Arborfield

Wokingham

SU 76

SU 86

Mortimer

SU 66

Hartley
Wintney

SU 65

SU 75

SU 85

Farnborough
(Hants)

Basingstoke

Farnham
(Surrey)

SU 64

SU 74

SU 84

Froyle

Lasham

The sand and gravel resources of the Loddon Valley area

Description of 1:25 000 sheets SU 75, 76 and parts of SU 64, 65, 66 and 74

M.R. Clarke, E.J. Raynor and R.A. Sobey

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.

Any enquiries concerning this report may be addressed to Head, Industrial Minerals Assessment Unit, Institute of Geological Sciences, Keyworth, Nottingham NG12 5GG.

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 resources 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 286 km² in the area of the Loddon Valley shown on the accompanying 1 : 25 000 resource sheet. The survey was conducted by M. R. Clarke, D. J. Havard and E. J. Raynor in 1974–76. The work is based on geological surveys at the 1 : 10 560 scale carried out principally by F. J. Bennett, J. H. Blake and C. E. Hawkins (One-inch Sheet 284, published 1897) and by F. J. Bennett and J. H. Blake (one-inch Sheet 268, published 1898). Minor amendments to terrace boundaries have been made based upon river profile studies and additional surveys by M. R. Clarke and A. J. Dixon. P. J. Moore and J. A. Bain have been responsible for the analysis of bedrock sands by staff in the Institute's Analytical and Ceramics Unit and Mineralogy Unit respectively. The results of this work are given in Appendix H.

Officers of the Property Services Agency under the supervision of the Defence Land Agent, Aldershot, have been responsible for negotiating access to land for drilling. The ready cooperation of landowners, tenants and gravel operators in this work, and the assistance of officials of the Berkshire County Council and Hampshire County Council are gratefully acknowledged.

P. A. Sabine
Acting Director

Institute of Geological Sciences
Exhibition Road
London SW7 2DE

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CONTENTS

The sand and gravel resources of the Loddon Valley area

Description of 1 : 25 000 sheets SU 75, 76 and parts of SU 64, 65, 66 and 74

M. R. CLARKE, E. J. RAYNOR and R. A. SOBEY

SUMMARY

The geological maps of the Institute of Geological Sciences, pre-existing borehole information, and 131 boreholes drilled for the Industrial Minerals Assessment Unit, form the basis of the assessment of sand and gravel resources in the area of the Loddon Valley in the counties of Berkshire and Hampshire.

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 their volume. The reliability of these estimates is given at the 95 per cent confidence level.

The 1 : 25 000 map is divided into seven resource blocks containing from 5.0 km^2 to 13.2 km^2 of sand and gravel. For each block, the geology of the deposits is described and the mineral-bearing areas, the mean thickness of overburden and mineral and the mean grading are given, together with detailed borehole data. The position of the boreholes, the geological lines and the outlines of the blocks are shown on the accompanying resource map which covers sheets SU 75, 76 and parts of SU 64, 65, 66 and 74.

Authors
M. R. Clarke, BSc, E. J. Raynor, BSc, and R. A. Sobey, BSc
Institute of Geological Sciences
Keyworth, Nottingham NG12 5GG

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 one metre 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 BS sieve, about $\frac{1}{16}$ mm) should not exceed 40 per cent.
d   The deposit should 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.

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

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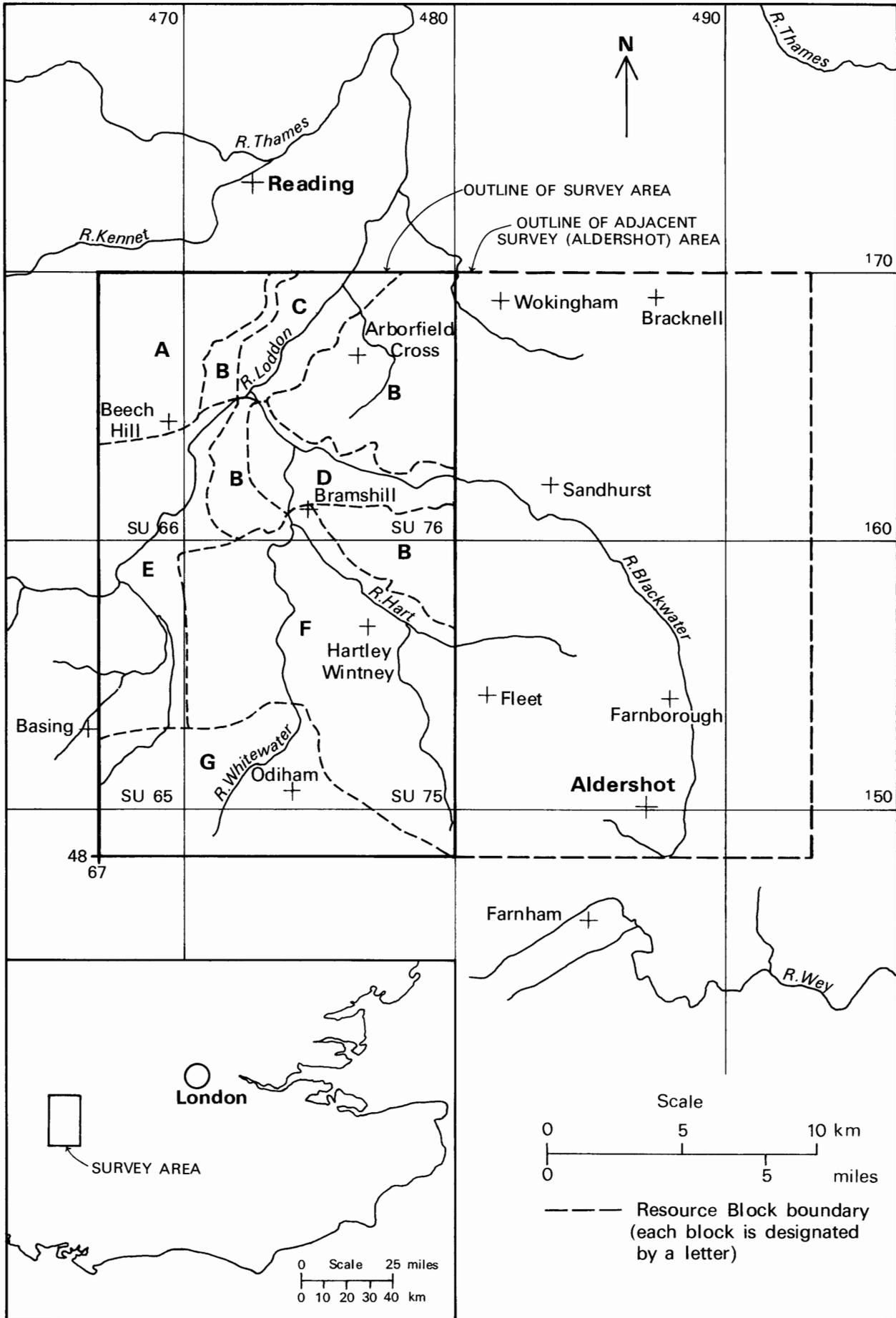
Figure 1   Location sketch map showing the resource block boundaries

grade 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 km² of sand and gravel. No account is taken of any factors, for example, roads, villages and land of 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.

DESCRIPTION OF RESOURCE SHEET

GENERAL

This report gives an assessment of the sand and gravel resources of 286 km² of country stretching from the suburbs of Reading in the north to beyond Odiham in the south (see Figure 1).

The survey area, which is largely agricultural, includes parts of the counties of Berkshire and Hampshire. Recent housing developments have extended the small urban areas at Arborfield [765 658], Hartley Wintney [769 570] and Odiham [740 510]; elsewhere the area remains essentially rural with scattered communities such as those at Rotherwick, Beech Hill and Barkham. Of the total area of the resource sheet, 4.4 km² are classified as urban, where the sand and gravel resources have not been assessed.

The 67.8 km² of mineral-bearing ground (24 per cent of the total survey area) comprises mainly the low-lying terraces of the rivers Blackwater and Loddon and their tributaries. However of this total, significant resources (10.7 km² assessed in block B) are identified in the higher level gravels particularly in the Eversley Common [788 595] and Heckfield Heath [720 615] areas, where they lie between 70 and 90 m above Ordnance Datum.

Bulk samples of bedrock sands (Bagshot Beds, Bracklesham Beds and Barton Beds) proved in assessment boreholes have been analysed for particle-size distribution and the results included in this report. No assessment of the resources within the bedrock sands has been made, although an indication of their quality and extent is given. (see Appendix H).

This report, together with the report on the adjoining survey area, the sand and gravel resources of the Blackwater Valley (Aldershot) area (Clarke, M. R., Dixon, A. J., and Kubala, M., 1979), completes the assessment of sand and gravel resources within the Loddon and Blackwater drainage system, which lies in the south-western part of the London Basin.

TOPOGRAPHY

The topography of the survey area is, for the most part, characterised by gently undulating ground where gradual changes in slope (see Figure 2) give rise to a landscape of "somewhat tame and monotonous character" (Osborne-White, 1909, p. 4).

Three main rivers of the area, the River Loddon, the River Whitewater and the River Hart rise at levels over 122 m above Ordnance Datum on the Chalk Uplands in the extreme south of the survey area and flow northwards forming a series of north to south-trending valleys and intervening generally flat-topped plateaux. The latter

owe their form to a protective capping of younger gravels overlying the less resistant (Eocene) bedrock sands and clays. Typical examples are Hazeley Heath [750 583], which rises to approximately 76 m above Ordnance Datum, and Eversley Common [795 592], at a height of about 90 m above Ordnance Datum, which continues eastwards into the adjoining Blackwater Valley survey area.

In the northern part of the area, the Loddon and Whitewater rivers join the River Blackwater, which trends east to west from Eversley [775 623] to Swallowfield [728 650], where it turns north-eastwards. The river here occupies a broad flood plain, flanked by extensive terraces lying at about 46 m above Ordnance Datum, which together form a valley in places over 2 km wide. To the north and east of the River Blackwater, the gravel-capped plateaux at Farley Hill [751 645] and Bear Wood [785 685], rise steeply to 76 m above Ordnance Datum above the generally low-lying countryside. In the north-west, a broad, flat area at 40 m above Ordnance Datum is formed by extensive terrace deposits associated with the River Kennett (which lies just outside of the survey area) and its tributaries, such as Foudry Brook.

GEOLOGY

The geological succession of mapped deposits within the survey area is shown in Table 1.

Structurally, the area lies towards the western end of the London Basin and includes parts of both northern and southern limbs of the broad east–west trending syncline. Gently dipping Eocene strata form the bedrock over all but the southernmost part of the area, where older, Cretaceous strata are brought to the surface by the Kingsclere anticline and associated minor folds.

The Paleogene formations were laid down within the London Basin, the form of which was similar to that of the present-day outcrop of these strata. Thinning and changes of facies take place towards the edges of the basin of deposition, with the result that within the survey area neither the Thanet Sands nor the Claygate Beds, found further to the east, are present.

The lithostratigraphic classification of the Eocene sands as originally mapped has been retained for the purposes of this survey, although there is faunal evidence (Curry, 1965) to suggest that their three-fold subdivision (Bagshot Beds, Bracklesham Beds and Barton Beds) may be bio-stratigraphically unacceptable.

Drift deposits are associated with the main river valleys, and also occur as scattered remnants of former high-level river terraces (see p. 5) which now form plateau-like features on the outliers of Eocene sands and clays.

A brief account of the nature of each deposit is given below; more detailed descriptions are given in the Geological Survey sheet memoirs (Blake, 1903; Osborne-White, 1909).

SOLID

Upper Chalk: The Upper Chalk comprises mainly soft white chalk with interbedded bands of nodular flint; it occurs in a broad belt of land in the south of the survey area. The total recorded thickness of these strata is about 120 m.

Reading Beds: The Reading Beds occupy a narrow outcrop along the base of the chalk uplands in the south of the area, where they exhibit little or no angular
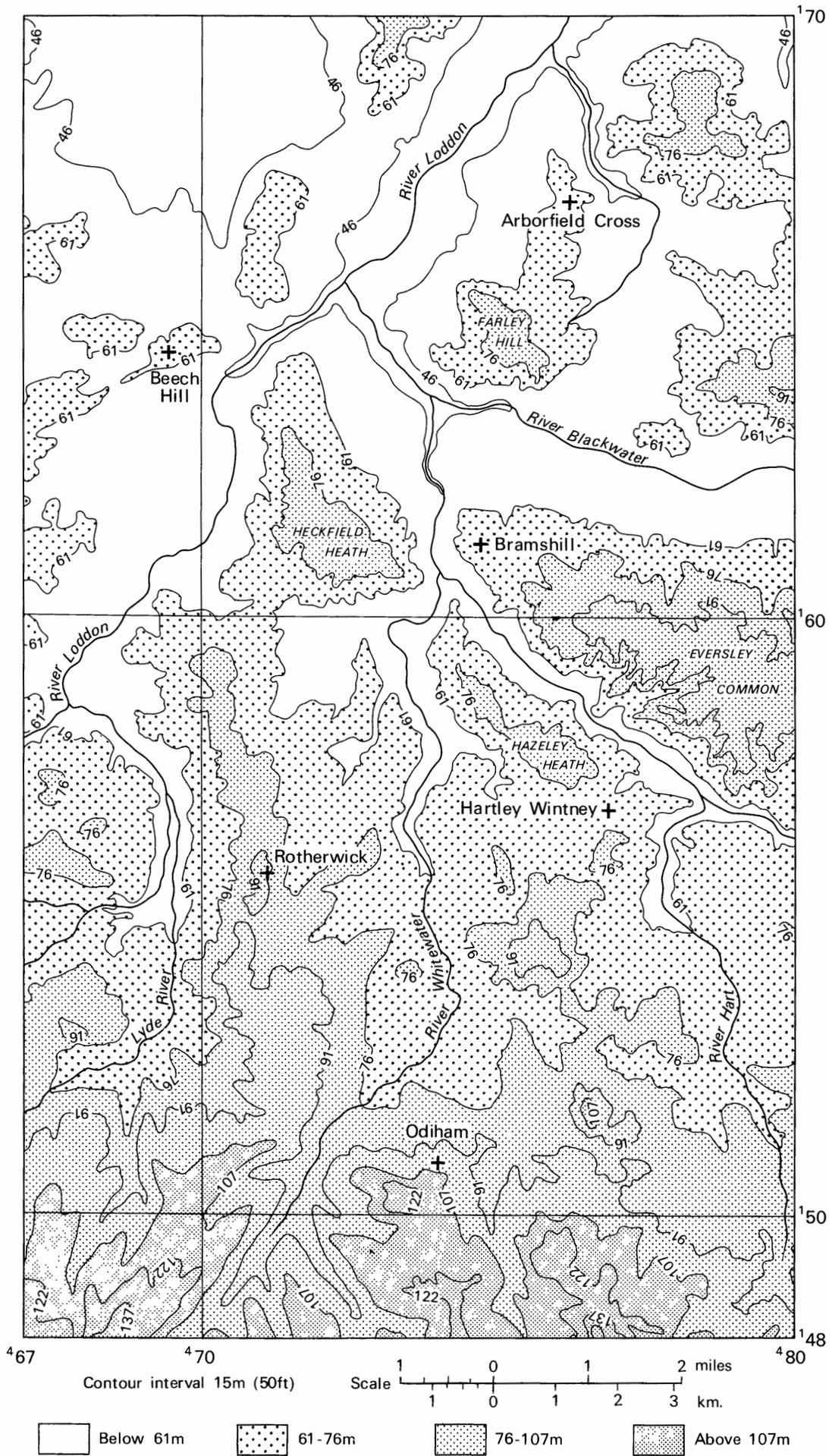
Figure 2 The topography of the resource sheet area

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unconformity with the underlying Upper Chalk. Only one assessment borehole (74 NE 1 [7971 4979]) proved these beds, which comprise a series of vari-coloured (predominantly red, green and grey) clays, loams and sands with a maximum recorded thickness of 21 m.

London Clay: Stiff, dark bluish grey silty clay, (in parts, fossiliferous) typical of the London Clay, forms bedrock over more than half of the survey area and was proved in many of the assessment boreholes. Generally there is only a shallow weathered zone of up to about 1.0 m of yellowish brown silty clay. A well sunk in Dogmersfield Park [771 515] near Odiham, proved a total thickness of London Clay of 102.1 m. The green sands and clay, and associated bands of septaria, which normally make up the basement bed, have not been proved in boreholes. Dark grey silty sand was proved near the top of the formation, for example in borehole 75 NE 66 [7529 5924].

Table 1 Geological classification of deposits within the Loddon Valley area

DRIFT	
PLEISTOCENE AND RECENT	
Alluvium	Silty clays and silts of fluvial origin with scattered pebbles and occasional thin peat beds
Brickearth	Orange-brown clays and silty clays overlying River Terrace Deposits
Downwash Gravel (Head Gravel)	Thin and patchy sands and gravels derived by solifluction from adjacent bedrock and gravelly Drift deposits
River Terrace Deposits	Fluviatile sands and gravels comprising mainly flint with minor amounts of quartz and, in some areas, sandstone
River Terrace Deposits (Undifferentiated)	Thin and patchy sands and gravels of limited extent and of uncertain origin
Clay-with-flints	Red and brown silty clays with nodular flints and angular flint fragments
SOLID	
PALAEOGENE	
Eocene	
Barton Beds	Silty fine quartz sands, yellow and pale grey with glauconite at some levels
Bracklesham Beds	Mainly fine with medium quartz sands, dark grey and yellow but becoming greenish yellow with increasing glauconite content
Bagshot Beds	Fine and medium quartz sands, orange, yellow and pale grey
London Clay	Firm, dark bluish grey clay, silty in parts and with dark bluish grey sands near the top of the formation
Palaeocene	
Reading Beds	Mottled red, grey and green sands and clays
UPPER CRETACEOUS	
Upper Chalk	Soft, white chalk with nodular flints

Bagshot Beds (Lower Bagshot Beds of published geological map): An arcuate outcrop of these beds stretches from Barkham [780 670] in the north through Hazeley [740 590] to Crookham [792 526] in the south, and occurs as small outliers such as those seen at Rotherwick [710 560], Hazeley and Farley Hill.

In this area the Bagshot Beds are believed to attain a thickness of between 15 and 18 m although considerable variation in thickness may occur locally owing to facies changes. A range of lithologies has been encountered in the fourteen assessment boreholes which proved these strata: generally they comprise yellow and grey silty sands which weather orange-brown at or near the surface. Thin laminated silty clay seams occur locally, for example in borehole 75 NW 9, and lignitic seams have also been recorded (Osborne-White, 1909, p. 60). The lithologies at the base and top of this formation are very similar to those seen in the underlying London Clay and overlying Bracklesham Beds, and hence it is particularly difficult to define the lithostratigraphic limits of these beds.

Bracklesham Beds: These beds are found in the central part of the basin and form an extensive outcrop in the eastern part of the survey area. Thirteen assessment boreholes proved the formation; it comprises a series of yellow and dark grey silty sands, becoming a dark greenish grey colour with increasing glauconite content. Interbedded dark grey laminated silty clays also occur and have been worked for brick-making, for example near Hazeley Heath [755 578]. In a railway cutting at Winchfield [760 545] the Bracklesham Beds are recorded as having a thickness of nearly 17 m.

Barton Beds (Upper Bagshot Beds of published geological map): The Barton Beds have a limited outcrop within the survey area and principally occur beneath the Drift sands and gravels at Eversley Common and also as a small outlier near Finchampstead [795 632]. Typically yellow and greyish brown silty sands, with green glauconite grains at some levels, were proved in the five assessment boreholes drilled in the Eversley Common area. Although much of the upper part of this formation has been removed, approximately 12 m remain.

DRIFT

Clay-with-flints: Patches of red and brown silty clay with a mixture of nodular flints and angular flint fragments are found scattered across the Chalk in the south of the area. Although locally these deposits may be more pebbly or sandy, experience in this and other assessment areas has shown that they are rarely potentially workable and they have not therefore been assessed.

River Terrace Deposits: Some of the spreads of high-level gravels (shown as Plateau Gravels on the one-inch geological maps (see p. 14)) have previously been recognised as River Terrace Deposits, and correlated with the deposits associated with the River Thames (Thomas, 1961).

The new data from the 131 assessment boreholes, detailed river profiles studies and a limited amount of geomorphological mapping have provided the basis for a reclassification of all the high-level gravels in the area as a sequence of River Terrace Deposits. They are numbered sequentially with the lower terraces (Valley Gravels) of the River Blackwater.

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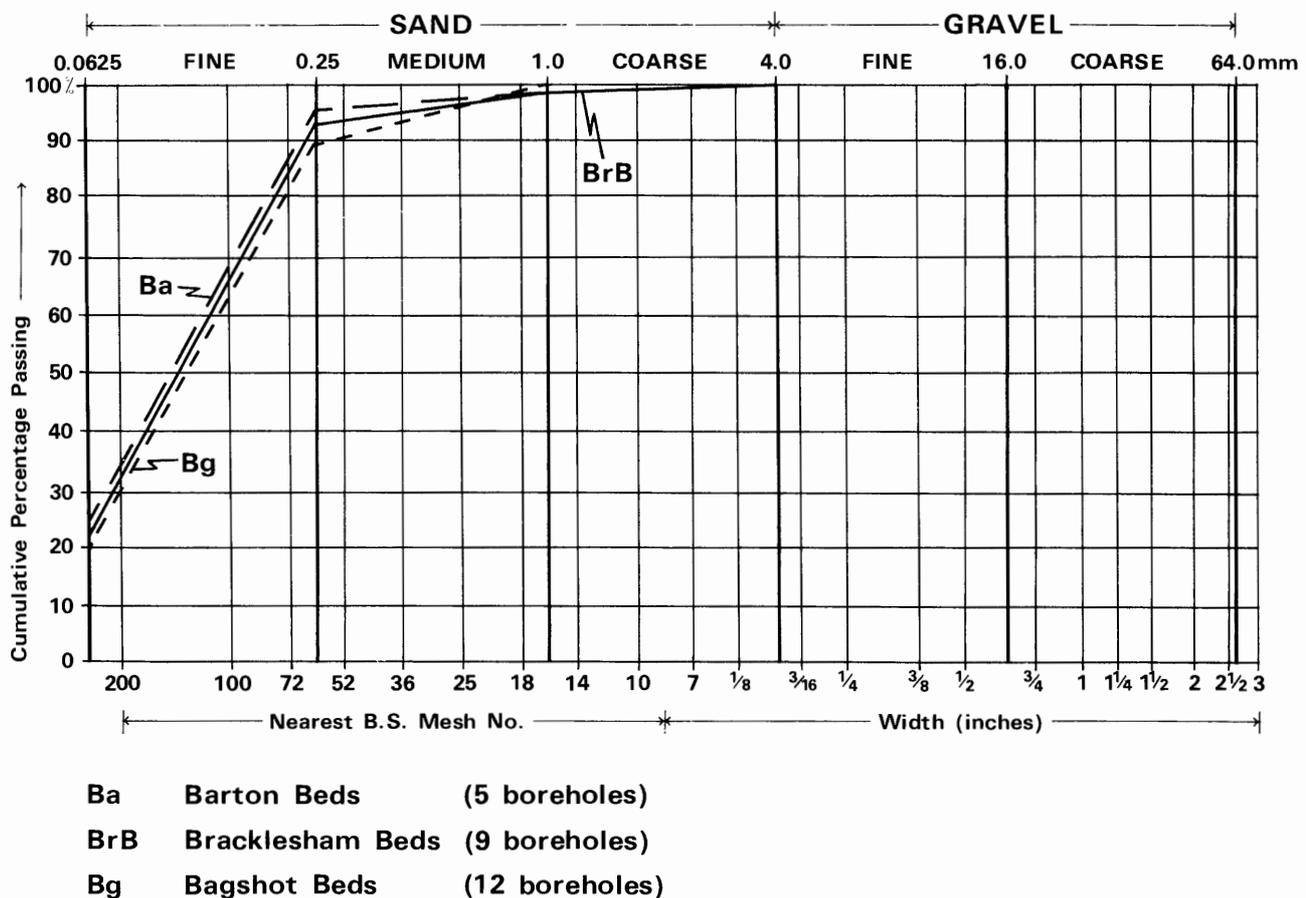
Figure 3   The mean grading of bedrock sand formations

There is a notable difference in composition between the River Terrace Deposits of the River Loddon – which consist almost entirely of flint gravels and quartz sands – and those of the rivers Hart, Whitewater and Blackwater, which also comprise principally flint gravels but with minor though significant amounts of sandstone and vein-quartz.

The River Terrace Deposits that occur within the main areas of sandy Eocene bedrock appear generally to have a higher sand content than the deposits found elsewhere within the sheet area (compare Figures 7 and 8).

Chalky gravels were proved in assessment boreholes near the heads of the rivers (for example, borehole 74 NW 1), but downstream, chalk is absent.

In some instances it has proved difficult to classify some occurrences of gravelly material, such as that near Broomfield Hatch [683 658], which are shown as River Terrace Deposits (Undifferentiated).

Downwash Gravel (Head Gravel): Thin and irregularly distributed patches of sand and gravel, often of a clayey nature (as shown in borehole 75 SW 84) are shown in some areas to have a high surface gradient, and are thought to represent materials derived by solifluction from adjacent deposits. The main occurrence of sand and gravel now reclassified as Downwash Gravel (Head Gravel) is that at Hook Common [715 535]. Other (unmapped) deposits are present at various localities within the area, for example on the north-western slopes

of Eversley Common, where hand augering and other information confirm the presence of thin spreads of clayey gravel. Although this material is unlikely to be a major source of aggregate, locally it may become very sandy or gravelly, and it has, therefore, been included with the assessment of the main spreads of River Terrace Deposits.

Brickearth: Brickearth, which occurs as spreads of orange and brown silty clays and clays, has been mapped in the Blackwater Valley around Upperwood Farm [745 695], and as small patches in the head-waters of the River Loddon (for example, near Andwell Moor [688 522]). They are believed to overlie River Terrace Deposits (see borehole 76 NW 33) and probably represent overbank material laid down at an earlier stage in the history of the drainage system of the area.

