
0.3	1	6.3	20.5	12.3	40.5	18.3	60	24.3	79.5
0.4	1.5	6.4	21	12.4	40.5	18.4	60.5	24.4	80
0.5	1.5	6.5	21.5	12.5	41	18.5	60.5	24.5	80.5
0.6	2	6.6	21.5	12.6	41.5	18.6	61	24.6	80.5
0.7	2.5	6.7	22	12.7	41.5	18.7	61.5	24.7	81
0.8	2.5	6.8	22.5	12.8	42	18.8	61.5	24.8	81.5
0.9	3	6.9	22.5	12.9	42.5	18.9	62	24.9	81.5
1.0	3.5	7.0	23	13.0	42.5	19.0	62.5	25.0	82
1.1	3.5	7.1	23.5	13.1	43	19.1	62.5	25.1	82.5
1.2	4	7.2	23.5	13.2	43.5	19.2	63	25.2	82.5
1.3	4.5	7.3	24	13.3	43.5	19.3	63.5	25.3	83
1.4	4.5	7.4	24.5	13.4	44	19.4	63.5	25.4	83.5
1.5	5	7.5	24.5	13.5	44.5	19.5	64	25.5	83.5
1.6	5	7.6	25	13.6	44.5	19.6	64.5	25.6	84
1.7	5.5	7.7	25.5	13.7	45	19.7	64.5	25.7	84.5
1.8	6	7.8	25.5	13.8	45.5	19.8	65	25.8	84.5
1.9	6	7.9	26	13.9	45.5	19.9	65.5	25.9	85
2.0	6.5	8.0	26	14.0	46	20.0	65.5	26.0	85.5
2.1	7	8.1	26.5	14.1	46.5	20.1	66	26.1	85.5
2.2	7	8.2	27	14.2	46.5	20.2	66.5	26.2	86
2.3	7.5	8.3	27	14.3	47	20.3	66.5	26.3	86.5
2.4	8	8.4	27.5	14.4	47	20.4	67	26.4	86.5
2.5	8	8.5	28	14.5	47.5	20.5	67.5	26.5	87
2.6	8.5	8.6	28	14.6	48	20.6	67.5	26.6	87.5
2.7	9	8.7	28.5	14.7	48	20.7	68	26.7	87.5
2.8	9	8.8	29	14.8	48.5	20.8	68	26.8	88
2.9	9.5	8.9	29	14.9	49	20.9	68.5	26.9	88.5
3.0	10	9.0	29.5	15.0	49	21.0	69	27.0	88.5
3.1	10	9.1	30	15.1	49.5	21.1	69	27.1	89
3.2	10.5	9.2	30	15.2	50	21.2	69.5	27.2	89
3.3	11	9.3	30.5	15.3	50	21.3	70	27.3	89.5
3.4	11	9.4	31	15.4	50.5	21.4	70	27.4	90
3.5	11.5	9.5	31	15.5	51	21.5	70.5	27.5	90
3.6	12	9.6	31.5	15.6	51	21.6	71	27.6	90.5
3.7	12	9.7	32	15.7	51.5	21.7	71	27.7	91
3.8	12.5	9.8	32	15.8	52	21.8	71.5	27.8	91
3.9	13	9.9	32.5	15.9	52	21.9	72	27.9	91.5
4.0	13	10.0	33	16.0	52.5	22.0	72	28.0	92
4.1	13.5	10.1	33	16.1	53	22.1	72.5	28.1	92
4.2	14	10.2	33.5	16.2	53	22.2	73	28.2	92.5
4.3	14	10.3	34	16.3	53.5	22.3	73	28.3	93
4.4	14.5	10.4	34	16.4	54	22.4	73.5	28.4	93
4.5	15	10.5	34.5	16.5	54	22.5	74	28.5	93.5
4.6	15	10.6	35	16.6	54.5	22.6	74	28.6	94
4.7	15.5	10.7	35	16.7	55	22.7	74.5	28.7	94
4.8	15.5	10.8	35.5	16.8	55	22.8	75	28.8	94.5
4.9	16	10.9	36	16.9	55.5	22.9	75	28.9	95
5.0	16.5	11.0	36	17.0	56	23.0	75.5	29.0	95
5.1	17	11.1	36.5	17.1	56	23.1	76	29.1	95.5
5.2	17	11.2	36.5	17.2	56.5	23.2	76	29.2	96
5.3	17.5	11.3	37	17.3	57	23.3	76.5	29.3	96
5.4	17.5	11.4	37.5	17.4	57	23.4	77	29.4	96.5
5.5	18	11.5	37.5	17.5	57.5	23.5	77	29.5	97
5.6	18.5	11.6	38	17.6	57.5	23.6	77.5	29.6	97
5.7	18.5	11.7	38.5	17.7	58	23.7	78	29.7	97.5
5.8	19	11.8	38.5	17.8	58.5	23.8	78	29.8	98
5.9	19.5	11.9	39	17.9	58.5	23.9	78.5	29.9	98
6.0	19.5	12.0	39.5	18.0	59	24.0	78.5	30.0	98.5

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INSTITUTE OF GEOLOGICAL SCIENCES

INDUSTRIAL MINERALS ASSESSMENT UNIT

THE SAND AND GRAVEL RESOURCES OF SHEET SU 46 & Parts of SU 36,37 & 47 (NEWBURY, BERKS.)

Scale 1:25 000 or about 2½ Inches to 1 Mile

ORDNANCE SURVEY

SHEET SU 46 & Parts of SU 36, 37 & 47

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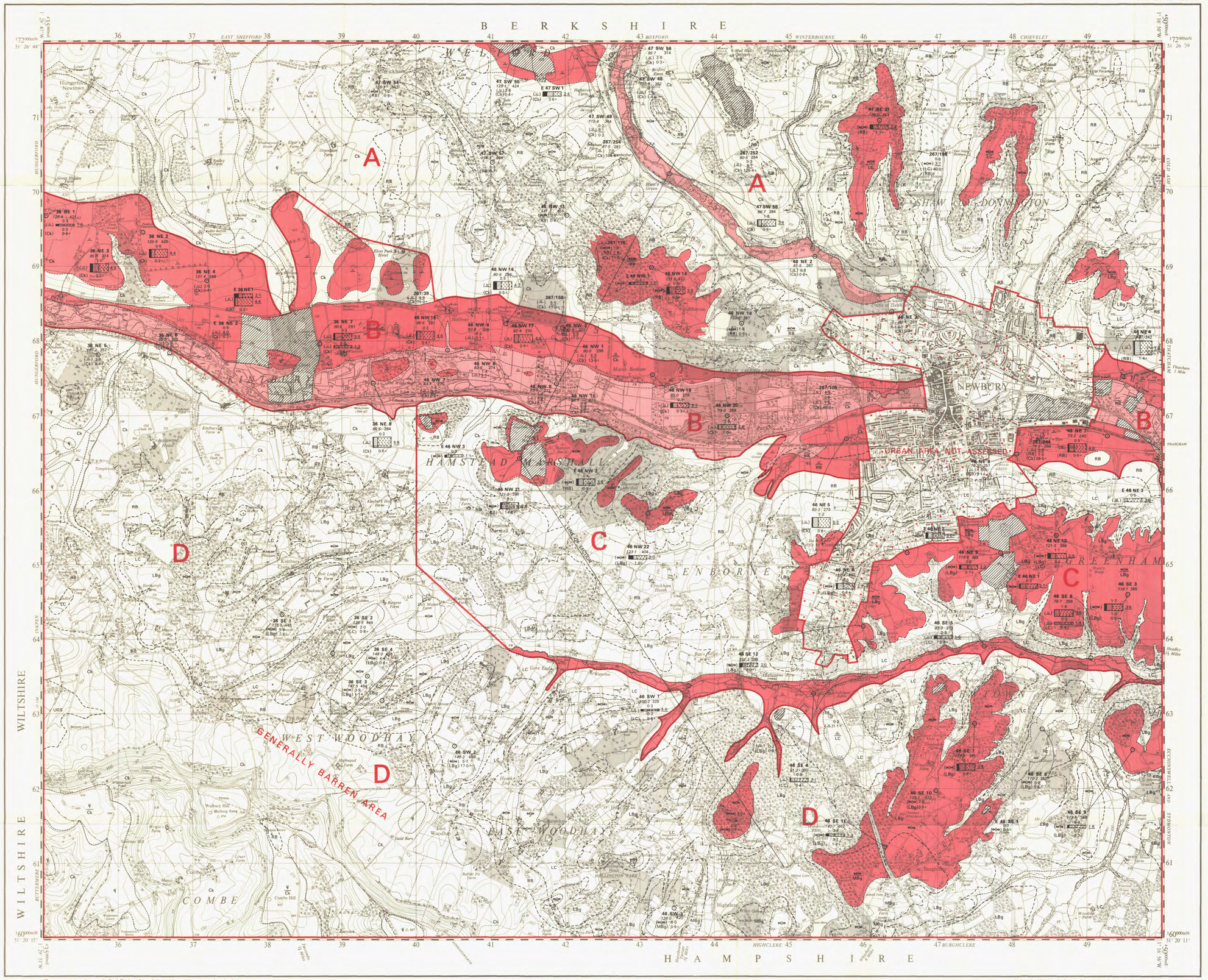

The representation on this map of a Road, Track, or Footpath, is no evidence of the existence of a right of way.