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Figure 4 Profile to show the relationship of the River Terrace Deposits to the rivers Hart and Whitewater
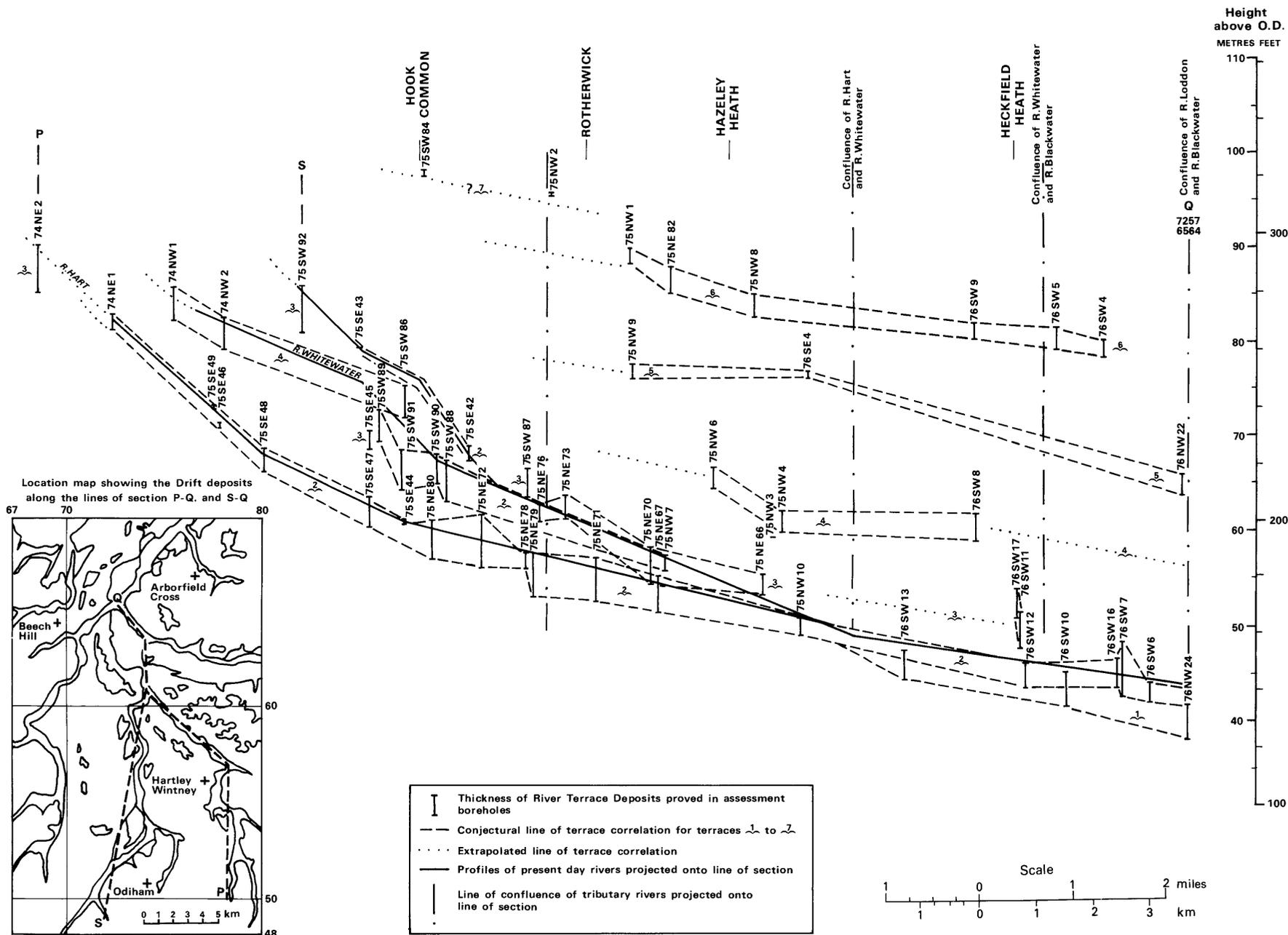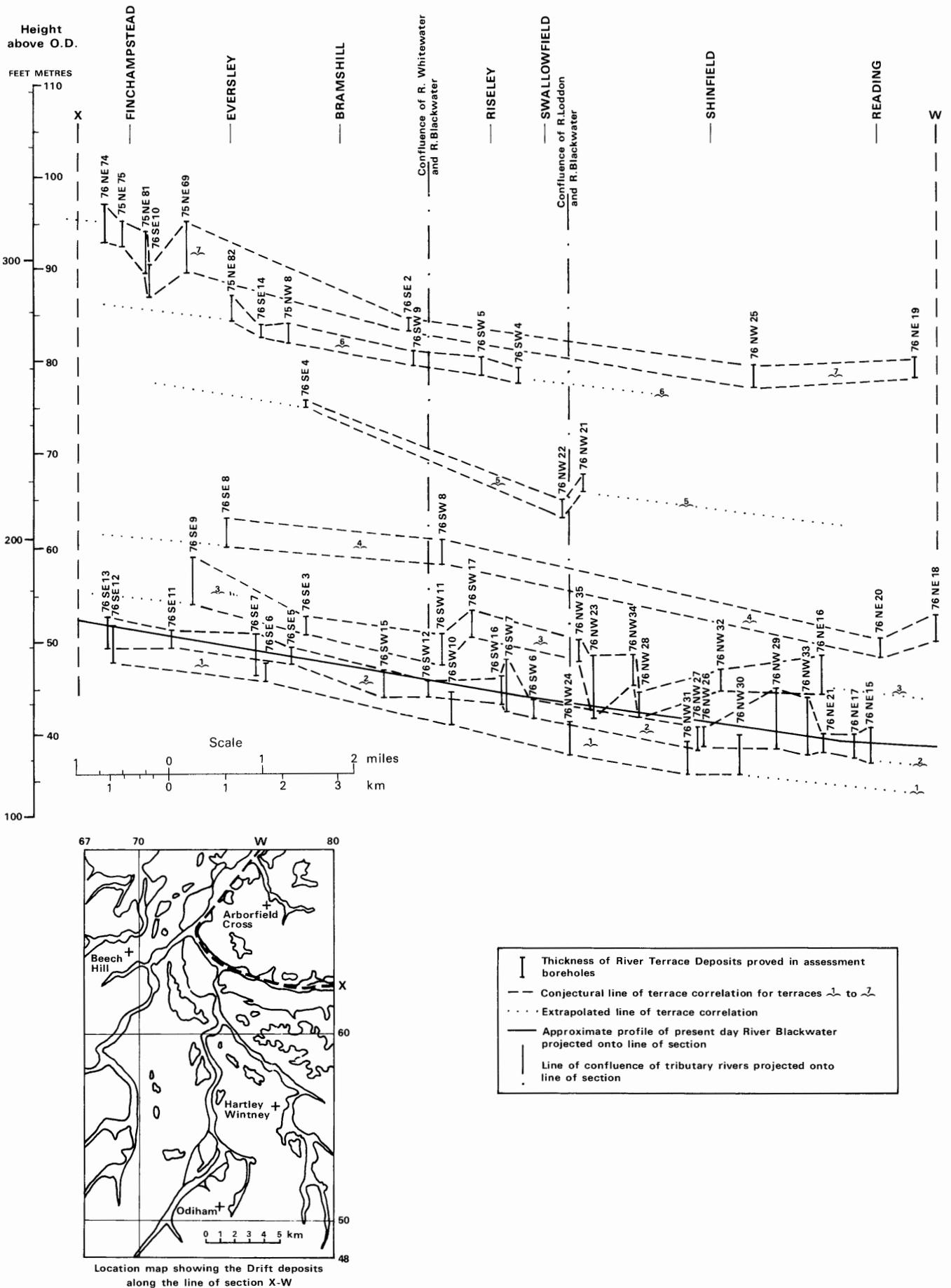
Figure 5 Profile to show the relationship of the River Terrace Deposits to the River Blackwater
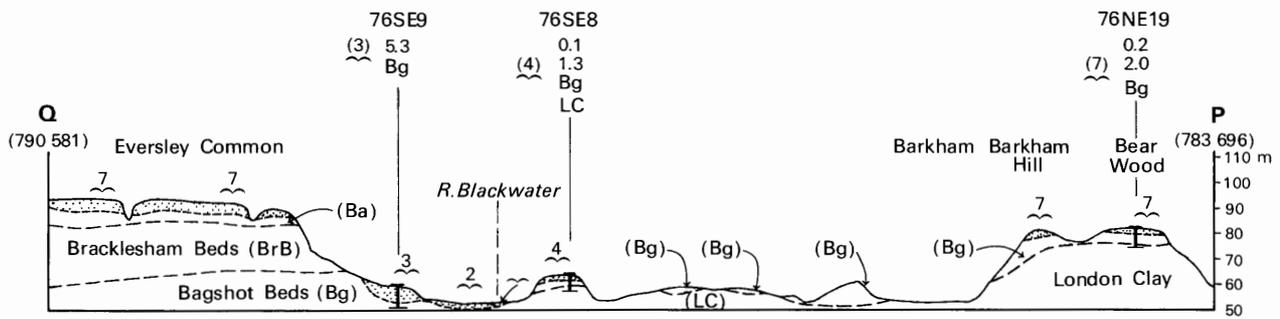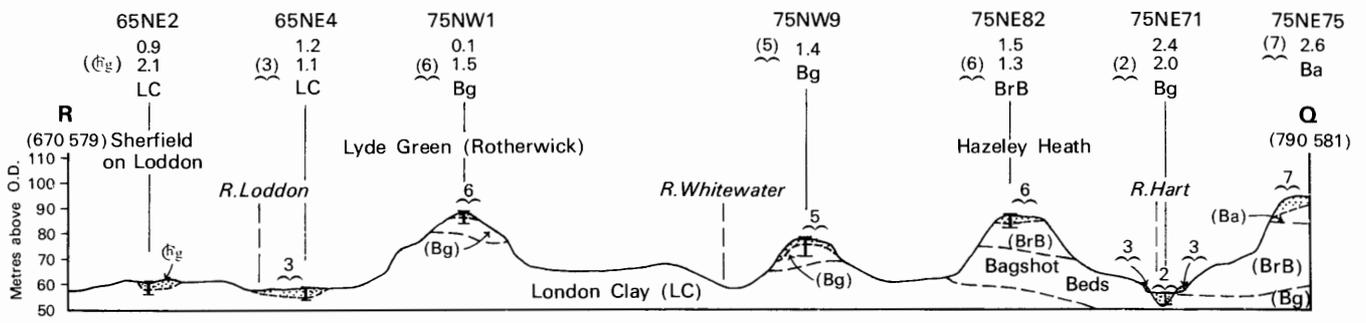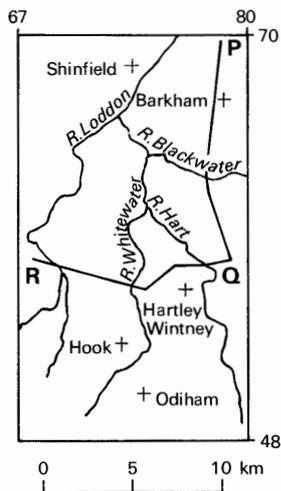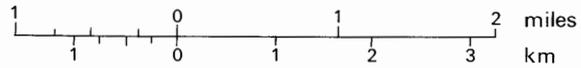
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Figure 6 Cross-sections of the Loddon Valley area

Table 2 The weighted mean gradings of the River Terrace Deposits

River terrace	Number of sample points	Mean thick-ness (m)	Mean grading percentages					
			$-\frac{1}{16}$ mm	$+\frac{1}{16} - \frac{1}{4}$ mm	$+\frac{1}{4} - 1$ mm	$+1 - 4$ mm	$+4 - 16$ mm	$+16$ mm
The high level River Terrace Deposits								
5 (all)	4	1.2	25	22	19	5	13	16
6 (all)	6	1.6	10	13	20	8	25	24
6 and 7 (Rotherwick)	2	1.0	17	14	9	6	18	36
7 (all)	8	3.1	15	16	21	10	20	18
The lower level River Terrace Deposits								
1st Whitewater	2	1.7	2	2	6	12	49	29
2nd Whitewater	9	2.1	9	5	7	11	33	35
3rd Whitewater	3	2.9	25	20	9	7	20	19
4th Whitewater	6	2.8	18	12	9	10	24	27
1st Blackwater	3	2.6	13	17	15	8	26	21
2nd Blackwater	11	2.0	12	13	18	10	26	21
3rd Blackwater	5	2.8	10	19	21	8	20	22
4th Blackwater	4	1.9	18	20	24	6	18	14
2nd Hart	12	2.1	11	20	11	8	27	23
3rd Hart	6	2.7	11	20	10	8	28	23
1st Lower Loddon	5	1.8	6	4	16	14	36	24
2nd Lower Loddon	4	4.1	11	11	17	11	31	19
3rd Lower Loddon	6	3.4	9	11	19	10	30	21
2nd Upper Loddon	6	1.1	9	5	11	12	37	26
3rd Upper Loddon	5	2.0	20	7	10	10	28	25
Kennet/Foudry Brook	13	2.4	11	7	18	10	34	20

Alluvium: Extensive spreads of pebbly silty clays and silts are found throughout the area, within the flood-plains of all the main rivers and their tributaries.

Throughout the sheet area, the floodplain alluvium, which is rarely less than 1 m thick, generally overlies River Terrace Deposits (Terraces 1 and 2). They have a mean thickness of 1.9 m of sand and gravel.

In some of the smaller tributary valleys, such as that of the Emm Brook, (which rises near Barkham [783 665]), hand augering has shown that the Alluvium is clayey in nature and rests almost directly upon bedrock; similarly, borehole 66 SE 5 [6961 6368], drilled in the valley of a small stream which joins the River Loddon near Beech Hill, proved, beneath Alluvium, 0.1 m of 'very clayey' sandy gravel on London Clay.

COMPOSITION OF THE SAND AND GRAVEL

The major resources of sand and gravel are found in the River Terrace Deposits, which are distributed through-out the sheet area as sinuous low-level terraces (ranging in height from about 35 m to 90 m above Ordnance Datum) in the valleys of the rivers Hart, Whitewater, Loddon and Blackwater, and as the more irregularly distributed high-level terrace deposits (ranging in height from about 70 m to 100 m above Ordnance Datum).

Where they form bedrock to the Drift deposits, the Eocene sands have been investigated to a shallow depth, and bulk samples have been analysed for particle-size distribution in order to provide a guide to the mean grading of the bedrock formations. The grading charac-teristics of the bedrock sands proved in assessment boreholes are shown in Fig. 7, and the mean grading of each formation is shown in Figure 3.

The grading characteristics of the Drift deposits as proved in each borehole are shown in Figure 8 and the mean composition, based upon pebble-count studies of the +4 − 16 mm fraction of samples from boreholes in each of the main deposits, is given in Table 3 and shown in Figure 11.

Laboratory tests were carried out on twelve randomly selected samples to determine the 10 per cent fines and oven-dried Specific Gravity values, and the results are given in Table 4.

Eocene Formations

The Bagshot Beds, proved in 13 boreholes, are generally orange-brown 'clayey' to 'very clayey', silty fine quartz with some medium quartz sands, having a mean grading of fines 19 per cent, fine sand 70 per cent, and medium sand 11 per cent. Near to the base of the formation the beds become more silty and pass imperceptibly into the dark grey silts and fine quartz sands (as seen in boreholes 75 NE 70 and NE 67) which characterise the apparently transitional passage between them and the underlying London Clay.

Nine assessment boreholes provided samples of the Bracklesham Beds, which comprise dark grey and greenish grey, glauconitic, silty fine quartz sands with a mean grading of fines 21 per cent, fine sand 72 per cent, medium sand 6 per cent and coarse sand 1 per cent.

The Barton Beds were encountered in five boreholes in the Eversley Common area. They comprise yellow, orange and grey 'very clayey' (silty) fine quartz sands with a mean grading of fines 33 per cent, fine sand 63 per cent, medium sand 3 per cent and coarse sand 1 per cent.

·The limited amount of data available suggests that the Barton Beds are finer in grain size than the underlying bedrock sands (see Figure 3). However, all of the bedrock sands encountered are too silty to be considered as resources potentially workable for fine aggregate or for industrial (silica) sands (see Appendix H).
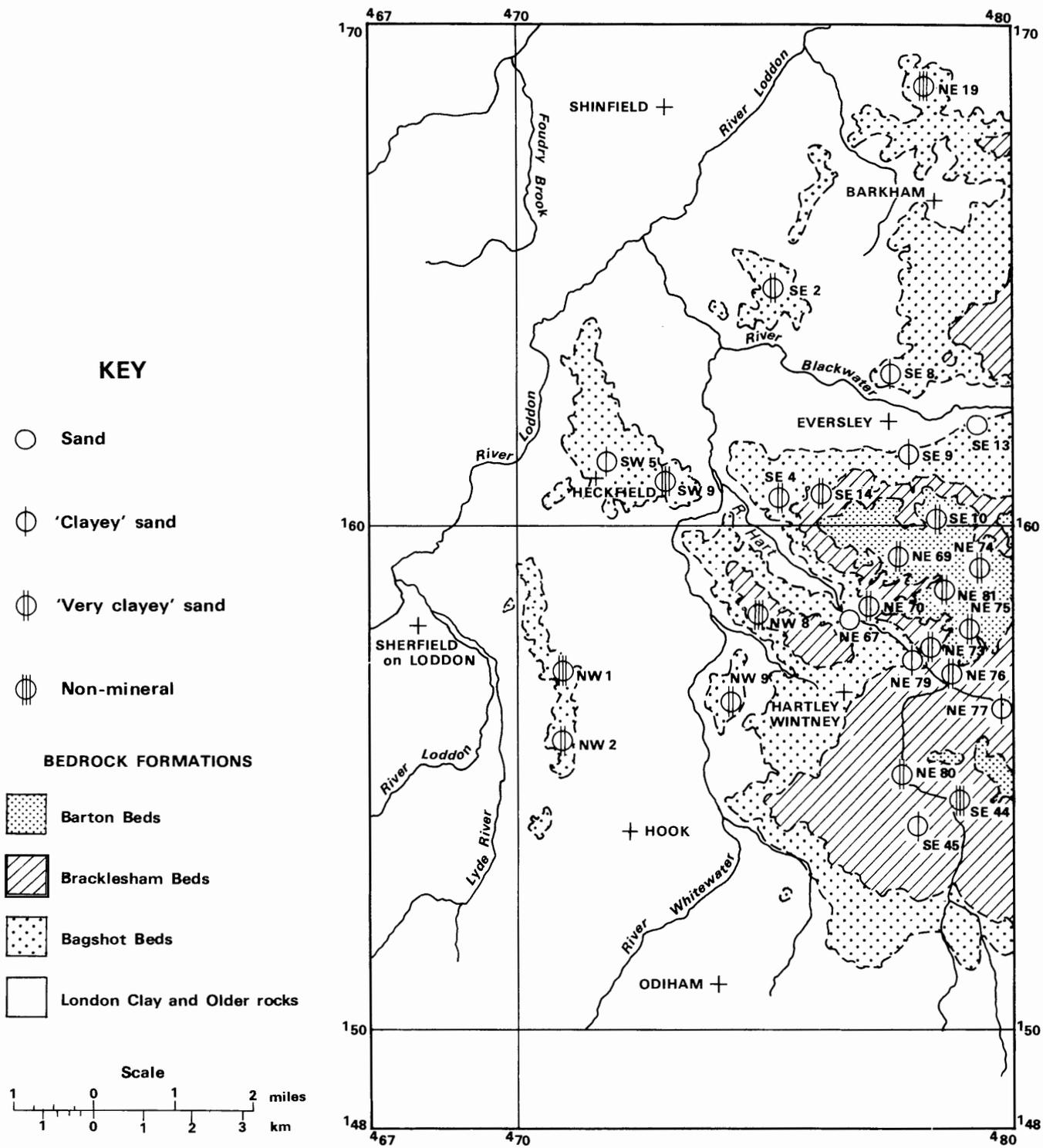
Figure 7 The grading characteristics of the Bagshot Beds, Bracklesham Beds and Barton Beds

Table 3 The mean composition of the +4 − 16 mm material, based on pebble count results of samples from randomly selected boreholes

Borehole Number	Gravel thickness (m)	Percentages by weight				
		Flint %	Rounded flint %	Sandstone %	Vein-quartz %	Chalk %
High level terraces						
76 NE 19	2.0	75	12	9	4	0
76 SW 5	1.9	89	2	8	1	0
75 NE 82	1.3	82	9	8	1	0
75 NE 75	2.3	87	6	4	3	0
76 SE 4	0.5	85	5	8	2	0
Lower level terraces						
1 of the River Blackwater						
76 SW 13	0.9	94	2	3	1	0
76 SW 16	2.4	90	5	3	2	0
76 SE 9	4.3	86	6	7	1	0
76 SE 10	3.2	90	3	6	1	0
76 SE 12	3.7	86	5	8	1	0
2 of the lower River Loddon						
76 NW 30	3.3	92	3	4	1	0
76 NW 33	4.4	90	5	4	1	0
76 NW 35	2.5	95	4	1	0	0
3 of the River Hart						
75 NE 67	2.0	92	4	3	1	0
75 NE 80	2.0	96	2	1	1	0
74 NE 1	2.4	90	7	2	1	0
4 of the River Whitewater						
75 SW 87	1.6	93	0	0	1	6
74 NW 2	3.4	96	0	1	0	3
5 of the upper River Loddon						
65 NE 3	0.7	98	1	1	0	0
65 SE 92	1.6	87	2	1	1	9
65 SE 95	2.0	87	1	2	1	9
75 NW 1	1.5	97	2	0	1	0
6 of the River Kennet						
76 NW 19	1.8	100	0	0	0	0
66 SE 2	2.3	99	1	0	0	0

No attempt has been made in this report to distinguish chert from flint; the 'sandstone' identified in borehole samples refers strictly to granular grey to buff cherty sandstone thought to have been derived from the Hythe Beds of the Wealden Area.

River Terrace Deposits – high levels (Plateau Gravels)

The sand and gravel of terraces 5, 6 and 7 is found at heights ranging from about 70 m to more than 90 m above Ordnance Datum and forms the many plateau features in the area such as Eversley Common, Hazeley Heath and Farley Hill.

These deposits comprise principally subangular to subrounded flint gravels with fine and medium quartz sands, but they also have up to 9 per cent by weight of subrounded sandstone pebbles (see Figure 11 and Table 3), which are thought to have been derived from the Lower Cretaceous Hythe Beds exposed to the south of the survey area.

The weighted mean gradings for deposits proved by assessment boreholes at each terrace level are given in Table 2. The higher level River Terrace Deposits contain from 29 per cent to 54 per cent gravel, with fine and medium quartz predominant in the sand grades (see Figure 9).

River Terrace Deposits – lower level (Valley Gravels)

The lower level River Terrace Deposits lie at heights of up to 20 m above the flood plains of the main rivers.

In general, all of these deposits are formed mainly of subangular to subrounded flint gravel, which contains only minor amounts of sandstone, rounded flint and vein-quartz pebbles, and subangular quartz-rich sands. In some deposits close to the outcrop of the Chalk, small subrounded and well-rounded pebbles of chalk and subrounded flint nodules also occur, as proved in borehole 65 SE 95 (see Figure 11).

The proportion of sandstone pebbles in the gravel fraction decreases as the distance of the sample point from the River Blackwater increases: this river was evidently one of the main agents for bringing sandstone into the area. River Terrace Deposits of the upper part of the River Loddon, and at Rotherwick, contain only a small percentage of sandstone, whilst those deposits related to Foudry Brook and the River Kennet contain none.
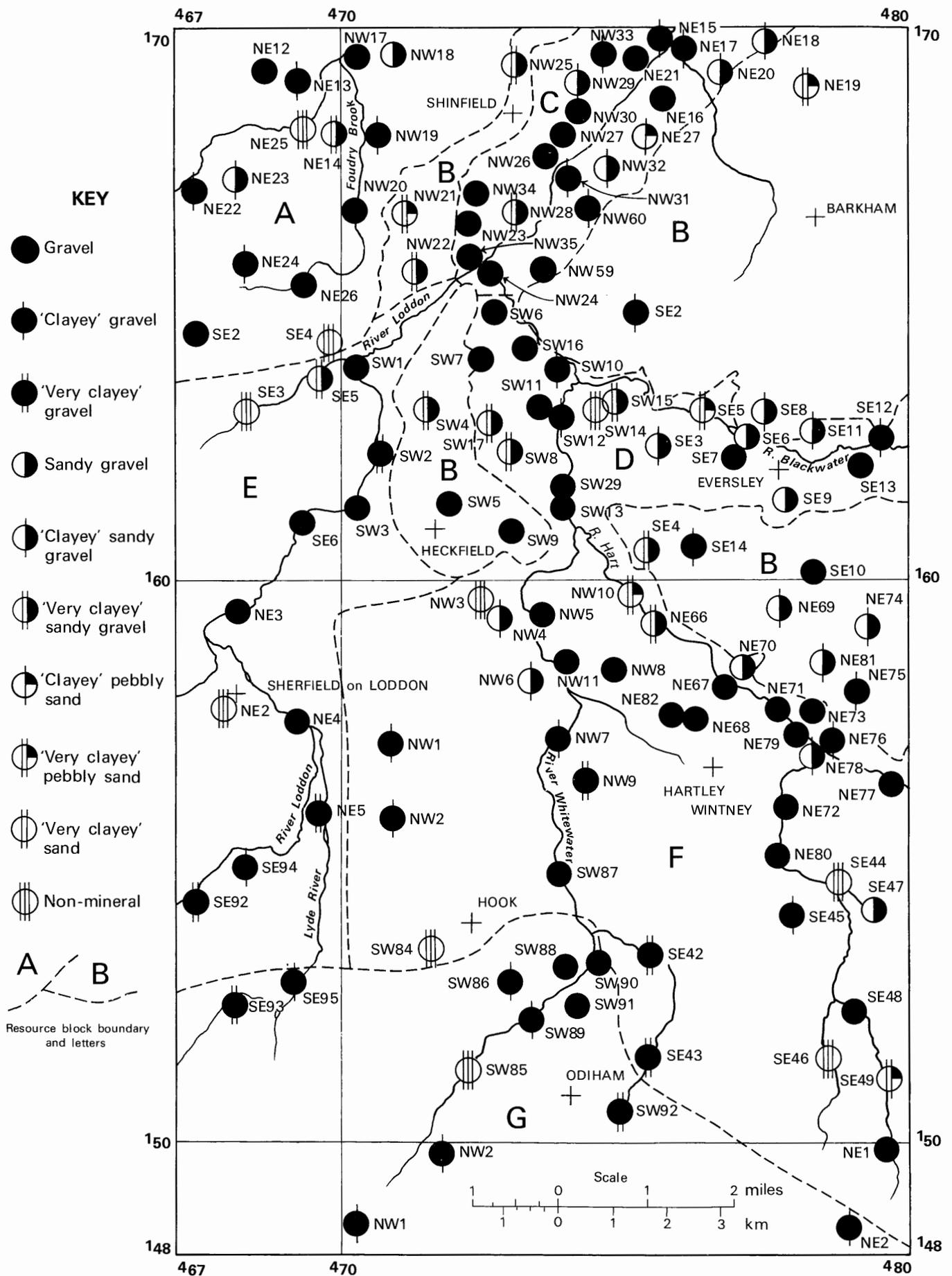
Figure 8 The grading characteristics of the Drift deposits

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Table 4 Results of 10 per cent Fines and Specific Gravity tests on +10 − 14 mm fraction

River Terrace Deposits of the Loddon/Blackwater Valley

Borehole number	Sample number	10% Fines Value (tons)	Oven dry (105°C) Specific Gravity
SU 76 SE 7	L.438	28.5	2.416 2.418
SU 76 SE 8	L.485	25.4	2.342 2.350
SU 76 SW 11	L.918	27.1	2.405 2.407
SU 76 NE 21	L.902	24.8	2.395 2.429
SU 76 NW 32	L.589	26.3	2.399 2.403
SU 76 NW 35	L.890	27.4	2.383 2.392
Mean Values		26.6	2.395

River Terrace Deposits of the Whitewater-Hart Valleys

SU 76 SW 13	L.888	28.5	2.379 2.383
SU 75 NE 72	L.299	26.3	2.507 2.511
SU 75 NE 77	L.657	29.4	2.416 2.419
SU 75 SW 91	L.926	25.9	2.289 2.290
Mean Values		27.5	2.399

River Terrace Deposits of the Loddon Valley

SU 76 SE 3	L.571	25.9	2.413 2.415
Mean values		25.9	2.414

River Terrace Deposits of Foudry Brook

SU 66 NE 24	L.899	26.2	2.444 2.445
Mean values		26.2	2.445

There is a large variaton between the weighted mean grading of the lower level River Terrace Deposits, but three broad overall trends may be observed:

1 The terraces of the River Blackwater have a high proportion of fine and medium quartz sand, which together make up as much as 44 per cent of the terrace deposits (as seen in the 4th terrace— Figure 9). As the river passes through large areas of bedrock sand, it is assumed that they contributed much of this sand.