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1 100 81

The GRID lines on this sheet are at 1 Kilometre interval.
Heights are in feet above Mean Sea Level at Newlyn.
Contour values are in feet.
1 square inch on this map represents 99·659 acres on the ground.

Data quoted for an individual borehole refer strictly to that site; reliable conclusions cannot be drawn about the thickness and grading elsewhere in the deposit, particularly in material as variable as sand and gravel. However, estimates of the volume and mean grading of the mineral as a whole in each Resource Block are given in the Report.

Compiled from 6" sheets last fully revised 1909-38.
Other partial systematic revision 1956 has been incorporated.
Major roads revised 1966-73.

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THE SAND AND GRAVEL RESOURCES OF SHEET SU 46 & Parts of SU 36,37 & 47 (NEWBURY, BERKS)

This map should be read in conjunction with the accompanying Report which contains details of the assessment of resources.

59

EXPLANATION OF SYMBOLS AND ABBREVIATIONS

DRIFT

	Tufa -light grey calcareous secretions of green algae. TFA-1	RECENT AND PLEISTOCENE
	Alluvium -grey silts and clays with peat horizons. A-39	
	River Terrace Deposits (undifferentiated) -fine and coarse flint gravels. RT-17	
	Clay-with-flints -brown clay containing angular flints. CF-5	
	Plateau Gravel -gravels and pebbly clays. PL-4	

SOLID

UBg	**Upper Bagshot Beds** -yellow silts and sands.	EOCENE
MBg	**Middle Bagshot Beds** -red laminated clay.	
LBg	**Lower Bagshot Beds** -yellow brown silts and sands.	
LC	**London Clay** - dark grey, blue and brown clay.	PALEOCENE
RB	**Reading Beds** -yellow brown and grey clays and sands with thin bands of flint pebbles.	
Ck	**Chalk (undivided)** -white and grey chalk with flints.	CRETACEOUS
UGS	**Upper Greensand** -green micaceous sands with glauconite.	

Worked out areas of sand and gravel WO-9

BOUNDARY LINES

- Geological boundary, Drift.
- Geological boundary, Solid.
- Inferred boundary between recognised categories of deposits
- Resource Block boundary.

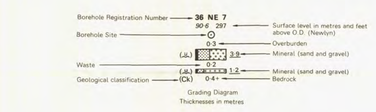
Broken line denotes uncertainty.

BOREHOLE DATA

SITE LOCATIONS

- Industrial Minerals Assessment Unit (I.M.A.U.) Boreholes.
- ha Industrial Minerals Assessment Unit hand auger hole.
- Other boreholes

I.M.A.U. BOREHOLES



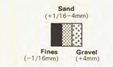
Note:
(i) Figures underlined denote thicknesses used in the assessment of resources.
(ii) The + sign indicates that the base of the deposit was not reached.
(iii) The figures in *italics* are conversions to metres of measurements recorded in feet.
(iv) The Geological Classification is given only for mineral and bedrock.

Borehole Registration Number

Each I.M.A.U. borehole is identified by a Registration Number, eg 36 NE 7. The first number and letters refer to the quarter sheet and the second number to the I.G.S. serial number for that quarter. The unique designation for borehole 36 NE 7 is SU 36 NE 7.

Grading Diagrams

Each grading diagram shows the mean particle size distribution of a distinct deposit of mineral



The height of the diagram is proportional to the mineral thickness.

The widths of the divisions show the proportions of **Fines**, **Sand** and **Gravel** but small amounts of gravel may be omitted or exaggerated.

OTHER BOREHOLES

The layout of information is the same as for I.M.A.U. boreholes, although data available may not be as comprehensive. They are registered in the same series. The final depth of deep boreholes is given in metres above (+) or below (–). O.D. (Newlyn)

EXPOSURE RECORDS

Information from the inspection of exposures is shown in the same way as for boreholes, but they are located by an asterisk, thus ✱. Reference number and details of thickness are shown.

CATEGORIES OF DEPOSITS

- **Exposed mineral, assessed** CAT-E2
- **Continuous or almost continuous spreads of mineral beneath overburden** CAT-C1
- **Sand and gravel either not potentially workable (see Report) or absent.** CAT-A2
- **Sand and gravel not assessed.** CAT-N1

Where appropriate on other sheets a category 'Discontinuous spreads of mineral beneath overburden' is recognised.

RESOURCE BLOCKS

For the purpose of assessment, the mineral is divided into Resource Blocks (see Report). Each is designated by a letter.

A horizontal section showing the general relations of the drift deposits along the lines shown, constitutes Fig. 2 of the report.

Detailed records may be consulted on application to the Head, Industrial Minerals Assessment Unit, Institute of Geological Sciences, Keyworth, Nottingham. NG12 5GG

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