2 The terraces of the lower part of the River Loddon (below Swallowfield) and of the River Hart, and the 3rd and 4th terraces of the River Whitewater also appear to contain some material derived from the bedrock sands. All of these terraces are composed of about 30 per cent fine and medium quartz sand with up to 14 per cent of coarse sand.

3 The terrace deposits with the smallest amounts of sand, and the highest amounts of gravel, are those related to the River Kennet and Foudry Brook, the terraces of the upper part of the River Loddon, and the First and Second terraces of the River Whitewater. The composition of these deposits is closely linked to their origin within the area of Chalk outcrop, and they therefore contain less derived material in the sand grades. Bulk samples from assessment boreholes have gravel components ranging from 54 per cent in the River Kennet/Foudry Brook deposits to 78 per cent in the 1st Terrace of the River Whitewater.

The mean gradings of all of the River Terrace Deposits in each river basin are given in Table 2 and shown in Figures 9 and 10.

Ten per cent Fines and Specific Gravity Values
The results of 10 per cent Fines and Specific Gravity tests carried out on the 10 to 14 mm size material from randomly selected bulk samples are shown in Table 4. The 10 per cent Fines values range from 24.8 to 29.4 tons; there is no trend discernible in the variation shown by samples taken from boreholes drilled at scattered sites throughout the area.

THE MAP
The sand and gravel resource map is folded into the pocket at the end of the 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 shades of red.

Geological data: The geological boundary lines shown are taken from the geological maps covering this area which were surveyed at the scale of 1 : 10 560 by F. J. Bennett, J. H. Blake and C. E. Hawkins (Sheet 268, 1897) and by F. J. Bennett and J. H. Blake (Sheet 284, 1898). Inter-terrace boundaries mapped by M. R. Clarke and A. J. Dixon in 1976–78, have been incorporated into the resource map. The new data available from assessment boreholes has enabled a re-classification of the Drift deposits (see p. 5) to be made. The high-level gravels, the Plateau Gravels of the published geological map, have been assigned to the various terrace levels of the Blackwater river system and, where possible, patches of soliflucted sand and gravel have been classified as Downwash Gravel (Head Gravel).

Borehole data, which include the stratigraphic relationship and mean particle-size distribution of the sand and gravel (including bedrock sand) samples collected during assessment survey are also shown.

The geological boundaries are regarded as the best interpretation of the information available at the time of survey. However because of the difficulty of mapping Drift deposits where thick solifluction material occurs, it is inevitable that local irregularities or discrepancies will be revealed by boreholes. These are taken into account in the assessment of resources (see below and Appendix B).
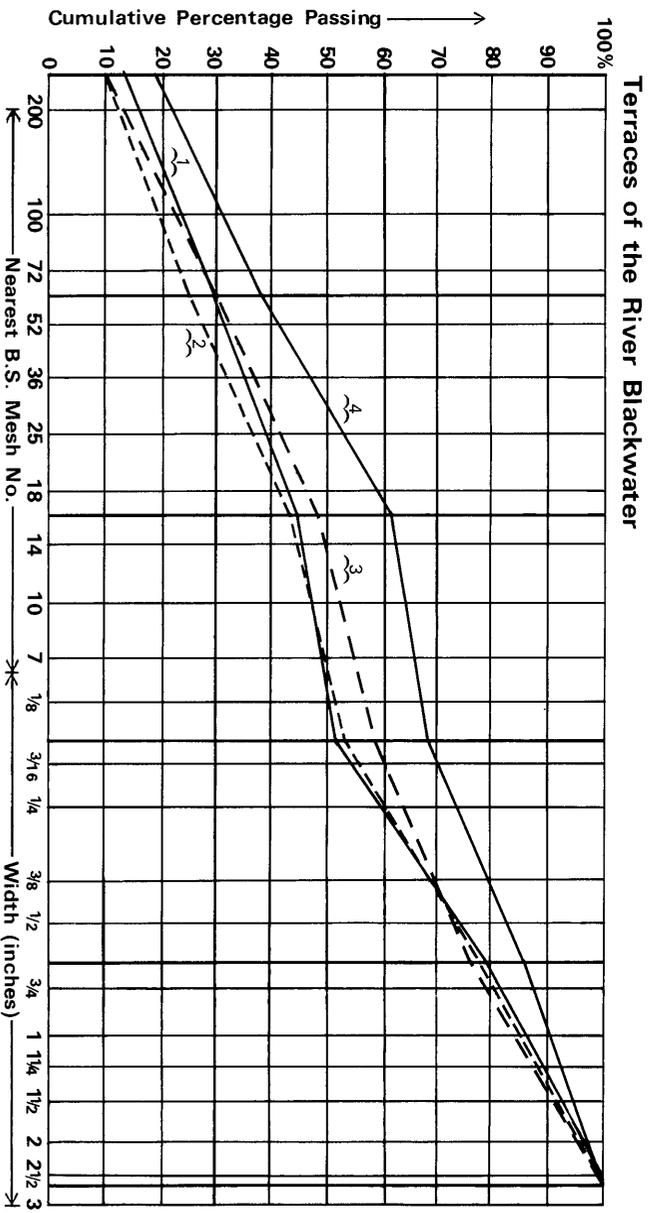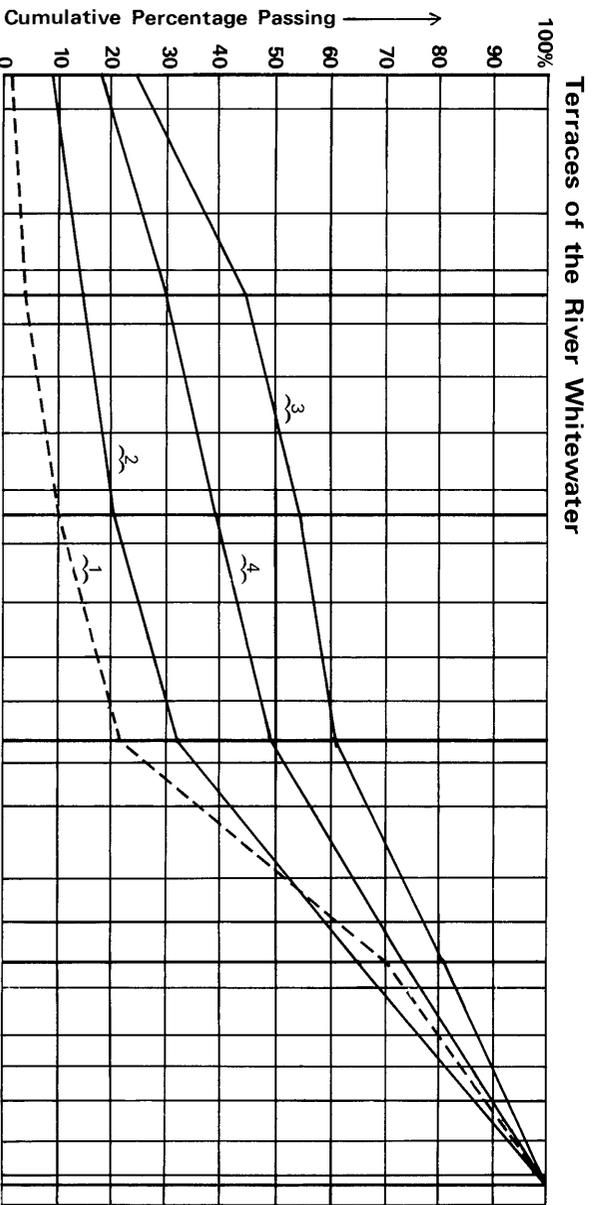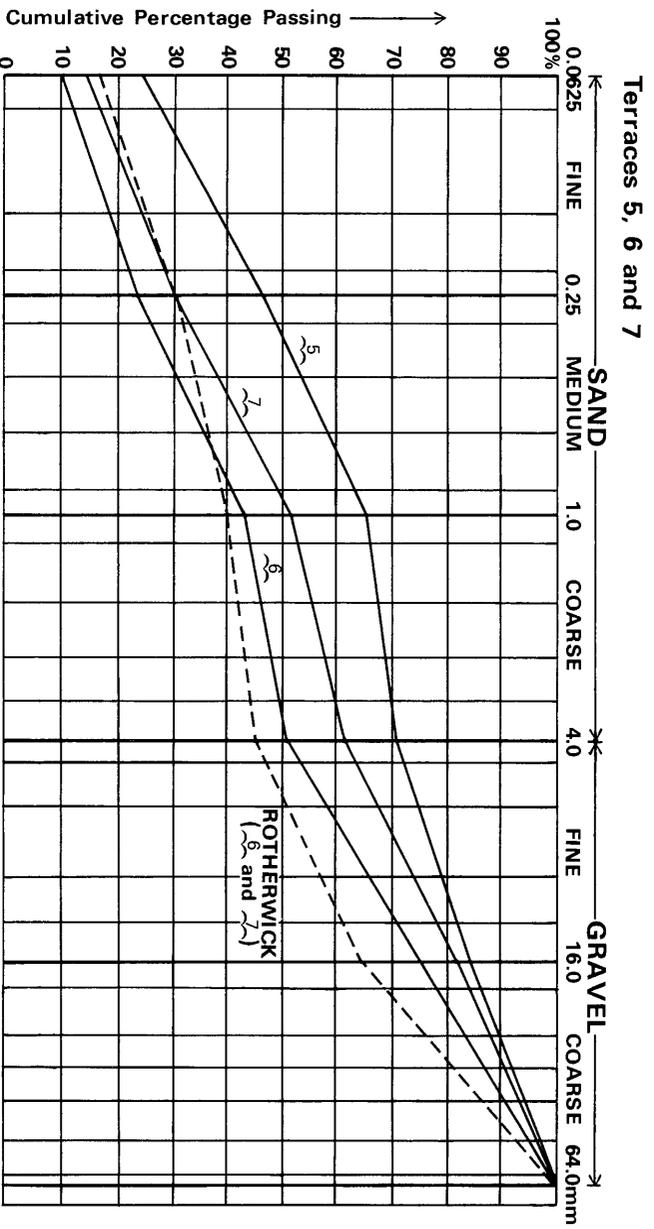
Figure 9   The mean grading of the River Terrace Deposits

15
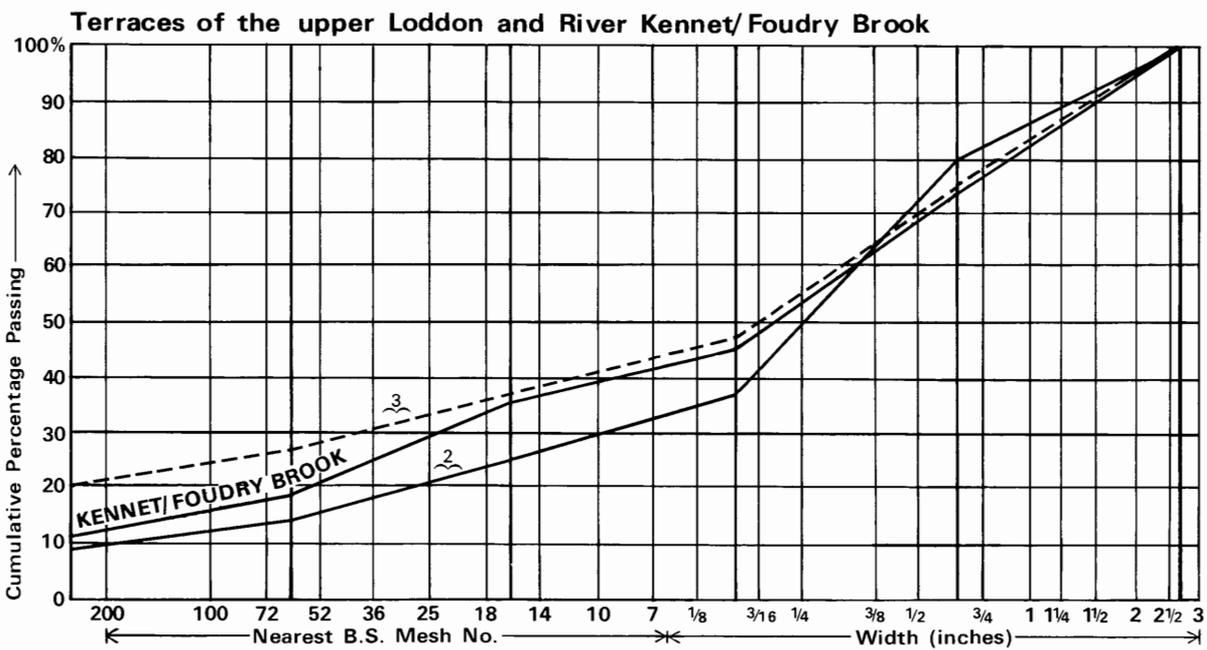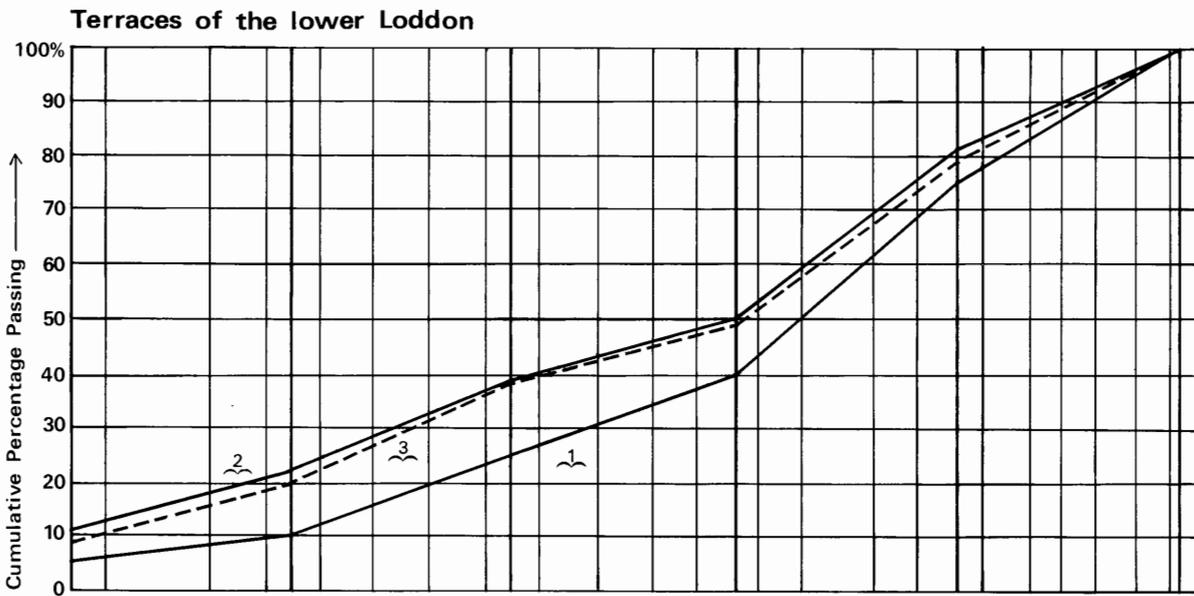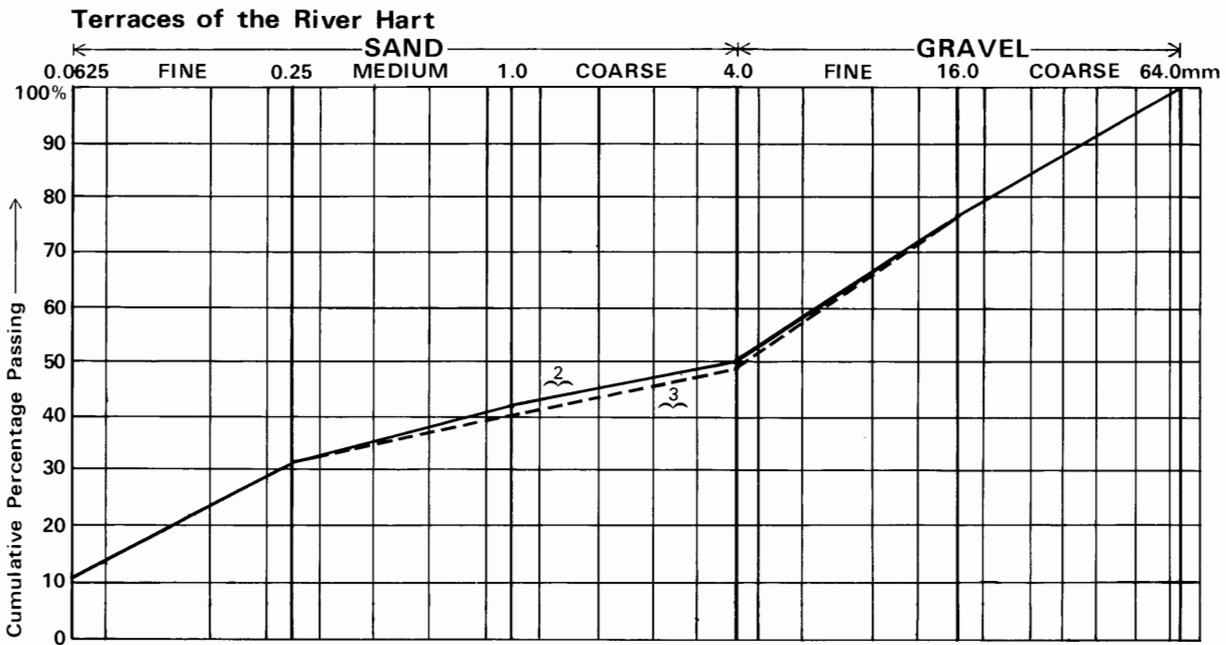
Figure 10   The mean grading of the River Terrace Deposits (continued)

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Table 5 Statistical assessment of the sand and gravel resources of the Loddon Valley area

Resource block	Area		Mean thickness		Volume of mineral			Mean grading percentages					
	Block	Mineral	Over-burden	Mineral		Limits at the ±95 per cent confidence level							
	km²	km²	m	m	m³ × 10⁶	±%	±m³ × 10⁶	$-\frac{1}{16}$ mm	$+\frac{1}{16}-\frac{1}{4}$ mm	$+\frac{1}{4}-1$ mm	$+1-4$ mm	$+4-16$ mm	$+16$ mm
A *(18)	27.3	10.0	0.6	2.1	21	31	10	11	6	18	10	35	20
B (15)	59.1	10.7	0.1	2.3	25	34	9	16	17	20	9	19	19
C (24)	13.1	11.2	0.7	2.7	30	25	8	10	10	18	11	30	21
D (25)	17.0	13.2	0.9	2.2	29	22	6	11	17	17	9	24	22
E (9)	36.9	5.8	0.9	1.2	7	19	1	13	5	11	10	35	26
F (34)	76.8	11.9	0.7	1.8	21	25	5	12	19	11	8	28	22
G (13)	51.4	5.0	0.7	3.1	16	15	2	15	6	9	10	28	32
A to G (138)	281.6	67.8	0.7	2.2	150	10	15	12	13	15	9	28	23

* Bracketed figures show the total number of sample points used in the statistical assessment of resources (see p. 29).

Mineral resource information: For assessment purposes, the map is divided into areas where mineral is present, and areas where sand and gravel is either absent or not potentially workable (p. 1).

The mineral, which everywhere has a mean overburden thickness of less than one metre (and is therefore classified as 'exposed'), is sub-divided into resource blocks which contain spreads of continuous, or almost continuous, sand and gravel.

The whole of the area of the exposed mineral as measured from the mapped geological boundary lines, is assumed to contain sand and gravel, although it may possibly include small areas where sand and gravel is absent or not potentially workable (for example at borehole 75 SE 43).

RESULTS

A simple statistical procedure explained in Appendix B has been used to calculate the resources in the seven resource blocks A to G. The results are shown in Table 5.

Bedrock sands have been penetrated in some assessment boreholes, and details are given in the borehole logs (Appendix F). No attempt has been made to assess the resources present within these bedrock sands, but the borehole information is given as a guide to the variation in lithology.

Particle-size distributions for the assessed thicknesses of mineral in blocks A to G are shown in Figure 12.

Accuracy of results: For each of the seven blocks, the accuracy of the results at the two-sided 95 per cent confidence level (that is the probability that nineteen times out of twenty, a true volume of mineral present lies within the stated limits) varies between 15 per cent and 34 per cent. However, the true volumes are more likely to be nearer the figure estimated than either of the limits. Moreover it is probable that roughly the same percentage limit would apply for the statistical estimate of mineral volume within a very much smaller parcel of ground (say 100 hectares) 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 quotation of reserves, data from more than 10 sample points would be required, even if the area were quite small. This point can be illustrated by considering the whole of the potentially workable sand and gravel on

the resource sheet. The total volume (150 million m³) can be estimated to limits of ± 10 per cent at the 95 per cent confidence level by a calculation based on the data from the 138 sample points spread across the seven resource blocks. However, it must again be emphasised that the quoted volume of mineral has no simple relationship with the amount that could be extracted in practice, because apart from the exclusion of the urban areas, 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 RESOURCE BLOCKS

Block A

The 10.0 km² of mineral included in this block are distributed principally as almost continuous spreads of flood-plain and 1st terrace deposits of the River Kennet (which lies to the north of this survey area) and its tributaries, such as Foudry Brook.

Borehole data show that the deposits of the 1st terrace of the River Kennet are thicker than the deposits found elsewhere in this block; for example, in the Burghfield area [685 690] they have a thickness of about 4 m, in contrast to the mean mineral thickness of 2.1 m for the block as a whole. The recorded thickness of the mineral deposits ranges from nil in boreholes 66 SE 4 and 66 NE 15, to 4.2 m in borehole 66 NE 12.

Although they have not been sampled, the patches of Undifferentiated River Terrace Deposits mapped near Beech Hill [698 651] are thought to be similar to the sand and gravel proved in borehole 66 NE 24, and they are therefore included in the assessment of resources.

Overburden, comprising thin spreads of alluvial silt and clay, ranges in thickness from nil in borehole 76 NW 17 to 2.3 m in borehole 76 NW 18, with a mean of 0.6 m, and is found in the areas of mapped alluvium and also as a thin veneer overlying the terrace deposits.

To the north of the M4 motorway, in the Pingewood area [685 697], a large area of mineral is worked out, and working of the adjacent deposits (just outside the sheet area) is continuing.

Based upon data from 18 sample points, the volume of mineral present is calculated to be 21 million m³ ± 31 per cent at the 95 per cent confidence level. The weighted mean grading of the deposits is fines 11 per cent, sand 34 per cent and gravel 55 per cent.
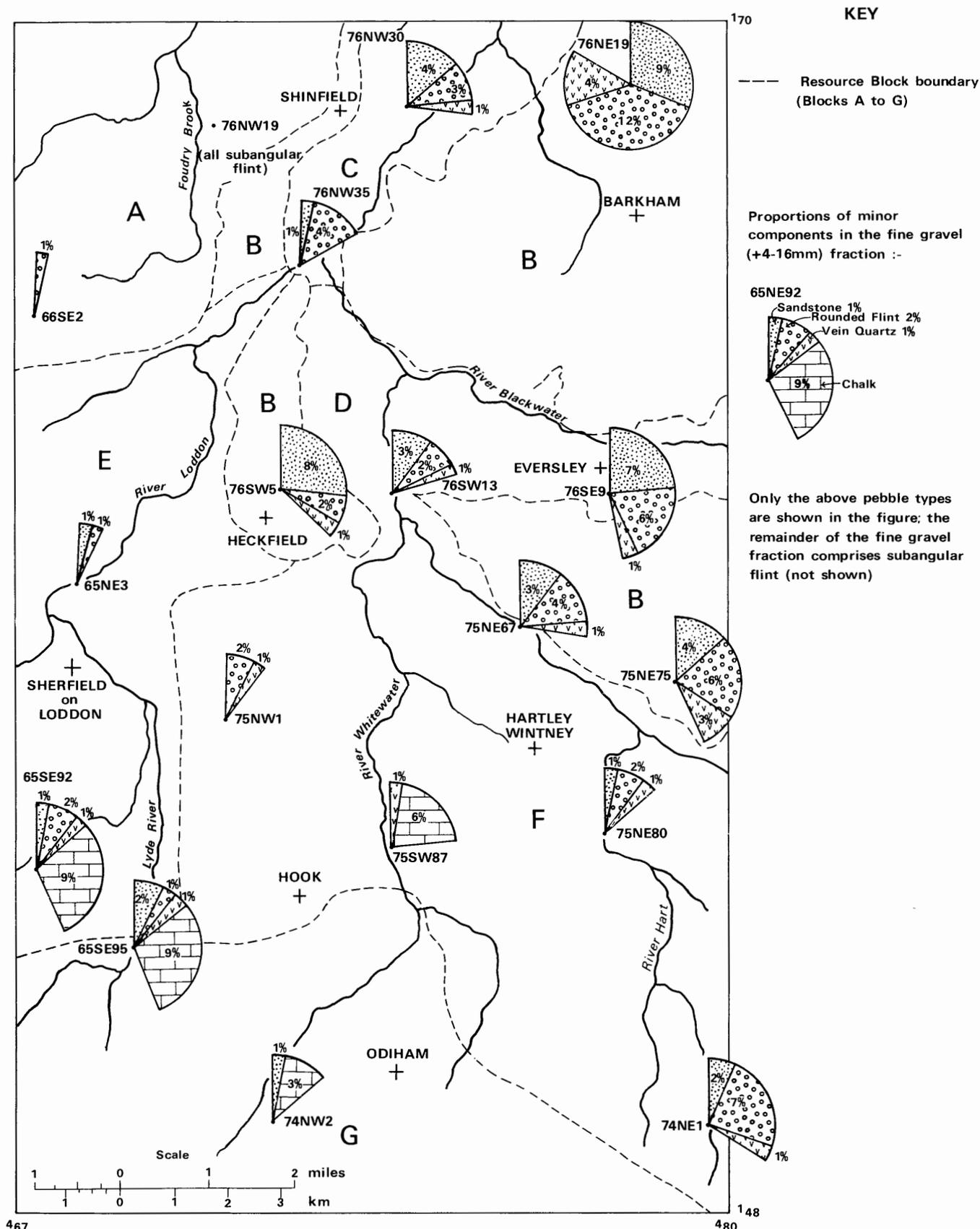
Figure 11 The mean composition of the Drift deposits based upon pebble count studies of the +4 − 16 mm material from 17 assessment boreholes

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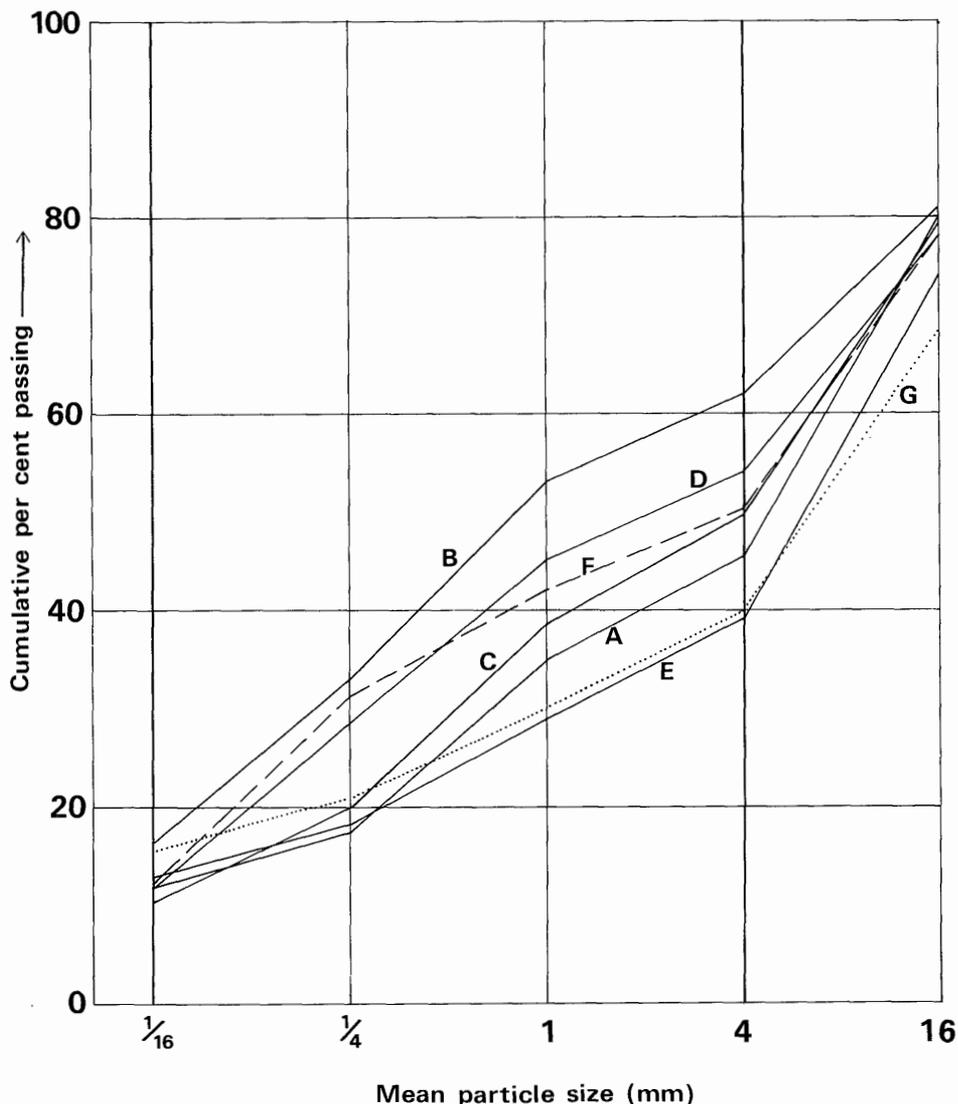
Figure 12   Particle-size distribution for the assessed sand and gravel in resource blocks A to G

Block B
All of the higher level terrace deposits apart from those small areas in Block F (see below) are assessed together in this block, where they cover 10.7 km².

The terrace deposits, which were formerly more extensive, are now dissected and separated by the valleys of the rivers Loddon, Whitewater and Blackwater into three main areas: Heckfield Heath, Eversley Common and the patches of high level deposits to the north-east of the river Blackwater (including Farley Hill and Bear Wood).

The recorded thickness of sand and gravel ranges from 0.4 m in borehole 76 SE 4 to 5.1 m in borehole 75 NE 69, with a mean of 2.3 m. However, the deposits on Eversley Common (7th terrace), which form the most extensive spread of mineral in the block, are also noticeably thicker, and have a mean thickness of 3.1 m.

Overburden is generally thin or absent and ranges in thickness from nil in many of the boreholes (for example 76 SE 10) to 0.4 m in borehole 76 NW 21, and has a mean thickness of 0.1 m.

A large area of ground at the western end of Eversley Common is worked out, and working continues in the substantial resources which remain, further to the east. Smaller areas of worked ground also occur on Heckfield Heath.

Data from 15 sample points were used to calculate the total volume of mineral: 25 million m³ ± 34 per cent at the 95 per cent confidence level.

The deposits in this block are all of similar composition, except those at Bear Wood (borehole 76 NE 19), which have a higher rounded flint content (see Table 3 and Figure 11). The weighted mean grading for all the deposits is fines 16 per cent, sand 46 per cent, gravel 38 per cent, and shows them to be sandier than any of the other Drift deposits proved within the survey area (see Figure 12).

Block C
Lines drawn near the confluence of the rivers Blackwater and Loddon are used to delineate the approximate position of the limits of the terrace deposits of the lower Loddon valley (1st to 4th terraces), which are assessed in this block.

The deposits form 11.2 km² of extensive and almost continuous terraces, which range in height from about 35 to 65 m above Ordnance Datum. The terraces are in places separated by distinct bluffs as seen for example between the 2nd and 3rd terraces near Arborfield Grange [745 670].

The recorded mineral thickness ranges from 1.1 m in borehole 76 NW 24 to an exceptional 6.6 m, which was proved in borehole 76 NW 29 and probably includes soliflucted sand and gravel; the calculated mean thickness for the block is 2.7 m.

Recent (1977) field mapping has identified a large area [740 660] of previously unmapped terrace deposits on the

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eastern flanks of the Loddon valley north-east of Swallowfield and data from boreholes 76 NW 59 and 76 NW 60, both of which proved 2.5 m of mineral have been incorporated into the assessment of resources.

Overburden, mainly comprising alluvial silts and clays, ranges in thickness from nil in borehole 76 NW 35 to 2.5 m in borehole 76 NW 24; the mean is 0.7 m. Brickearth mapped near Earley [750 695], ranges in thickness from nil in borehole 76 NE 15 to 0.8 m in borehole 76 NW 30; it does not appear to be substantially different in nature to deposits classified as Alluvium in other boreholes.

Only one area (at Carters Hill) has been worked for sand and gravel (see Appendix G).

The estimated volume of mineral, based upon data from 24 sample points is 30 million m^3 ±25 per cent at the 95 per cent confidence level.

All of the terraces in this block have a similar composition of approximately 92 per cent flint, 4 per cent rounded flint, 3 per cent sandstone, 1 per cent vein-quartz and have a collective weighted mean grading of fines 10 per cent, sand 39 per cent, gravel 51 per cent.

Block D

The lower level terraces (1st to 4th terraces) of the River Blackwater form an almost continuous spread of mineral over 1 kilometre wide, stretching eastwards from the boundary of block C at Swallowfield, to the limit of the survey area; the 13.2 km^2 of mineral are assessed together in this block.

The sand and gravel ranges in thickness from 0.7 m in borehole 76 SE 11 to 5.3 m in borehole 76 SE 9; it has a mean of 2.2 m. The thicker and more consistent deposits are those which form the broad terrace features to the south of the river. However, commercial information (held in confidence by the Institute) and field mapping show that these broad terrace features do have significant barren areas (containing no sand and gravel) as shown by borehole 76 SW 14. Around Bramshill, barren ground appears to occupy the front of each terrace spread. The terraces of the Riseley area may also be partly barren, but it has not been possible to demonstrate this on the ground, or from the limited amount of borehole data available.

The terrace boundaries of the Bramshill area have been amended in the light of field mapping and borehole information, held in confidence.

Overburden comprising silts and clays ranges in thickness from nil in boreholes 76 SE 7 and 76 SE 9 to 1.5 m in borehole 76 SE 6; it has a mean of 0.9 m.

Part of the third terrace at Riseley Common is worked out and redeveloped; extensive working continues in the terraces at Bramshill.

Using data from 25 sample points, the estimated volume of mineral in this block is 29 million m^3 ±22 per cent, at the 95 per cent confidence level.

The approximate composition of the deposits in this block is 89 per cent flint, 4 per cent rounded flint, 6 per cent sandstone, and 1 per cent vein-quartz, and they have a collective weighted mean grading of fines 11 per cent, sand 43 per cent, gravel 46 per cent.

Block E

The 5.8 km^2 of thin but continuous spreads of sand and gravel in this block are found in the sinuous 'floodplain' (2nd) and 3rd terraces of the River Loddon and its main tributary the River Lyde. The mineral is of fairly uniform thickness ranging from 0.7 m in borehole 65 NE 3 to 1.5 m in borehole 76 SW 2, with a mean of 1.2 m.

Borehole 65 NE 2 proved that the patch of Downwash Gravel which it penetrated, comprises only sandy clay and it is therefore considered as not potentially workable. Similarly boreholes 66 SE 3 and 66 SE 5 drilled in the mapped Alluvium near Beech Hill [695 640] proved 1.4 m of pebbly silty clay and 0.1 m of 'very clayey' sandy gravel respectively, and the deposit is therefore regarded as non-mineral. None of the deposits in this block has been worked.

Alluvial silts and clays comprise the overburden, which ranges in thickness from nil in borehole 76 SW 2 to 1.4 m in borehole 76 SW 3, and has a mean of 0.9 m.

The total estimated mineral volume is 7 million m^3 ±19 per cent at the 95 per cent confidence level, using data from 9 sample points. The sand and gravel of both the 2nd and 3rd terraces are thought to have a general composition of about 98 per cent flint, 1 per cent rounded flint, and 1 per cent sandstone, although those deposits lying close to the outcrop of the Chalk have a significant amount (up to 9 per cent by weight proved) of subangular chalk present, for example as shown by borehole 65 SE 92. The mean grading of all the deposits in this block is fines 13 per cent, sand 26 per cent, and gravel 61 per cent.

Block F

The sand and gravel in the valleys of the rivers Hart and Whitewater comprise the mineral resources in this block, which cover 11.9 km^2. Smaller, irregularly distributed spreads of mineral, such as the remnant high level terrace deposits at Rotherwick and Hazeley Heath, are also included in the assessment.

Because of the mixed origins of the deposits in this block the mineral shows a fairly large variation in thickness ranging from nil in borehole 75 SW 84 sited in Downwash Gravel near Hook, to 6.7 m in borehole 75 NE 77 sited on the floodplain gravels of the River Hart. The mean mineral thickness is 1.8 m.

Overburden is found mainly in the river valleys as silty alluvial clays (overlying the 2nd and 3rd terraces) and ranges in thickness from 0.1 m (as proved for example in borehole 75 NW 10) to 2.4 m proved in borehole 75 NE 71; it has a mean thickness of 0.7 m.

There are no active workings in the block, but much of the area of sand and gravel at Hazeley Heath has been worked and a small area of worked ground exists in the Whitewater Valley near Holt Farm [735 541].

Using data from 34 sample points the total mineral volume is calculated to be 21 million m^3 ±25 per cent at the 95 per cent confidence level.

There is considerable variation in both the composition (see p. 14) and grading (see Table 2) of the various River Terrace Deposits in this block, which collectively have a weighted mean grading of fines 12 per cent, sand 38 per cent, and gravel 50 per cent.

Block G

Boreholes sited in the headwater areas of the rivers Hart, Whitewater and Loddon showed that the floodplain and terrace deposits in these areas are significantly thicker than in the main valleys, and they are therefore assessed together in this block. The 5.0 km^2 of mineral is distributed as continuous spreads of River Terrace Deposits, which appear to fan outwards from the margins of the Chalk uplands. The sand and gravel ranges in thickness from 2.0 m in borehole 65 SE 95 to 4.4 m in borehole 75 SW 91 with a mean thickness of 3.1 m.

Terrace deposits associated with the River Whitewater

to the north of Odiham were proved by five assessment boreholes to be of fairly uniform thickness (about 3 m). Minor amendments to the mapped boundaries of the sand and gravel in this area have been made on the basis of the commercial information available and a limited amount of field mapping.

Although borehole 75 SW 93 proved no sand and gravel, other borehole data, suggest that the areas of terrace gravels may be somewhat more extensive than is shown on the resource map, but a revised interpretation of the geological mapping in this area has not been attempted.

Overburden, comprising alluvial silts and clays ranges in thickness from nil in borehole 74 NW 2 to 2.1 m in borehole 65 SE 93: the mean thickness is 0.7 m.

The deposits in this block have been worked at Scotland Farm [742 537]. Using data from 13 sample points the total volume of mineral is estimated to be 16 million m^3 ± 15 per cent at the 95 per cent confidence level.

The composition of the deposits is varied; in some boreholes (see Figure 11) chalk and associated nodular flint cobbles are important constituents. The weighted mean grading is fines 15 per cent, sand 25 per cent, and gravel 60 per cent.

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 is 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 km², 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.

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 un-consolidated deposits, so that the in-situ grading can be determined, if necessary, to a depth of 30 m at a diameter of about 200 mm 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 depth. The samples, each weighing between 25 and 45 kg are despatched in heavy duty polythene bags to a laboratory for grading. The grading procedure is based on British Standard 1377 (1967). Random checks on the accuracy of the grading are made in the laboratories of the Institute's Geochemical Division.

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 km², 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

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

4   The above relationship may be transposed such that

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

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, $\bar{l}_m$, 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 $S_A/S_{\bar{l}_m} \leqslant \frac{1}{3}$ is assumed in all cases. It follows from equation [2] that

$$S_{\bar{l}_m} \leqslant S_V \leqslant 1.05 \, S_{\bar{l}_m} \quad . \tag{3}$$

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).

Block calculation 1 : 25 000 } Fictitious
                         Block }

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		Mineral		Remarks
		l_o	wl_o	l_m	wl_m	
SE 14	1	1.5	1.5	9.4	9.4	
SE 18	1	3.3	3.3	5.8	5.8	
SE 20	1	nil	–	6.9	6.9	IMAU
SE 22	1	0.7	0.7	6.4	6.4	boreholes
SE 23	1	6.2	6.2	4.1	4.1	
SE 24	1	4.3	4.3	6.4	6.4	
SE 17	$\frac{1}{2}$	1.2) 1.6		9.8) 7.2		Hydrogeology
123/45	$\frac{1}{2}$	2.0)		4.6)		Unit record
1	$\frac{1}{4}$	2.7)		7.3)		Close group
2	$\frac{1}{4}$	4.5) 2.6		3.2) 5.8		of four
3	$\frac{1}{4}$	0.4)		6.8)		boreholes
4	$\frac{1}{4}$	2.8)		5.9)		(commercial)
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

l_m	$(wl_m - \overline{wl_m})$	$(wl_m - \overline{wl_m})^2$
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 13 Example of resource block assessment:
calculation and results
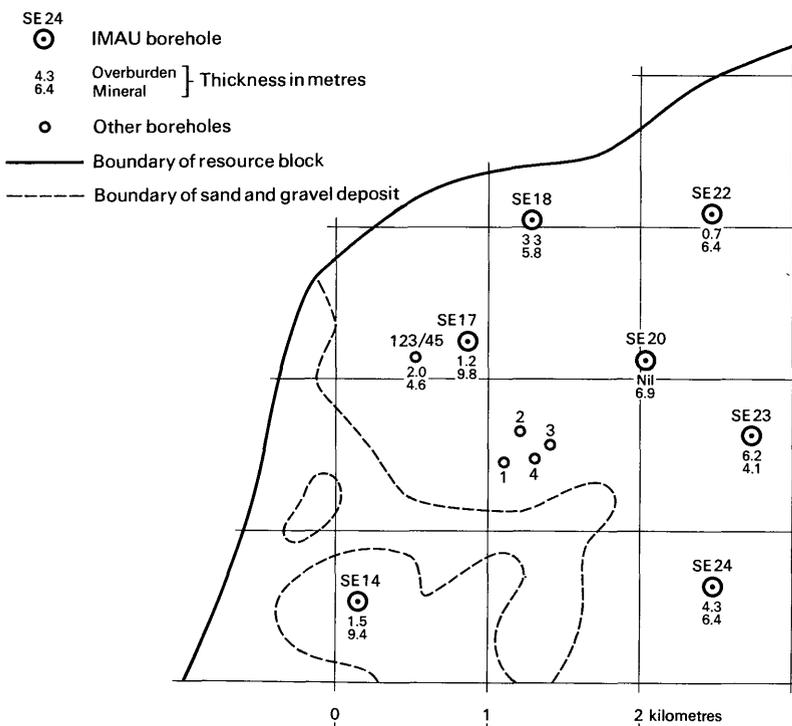
Figure 14 Example of resource block assessment: map of fictitious block

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:

$$L_{l_m} \leqslant L_V \leqslant 1.05 \, L_{l_m}$$

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.

11   The application of this procedure to a fictitious area is illustrated in Figures 13 and 14.

Inferred assessment
12   If the sampled area of mineral in a resource block is between 0.25 km² and 2 km² 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 km².

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 15). 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 11, 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 6), 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 logarithmic cumulative curves (see, for example, British Standard 1377: 1967). In this report the grading is tabulated

on the borehole record sheets (Appendix D), 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. The 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, 1975), 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 6 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

I   Gravel

II   'Clayey' gravel

III   'Very clayey' gravel

IV   Sandy gravel

V   'Clayey' sandy gravel

VI   'Very clayey' sandy gravel

VII   Pebbly sand

VIII   'Clayey' pebbly sand

IX   'Very clayey' pebbly sand

X   Sand

XI   'Clayey' sand

XII   'Very clayey' sand
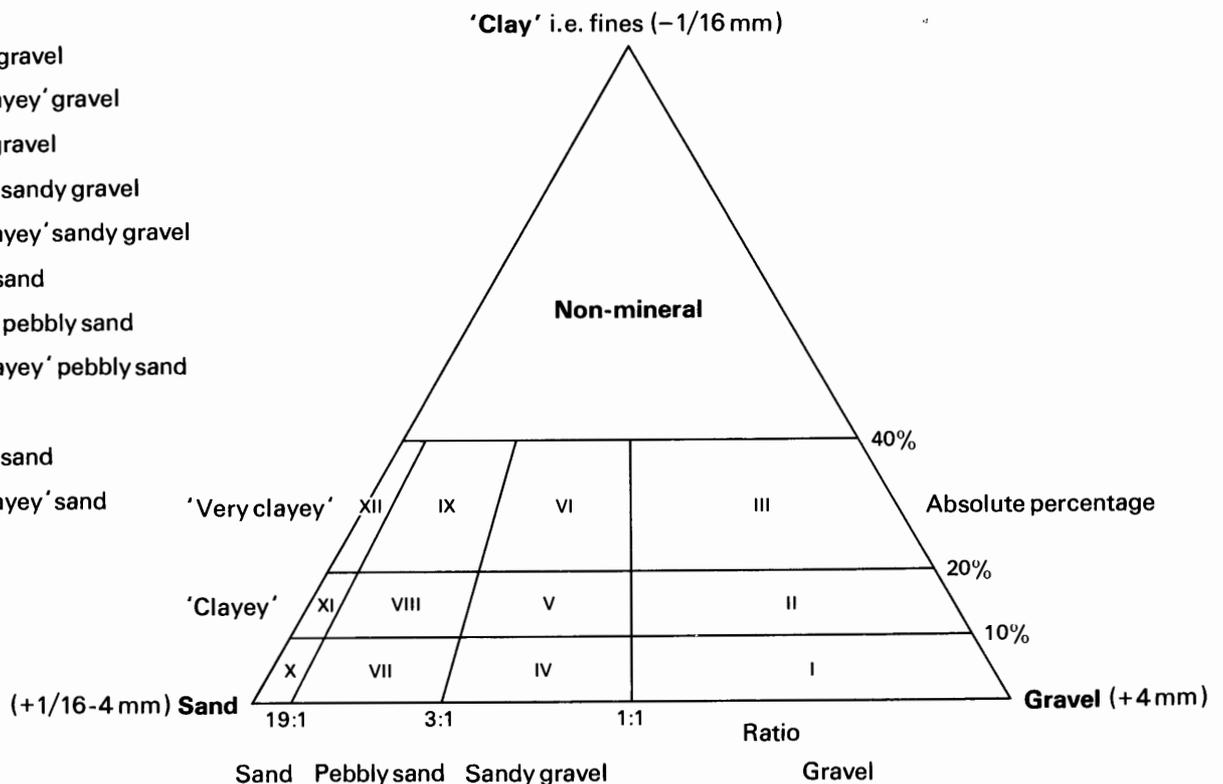
Figure 15   Diagram to show the descriptive categories used in the classification of sand and gravel

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APPENDIX D

EXPLANATION OF THE BOREHOLE RECORDS

Annotated example

SU 75 NE 79[1] **7850 5694[2]** **Near Home Farm, Hartley Wintney[3]** **Block F**

Surface level (+57.6 m) + 189 ft[4]
Water struck at +55.8 m[5]
Shell and Auger (152 mm) 6 in diameter[6]
December 1974

[7]Overburden 1.8 m
Mineral   2.8 m
Bedrock   2.0 m +[9]

LOG

Geological classification	Lithology	Thickness m	Depth[8] m
	Soil	0.5	0.5
[10]Alluvium	[11] Clay, very soft dark brown and red brown, silty	1.3	1.8
River Terrace Deposits (2nd Terrace)	**a** Gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse quartz and flint	2.8	4.6
Bracklesham Beds	**b** 'Clayey' sand Sand: mainly fine quartz with some glauconite	2.0+	6.6

GRADING

	Mean for deposit[14] percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	3	38	59	1.8–2.8	1	6	10	12	39	32
b	13	87	0	2.8–3.8	2	11	15	9	32	31
				3.8–4.6	7	35	12	8	24	14
				Mean	3	16	12	10	33	26
				4.6–5.6	17	75	7	1	0	0
				5.6–6.6	9	85	5	1	0	0
				Mean	13	80	6	1	0	0

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 75.
    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 79
Thus the full Registration Number is SU 75 NE 79. Usually this is abbreviated to 75 NE 79 in the text.

2 The National Grid reference
All National Grid references in this publication lie within the 100-km square SU 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. Where measurements were made in feet approximate conversions to metres are given in brackets, and *vice versa*.

5 Groundwater conditions
Three kinds of entry are made: (1) the record indicates the level at which ground-water stood on completion of drilling (in metres above or below Ordnance Datum); (2) water was not encountered; (3) no note of groundwater conditions was made.

6 Type of drill and date of drilling
All boreholes were drilled by a shell and auger rig using 6- or 8-in diameter casing. The month and year of completion of the borehole 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'. In this survey bedrock sands have been drilled and graded in order to give an indication of their nature but no assessment of their resources is given. Waste is any material other than bedrock or mineral. Where waste occurs between the surface and mineral it is classified as overburden.

8 Thickness and depth
All thickness and depth measurements were made in metres. A conversion table for metres to feet is given in Appendix J.

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

10 Geological classification
The geological classification (Table 1) is given whenever possible.

11 Lithological description
When sand and gravel is recorded a general description based on the mean grading characteristics (for details see Appendix C) is followed by more detailed particulars. The description of other rocks is based on visual examination, in the field.

12 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.

13 Grading results
The limits are as follows: gravel, $+4$ mm; sand, $-4 + \frac{1}{16}$ mm; fines, $-\frac{1}{16}$ mm (see Appendix C).

14 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 6. Unless otherwise stated all the material passes the 64 mm sieve.

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 USED IN THE ASSESSMENT OF RESOURCES

a INDUSTRIAL MINERALS ASSESSMENT UNIT BOREHOLES

Borehole number*	Grid reference†	Borehole number*	Grid reference†	Borehole number*	Grid reference†	Borehole number*	Grid reference†
65 NE 2	6779 5784	75 NW 5	7314 5958	75 SE 42	7533 5346	76 NE 20	7668 6940
65 NE 3	6848 5970	75 NW 6	7330 5808	75 SE 43	7550 5155	76 NE 21	7527 6929
65 NE 4	6932 5762	75 NW 7	7386.5714	75 SE 44	7856 5473	76 NE 27	7552 6811
65 NE 5	6954 5589	75 NW 8	7492 5847	75 SE 45	7806 5410		
		75 NW 9	7423 5652	75 SE 46	7859 5159	76 SW 1	7064 6413
65 SE 92	6722 5413	75 NW 10	7491 5985	75 SE 47	7944 5414	76 SW 2	7069 6261
65 SE 93	6790 5226	75 NW 11	7397 5821	75 SE 48	7898 5234	76 SW 3	7007 6138
65 SE 94	6824 5482			75 SE 49	7944 5150	76 SW 4	7150 6302
65 SE 95	6914 5289	75 NE 66	7529 5924			76 SW 5	7161 6175
		75 NE 67	7672 5813	76 NW 17	7020 6970	76 SW 6	7272 6489
66 NE 12	6833 6900	75 NE 69	7766 5943	76 NW 18	7089 6956	76 SW 7	7262 6395
66 NE 13	6922 6907	75 NE 70	7695 5827	76 NW 19	7080 6815	76 SW 8	7299 6234
66 NE 14	6977 6821	75 NE 71	7771 5770	76 NW 20	7027 6675	76 SW 9	7286 6104
65 NE 15	6910 6693	75 NE 72	7792 5603	76 NW 21	7096 6666	76 SW 10	7384 6384
66 NE 22	6746 6713	75 NE 73	7829 5761	76 NW 22	7122 6545	76 SW 11	7349 6307
66 NE 23	6811 6725	75 NE 74	7951 5897	76 NW 23	7229 6645	76 SW 12	7387 6315
66 NE 24	6851 6579	75 NE 75	7901 5814	76 NW 24	7257 6564	76 SW 13	7397 6118
66 NE 25	6941 6807	75 NE 76	7860 5725	76 NW 25	7310 6950	76 SW 14	7452 6306
66 NE 26	6934 6535	75 NE 77	7972 5636	76 NW 26	7367 6777	76 SW 15	7476 6319
		75 NE 78	7867 5681	76 NW 27	7378 6782	76 SW 16	7302 6422
66 SE 2	6728 6435	75 NE 79	7850 5694	76 NW 28	7307 6696	76 SW 17	7281 6306
66 SE 3	6830 6305	75 NE 80	7755 5518	76 NW 29	7421 6914	76 SW 29	7390 6160
66 SE 4	6976 6427	75 NE 81	7847 5871	76 NW 30	7402 6847		
66 SE 5	6961 6368	75 NE 82	7602 5756	76 NW 31	7393 6731	76 SE 2	7529 6481
66 SE 6	6932 6108			76 NW 32	7485 6734	76 SE 3	7591 6211
		75 SW 84	7160 5342	76 NW 33	7456 6954	76 SE 4	7529 6061
74 NW 1	7077 4921	75 SW 85	7218 5125	76 NW 34	7270 6707	76 SE 5	7654 6310
74 NW 2	7170 4990	75 SW 86	7297 5279	76 NW 35	7224 6595	76 SE 6	7680 6262
		75 SW 87	7382 5475	76 NW 59	7354 6548	76 SE 7	7682 6216
74 NE 1	7971 4979	75 SW 88	7404 5324	76 NW 60	7430 6669	76 SE 8	7760 6314
74 NE 2	7906 4849	75 SW 89	7340 5227			76 SE 9	7780 6141
		75 SW 90	7438 5305	76 NE 15	7585 6989	76 SE 10	7856 6012
75 NW 1	7083 5710	75 SW 91	7402 5254	76 NE 16	7583 6877	76 SE 11	7841 6254
75 NW 2	7097 5572	75 SW 92	7495 5062	76 NE 17	7592 6948	76 SE 12	7942 6250
75 NW 3	7295 5923	75 SW 93	7356 5358	76 NE 18	7765 6980	76 SE 13	7950 6215
75 NW 4	7277 5935			76 NE 19	7820 6881	76 SE 14	7623 6056

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

b HYDROGEOLOGICAL DEPARTMENT BOREHOLE RECORDS

One-in Geol. Sheet number	Borehole number	Grid reference	Surface level* m	Surface level* ft	Thickness Over-burden m	Thickness Mineral m	Thickness Bedrock m	Bedrock classifica-ation	Strata proved to depth* m	Strata proved to depth* ft
268	415	694 674	(42.7)	140	0.6	0.6	13.4 +	London Clay	(28.0)	92
268	498A	733 641	(c.43.9)	c.144	0.6	2.3	0.3 +	London Clay	(c.40.7)	c.133
268	498B	732 643	(c.43.6)	c.143	0.6	2.4	0.6 +	London Clay	(c.40.0)	c.131
268	498C	729 645	(c.44.2)	c.145	0.6	2.5	0.5 +	London Clay	(c.40.6)	c.133
268	498D	736 638	(c.43.6)	c.143	0.3	2.4	0.5 +	London Clay	(c.40.2)	c.132
268	498F	730 641	(c.46.0)	c.151	0.6	1.8	0.5 +	London Clay	(c.43.1)	c.141
268	498G	738 636	(c.43.9)	c.144	0.5	1.8	0.5 +	London Clay	(c.41.1)	c.135

* Above Ordnance Datum

Table 7 Boreholes used in the assessment of resources for each resource block

Block	IMAU Boreholes	Hydrogeological Department Boreholes	Site Investigation Boreholes	Commercial Sample Points*
A	18	1	12	0
B	15	0	0	0
C	21	0	8	1
D	20	6	0	11
E	9	0	0	0
F	35	0	0	0
G	12	0	28	0
Total	130	7	48	12

* The term 'sample point' may include a number of closely spaced site investigation boreholes which have been given a weighting factor of one in the calculations. Therefore, the number of sample points may be less than the total number of borehole records available for the block concerned.

**INDUSTRIAL MINERALS ASSESSMENT UNIT
BOREHOLE RECORDS**

SU 65 NE 2   6779 5784   Sherfield Green, Sherfield on Loddon   **Block E**

Surface level: (+61.6 m) + 202 ft   Waste 3.0 m
Water not struck   Bedrock 0.8 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made ground	Soil, clayey, and clay	0.9	0.9
Downwash Gravel	Clay, medium brown, sandy	2.1	3.0
London Clay	Clay, grey, silty	0.8 +	3.8

SU 65 NE 3   6848 5970   Nr Heywood's Farm, Stratfield Saye   **Block E**

Surface level (+50.9 m) + 167 ft   Waste 2.0 m
Water struck at +50.4 m   Bedrock 0.5 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, grey-brown, soft, silty	1.1	1.3
River Terrace Deposits (2nd Terrace)	Gravel	0.7	2.0
	Gravel: fine to coarse, angular to subangular black flint and white patinated flint, with occasional very dark brown, well rounded flint pebbles		
	Sand: fine to coarse quartz and flint		
London Clay	Clay, grey, firm, silty	0.5 +	2.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
5	23	72	1.3–2.0	5	3	10	10		49	23
			Mean	5	3	10	10		49	23

SU 65 NE 4   6932 5762   Nr. Cooper's Farm, Hartley Wespall   **Block E**

Surface level (+58.5 m) + 192 ft   Overburden 1.2 m
Water struck at (+57.5 m)   Mineral 1.1 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.7 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, brown, silty, black silt and peat	1.1	1.2

River Terrace Deposit (3rd Terrace)	Gravel
	    Gravel: fine to coarse, mainly black angular flint. Occasional
	        rounded flint pebbles
	    Sand: fine to coarse quartz and flint
		1.1	2.3

London Clay	Clay, grey, silty	0.7 +	3.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
2	18	80	1.2–2.3	2	2	7	9		38	42
			Mean	2	2	7	9		38	42

SU 65 NE 5   6954 5589   Nr. Tylney Park, Rotherwick   **Block E**

Surface level (+58.5 m) + 192 ft   Waste 2.0 m
Water struck at (+57.4 m)   Bedrock 0.5 m +
Shell and Auger 152 mm (6 in) diameter
January 1975

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, dark brown, silty, sandy with a little peat	0.9	1.1

River Terrace Deposits (2nd Terrace)	'Very clayey' gravel
	    Gravel: fine to coarse, angular and subrounded, black, brown and
	        white patinated flint
	    Sand: fine to coarse quartz and flint
		0.9	2.0

London Clay	Clay, brown, silty Clay, firm, grey, silty	0.2 0.3 +	2.2 2.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
20	23	57	1.1–2.0	20	7	9	7		22	35
			Mean	20	7	9	7		22	35

SU 65 SE 92   6722 5413   **Nr. Bain's Wood, Basing**   **Block E**

Surface level (+52.4 m) + 172 ft   Overburden 0.5 m
Water struck at (+50.9 m)   Mineral 1.6 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.4 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5

River Terrace Deposits (3rd Terrace)	'Very clayey' gravel
	  Gravel: fine to coarse, angular to subangular flint with occasional chalk pebbles
	  Sand: fine to coarse quartz and flint with a little chalk
		1.6	2.1

London Clay	Clay, firm, grey, silty	0.4 +	2.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
26	24	50	0.5–0.8	39	5	5	5	24	22
			0.8–1.8	27	7	11	11	22	22
			1.8–2.1	6	3	7	10	34	40
			Mean	26	5	10	9	24	26

SU 65 SE 93   6790 5226   **Ernstholme Nursery, Mapledurwell and Up Nately**   **Block G**

Surface level (+71.6 m) + 235 ft   Overburden 2.1 m
Water struck at (+68.6 m)   Mineral 3.9 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
January 1975

LOG

Geological classification	Lithology	Thickness m	Depth m
Made ground	Rubble, chalky	1.2	1.2
Alluvium	Clay, soft, grey, silty	0.9	2.1

River Terrace Deposits (3rd Terrace)	'Very clayey' gravel, chalky below 4.0 m
	  Gravel: fine to coarse, angular to subangular flint with some cobbles below 4.0 m
	  Sand: fine to coarse quartz and flint with some chalk
		3.9	6.0

Upper Chalk	Chalk, soft, white, becoming hard	0.5 +	6.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *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	27	51	2.1–3.0	21	14	10	9	23	23	0
			3.0–4.1	7	5	8	15	31	34	0
			4.1–5.1	28	7	10	9	19	23	4
			5.1–6.0	35	2	7	13	16	19	8
			Mean	22	7	9	11	23	25	3

SU 65 SE 94　6824 5482　　**Nr. Blackland's Farm, Basing**　　　　　　　　　　**Block E**

Surface level (+ 62.2 m) + 204 ft　　　　　　　　　　　　　　　　Overburden 0.9 m
Water struck at + 61.2 m　　　　　　　　　　　　　　　　　　　Mineral 1.0 m
Shell and Auger 152 mm (6 in) diameter　　　　　　　　　　　　Bedrock 0.6 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.9	0.9
River Terrace Deposits (2nd Terrace)	'Clayey' gravel 　Gravel: fine to coarse, mainly angular flint 　Sand: fine to coarse, quartz flint and chalk	1.0	1.9
London Clay	Clay, firm, grey, silty	0.6 +	2.5

GRADING

Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
15	30	55	0.9–1.9	15	6	12	12	25	30
			Mean	15	6	12	12	25	30

SU 65 SE 95　6914 5289　　**Nr. Priory Farm, Mapledurwell and Up Nately**　　　**Block G**

Surface level (+ 67.1 m) + 220 ft　　　　　　　　　　　　　　　Overburden 1.0 m
Water struck at (+ 66.1 m)　　　　　　　　　　　　　　　　　　Mineral 2.0 m
Shell and Auger 152 mm (6 in) diameter　　　　　　　　　　　　Bedrock 0.5 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Alluvium	Clay, brown, silty, with scattered flint pebbles	0.6	1.0
River Terrace Deposits (3rd Terrace)	'Clayey' gravel 　Gravel: fine to coarse, angular black, brown and white patinated 　　flints, traces subrounded nodular flints 　Sand: fine to coarse flint and quartz	2.0	3.0
London Clay	Clay, grey, silty	0.5 +	3.5

GRADING

Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
17	36	47	1.0–2.0	16	9	16	13	23	23
			2.0–3.0	17	7	17	16	31	18
			Mean	17	8	16	12	27	20

Surface level +40.2 m (+132 ft)   Overburden 0.4 m
Water struck at +39.2 m   Mineral 4.2 m
Shell and Auger 152 m (6 in) diameter   Bedrock 0.5 m +
May 1972

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, silty with fine to medium flint pebbles. Brown	0.3	0.4
River Terrace Deposits (1st Terrace)	Gravel Gravel: fine with medium, subangular to subrounded flint, with occasional rounded flint. Trace rounded vein-quartz Sand: fine to medium, subrounded to rounded quartz with some flint	4.2	4.6
London Clay	Clay, firm, grey-brown, silty, with shells	0.5 +	5.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	34	61	0.4–1.4	8	7	18	9	42	16
			1.4–2.4	1	4	18	9	36	32
			2.4–3.4	3	3	22	10	32	30
			3.4–4.6	7	3	24	9	39	18
			Mean	5	4	21	9	37	24

SU 66 NE 13   6922 6907   Pinge Wood, Burghfield   **Block A**

Surface level +39.0 m (+128 ft)
Water struck at +37.8 m
Shell and Auger 152 mm (6 in) diameter
October 1972

Overburden 1.0 m
Mineral 3.9 m
Bedrock 1.1 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Clay, mottled brown and grey, silty, with some fine subangular flint	0.4	0.7
	Clay, mottled brown-red and grey, with fine patinated flint, subangular to subrounded; occasional quartz pebbles	0.3	1.0

River Terrace Deposits (1st Terrace)	'Clayey' gravel
	    Gravel: fine to medium, subangular to subrounded flint. Traces quartz and quartzite
	    Sand: coarse with medium and fine quartz and flint
		3.9	4.9

London Clay	Clay, silty, mottled grey and brown	0.9	5.8
	Clay, firm, bluish grey	0.2 +	6.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
11	44	45	1.0–2.0	11	2	37	17	27	6
			2.0–3.0	18	4	30	8	31	9
			3.0–4.0	5	4	23	7	34	27
			4.0–4.9	8	2	30	13	37	10
			Mean	11	3	30	11	32	13

SU 66 NE 14   6977 6821   **Kybes Lane, Shinfield**   **Block A**

Surface level +40.5 m (+133 ft)
Water struck at +39.2 m
Shell and Auger 152 mm (6 in) diameter
May 1972

Overburden 0.2 m
Mineral 1.7 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (1st Terrace)	'Very clayey' sandy gravel Gravel; fine to medium, subangular to subrounded, with occasional rounded flint Sand: fine to medium, mostly fine, subrounded to rounded, quartz	1.7	1.9
London Clay	Clay, greyish brown and bluish grey, mottled, silty	0.5 +	2.4

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
26	41	33	0.2–0.8	42	27	21	3	6	1
			0.8–1.9	18	4	18	13	36	11
			Mean	26	12	20	9	25	8

SU 66 NE 15   6910 6693   Nr. Lambwood Hill, Shinfield   **Block A**

Surface level +43.6 m (+143 ft)   Soil 0.1 m
Water not struck   Bedrock 6.5 m +
Shell and Auger 152 mm (6 in) diameter
May 1972

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
London Clay	Clay, soft, dark brown	0.3	0.4
	Clay, soft, orange-brown	0.5	0.9
	Clay, silty, mottled brownish grey and orange	3.9	4.8
	Clay, brownish grey	0.8	5.6
	Clay, firm bluish grey with shells	1.0 +	6.6

SU 66 NE 22   6746 6713   James's Farm, Sulhamstead Bannister   **Block A**

Surface level +48.7 m (+160 ft)   Overburden 0.3 m
Water level not recorded   Mineral 2.5 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (1st Terrace)	'Clayey' gravel Gravel: fine to coarse, angular to subrounded flint Sand: fine to coarse quartz and flint	2.5	2.8
London Clay	Clay, firm, grey	1.0 +	3.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
15	26	59	0.3–1.3	16	3	11	11	40	19
			1.3–2.8	14	4	14	9	41	18
			Mean	15	3	13	10	41	18

SU 66 NE 23   6811 6725   Nr. Rapleys, Sulhamstead Bannister   **Block A**

Surface level +48.4 m (+159 ft)   Overburden 0.3 m
Water not struck   Mineral 2.4 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m+
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (1st Terrace)·	'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded flint, with some rounded flint Sand: fine to coarse quartz	2.4	2.7
London Clay	Clay, firm, grey, silty	1.0+	3.7

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
15	48	37	0.3–1.0	25	51	11	2	9	2
			1.3–2.7	8	13	13	10	39	17
			Mean	15	29	12	7	26	11

SU 66 NE 24   6851 6579   **Bloomfield Hatch, Sulhamstead Bannister**   **Block A**

Surface level +59.5 m (+196 ft)   Overburden 0.5 m
Water not struck   Mineral 1.7 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m+
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Soil and brick rubble	0.5	0.5
River Terrace Deposits (Undifferentiated)	'Clayey' gravel Gravel: fine to coarse (becoming mainly fine below 1.5 m), angular to rounded flint Sand: fine to coarse quartz and flint	1.7	2.2
London Clay	Clay, firm, silty, grey and brown	2.0+	4.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
16	37	47	0.5–1.5	10	8	13	12	36	21
			1.5–2.2	24	12	16	15	31	2
			Mean	16	9	14	14	34	13

Surface level +40.3 m (+133 ft)   Waste 1.5 m
Water not struck   Bedrock 2.0 m +
Shell and Auger 152 mm (6 in) diameter
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits (1st Terrace)	Clay, alternating layers of soft and gravelly clay Gravel: mainly fine angular to subrounded flint	1.1	1.5
London Clay	Clay, firm, mottled grey and brown	1.7	3.2
	Clay, firm, grey	0.3+	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
46	23	31	0.4–1.5	46	6	11	6	24	7
			Mean	46	6	11	6	24	7

Surface level +48.6 m (+160 ft)   Overburden 1.4 m
Water struck at +47.2 m   Mineral 3.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, brown, silty, with scattered fine subangular flint	1.2	1.4

River Terrace Deposits (1st Terrace)	Gravel
	    Gravel: fine to coarse, angular to subrounded, with some rounded flint. The flint pebbles are mainly black, often with a white patina
	    Sand: fine to coarse quartz and flint
		3.0	4.4

London Clay	Clay, firm, grey, silty	0.5+	4.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
1	14	85	1.4–2.4	1	1	1	8	44	45
			2.4–3.4	1	1	4	9	46	39
			3.4–4.4	2	1	6	10	48	33
			Mean	1	1	4	9	46	39

SU 66 SE 2   6728 6435   Nr. Tun Bridge, Stratfield Mortimer   **Block A**

Surface level ($+52.4$ m) $+172$ ft   Overburden 0.2 m
Water struck at ($+51.5$ m)   Mineral 2.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2

River Terrace Deposits (1st Terrace)	Gravel
	  Gravel: fine to coarse, angular to subrounded with some dark brown rounded flint
	  Sand: fine to coarse quartz and flint
		2.3	2.5

London Clay	Clay, firm, grey	0.5 +	3.0

GRADING

Mean for Deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	33	62	0.2–1.2	6	5	10	9	34	36
			1.2–2.5	4	7	16	17	35	21
			Mean	5	6	13	14	35	27

SU 66 SE 3   6830 6305   Nr. Little Park Farm, Stratfield Mortimer   **Block E**

Surface level ($+49.4$ m) $+162$ ft   Waste 2.3 m
Water level not recorded   Bedrock 1.0 m +
Shell and Auger 152 mm (6 in) diameter
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, soft, grey and brown mottled	0.7	0.9
River Terrace Deposits (2nd Terrace)	Clay, dark orange-brown, silty, with scattered fine subangular and subrounded flint pebbles	1.4	2.3
London Clay	Clay, firm, grey	1.0 +	3.3

No grading data available

SU 66 SE 4   6976 6427   Nr. Home Farm, Beech Hill   **Block A**

Surface level ($+67.7$ m) $+222$ ft   Waste 1.2 m
Water not struck   Bedrock 0.6 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (5th Terrace)	Clay, sandy, with scattered fine white angular flint pebbles	1.0	1.2
London Clay	Clay, firm, grey and brown, silty	0.6 +	1.8

No grading data available

Surface level (+ 50.3 m) + 165 ft   Waste 1.9 m
Water level not recorded   Bedrock 3.1 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Alluvium	Clay, brown, silty	1.3	1.8

River Terrace Deposits (2nd Terrace)	'Very clayey' sandy gravel
	    Gravel: fine angular flint
	    Sand: fine to coarse quartz and flint
		0.1	1.9

London Clay	Clay, grey and brown mottled	2.1	4.0
	Clay, becoming firm, grey silty	1.0 +	5.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
25	42	33	1.8–1.9	25	14	11	17	33	0
			Mean	25	14	11	17	33	0

Surface level (+ 48.8 m) + 160 ft   Overburden 1.1 m
Water struck at (+ 47.5 m)   Mineral 1.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.6 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, grey and brown mottled	1.0	1.1

River Terrace Deposits (2nd Terrace)	Gravel, clayey in the top 0.2 m and in the lower 0.3 m
	    Gravel: fine to coarse, angular to subangular black flint, often with
	    a white patina
	    Sand: fine to coarse quartz and flint
		1.3	2.4

London Clay	Clay, grey, silty	1.6 +	4.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
6	32	62	1.1–2.1	5	4	11	15	51	14
			2.1–2.4	10	13	11	17	43	6
			Mean	6	6	11	15	50	12

SU 74 NW 1   7077 4921   Nr. Bidden, Upton Grey   **Block G**

Surface level (+85.3 m) + 280 ft   Overburden 0.2 m
Water struck at (+84.4 m)   Mineral 3.1 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.7 m +
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2

River Terrace Deposits (4th Terrace)	'Clayey' gravel
	  Gravel: fine to coarse angular flint with some fine vein-quartz. Some fine chalk below 2.0 m
	  Sand: fine to coarse flint and quartz, with chalk below 1.1 m
		3.1	3.3

	Clay, chalky, with chalk pebbles and scattered angular flint	0.4	3.7
Upper Chalk	Chalk, soft, white	0.3 +	4.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
10	29	61	0.2–1.2	18	7	10	11	29	25
			1.2–2.2	3	3	9	17	31	37
			2.2–3.3	9	3	9	19	31	29
			Mean	10	4	10	15	31	30

SU 74 NW 2   7170 4990   Nr. Ford Farm, South Warnborough   **Block G**

Surface level (+82.0 m) + 269 ft   Mineral 3.4 m
Water struck at +81.8 m   Bedrock 1.0 m +
Shell and Auger 152 mm (6 in) diameter
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (4th Terrace)	'Clayey' gravel Gravel: fine to coarse, mainly angular flint Sand: fine to coarse quartz and flint	3.4	3.4
Upper Chalk	Chalk, soft, white	1.0 +	4.4

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
11	24	65	0.0–1.0	22	7	5	9	25	32
			1.0–2.0	4	5	7	14	33	37
			2.0–3.4	9	3	7	13	30	38
			Mean	11	5	7	12	29	36

Surface (+82.3 m) + 270 ft   Overburden 0.3 m
Water not struck   Mineral 1.2 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 4.5 m +
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (2nd Terrace)	Gravel 　　Gravel: fine to coarse, angular to subrounded with occasional rounded flint 　　Sand: fine to coarse quartz and flint	1.2	1.5
Reading Beds	Clay, firm, grey and brown with slight red mottling	4.5 +	6.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	26	65	0.3–1.5	9	10	7	9	26	39
			Mean	9	10	7	9	26	39

Surface level (+89.9 m) + 295 ft   Overburden 0.9 m
Water struck at +88.4 m   Mineral 4.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.1 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.9	0.9
River Terrace Deposits (3rd Terrace)	'Clayey' gravel with cobbles in top 1.0 m 　　Gravel: fine to coarse, mainly angular flint, with some dark rounded flint and some fine quartz and chalk 　　Sand: fine to coarse quartz and flint	4.0	4.9
Upper Chalk	Chalk, soft, white	0.1 +	5.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-14$	$+64$
13	24	63	0.9–1.9	15	14	6	7	19	9	30
			1.9–2.9	2	9	8	8	30	43	0
			2.9–3.9	6	10	7	9	37	31	0
			3.9–4.9	28	8	4	8	23	29	0
			Mean	13	10	6	8	27	28	8

SU 75 NW 1   7083 5710   Nr. Winnells Copse, Hartley Wespall   **Block F**

Surface level (+89.3 m) + 293 ft   Overburden 0.1 m
Water not struck   Mineral 1.5 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (6th Terrace)	**a** 'Clayey' gravel, dark brown with much rounded flint in the top 0.4 m. Orange-brown and grey below 0.4 m. Gravel: fine to coarse angular to rounded flint. Sand: fine to coarse quartz and flint	1.5	1.6
Bagshot Beds	**b** Sand, orange-brown and grey, silty. Sand: mainly fine quartz	2.0 +	3.6

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	18	25	57	0.1–0.5	8	14	10	11	34	23
				0.5–1.6	22	13	4	4	13	44
				Mean	18	14	5	6	19	38
b	43	57	0	1.6–2.6	46	51	2	0	1	0
				2.6–3.6	39	60	1	0	0	0
				Mean	43	55	2	0	0	0

SU 75 NW 2   7097 5572   Nr. Tylney Hall School, Rotherwick   **Block F**

Surface level (+95.1 m) + 312 ft   Waste 0.5 m
Water not struck   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (7th Terrace)	**a** 'Clayey' gravel. Gravel: fine to coarse, angular to subrounded, with occasional rounded flint. Sand: fine to medium quartz and flint	0.4	0.5
Bagshot Beds	**b** 'Very clayey' sand, orange-brown with grey patches, becoming grey-brown. Sand: mainly fine quartz	3.0 +	3.5

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	15	39	46	0.1–0.5	15	12	23	4	16	30
				Mean	15	12	23	4	16	30
b	32	68	0	0.5–1.5	36	58	6	0	0	0
				1.5–2.5	25	67	7	1	0	0
				2.5–3.5	36	61	3	0	0	0
				Mean	32	62	6	0	0	0

SU 75 NW 3   7295 5923   Nr. Brickkiln Farm, Heckfield

Block F

Surface level (+59.1 m) +194 ft

Waste 3.1 m

Water not struck

Bedrock 1.9 m +

Shell and Auger 152 mm (6 in) diameter

June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (? 3rd Terrace)	Clay, pebbly, sandy Gravel: mainly fine angular to subangular flint Sand: mainly fine quartz	3.0	3.1
London Clay	Clay, laminated, medium brown, sandy, silty	0.7	3.8
	Silt, grey, clayey	1.2 +	5.0

GRADING

Mean for deposit *percentages*			Depth below surface (m).	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
40	56	4	0.1–1.1	35	45	12	2	5	1
			1.1–2.1	35	50	10	1	2	2
			2.1–3.1	50	42	6	0	1	1
			Mean	40	46	9	1	3	1

SU 75 NW 4   7277 5935   Brickkiln Farm, Heckfield

Block F

Surface level (+61.6 m) +202 ft

Overburden 0.1 m

Water not struck

Mineral 2.0 m

Shell and Auger 152 mm (6 in) diameter

Bedrock 3.4 m +

June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (4th Terrace)	a 'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded flint Sand: mainly fine to medium quartz	2.0	2.1
Bagshot Beds	b Sand, orange-brown Sand: mainly fine quartz	2.2	4.3
London Clay	Clay, grey, silty	1.2 +	5.5

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	13	60	27	0.1–1.1	13	69	17	0	1	0
				1.1–2.1	13	7	14	12	31	23
				Mean	13	38	16	6	16	11
b	9	91	0	2.1–3.1	7	75	18	0	0	0
				3.1–4.3	11	75	14	0	0	0
				Mean	9	75	16	0	0	0

Surface level (+48.8 m) +160 ft   Waste 2.9 m
Water struck at +48.3 m   Bedrock 0.6 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, brown, silty	0.2	0.3
	Clay, grey-brown, very soft	1.4	1.7
	Clay, grey-brown, soft, silty	0.3	2.0

River Terrace Deposits (2nd Terrace)	Gravel
	    Gravel: fine to coarse, mainly black, with some brown angular flint and traces of rounded flint
	    Sand: fine to coarse quartz and flint
		0.9	2.9

London Clay	Clay, grey, very silty, with occasional green patches	0.6+	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
2	18	80	2.0–2.9	2	3	6	9	34	46
			Mean	2	3	6	9	34	46

Surface level (+66.1 m) +217 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (4th Terrace)	**a** 'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: mainly fine to medium quartz	2.1	2.2
London Clay	**b** 'Very clayey' sand, orange-brown and grey Sand: mainly fine quartz	1.8	4.0
London Clay	Clay, brown, silty	0.5	4.5
	Clay, grey, silty	0.4+	4.9

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
	Fines	Sand	Gravel		Fines	Sand				Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
a	18	42	40	0.1–0.5	25	26	8	5		16	20
				0.5–1.5	17	14	11	8		28	22
				1.5–2.2	15	35	14	6		18	12
				Mean	18	23	12	7		22	18
b	32	68	0	2.2–3.2	25	72	3	0		0	0
				3.2–4.0	40	57	3	0		0	0
				Mean	32	65	3	0		0	0

Surface level (+57.0 m) +187 ft   Overburden 0.1 m
Water level not recorded   Mineral 1.7 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (2nd Terrace)	'Clayey' gravel, brown, becoming grey with depth
	    Gravel: fine to coarse, mainly angular with some subangular flint
	    Sand: fine to coarse quartz and flint
		1.7	1.8

London Clay	Clay, grey, silty	1.0+	2.8

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
18	27	55	0.1–1.1	17	5	7	8		26	37
			1.1–1.8	19	14	13	10		25	19
			Mean	18	8	10	9		26	29

SU 75 NW 8   7492 5847   **Hazeley Heath, Mattingley**   **Block F**

Surface level (+84.4 m) +277 ft   Mineral 2.3 m
Water not struck   Bedrock 1.5 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (8th Terrace)	a Gravel, brown, becoming grey and brown, clayey below 1.8 m
	    Gravel: fine to coarse, angular to rounded flint
	    Sand: fine to coarse quartz and flint
		2.3	2.3

Bracklesham Beds	b Clay, orange-brown and grey, sandy	1.5+	3.8

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
	Fines	Sand	Gravel		Fines	Sand				Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
a	8	43	49	0.0–0.6	1	12	13	11		29	34
				0.6–1.8	6	7	35	9		28	15
				1.8–2.3	19	15	13	6		20	27
				Mean	8	10	25	8		27	22
b	43	55	2	2.3–3.3	38	56	2	1		1	2
				3.3–3.8	54	45	1	0		0	0
				Mean	43	53	1	1		1	1

SU 75 NW 9   7423 5652   Nr. West Green House, Hartley Wintney   **Block F**

Surface level (+ 77.1 m) + 253 ft   Mineral 1.4 m
Water not struck   Bedrock 4.0 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (5th Terrace)	**a** 'Very clayey' gravel
	    Gravel: fine to coarse, angular to subangular flint
	    Sand: fine to coarse quartz and flint
		1.4	1.4

Bagshot Beds	**b** 'Very clayey' sand, grey-brown and orange-brown, laminated in parts Sand: mainly fine quartz	3.0	4.4
	Clay, silty, alternating brown and grey, with orange-brown and grey-brown fine quartz sand	1.0+	5.4

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	21	25	54	0.1–0.4	34	10	7	5	12	32
				0.4–1.4	15	10	9	9	27	30
				Mean	21	10	8	7	23	31
b	32	68	0	1.4–2.4	21	76	3	0	0	0
				2.4–3.4	14	83	3	0	0	0
				3.4–4.4	26	73	1	0	0	0
				4.4–5.4	66	33	1	0	0	0
				Mean	32	66	2	0	0	0

SU 75 NW 10   7491 5985   Lea Farm, Mattingley   **Block F**

Surface level (+ 50.3 m) + 165 ft   Overburden 0.1 m
Water struck at 49.6 m   Mineral 1.7 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 3.2 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (2nd Terrace)	'Very clayey' pebbly sand
	    Gravel: fine to coarse, angular to subrounded flint
	    Sand: mainly fine quartz
		1.7	1.8

London Clay	Clay, grey, silty	3.2+	5.0

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	22	69	9	0.1–0.6	30	49	13	2	3	3
				0.6–1.1	18	43	24	4	8	3
				Mean	22	45	21	3	6	3

SU 75 NW 11   7397 5821   **Nr. Mattingley Clappers Bridge, Mattingley**   **Block F**

Surface level +53.8 m (+177 ft)
Water struck at +52.6 m
Shell and Auger 152 mm (6 in) diameter
July 1976

Overburden 1.2 m
Mineral 1.1 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Silt, orange-brown and dark brown mottled, clayey, with root fragments, becoming dark brown and green, soft clayey silt with scattered angular and subangular flint pebbles	1.0	1.2

River Terrace Deposits (2nd Terrace)	Gravel
	    Gravel: fine to coarse, black and brown, angular and subangular flint
	    Sand: fine to coarse quartz and coarse flint
		1.1	2.3

London Clay	Clay, firm, grey silty	0.5 +	2.8

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	8	18	74	1.2–2.3	8	2	3	13	41	33
				Mean	8	2	3	13	41	33

SU 75 NE 66   7529 5924   **Nr. High Bridge, Mattingley**   **Block F**

Surface level (+54.9 m) +180 ft
Water level not recorded
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.2 m
Mineral 2.0 m
Bedrock 1.8 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2

River Terrace Deposits (3rd Terrace)	a 'Very clayey' sandy gravel, becoming mainly sand below 1.2 m
	    Gravel: fine to coarse, angular to rounded flint
	    Sand: mainly fine to medium quartz
		2.0	2.2

London Clay	b 'Very clayey' sand, dark grey Sand: mainly fine quartz	1.8 +	4.0

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	20	58	22	0.2–1.2	22	22	13	6	26	11
				1.2–2.2	17	61	14	1	2	5
				Mean	20	41	14	3	14	8
b	39	61	10	2.2–3.2	50	46	4	0	0	0
				3.2–4.0	26	65	9	0	0	0
				Mean	39	55	6	0	0	0

Surface level (+54.9 m) +180 ft
Water struck at +53.4 m
Shell and Auger 152 mm (6 in) diameter
December 1974

Overburden 1.5 m
Mineral 2.0 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, silty, medium brown with red and brown mottle and traces of peat	0.2	0.4
	Silt, medium brown, clayey, sandy, with wood fragments	1.1	1.5

River Terrace Deposits (2nd Terrace)	a Gravel
	    Gravel: fine to coarse, angular to rounded flint
	    Sand: fine to coarse, quartz and flint
		2.0	3.5

Bagshot Beds	b Sand, grey Sand: mainly fine quartz	3.0+	6.5

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	5	24	71	1.5–2.5	9	5	17	13	31	25
				2.5–3.5	1	6	2	5	49	37
				Mean	5	6	9	9	40	31
b	6	94	0	3.5–5.5	5	93	1	1	0	0
				5.5–6.5	7	91	2	0	0	0
				Mean	6	92	2	0	0	0

Surface level (+95.4 m) +313 ft   Mineral 5.1 m
Water not struck   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (7th Terrace)	**a** 'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded, with some rounded flint Sand: mainly fine to medium quartz	5.1	5.1
Barton Beds	**b** Clay, orange-brown and grey, sandy	3.0+	8.1

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	17	47	36	0.0–0.2	16	48	17	3	4	12
				0.2–0.5	13	46	17	4	8	12
				0.5–1.5	25	12	12	4	21	26
				1.5–2.5	11	3	19	9	34	24
				2.5–3.3	17	8	21	9	33	12
				3.3–4.3	19	55	24	2	0	0
				4.3–5.1	16	23	14	6	22	19
				Mean	17	24	17	6	20	16
b	71	29	0	5.1–6.1	30	65	4	1	0	0
				6.1–7.1	88	11	1	0	0	0
				7.1–8.1	94	6	0	0	0	0
				Mean	71	27	2	0	0	0

Surface level (+57.9 m) +190 ft   Overburden 0.2 m
Water struck at +56.6 m   Mineral 3.6 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.7 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (3rd Terrace)	**a** Sandy gravel Gravel: fine to coarse, angular to rounded flint with some dark grey-brown well rounded flint Sand: fine to coarse quartz and flint	3.6	3.8
Bagshot Beds	**b** 'Very clayey' sand, grey-brown becoming grey Sand: mainly fine quartz	2.7+	6.5

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	4	48	48	0.2–1.2	1	15	11	11	32	30
				1.2–2.2	3	14	13	13	35	22
				2.2–3.2	6	43	14	10	17	10
				3.2–3.8	8	36	6	4	23	23
				Mean	4	26	12	10	27	21
b	20	80	0	3.8–4.8	29	66	5	0	0	0
				4.8–5.8	16	72	10	2	0	0
				5.8–6.5	12	84	2	2	0	0
				Mean	12	84	2	2	0	0

Surface level (+ 56.7 m) + 186 ft
Water level not recorded
Shell and Auger 152 mm (6 in) diameter
April 1974

Overburden 2.4 m
Mineral 2.0 m
Bedrock 0.2 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Silt, peaty	0.2	0.5
	Peat	0.1	0.6
	Silt, peaty	1.8	2.4
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse, quartz and flint	2.0	4.4
Bagshot Beds	Silt, black sandy	0.2 +	4.6

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
7	22	71	2.4–3.4	5	9	7	6	35	38
			3.4–4.4	9	8	7	7	29	40
			Mean	7	9	6	7	32	39

Surface level (+61.3 m) +201 ft   Overburden 0.5 m
Water level not recorded   Mineral 5.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
April 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Silt, peaty	0.3	0.5
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, subangular to rounded flint Sand: fine to coarse quartz and flint	5.0	5.5
Bracklesham Beds	Sand, dark grey, silty	1.0 +	6.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
4	24	72	0.5–1.5	5	4	5	10	46	30
			1.5–2.5	2	4	6	13	50	25
			2.5–3.5	3	7	12	12	40	26
			3.5–4.5	3	4	7	9	41	36
			4.5–5.5	6	15	6	5	29	39
			Mean	4	7	7	10	41	31

54

Surface level (+63.4 m) +208 ft
Water struck at +57.8 m
Shell and Auger 152 mm (6 in) diameter
April 1974

Overburden 0.2 m
Mineral 2.2 m
Bedrock 3.2 m +

LOG

Geological Classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (3rd Terrace)	**a** Gravel Gravel: fine to coarse, subangular to subrounded, with some rounded flint Sand: fine to coarse quartz	2.2	2.4
Bracklesham Beds	**b** 'Very clayey' sand, pale grey and yellow-brown becoming dark grey Sand: mainly fine quartz	3.2 +	5.6

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	5	33	62	0.2–1.2	5	11	10	10	33	31
				1.2–2.4	6	15	15	12	35	17
				Mean	5	12	11	10	39	23
b	29	71	0	2.4–3.1	37	59	3	1	0	0
				3.1–4.1	28	64	7	1	0	0
				4.1–5.1			No data available			
				5.1–5.6	20	68	11	1	0	0
				Mean	29	63	7	1	0	0

Surface level (+97.2 m) +319 ft
Water struck at +93.9 m
Shell and Auger 152 mm (6 in) diameter
April 1974

Overburden 0.3 m
Mineral 4.0 m
Bedrock 1.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
	Peat	0.2	0.3
River Terrrace Deposits (7th Terrace)	a 'Clayey' sandy gravel, mainly sand and fines above 1.4 m Gravel: fine to coarse, subangular to rounded flint Sand: fine to coarse quartz and flint	4.0	4.3
Barton Beds	b 'Very clayey' sand, pale green-grey becoming orange Sand: mainly fine quartz	1.0+	5.3

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	14	47	39	0.3–0.5	27	35	19	5	7	7
				0.5–0.9	36	42	15	1	3	3
				0.9–1.4	24	47	19	2	5	3
				1.4–2.4	11	15	16	7	19	32
				2.4–3.3	8	19	17	8	28	20
				3.3–3.8	1	6	21	22	34	16
				3.8–4.3	10	4	15	13	36	22
				Mean	14	17	21	9	21	18
b	27	73	0	4.3–5.3	27	66	5	2	0	0
				Mean	27	66	5	2	0	0

SU 75 NE 75   7901 5814   **Star Hill Plantation, Hartley Wintney**   **Block B**

Surface level (+95.4 m) +313 ft   Mineral 2.6 m
Water level not recorded   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
April 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (7th Terrace)	**a** 'Clayey' gravel Gravel: fine to coarse, subangular to subrounded, with some rounded flint Sand: fine to coarse quartz and flint	2.6	2.6
Barton Beds	**b** 'Very clayey' sand, pale yellow-grey becoming yellow-brown at 2.8 m, then becoming orange and yellow Sand: fine quartz	3.0 +	5.6

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	11	36	53	0.0–0.3	8	16	14	11	24	27
				0.3–1.3	13	4	19	11	21	32
				1.3–2.6	11	6	18	11	33	21
				Mean	11	7	13	16	18	35
b	23	77	0	2.6–3.6	22	74	2	2	0	0
				3.6–4.6	25	75	0	0	0	0
				4.6–5.6	23	76	1	0	0	0
				Mean	23	75	1	1	0	0

57

Surface level (+63.7 m) +209 ft   Overburden 0.4 m
Water level not recorded   Mineral 2.8 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 3.2 m +
April 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits (3rd Terrace)	a 'Clayey' gravel Gravel: fine to coarse, subangular to subrounded, with some rounded flint Sand: fine to coarse quartz and flint	2.8	3.2
Bracklesham Beds	b 'Very clayey' sand, orange, yellow and brown becoming grey Sand: mainly fine quartz	3.2+	6.4

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	10	40	50	0.4–1.4	12	19	10	11	28	20
				1.4–2.4	9	23	12	10	33	13
				2.4–3.2	10	17	8	9	33	23
				Mean	10	20	10	10	32	18
b	22	78	0	3.2–4.2	20	71	7	2	0	0
				4.2–5.2	26	66	5	3	0	0
				5.2–5.6	22	71	7	0	0	0
				5.6–6.4	20	73	5	2	0	0
				Mean	22	70	6	2	0	0

Surface level (+59.4 m) +195 ft
Water struck at +57.9 m
Shell and Auger 152 mm (6 in) diameter
July 1974

Mineral 6.7 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (2nd Terrace)	**a** Gravel Gravel: fine to coarse, angular to subangular, with occasional rounded flint Sand: fine to coarse quartz and flint	6.7	6.7
Bracklesham Beds	**b** 'Clayey' sand, grey Sand: mainly fine quartz	3.0 +	9.7

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	6	33	61	0.0–1.5	4	10	14	11	28	33
				1.5–2.5	2	14	14	15	33	22
				2.5–3.5	4	9	13	15	43	16
				3.5–4.5	2	9	13	8	42	26
				4.5–5.7	4	2	6	8	37	43
				5.7–6.7	23	28	6	5	23	15
				Mean	6	12	11	10	34	27
b	14	84	2	6.7–7.7	14	66	15	4	1	0
				7.7–8.7	12	67	13	5	3	0
				8.7–9.7	17	72	9	1	1	0
				Mean	14	69	12	3	2	0

Surface level (+57.6 m) +189 ft   Overburden 0.7 m
Water struck at +55.6 m   Mineral 1.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Alluvium	Clay, grey, silty	0.2	0.7

River Terrace Deposits (2nd Terrace)	**a** 'Clayey' sandy gravel
	   Gravel: fine to coarse, angular to rounded flint
	   Sand: mainly fine to medium quartz
		1.0	1.7

Bracklesham Beds	**b** 'Very clayey' sand, grey Sand: mainly fine quartz	2.0 +	3.7

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	11	51	38	0.7–1.7	11	29	13	9	25	13
				Mean	11	29	13	9	25	13
b	28	72	0	1.7–2.7	26	67	6	1	0	0
				2.7–3.7	30	68	1	1	0	0
				Mean	28	68	3	1	0	0

Surface level (+57.6 m) +189 ft   Overburden 1.8 m
Water struck at +55.8 m   Mineral 2.8 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Alluvium	Clay, very soft, dark brown and red-brown, silty	1.3	1.8
River Terrace Deposits (2nd Terrace)	**a** Gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse quartz and flint	2.8	4.6
Bracklesham Beds	**b** 'Clayey' sand, grey Sand: mainly fine quartz with some glauconite	2.0 +	6.6

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	3	38	59	1.8–2.8	1	6	10	12	39	32
				2.8–3.8	2	11	15	9	32	31
				3.8–4.6	7	35	12	8	24	14
				Mean	3	16	12	10	33	26
b	13	87	0	4.6–5.6	17	75	7	1	0	0
				5.6–6.6	9	85	5	1	0	0
				Mean	13	80	6	1	0	0

Surface level (+ 60.7 m) + 199 ft
Water struck at + 58.7 m
Shell and Auger 152 mm (6 in) diameter
December 1974

Overburden 2.0 m
Mineral 2.0 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Alluvium	Clay, grey and orange-brown,sandy	0.3	0.7
	Clay, red-brown, silty	0.6	1.3
	Clay, red-brown and grey, very soft, silty	0.2	1.5
	Clay, grey-green and brown, sandy	0.5	2.0

River Terrace Deposits (2nd Terrace)	**a** Gravel
	    Gravel: fine to coarse angular to subrounded flint with dark
	        grey-brown rounded flint
	    Sand: fine to coarse quartz and flint with some glauconite
		2.0	4.0

Bracklesham Beds	**b** 'Very clayey' sand, medium grey Sand: mainly fine quartz with some glauconite	3.0 +	4.0

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	4	43	53	2.0–3.0	3	12	10	14	40	21
				3.0–4.0	5	23	17	9	29	17
				Mean	4	18	13	12	34	19
b	20	80	0	4.0–5.0	12	83	4	1	0	0
				5.0–6.0	23	74	2	1	0	0
				6.0–7.0	25	72	3	0	0	0
				Mean	12	83	4	1	0	0

SU 75 NE 81   7847 5871   London Road Heath, Hartley Wintney   **Block B**

Surface level (+94.5 m) +310 ft   Mineral 4.5 m
Water not struck   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (7th Terrace)	**a** 'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded with some rounded flint and subangular cherty sandstone	4.5	4.5
Barton Beds	**b** 'Very clayey' sand, medium brown, grey-brown, orange-brown and grey Sand: mainly fine quartz	3.0 +	7.5

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	13	49	38	0.0–0.6	13	14	39	11	9	14
				0.6–1.6	22	9	32	10	18	9
				1.6–2.6	10	6	25	15	28	16
				2.6–3.6	14	13	16	13	29	15
				3.6–4.5	5	11	24	16	29	15
				Mean	13	10	27	12	24	14
b	20	79	1	4.5–5.5	22	73	1	3	1	0
				5.5–6.5	19	79	1	0	1	0
				6.5–7.5	20	79	1	0	0	0
				Mean	20	77	1	1	1	0

SU 75 NE 82   7602 5756   Nr. Hazeley House, Hartley Wintney   **Block F**

Surface level (+87.5 m) +287 ft   Overburden 1.5 m
Water struck at +86.0 m   Mineral 1.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.2 m +
January 1975

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Made Ground	Clay, sand, gravel and ashes	1.4	1.5
River Terrace Deposits (6th Terrace)	Gravel Gravel: fine to coarse, angular to rounded flint with some dark grey-brown, well rounded flint	1.3	2.8
Bracklesham Beds	Clay, laminated, sandy, orange-brown, medium brown and grey	1.2 +	4.0

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	2	31	67	1.5–2.8	2	2	14	15	43	24
				Mean	2	2	14	15	43	24

SU 75 SW 84   7160 5342   **Hook Common, Hook**   **Block F**

Surface level (+97.8 m) +321 ft   Waste 0.4 m
Water not struck   Bedrock 5.6 m +
Shell and Auger 152 mm (6 in) diameter
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Downwash Gravel	Sand, clayey, with scattered pebbles	0.3	0.4
London Clay	Clay, orange-brown, medium brown and grey, mottled, silty	5.3	5.7
	Clay, grey, silty	0.3+	6.0

SU 75 SW 85   7218 5125   **Nr. Deptford Bridge, Odiham**   **Block G**

Surface level (+78.0 m) +256 ft   Waste 4.0 m
Water not struck   Bedrock 0.5 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, brown, chalky	0.8	0.9
River Terrace Deposits (4th Terrace)	Clay, dark and light brown, becoming light brown, pebbly, sandy	3.1	4.0
Upper Chalk	Chalk, with scattered flints	0.5+	4.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
42	28	30	0.9–1.8	34	11	4	5	17	29
			1.8–2.8	27	9	8	11	19	26
			2.8–4.0	59	11	13	11	6	0
			Mean	42	10	9	9	13	17

SU 75 SW 86   7297 5279   Nr. Bartley Heath, Odiham   **Block G**

Surface level ($+74.7$ m) $+245$ ft
Water struck at $+73.2$ m
Shell and Auger 152 mm (6 in) diameter
January 1975

Overburden 0.3 m
Mineral 2.9 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, grey-brown, sandy, with scattered fine gravel-sized flint pebbles	0.1	0.3
River Terrace Deposits (4th Terrace)	'Clayey' gravel Gravel: fine to coarse, angular to subangular flint Sand: fine to coarse quartz and flint	2.9	3.2
London Clay	Clay, firm, brown, silty	0.2	3.4
	Clay, firm, grey-brown, silty	0.3 +	3.7

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
13	20	67	0.3–1.4	23	13	6	7	18	33
			1.4–2.3	10	2	4	8	42	34
			2.3–3.2	5	2	6	9	34	44
			Mean	13	7	5	8	30	37

SU 75 SW 87   7382 5475   Nr. The Crooked Billet, Hook   **Block F**

Surface level ($+66.1$ m) $+217$ ft
Water struck at $+64.6$ m
Shell and Auger 152 mm (6 in) diameter
November 1974

Overburden 1.4 m
Mineral 1.6 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.5	0.5
Alluvium	Silt, brown, clayey	0.4	0.9
	Chalky rubble, clayey	0.5	1.4
River Terrace Deposits (3rd Terrace)	Gravel Gravel: fine to coarse, mainly angular flint Sand: mainly medium to coarse flint and quartz	1.6	3.0
London Clay	Clay, soft, grey, silty	0.5 +	3.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
8	20	72	1.4–2.4	10	4	9	11	33	33
			2.4–3.0	2	3	6	6	35	48
			Mean	8	3	8	9	33	39

SU 75 SW 88   7404 5324   W. of Poland, Odiham   Block G

Surface level (+66.8 m) +219 ft   Overburden 0.8 m
Water struck at +65.7 m   Mineral 3.5 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
January 1975

LOG

Geological classification	Lithology	Thickness m	Depth m
Alluvium	Silt, dark brown·	0.8	0.8
River Terrace Deposits (2nd Terrace)	Gravel, with cobbles below 4.0 m Gravel: fine to coarse, angular and subangular flint with some rounded flint Sand: mainly medium to coarse flint and quartz	3.5	4.3
London Clay	Clay, firm, grey, silty	0.5 +	4.8

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand			Gravel		
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16-64$	$+64$
5	23	72	0.8–1.8	6	5	8	9	38	34	0
			1.8–2.8	6	8	12	12	25	37	0
			2.8–4.3	3	1	4	14	39	30	9
			Mean	5	4	7	12	35	33	4

SU 75 SW 89   7340 5227   S.W. of Lodge Farm, Odiham   Block G

Surface level (+72.2 m) +237 ft   Overburden 0.1 m
Water struck at +71.1 m   Mineral 2.9 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (2nd Terrace)	'Clayey' gravel Gravel: fine to coarse, angular to subrounded flint Sand: mainly medium to coarse quartz and flint	2.9	3.0
London Clay	Clay, soft, grey, silty	0.5 +	3.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
11	21	68	0.1–1.1	15	4	5	5	21	50
			1.1–2.1	8	1	8	15	36	32
			2.1–3.0	11	2	11	13	25	38
			Mean	11	3	8	10	28	40

SU 75 SW 90   7438 5305   Nr. Poland, Odiham   **Block G**

Surface level (+67.4 m) +221 ft
Water struck at +66.8 m
Shell and Auger 152 mm (6 in) diameter
December 1974

Overburden 0.4 m
Mineral 2.6 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits (2nd Terrace)	Gravel 　Gravel: fine to coarse, mainly angular flint 　Sand: mainly medium to coarse quartz and flint	2.6	3.0
London Clay	Clay, firm grey	0.5 +	3.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	32	63	0.4–1.1	0	2	7	11	38	42
			1.1–2.1	6	7	14	20	33	20
			2.1–3.0	7	6	11	15	34	27
			Mean	5	5	11	16	35	28

SU 75 SW 91   7402 5254   E. of Lodge Farm, Odiham   **Block G**

Surface level (+68.0 m) +223 ft
Water struck at +67.5 m
Shell and Auger 152 mm (6 in) diameter
January 1975

Overburden 0.3 m
Mineral 4.4 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (2nd Terrace)	Gravel 　Gravel: fine to coarse, angular to subangular flint 　Sand: mainly medium to coarse flint and quartz	4.4	4.7
London Clay	Clay, firm grey	0.5 +	5.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
6	19	75	0.3–1.3	9	7	5	12	33	34
			1.3–2.3	10	2	5	9	35	39
			2.3–3.3	3	1	5	10	40	41
			3.3–3.7	3	2	7	11	34	43
			Mean	6	3	6	10	36	39

SU 75 SW 92   7495 5062   **Nr. Hillside Farm, Odiham**   **Block G**

Surface level (+85.3 m) +280 ft   Overburden 0.7 m
Water not struck   Mineral 4.1 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
Alluvium	Clay, brown, silty	0.3	0.7
River Terrace Deposits (3rd Terrace)	'Very clayey' gravel Gravel: fine to coarse, mainly angular flint Sand: fine to coarse quartz and flint	4.1	4.8
Upper Chalk	Chalk, soft	1.0 +	5.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
21	27	52	0.7–1.7	27	5	9	10		24	25
			1.7–2.5	29	12	9	10		22	18
			2.5–3.3			Clay band				
			3.3–4.3	13	10	8	12		33	24
			4.3–4.8	11	6	6	11		27	39
			Mean	21	8	9	10		27	25

SU 75 SW 93   7356 5358   **Nr. Scotland Farm, Hook**   **Block.G**

Surface level (+69.9 m) +229 ft   Waste 1.1 m
Water not struck   Bedrock 2.6 m +
Shell and Auger 152 mm (6 in) diameter
September 1977

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil, dark brown loam	0.2	0.2
? Head	Clay, mottled orange and brown, silty, with scattered fine subangular flint	0.9	1.1
London Clay	Clay, silty, orange and brown, mottled	0.6	1.7
	Clay, silty, orange and grey, mottled	1.7	3.4
	Clay, silty, firm bluish grey	0.3 +	3.7

SU 75 SE 42   **7533 5346**   **Nr. Odiham Wood, Odiham**   **Block F**

Surface level (+68.3 m) +224 ft   Overburden 0.2 m
Water not struck   Mineral 1.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.1 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (2nd Terrace)	'Very clayey' gravel Gravel: fine to coarse, angular to subangular flint Sand: fine to coarse quartz and flint	1.0	1.2
Bagshot Beds	Clay, medium brown and grey, sandy Sand: quartz with some muscovite	1.1+	2.3

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
27	31	42	0.2–1.2	27	14	8	9	26	16
			Mean	27	14	8	9	26	16

SU 75 SE 43   **7550 5155**   **Nr. Broad Oak Farm, Odiham**   **Block F**

Surface level (+78.9 m) +259 ft   Waste 1.6 m
Water not struck   Bedrock 1.2 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, medium brown, chalky	0.7	0.9
River Terrace Deposits (2nd Terrace)	'Very clayey' gravel Gravel: fine to coarse angular flint Sand: fine to coarse quartz and flint	0.7	1.6
London Clay	Clay, firm, grey, silty	1.2+	2.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
28	32	40	0.9–1.6	28	12	9	11	22	18
			Mean	28	12	9	11	22	18

69

Surface level (+60.7 m) +199 ft   Waste 2.6 m
Water level not recorded   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits (2nd Terrace)	a Clay, grey and orange-brown, sandy with scattered flint pebbles	2.2	2.6
Bracklesham Beds	b Clay, grey, sandy, silty	3.0+	5.6

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	46	53	1	0.4–1.4	40	51	5	1	2	1
				1.4–2.6	50	41	7	1	1	0
				Mean	46	46	6	1	1	0
b	42	56	2	2.6–3.6	19	65	13	1	2	0
				3.6–4.6	44	46	8	1	1	0
				4.6–5.6	62	31	4	1	0	2
				Mean	42	47	8	1	1	1

Surface level (+ 70.1 m) + 230 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
April 1974

Overburden 0.3 m
Mineral 1.6 m
Bedrock 2.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (3rd Terrace)	a 'Clayey' gravel 　　Gravel: fine to coarse, subangular to subrounded flint 　　Sand: fine to coarse quartz	1.6	1.9
Bracklesham Beds	b 'Clayey' sand, orange and green, becoming pale greenish grey 　　Sand: mainly fine quartz with some glauconite	2.0 +	3.9

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	19	36	45	0.3–0.8		No data available				
				0.8–1.9	19	14	15	7	27	18
				Mean	19	14	15	7	27	18
b	17	82	1	1.9–2.9	17	78	4	0	1	0
				2.9–3.9	16	81	3	0	0	0
				Mean	17	78	4	0	1	0

SU 75 SE 46   7859 5159   Nr. Cunningham's Row, Dogmersfield   Block F

Surface level (+ 71.0 m) + 233 ft
Water level not recorded
Shell and Auger 152 mm (6 in) diameter
July 1974

Waste 2.6 m
Bedrock 1.4 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Clay, grey and medium brown, mottled, soft	1.1	1.4
River Terrace Deposits (2nd Terrace)	Clay, grey and medium brown mottled pebbly 　　Gravel: fine to coarse, angular to rounded flint	1.2	2.6
London Clay	Clay, soft, medium brown and grey, mottled	0.2	2.8
	Clay, firm, grey, silty	1.2 +	4.0

No grading data available

SU 75 SE 47   7944 5414   **Nr. Hitches Farm, Fleet**   **Block F**

Surface level (+63.1 m) +207 ft   Overburden 1.5 m
Water struck at +61.6 m   Mineral 1.1 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Sand, brown	1.5	1.5
River Terrace Deposits (2nd Terrace)	Sandy gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse quartz and flint	1.1	2.6
Bracklesham Beds	Clay, sandy, grey	1.0+	3.6

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
6	59	35	1.5–2.0	9	72	13	2	3	1
			2.0–2.6	3	16	7	14	36	24
			Mean	6	41	10	8	22	13

SU 75 SE 48   7898 5234   **Nr. Brook Hill, Crookham Village**   **Block F**

Surface level (+68.3 m) +224 ft   Overburden 1.0 m
Water struck at +66.8 m   Mineral 1.5 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.3 m +
April 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, brown, silty with slight orange and brown mottling	0.2	0.3
	Clay, soft, light grey, silty, with orange and brown mottling	0.3	0.6
	Clay, soft, grey, silty	0.4	1.0
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, subangular to subrounded, flint Sand: fine to coarse, quartz and flint	1.5	2.5
London Clay	Clay, soft, light grey, silty becoming bluish grey and with a thin band of fine quartz sand at 2.7 m	1.3+	3.8

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	26	65	1.0–1.5	9	8	9	7	25	42
			1.5–2.5	9	6	5	15	40	25
			Mean	9	7	6	13	34	31

SU 75 SE 49   7944 5150   Nr. Burnt Cottage, Crookham Village   **Block F**

Surface level (+72.8 m) +239 ft   Waste 2.2 m
Water struck at +71.0 m   Bedrock 0.5 m+
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, soft, mottled light brown and red-brown, silty, with scattered flint pebbles	1.1	1.3
River Terrace Deposits (2nd Terrace)	'Very clayey' pebbly sand Gravel: fine to coarse, angular to subangular flint Sand: mainly fine to medium quartz and flint	0.9	2.2
London Clay	Clay, fairly soft, mottled grey and brown, becoming grey, silty	0.5+	2.7

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
28	58	14	1.3–2.2	28	40	16	2	7	7
			Mean	28	40	16	2	7	7

SU 76 NW 17   7020 6970   Nr. Farm No. 2, Reading   **Block A**

Surface level (+38.1 m) +125 ft   Mineral 2.7 m
Water struck at +37.6 m   Bedrock 1.0 m+
Shell and Auger 152 mm (6 in) diameter
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (1st Terrace)	Gravel, brown and grey-brown Gravel: fine to coarse, angular to rounded flint Sand: coarse flint and fine to coarse quartz	2.7	2.7
London Clay	Clay, firm, grey	1.0+	3.7

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	33	62	0.0–0.5	15	7	13	6	40	19
			0.5–1.5	4	3	26	8	36	23
			1.5–2.7	1	3	20	9	39	28
			Mean	5	4	21	8	38	24

Surface level (+37.5 m) +123 ft
Water struck at +36.5 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 2.3 m
Mineral 1.0 m
Bedrock 1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, soft, brown and grey, mottled, becoming very soft	2.1	2.3

River Terrace Deposits (1st Terrace)	Sandy gravel, grey
	  Gravel: fine to coarse, angular to subrounded, black flints, commonly with a white patina
	  Sand: fine to coarse quartz and flint
		1.0	3.3

London Clay	Clay, firm, grey	1.0+	4.3

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	53	38	2.3–3.3	9	8	38	7	33	5
			Mean	9	8	38	7	33	5

Surface level (+39.9 m) +131 ft
Water level not recorded
Shell and Auger 152 mm (6 in) diameter
July 1974

Overburden 0.2 m
Mineral 1.8 m
Bedrock 1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2

River Terrace Deposits (1st Terrace)	'Clayey' gravel, brown, becoming more sandy with depth
	  Gravel: fine to coarse, angular to subrounded with occasional rounded flint
	  Sand: fine to coarse quartz and flint
		1.8	2.0

London Clay	Clay, firm, grey	1.0+	3.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
12	39	49	0.2–1.2	11	4	15	11	42	17
			1.2–1.5	15	16	15	9	39	6
			1.5–2.0	11	11	25	21	24	8
			Mean	12	7	19	13	36	13

SU 76 NW 20   7027 6675   **W. of Woodcock Lane, Shinfield**   **Block A**

Surface level +43.3 m (142 ft)   Overburden 0.4 m
Water struck at +41.6 m   Mineral 2.4 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Made Ground	Soil and brick rubble	0.2	0.4
River Terrace Deposits (1st Terrace)	Gravel, brown Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: fine to coarse quartz and flint	2.4	2.8
London Clay	Clay, firm, grey with slight grey and brown mottling	1.0 +	3.8

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	30	65	0.4–1.7	5	4	14	9	31	37
			1.7–2.8	5	4	17	12	39	23
			Mean	5	4	16	10	35	30

SU 76 NW 21   7096 6666   **Nr. Highlands, Shinfield**   **Block B**

Surface level +68.1 m (+224 ft)   Overburden 0.4 m
Water level not recorded   Mineral 1.6 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m +
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.4	0.4
River Terrace Deposits (5th Terrace)	'Very clayey' pebbly sand, orange-brown and grey, mottled. Pebbles scarce in the top 1 m Gravel: mainly fine angular flint Sand: fine to medium quartz	1.6	2.0
London Clay	Clay, firm, mottled brown and grey	2.0 +	4.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
26	70	4	0.4–1.4	33	44	22	1	0	0
			1.4–2.0	15	22	46	5	10	2
			Mean	26	36	31	3	3	1

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Surface level (+65.5 m) +215 ft   Overburden 0.2 m
Water not struck   Mineral 1.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.2 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposit (5th Terrace)	'Very clayey' sandy gravel with sandy clay band between 0.8 m and 1.3 m Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: fine to coarse quartz and flint	1.8	2.0
London Clay	Clay, brown silty with some grey and orange mottling	2.2 +	4.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
26	40	34	0.2–0.8	30	22	15	4	12	17
			0.8–1.3			Clay band			
			1.3–2.0	23	7	22	9	20	19
			Mean	26	14	18	8	16	18

Surface level (+48.4 m) +159 ft   Overburden 1.0 m
Water struck at +47.4 m   Mineral 6.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Clay, sand, gravel and brick rubble	1.0	1.0
River Terrace Deposits (3rd Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: mainly medium to coarse quartz and flint	6.0	7.0
London Clay	Clay, firm, grey	1.0 +	8.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
3	33	64	1.0–2.0	4	8	26	9	35	18
			2.0–3.0	5	5	26	9	37	18
			3.0–4.0	2	4	14	4	38	38
			4.0–5.0	1	2	17	13	33	34
			5.0–6.0	2	4	17	9	35	33
			6.0–7.0	2	3	18	12	44	21
			Mean	3	4	20	9	37	27

Surface level (+41.1 m) +135 ft   Overburden 2.5 m
Water struck at +38.6 m   Mineral 1.1 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.9 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, firm, brown	1.0	1.2
	Silt and clay, soft brown	1.3	2.5
River Terrace Deposits (1st Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: mainly medium to coarse quartz and flint	1.1	3.6
London Clay	Clay, soft becoming firm, grey silty	1.9 +	5.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
3	17	80	2.5–3.6	3	3	6	8	48	32
			Mean	3	3	6	8	48	32

SU 76 NW 25   7310 6950   **Nr. Crosfields, Shinfield**   **Block B**

Surface level (+80.2 m) +263 ft   Overburden 0.3 m
Water not struck   Mineral 2.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.7 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (7th Terrace)	'Very clayey' sandy gravel Gravel: fine to coarse, angular to subrounded, with occasional rounded flint Sand: fine to coarse quartz and flint	2.0	2.3
London Clay	Clay, brown and grey mottled silty	2.7 +	5.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
25	49	26	0.3–0.6	22	22	26	9	17	4
			0.6–1.1	31	23	24	8	9	5
			1.1–2.3	22	9	26	10	24	9
			Mean	25	14	25	10	19	7

Surface level (+40.4 m) +133 ft
Water struck at +39.2 m
Shell and Auger 152 mm (6 in) diameter
November 1974

Waste 2.0 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Clay, medium brown, silty	0.9	1.2
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, angular to rounded flint Sand: mainly medium to coarse quartz and flint	0.8	2.0
London Clay	Clay, firm, grey, silty	0.5 +	2.5

GRADING

Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
6	26	68	1.2–2.0	6	3	15	8	32	36
			Mean	6	3	15	8	32	36

Surface level (+40.4 m) +133 ft
Water struck at +40.1 m
Shell and Auger 152 mm (6 in) diameter
November 1974

Overburden 0.6 m
Mineral 1.9 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, angular to rounded flint Sand: mainly medium to coarse quartz and flint	1.9	2.5
London Clay	Clay, firm, grey	0.5 +	3.0

GRADING

Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _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	30	67	0.6–1.6	3	1	12	15	37	32	0
			1.6–2.5	2	2	15	15	34	20	12
			Mean	3	1	13	16	35	26	6

Surface level (+44.5 m) +146 ft   Overburden 0.1 m
Water not struck   Mineral 2.7 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (3rd Terrace)	'Very clayey' sandy gravel, orange-brown and grey
	    Gravel: fine to coarse (mainly fine above 1.9 m) angular to
	       subrounded with occasional rounded flint
	    Sand: mainly fine to medium quartz with some coarse flint
		2.7	2.8

London Clay	Clay, brown silty	0.1	2.9
	Clay, grey silty	0.9 +	3.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
20	53	27	0.1–1.1	27	37	24	3	6	3
			1.1–1.9	28	27	16	8	18	3
			1.9–2.8	7	9	19	13	31	21
			Mean	20	25	21	7	18	9

Surface level (+ 44.7 m) + 147 ft
Water struck at + 41.7 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.1 m
Mineral 6.6 m
Bedrock 1.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (2nd Terrace)	'Clayey' sandy gravel, with 'very clayey' sand between 2.1 m and 2.6 m
	    Gravel: fine to coarse, angular to subangular with occasional rounded flint
	    Sand: fine to coarse quartz and flint
		6.6	6.7

London Clay	Clay, brown	0.2	6.9
	Clay, firm grey	0.8 +	7.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
12	46	42	0.1–1.1	30	30	22	8	8	2
			1.1–2.1	24	15	13	13	32	3
			2.1–2.6	23	69	7	0	1	0
			2.6–3.0	3	12	16	13	37	19
			3.0–4.0	1	4	31	12	38	14
			4.0–5.0	2	3	17	18	41	19
			5.0–6.0	5	6	19	20	33	17
			6.0–6.7	2	4	14	12	39	29
			Mean	12	15	18	13	29	13

SU 76 NW 30   7402 6847   **Nr. Oldhouse Farm, Shinfield**   **Block C**

Surface level (+39.6 m) +130 ft   Overburden 1.0 m
Water struck at +37.8 m   Mineral 3.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Brickearth and Loam	Clay, grey and brown, mottled	0.8	1.0
River Terrace Deposits (1st Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: mainly medium to coarse quartz and flint	3.3	4.3
London Clay	Clay, firm, grey	1.0+	5.3

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
4	45	51	1.0–1.8	5	4	18	16	35	22
			1.8–2.8	5	4	30	24	22	15
			2.8–3.8	3	7	17	19	42	12
			3.8–4.3	3	5	20	11	42	19
			Mean	4	5	22	18	35	16

SU 76 NW 31   7393 6731   **N. of Moor Copse, Arborfield and Newland**   **Block C**

Surface level (+39.0 m) +128 ft   Overburden 1.6 m
Water struck at +37.4 m   Mineral 2.0 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.4 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Clay, grey and brown mottled silty	1.3	1.6
River Terrace Deposits (1st Terrace)	'Clayey' gravel Gravel: fine to coarse, angular to subangular with occasional rounded flint Sand: fine to coarse quartz and flint	2.0	3.6
London Clay	Clay, grey, silty	1.4+	5.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
12	24	64	1.6–2.6	19	1	12	17	26	25
			2.6–3.6	4	3	9	7	37	40
			Mean	12	2	10	12	32	32

Surface level (+46.9 m) +154 ft
Water struck at +45.3 m
Shelll and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.1 m
Mineral 2.4 m
Bedrock 1.3 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (3rd Terrace)	'Clayey' sandy gravel
	    Gravel: fine to coarse, angular to subrounded, with occasional rounded flint
	    Sand: fine to coarse, quartz and flint
		2.4	2.5

London Clay	Clay, firm, grey	1.3 +	3.8

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
18	47	35	0.1–1.2	35	35	20	3	5	2
			1.2–2.2	3	7	19	12	35	24
			2.2–2.5	5	3	18	16	25	33
			Mean	18	19	20	8	20	15

Surface level (+43.9 m) +144 ft
Water struck at +41.9 m
Shell and Auger 152 mm (6 in) diameter
November 1974

Overburden 0.7 m
Mineral 5.3 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Brickearth	Clay, brown, silty	0.4	0.7

River Terrace Deposits (2nd Terrace)	'Clayey' gravel with clay band between 1.6 and 2.0 m
	    Gravel: mainly fine, angular to rounded flint
	    Sand: fine to coarse quartz and flint
		5.3	6.4

London Clay	Clay, grey, silty	0.5 +	6.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *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	31	59	0.7–1.6	39	22	13	6	17	3	0
			1.6–2.0			Clay band				
			2.0–3.0	6	12	22	10	30	20	0
			3.0–4.0	5	4	21	8	26	29	7
			4.0–5.0	4	0	1	2	63	30	0
			5.0–6.0	3	1	16	18	37	25	0
			6.0–6.4	6	2	9	10	32	41	0
			Mean	10	8	14	9	34	24	1

SU 76 NW 34   7270 6707   Nr. Orchard House, Shinfield   Block C

Surface level (+48.3 m) +159 ft   Overburden 0.3 m
Water struck at +47.6 m   Mineral 2.9 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
River Terrace Deposits (3rd Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional very dark brown rounded flint, and traces of fine quartz Sand: mainly fine to coarse quartz and flint	2.9	3.2
London Clay	Clay, firm brown becoming firm grey	0.5 +	3.7

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
5	43	52	0.3–1.3	7	8	17	15	32	21
			1.3–2.3	3	5	22	20	28	22
			2.3–3.2	4	6	21	15	33	21
			Mean	5	6	20	17	31	21

SU 76 NW 35   7224 6595   S.W. of Sussex Lodge, Shinfield   Block C

Surface level (+50.3 m) +165 ft   Mineral 2.5 m
Water struck at +49.8 m   Bedrock 0.5 m +
Shell and Auger 152 mm (6 in) diameter
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (3rd Terrace)	Gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse, quartz and flint	2.5	2.5
London Clay	Clay, firm, brown, silty	0.3	2.8
	Clay, firm, grey, silty	0.2 +	3.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
8	30	62	0.0–0.5	11	15	9	8	31	26
			0.5–1.5	9	7	18	11	38	17
			1.5–2.5	4	3	8	14	47	24
			Mean	8	6	13	11	40	22

SU 76 NW 59   7354 6548   **Swallowfield Park, Swallowfield**   **Block C**

Surface level (+45.9 m) +151 ft
Water struck at +44.0 m
Shell and Auger 152 mm (6 in) diameter
September 1977

Overburden 0.5 m
Mineral 2.5 m
Bedrock 1.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil and subsoil, sandy loam, dark brown	0.5	0.5

River Terrace Deposits (2nd Terrace)	Gravel
	  Gravel: fine with coarse subangular to subrounded flint with traces of fine subrounded sandstone, and well rounded flint
	  Sand: medium with coarse and some fine quartz and flint, orange
		2.5	3.0

London Clay	Clay, stiff, bluish grey	1.0 +	4.0

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	38	53	0.5–1.5	12	7	18	9	28	26
			1.5–2.5	8	6	19	13	34	20
			2.5–3.0	6	5	20	18	34	17
			Mean	9	6	19	13	31	22

SU 76 NW 60   7430 6669   **Nr. Moor Copse, Arborfield and Newland**   **Block C**

Surface level (+43.8 m) +144 ft
Water struck at +41.9 m
Shell and Auger 152 mm (6 in) diameter
September 1977

Overburden 0.7 m
Mineral 2.5 m
Bedrock 1.3 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil, sandy, light brown	0.4	0.4
?Brickearth and Loam	Clay, silt, mottled orange and brown with scattered, fine subangular flint	0.3	0.7

River Terrace Deposits (2nd Terrace)	'Clayey' gravel
	  Gravel: fine with coarse, subangular to subrounded flint, traces of fine well rounded flint
	  Sand: medium and coarse with some fine quartz and flint
		2.5	3.2

London Clay	Clay, stiff, bluish grey	1.3 +	4.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
19	30	51	0.7–1.5	33	4	13	12	28	10
			1.5–1.9	29	9	17	10	26	9
			1.9–2.9	10	5	15	10	34	26
			2.9–3.2	0	3	11	10	35	41
			Mean	19	5	15	10	31	20

84

SU 76 NE 15   7585 6989   Marsh Farm, Woodley and Sandford   Block C

Surface level (+40.5 m) +133 ft   Overburden 0.1 m
Water level not recorded   Mineral 3.7 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.2 m+
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (2nd Terrace)	'Clayey' gravel
	    Gravel: fine to coarse, angular to rounded flint with some
	        subrounded vein-quartz
	    Sand: fine to coarse quartz and flint
		3.7	3.8

London Clay	Clay, grey silty	1.2+	5.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
10	43	47	0.1–1.2	24	18	23	5	20	10
			1.2–2.2	7	13	21	8	31	20
			2.2–3.2	1	2	15	14	41	27
			3.2–3.8	7	10	28	17	28	10
			Mean	10	11	22	10	30	17

SU 76 NE 16   7583 6877   Barrett's Lane, Arborfield and Newland   Block C

Surface level (+48.5 m) +159 ft   Overburden 0.3 m
Water level not recorded   Mineral 3.9 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m+
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3

River Terrace Deposits (3rd Terrace)	Gravel
	    Gravel: fine to coarse, angular to subrounded with occasional
	        rounded flint
	    Sand: fine to coarse quartz and flint
		3.9	4.2

London Clay	Clay, brown silty	0.2	4.4
	Clay, grey silty	0.8+	5.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
6	45	49	0.3–1.3	12	33	16	5	19	15
			1.3–2.3	8	14	22	16	25	15
			2.3–3.3	2	6	25	12	25	30
			3.3–4.2	2	4	14	11	32	37
			Mean	6	15	19	11	25	24

SU 76 NE 17   7592 6948   Nr. Carter's Hill, Aborfield and Newland   **Block C**

Surface level (+39.6 m) +130 ft   Overburden 1.3 m
Water struck at +37.6 m   Mineral 1.2 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, grey and brown, mottled, silty	1.1	1.3
River Terrace Deposits (1st Terrace)	'Clayey' gravel 　Gravel: fine to coarse, angular to subrounded with occasional 　　rounded flint 　Sand: fine to coarse quartz and flint	1.2	2.5
London Clay	Clay, grey, silty	1.0 +	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
10	43	47	1.3–2.0	12	9	27	10	30	12
			2.0–2.5	8	6	16	14	30	26
			Mean	10	8	23	12	30	17

SU 76 NE 18   7765 6980   Nr. Sindlesham House, Winnersh   **Block C**

Surface level (+52.9 m) +174 ft   Overburden 0.2 m
Water struck at +50.7 m   Mineral 2.8 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (4th Terrace)	'Clayey' sandy gravel 　Gravel: fine to coarse, angular to rounded flint 　Sand: fine to coarse quartz and flint	2.8	3.0
London Clay	Clay, firm, brown, silty	0.4	3.4
	Clay, firm, grey, silty	0.1 +	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
19	46	35	0.2–1.0	36	25	25	4	6	4
			1.0–2.0	18	13	29	10	22	8
			2.0–3.0	5	15	16	4	31	29
			Mean	19	17	23	6	21	14

Surface level (+81.1 m) +266 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.2 m
Mineral 2.0 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (7th Terrace)	a 'Very clayey' pebbly sand, dark brown becoming light brown, orange-brown and then grey Gravel: fine to coarse, angular to rounded flint Sand: fine to coarse quartz with some muscovite	2.0	2.2
Bagshot Beds	b Silt, orange-brown and grey, mottled, sandy, with clay bands	3.0 +	5.2

GRADING

	Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	27	59	14	0.2–1.2	17	34	26	8	11	4
				1.2–2.2	37	41	6	3	6	7
				Mean	27	38	16	5	9	5
b	62	36	2	2.2–3.2	47	45	2	1	2	3
				3.2–4.2	50	49	1	0	0	0
				4.2–5.2	88	12	0	0	0	0
				Mean	62	35	1	0	1	1

Surface level (+50.3 m) +165 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
December 1974

Overburden 0.1 m
Mineral 1.3 m
Bedrock 1.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (4th Terrace)	'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded flint Sand: fine to coarse quartz and flint	1.3	1.4
London Clay	Clay, stiff, brown, sandy, with scattered flint pebbles	0.6	2.0
London Clay	Clay, firm, grey and medium brown, mottled, silty	0.9 +	2.9

GRADING

	Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	10	49	41	0.1–1.4	10	14	27	8	23	18
				Mean	10	14	27	8	23	18

SU 76 NE 21   7527 6929   S. of Lower Earley Farm, Earley   **Block C**

Surface level (+39.9 m) +131 ft
Water struck at +38.9 m
Shell and Auger 152 mm (6 in) diameter
December 1974

Overburden 0.8 m
Mineral 1.3 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, light brown, silty, sandy with occasional flint pebbles	0.7	0.8
River Terrace Deposits (1st Terrace)	Gravel Gravel: fine to coarse, angular to rounded, flint with some fine subrounded quartz Sand: mainly medium to coarse quartz and flint	1.3	2.1
London Clay	Clay, firm, grey, silty	0.5 +	2.6

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
Fines	Sand	Gravel		Fines	Sand				Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
3	27	70	0.8–2.1	3	3	12	12		39	31
			Mean	3	3	12	12		39	31

SU 76 NE 27   7552 6811   Arborfield Hall Farm, Arborfield   **Block C**

Surface level (+46.8 m) +154 ft
Water struck at +44.8 m
Shell and Auger 152 mm (6 in) diameter
September 1977

Overburden 1.4 m
Mineral 1.3 m
Bedrock 1.3 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil, loam with scattered fine subangular flint pebbles	0.3	0.3
? Head	**a** 'Very clayey' pebbly sand Gravel: fine subangular to subrounded flint Sand: fine and medium quartz with traces flint, clayey	0.5	0.8
	Clay, silty brown and grey mottled, with scattered fine subangular flint	0.6	1.4
River Terrace Deposits (3rd Terrace)	**b** 'Clayey' pebbly sand Gravel: fine and coarse, subangular to subrounded, flint, traces of fine well rounded flint Sand: medium with some fine and coarse quartz and flint, silty	1.3	2.7
London Clay	Clay, silty, mottled brown and grey becoming stiff bluish grey clay below 2.8 m	1.3 +	4.0

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages						
	Fines	Sand	Gravel		Fines	Sand				Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$		$+4-16$	$+16$
a	36	52	12	0.3–0.8	36	25	23	4		3	9
				Mean	36	25	23	4		3	9
b	15	67	18	1.4–2.7	15	6	51	10		12	6
				Mean	15	6	51	10		12	6

SU 76 SW 1   **7064 6413**   **Nr. The Priory, Swallowfield**   **Block E**

Surface level (+45.7 m) +150 ft   Overburden 0.7 m
Water struck at +44.8 m   Mineral 1.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 1.0 m+
July 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, soft, brown	0.5	0.7
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint Sand: mainly coarse and medium flint and quartz	1.3	2.0
London Clay	Clay, firm, grey, silty	1.0+	3.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
0	32	68	0.7–2.0	0	3	15	14	33	35
			Mean	0	3	15	14	33	35

SU 76 SW 2   **7069 6261**   **Nr. Stone Bridge, Heckfield**   **Block E**

Surface level (+49.1 m) +161 ft   Mineral 1.5 m
Water not struck   Waste 1.2 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.8 m+
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (3rd Terrace)	'Very clayey' gravel Gravel: mainly fine angular and subangular flint Sand: fine to coarse quartz and flint	1.5	1.5
	Clay, pebbly, pebbles decreasing with depth	1.2	2.7
London Clay	Clay, brown, becoming grey, silty clay	0.8+	3.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
27	25	48	0.0–1.5	27	9	9	7	35	13
			Mean	27	9	9	7	35	13

SU 76 SW 3   7007 6138   **Nr. Stratfield Saye House, Stratfield Saye**   **Block E**

Surface level (+47.5 m) +156 ft   Overburden 1.4 m
Water struck at +46.0 m   Mineral 1.2 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.3 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Brick rubble and soil	0.5	0.5
Alluvium	Clay, orange and grey, mottled	0.9	1.4
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, mainly angular flint Sand: mainly coarse and medium angular flint	1.2	2.6
London Clay	Clay, soft, grey, silty	2.3 +	4.9

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	25	66	1.4–2.4	10	4	10	12	45	19
			2.4–2.6	7	7	3	6	42	35
			Mean	9	5	9	11	44	22

SU 76 SW 4   7150 6302   **Nr. Noah's Ark, Swallowfield**   **Block B**

Surface level (+79.6 m) +261 ft   Mineral 1.5 m
Water not struck   Bedrock 4.5 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (6th Terrace)	'Very clayey' sandy gravel Gravel: fine to coarse, angular to subangular with occasional rounded flint Sand: mainly fine to medium quartz	1.5	1.5
London Clay	Clay, grey and orange-brown mottled, silty, passing, at 5.0 m, into grey silty clay	4.5 +	6.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
21	48	31	0.0–1.0	19	23	18	4	16	20
			1.0–1.5	23	19	34	3	6	15
			Mean	21	21	23	4	13	18

90

SU 76 SW 5   7161 6175   **The Plantation, Heckfield**   **Block B**

Surface level (+80.8 m) +265 ft   Overburden 0.1 m
Water not struck   Mineral 1.9 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m+
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
River Terrace Deposits (6th Terrace)	a Gravel Gravel: fine to coarse, angular to rounded flint Sand: fine to medium quartz and flint	1.9	2.0
Bagshot Beds	b 'Clayey' sand, orange-brown, grey-brown and grey Sand: mainly fine quartz	2.0+	4.0

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	7	43	50	0.1–1.0	7	10	23	5	27	28
				1.1–2.0	7	14	26	9	29	15
				Mean	7	12	24	7	28	22
b	14	85	1	2.0–3.0	12	83	2	1	2	0
				3.0–4.0	15	84	1	0	0	0
				Mean	14	83	2	0	1	0

SU 76 SW 6   7272 6489   **Nr. Russel Hall, Swallowfield**   **Block D**

Surface level (+43.6 m) +143 ft   Overburden 0.9 m
Water struck at +42.6 m   Mineral 1.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m+
December 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Alluvium	Clay, medium brown, silty with scattered pebbles	0.9	0.9
River Terrace Deposits (2nd Terrace)	Gravel Gravel: fine to coarse, angular to subrounded with occasional rounded flint, fine subangular sandstone, and fine rounded quartz Sand: mainly medium to coarse quartz and flint	1.3	2.2
London Clay	Clay, firm, grey, silty	0.5+	2.7

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	2	47	51	0.9–2.2	2	6	24	17	28	23
				Mean	2	6	24	17	28	23

Surface level (+47.9 m) +157 ft
Water struck at 43.5 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.2 m
Mineral 1.2 m
Waste 3.0 m
Mineral 1.2 m
Bedrock 0.4 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (2nd Terrace)	**a** 'Clayey' sandy gravel Gravel: fine to coarse, angular to subrounded, with occasional rounded flint Sand: mainly fine to medium quartz and flint	1.2	1.4
	Clay, orange-brown, brown and grey, sandy	3.0	4.4
	b Gravel Gravel: fine to coarse, subangular to rounded; flint with some cobbles Sand: mainly fine quartz	1.2	5.6
London Clay	Clay, grey, silty	0.4+	6.0

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	18	50	32	0.2–0.7	22	21	14	7	16	20
				0.7–1.4	16	35	14	5	14	16
				Mean	18	30	15	5	15	17
b	4	21	75	1.4–4.4			Sandy clay band			
				4.4–5.6	4	14	5	2	23	52
				Mean	4	14	5	2	23	52

SU 76 SW 8   7299 6234   Riseley Cottage, Heckfield   **Block D**

Surface level (+61.3 m) +201 ft   Overburden 0.4 m
Water struck at +58.8 m   Mineral 2.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 2.0 m +
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Soil and brick rubble	0.4	0.4

River Terrace Deposits (4th Terrace)	'Very clayey' sandy gravel
	  Gravel: fine to coarse, angular to subrounded flint
	  Sand: mainly fine to medium quartz
		2.3	2.7

London Clay	Clay, orange, silty, becoming orange and grey at 3.0 m and grey at 3.9 m	2.0 +	4.7

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
				Fines	Sand			Gravel	
Fines	Sand	Gravel		$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
23	50	27	0.4–1.6	32	15	15	7	13	18
			1.6–2.6	11	28	34	5	14	8
			2.6–2.7	26	16	17	10	23	8
			Mean	23	20	24	6	14	13

SU 76 SW 9   7286 6104   E. of Heckfield Place, Heckfield   **Block B**

Surface level (+81.4 m) +267 ft   Mineral 1.5 m
Water not struck   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (6th Terrace)	**a** Gravel with sand layer between 0.7 m and 1.0 m
	  Gravel: fine to coarse, angular to subrounded with occasional rounded flint
	  Sand: fine to coarse quartz and flint
		1.5	1.5

Bagshot Beds	**b** Sand, orange-brown, grey and grey-brown, silty, becoming very silty below 3.5 m	3.0 +	4.5

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
					Fines	Sand			Gravel	
	Fines	Sand	Gravel		$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	9	42	49	0.0–0.7	11	16	25	7	18	23
				0.7–1.5	8	9	17	10	22	34
				Mean	9	13	20	9	20	29
b	47	53	0	1.5–2.5	17	77	4	1	1	0
				2.5–3.5	29	70	1	0	0	0
				3.5–4.5	88	12	0	0	0	0
				Mean	47	51	1	1	0	0

Surface level (+44.5 m) +146 ft
Water struck at +43.0 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.2 m
Mineral 3.4 m
Bedrock 1.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (1st Terrace)	'Clayey' gravel, orange-brown becoming grey-brown, then grey Gravel: fine to coarse (mainly fine above 2.5 m), angular to subrounded with occasional rounded flint Sand: fine to coarse quartz and flint	3.4	3.6
Reworked London Clay	Clay, grey, with occasional flints	0.4	4.0
London Clay	Clay, grey, silty	1.1 +	5.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
14	40	46	0.2–1.2	34	36	20	3	6	1
			1.2–1.5	17	24	33	8	16	2
			1.5–2.5	2	5	13	10	42	28
			2.5–3.6	6	3	12	12	37	30
			Mean	14	15	17	8	27	19

Surface level (+50.9 m) +167 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
January 1975

Overburden 0.2 m
Mineral 3.4 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
River Terrace Deposits (3rd Terrace)	Gravel: Gravel: fine to coarse, angular to rounded flint with traces of fine quartz Sand: fine to coarse quartz and flint	3.4	3.6
London Clay	Clay, brown, silty	0.2	3.8
	Clay, grey, silty	0.3 +	4.1

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
4	27	69	0.2–1.2	8	8	16	10	25	23
			1.2–2.2	1	3	15	13	36	32
			2.2–3.6	3	2	7	11	33	44
			Mean	4	4	12	11	32	37

SU 76 SW 12   **7387 6315**   **Nr. River Whitewater, Heckfield**   **Block D**

Surface level (+45.7 m) +150 ft
Water level not recorded
Shell and Auger 152 mm (6 in) diameter
July 1974

Overburden 0.7 m
Mineral 1.1 m
Bedrock 2.7 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3
Alluvium	Clay, brown, silty, with fine subangular flints	0.4	0.7

River Terrace Deposits (2nd Terrace)	'Clayey' gravel
	   Gravel: fine to coarse, angular to subrounded with occasional rounded flints
	   Sand: mainly medium to coarse flint and quartz
		1.1	1.8

London Clay	Clay, soft, grey-brown, mottled	1.4	3.2
	Clay, firm, orange-brown and grey mottled	1.1	4.3
	Clay, firm, grey, silty	0.2 +	4.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
10	27	63	0.7–1.8	10	3	10	14	30	33
			Mean	10	3	10	14	30	33

SU 76 SW 13   **7397 6118**   **N.W. of Vinalls Copse, Bramshill**   **Block F**

Surface level (+46.9 m) +154 ft
Water struck at +44.8 m
Shell and Auger 152 mm (6 in) diameter
December 1974

Waste 3.0 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, orange-brown, medium brown and light brown, sandy, becoming grey below 1.8 m	1.9	2.1

River Terrace Deposits (1st Terrace)	Gravel
	   Gravel: fine to coarse, angular to rounded flint
	   Sand: fine to medium quartz and flint
		0.9	3.0

London Clay	Clay, stiff, grey, silty	0.5 +	3.5

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
4	22	74	2.1–3.0	4	4	10	8	42	32
			Mean	4	4	10	8	42	32

SU 76 SW 14   **7452 6306**   **N. of Hall's Farm, Bramshill**   **Block D**

Surface level (+46.6 m) +153 ft   Waste 2.1 m
Water not struck   Bedrock 1.0 m +
Shell and Auger 152 mm (6 in) diameter
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Soil, clay and rubble	0.5	0.5
	Soil	0.2	0.7
? Alluvium	Sand, brown, clayey	0.6	1.3
? Alluvium	Clay, grey and brown, sandy	0.8	2.1
London Clay	Clay, firm, grey, silty	1.0 +	3.1

SU 76 SW 15   **7476 6319**   **Nr. Smiths Farm, Bramshill**   **Block D**

Surface level (+46.9 m) ⊣ 154 ft   Overburden 0.3 m
Water not struck   Mineral 2.3 m
Shell and Auger 152 mm (6 in) diameter   Bedrock 0.5 m +
January 1975

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3

River Terrace Deposits (2nd Terrace)	'Very clayey' sandy gravel
	    Gravel: fine to coarse, angular to subangular with occasional
	        rounded flints
	    Sand: fine to coarse quartz and flint
		2.3	2.6

London Clay	Clay, firm, brown, silty	0.5 +	3.1

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
23	53	24	0.3–1.3	31	43	17	2	4	3
			1.3–2.6	17	19	19	8	25	12
			Mean	23	30	18	5	16	8

Surface level (+46.0 m) +151 ft
Water struck at +51.5 m
Shell and Auger 152 mm (6 in) diameter
September 1974

Overburden 0.6 m
Mineral 2.4 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, light brown and grey, sandy with scattered flint pebbles	0.2	0.4
	Clay, grey and orange-brown, mottled, pebbly, sandy	0.2	0.6

River Terrace Deposits (2nd Terrace)	Gravel
	    Gravel: fine to coarse, angular to subangular with occasional rounded flint
	    Sand: fine to coarse quartz and flint
		2.4	3.0

London Clay	Clay, grey, silty	0.5 +	3.5

GRADING

Mean for deposit _percentages_			Depth below surface (m)	Bulk samples _percentages_					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
8	40	52	0.6–1.6	12	12	17	11	31	17
			1.6–3.0	5	6	19	15	31	24
			Mean	8	8	19	13	31	21

Surface level (+53.3 m) +175 ft
Water struck at 51.5 m
Shell and Auger 152 mm (6 in) diameter
September 1974

Overburden 0.5 m
Mineral 2.2 m
Bedrock 0.3 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, grey and orange-brown, mottled, sandy, with occasional subangular flint pebbles	0.3	0.5

River Terrace Deposits (3rd Terrace)	'Very clayey' sandy gravel
	    Gravel: fine to coarse, angular to subangular with occasional rounded flint
	    Sand: mainly fine to medium quartz
		2.2	2.7

London Clay	Clay, brown becoming grey, silty	0.3 +	3.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
22	40	38	0.5–1.3	51	38	9	1	1	0
			1.3–2.3	14	21	14	7	24	20
			2.3–2.7	15	7	13	3	28	34
			Mean	22	22	13	5	19	19

Surface level +46.9 m (154 ft)
Water struck at +45.7 m
Shell and Auger 152 mm (6 in) diameter
July 1976

Overburden 1.2 m
Mineral 2.5 m
Bedrock 0.5 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, dark orange-brown and medium brown, mottled, soft, silty with occasional flint pebbles becoming more orange-brown at 1.1 m with blue silty clay patches	1.0	1.2

River Terrace Deposits (1st Terrace)	Gravel
	    Gravel: fine to coarse, angular to subangular flint pebbles. Scarce dark rounded flint pebbles
	    Sand: fine to coarse quartz and flint
		2.5	3.7

London Clay	Clay, brown silty, becoming grey silty	0.5 +	4.2

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
1	20	79	1.2–2.2	2	2	8	13	49	26
			2.2–3.7	0	0	4	14	53	29
			Mean	1	1	5	14	51	28

Surface level (+85.0 m) +279 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.1 m
Mineral 1.6 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (7th Terrace)	a 'Clayey' gravel, orange-brown and grey
	    Gravel: fine to coarse, angular to subrounded with occasional
	        rounded flint
	    Sand: fine to coarse quartz
		1.6	1.7

Bagshot Beds	b 'Very clayey' sand, orange-brown and grey becoming grey-brown Sand: mainly fine quartz	3.0 +	4.7

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	11	40	49	0.1–1.1	6	8	21	13	27	25
				1.1–1.7	18	20	11	7	17	27
				Mean	11	12	17	11	23	26
b	36	64	0	1.7–2.7	44	55	1	0	0	0
				2.7–3.7	40	60	0	0	0	0
				3.7–4.7	24	73	3	0	0	0
				Mean	36	63	1	0	0	0

Surface level (+52.7 m) +173 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.3 m
Mineral 1.8 m
Bedrock 1.4 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.3	0.3

River Terrace Deposits (3rd Terrace)	'Clayey' sandy gravel, orange-brown and grey, mottled, becoming
	    light brown
	    Gravel: fine to coarse, angular to subrounded with occasional
	        rounded flint
	    Sand: mainly fine quartz
		1.8	2.1

London Clay	Clay, brown and grey-brown, silty, becoming grey, silty	1.4 +	3.5

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	19	57	24	0.3–1.3	22	54	5	3	4	12
				1.3–2.1	15	28	17	6	13	21
				Mean	19	42	11	4	7	17

Surface level (+76.2 m) +250 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

Waste 0.4 m
Bedrock 5.3 m +

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (5th Terrace)	**a** 'Very clayey' sandy gravel
	    Gravel: fine to coarse, subangular to subrounded flint
	    Sand: mainly fine quartz
		0.4	0.4

Bagshot Beds	**b** 'Very clayey' sand, orange-brown, mottled Sand: mainly fine quartz	1.2	1.6
	Clay, grey and red-brown mottled, sandy	4.1 +	5.7

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	32	42	26	0.0–0.4	32	31	9	2	9	17
				Mean	32	31	9	2	9	17
b	20	76	4	0.4–1.6	20	59	15	2	3	1
				Mean	20	59	15	2	3	1

Surface level (+49.4 m) +162 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 1.0 m
Mineral 1.0 m
Bedrock 1.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
Made Ground	Ash and brick rubble	0.2	0.2
Alluvium	Clay, grey and red-brown, mottled, sandy	0.8	1.0

River Terrace Deposits (2nd Terrace)	'Very clayey' pebbly sand, grey
	    Gravel: fine to coarse, angular to subangular flint
	    Sand: mainly fine quartz
		1.0	2.0

London Clay	Clay, brown, silty	0.5	2.5
	Clay, grey, silty	0.5 +	3.0

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
	34	58	8	1.0–2.0	34	51	5	2	4	4
				Mean	34	51	5	2	4	4

SU 76 SE 6   7680 6262   **Nr. Westlands, Eversley**   **Block D**

Surface level (+ 47.5 m) + 156 ft   Waste 2.2 m
Water struck at + 45.9 m   Bedrock 4.4 m +
Shell and Auger 152 mm (6 in) diameter
May 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1
Alluvium	Clay, dark brown, silty, sandy with occasional pebbles near the top	1.1	1.2
	Clay, dark brown, silty, sandy with orange mottling	0.3	1.5

River Terrace Deposits (2nd Terrace)	Sandy gravel
	    Gravel: mainly fine, subangular to subrounded flint
	    Sand: fine to medium quartz and flint
		0.7	2.2

London Clay	Clay, soft, dark grey, silty	1.0	3.2
	Clay, firm, grey, silty	3.4 +	6.6

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
9	57	34	1.5–2.2	9	13	26	18	27	7
			Mean	9	13	26	18	27	7

SU 76 SE 7   7682 6216   **Lower Common, Eversley**   **Block D**

Surface level (+ 50.9 m) + 167 ft   Mineral 4.7 m
Water struck at + 48.9 m   Bedrock 2.2 m +
Shell and Auger 152 mm (6 in) diameter
May 1974

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (2nd Terrace)	Gravel
	    Gravel: fine to coarse, angular to subrounded with occasional
	      rounded flint and occasional subrounded cherty sandstone
	    Sand: fine to coarse quartz and flint
		4.7	4.7

London Clay	Clay, grey, becoming grey silty	1.1	5.8
	Clay, grey, silty, sandy	1.1 +	6.9

GRADING

Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
8	43	49	0.0–1.0	10	16	11	8	34	21
			1.0–1.3	9	13	12	16	31	19
			1.3–2.0	18	30	16	6	16	14
			2.0–3.0	6	9	19	11	28	27
			3.0–4.0	2	4	33	14	27	20
			4.0–4.7	3	2	30	13	22	30
			Mean	8	12	20	11	27	22

Surface level (+63.4 m) +208 ft
Water struck at +61.7 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.1 m
Mineral 1.3 m
Bedrock 2.6 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.1	0.1

River Terrace Deposits (4th Terrace)	**a** 'Clayey' sandy gravel
	    Gravel: fine to coarse, angular to subrounded flint
	    Sand: fine to coarse quartz and flint
		1.3	1.4

Bagshot Beds	**b** 'Clayey' sand, orange-brown with occasional grey and red mottled clay Sand: fine to medium quartz	1.6	3.0
London Clay	Clay, grey, silty	1.0 +	4.0

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand				Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	15	60	25	0.1–0.6	17	40	24	5	10	4
				0.6–1.4	14	29	18	7	15	17
				Mean	15	33	21	6	12	13
b	16	84	0	1.4–1.7	15	53	32	0	0	0
				1.7–3.0	16	66	18	0	0	0
				Mean	16	63	21	0	0	0

SU 76 SE 9   7780 6141   **Yalden's Farm, Eversley**   **Block D**

Surface level (+ 59.1 m) + 194 ft   Mineral 5.3 m
Water struck at + 57.8 m   Bedrock 2.5 m +
Shell and Auger 152 mm (6 in) diameter
June 1974

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (3rd Terrace)	**a** Sandy gravel
	   Gravel: fine to coarse, angular to subrounded with occasional
	      rounded flint. Subangular flint cobbles between 2.3 m and 4.3 m
	   Sand: fine to coarse quartz and flint
		5.3	5.3

Bagshot Beds	**b** 'Clayey' sand, orange-brown Sand: fine to medium quartz	2.5 +	7.8

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	6	56	38	0.0–1.0	6	14	13	15	32	20
				1.0–1.3	10	22	17	12	25	14
				1.3–2.3	5	30	25	8	15	17
				2.3–3.3	3	16	25	9	18	29
				3.3–4.3	3	14	28	6	21	28
				4.3–5.3	12	37	39	3	4	5
				Mean	6	22	26	8	19	19
b	18	82	0	5.3–6.3	23	29	47	1	0	0
				6.3–7.3	14	25	61	0	0	0
				7.3–7.8	16	33	51	0	0	0
				Mean	18	28	54	0	0	0

Surface level (+91.1 m) +299 ft   Mineral 3.2 m
Water not struck   Bedrock 3.0 m +
Shell and Auger 152 mm (6 in) diameter
November 1974

LOG

Geological classification	Lithology	Thickness m	Depth m
River Terrace Deposits (7th Terrace)	**a** Gravel Gravel: fine to coarse, angular to subrounded flint Sand: fine to coarse quartz and flint	3.2	3.2
Barton Beds	**b** 'Very clayey' sand, medium brown Sand: mainly fine quartz	3.0 +	6.2

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	7	46	47	0.0–0.5	14	20	15	6	15	30
				0.5–1.5	6	8	29	12	23	22
				1.5–2.5	3	4	24	14	27	28
				2.5–3.2	10	11	19	20	20	20
				Mean	7	10	23	13	22	25
b	22	78	0	3.2–4.2	29	66	4	1	0	0
				4.2–5.2	20	72	8	0	0	0
				5.2–6.2	16	77	7	0	0	0
				Mean	22	71	7	0	0	0

Surface level (+51.2 m) +168 ft
Water struck at +49.9 m
Shell and Auger 152 mm (6 in) diameter
October 1974

Waste 2.0 m
Bedrock 1.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2
Alluvium	Clay, brown	0.6	0.8
	Clay, grey-brown, sandy	0.5	1.3

River Terrace Deposits (2nd Terrace)	'Clayey' sandy gravel
	    Gravel: fine to coarse, angular to subrounded with occasional rounded flint
	    Sand: fine to coarse quartz and flint
		0.7	2.0

London Clay	Clay, grey, silty	1.0+	3.0

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
10	52	38	1.3–2.0	10	14	28	10	22	16
			Mean	10	14	28	10	22	16

Surface level (+51.5 m) +169 ft
Water struck at +50.3 m
Shell and Auger 152 mm (6 in) diameter
June 1974

Overburden 0.2 m
Mineral 3.7 m
Bedrock 2.0 m+

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.2	0.2

River Terrace Deposits (1st Terrace)	'Clayey' gravel, with clay band between 0.6 m and 1.2 m
	    Gravel: fine to coarse, angular to subrounded with occasional rounded flint
	    Sand: fine to coarse quartz and flint
		4.3	4.5

London Clay	Clay, firm, grey, silty	2.0+	6.5

GRADING

Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
Fines	Sand	Gravel		Fines	Sand			Gravel	
				$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
12	37	51	0.2–0.6	16	26	20	11	25	2
			0.6–1.2		Clay band				
			1.2–2.2	4	10	7	4	28	47
			2.2–3.2	4	9	10	5	31	41
			3.2–4.5	22	35	13	6	19	5
			Mean	12	20	11	6	25	26

Surface level (+52.4 m) +172 ft
Water struck at +50.9 m
Shell and Auger 152 mm (6 in) diameter
October 1974

Overburden 1.4 m
Mineral 3.0 m
Bedrock 0.9 m +

LOG

Geological classification	Lithology	Thickness m	Depth m
	Soil	0.6	0.6
Alluvium	Clay, brown with scattered pebbles	0.8	1.4
River Terrace Deposits (2nd Terrace)	**a** Gravel Gravel: fine to coarse, angular to rounded flint with some subangular sandstone and occasional rounded flints Sand: fine to coarse quartz and flint	3.0	4.4
London Clay	**b** Sand, grey Sand: fine to medium quartz	0.9+	5.3

GRADING

	Mean for deposit percentages			Depth below surface (m)	Bulk samples percentages					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	8	39	53	1.4–2.4	4	7	23	10	29	27
				2.4–3.4	3	8	28	12	26	23
				3.4–4.4	17	4	14	10	38	17
				Mean	8	6	22	11	31	22
b	9	91	0	4.4–5.3	9	51	38	2	0	0
				Mean	9	51	38	2	0	0

SU 76 SE 14   7623 6056   **Nr. Cudbury Clump, Bramshill**   **Block B**

Surface level (+84.1 m) +276 ft
Water not struck
Shell and Auger 152 mm (6 in) diameter
November 1974

Mineral 1.2 m
Bedrock 3.0 m +

LOG

Geological classification	Lithology	Thickness m	Depth m

River Terrace Deposits (? 6th Terrace)	'Clayey' gravel
	  Gravel: fine to coarse, angular to subrounded flint
	  Sand: fine to medium quartz and flint
		1.2	1.2

Bracklesham Beds	'Very clayey' sand Sand: fine quartz	3.0+	4.2

GRADING

	Mean for deposit *percentages*			Depth below surface (m)	Bulk samples *percentages*					
	Fines	Sand	Gravel		Fines	Sand			Gravel	
					$-\frac{1}{16}$	$+\frac{1}{16}-\frac{1}{4}$	$+\frac{1}{4}-1$	$+1-4$	$+4-16$	$+16$
a	15	33	52	0.0–0.7	12	7	7	9	24	41
				0.7–1.2	19	34	6	5	11	25
				Mean	15	18	7	8	18	34
b	27	73	0	1.2–2.2	33	66	1	0	0	0
				2.2–3.2	24	75	1	0	0	0
				3.2–4.2	24	75	1	0	0	0
				Mean	27	72	1	0	0	0

APPENDIX G

LIST OF WORKINGS

A list of the main working and worked-out pits within the area is given below; there are also a number of minor excavations for which no details are recorded.

Location	Grid reference	Status
Carters Hill	768 697	Worked out; restored to agriculture
Heckfield Heath	719 618	Partially worked
Riseley Common	732 629	Worked out; redeveloped as part of Wellington Country Park
Bramshill Plantation	750 652	Working
Bramshill (Moor Place)	758 608	Worked out, partially backfilled (tip)
Eversley Common	770 599	Partially worked out
Hazeley Heath	760 578	Worked out, partially restored to open space
Scotland Farm	742 537	Worked out; restored to agriculture
Pingewood	685 698	Worked out

APPENDIX H

REPORT ON THE SIZE GRADING AND CHEMICAL COMPOSITION OF BEDROCK SANDS

D. Hutchison, F. R. Stacey and P. J. Moore

Five samples of sand from the Bagshot Beds, Bracklesham Beds and Barton Beds collected from the survey area were submitted for analysis as possible glass sands.

Laboratory procedure
The samples, which were received from the field in a damp condition in polyethylene bags, were air-dried and the dry weights recorded as a check on subsequent grading tests. The dried samples were thoroughly disaggregated in water and wet-screened through Nos. 36, 100 and 240 B.S. sieves. The material retained at each stage was dried and weighed, the suspension passing a No. 240 mesh screen de-watered and the residue dried and weighed. Results of the grading analysis are shown in Table 8.

Table 8 Size grading (weight per cent retained) of bedrock sands

Sample number	Borehole number	Per cent retained (on BS mesh sieves)			
		+36#	+100#	+240#	−240#
Barton Beds					
L522	75 NE 69	0.53	22.7	48.4	28.4
Bracklesham Beds					
L281	75 SE 45	0.34	42.6	42.6	14.5
Bagshot Beds					
L487	76 SE 8	2.91	43.8	39.4	13.9
L539	76 SW 5	0.12	62.5	28.8	8.6
L552	75 NW 2	1.93	49.3	24.1	24.7

Chemical analysis
The sand fraction of each sample passing a No. 36 sieve and retained on a No. 100 sieve was dried to constant weight at 105°C and chemically analysed for silica, alumina, iron oxide and titanium dioxide.

Silica was determined gravimetrically by fusion of the sample with sodium carbonate, dissolution of the fusion cake in dilute hydrochloric acid, double dehydration in the presence of the same acid and ignition of the separated silica residues. The impure silica was weighed, silica removed by volatilisation as fluorides and determined by difference.

The residue from the silica determination was fused with hydrogen potassium sulphate, dissolved and added to the main silica filtrate. Ammonia group oxides were precipitated from the combined solution, separated by filtration, dissolved in hydrochloric acid and reprecipitated, ignited at 1050°C and weighed.

The ignited oxides were fused with hydrogen potassium sulphate, the fusion cake dissolved in dilute sulphuric acid and iron and titanium determined absorptiometrically as o-phenanthroline and peroxy complexes respectively. Aluminium oxide was estimated by difference.

Loss on ignition at 950°C was determined gravimetrically. The results of the chemical analyses are shown in Table 9.

Table 9 Results of chemical analysis of bedrock sands

Sample number	Borehole number	Loss on igni-tion	SiO_2	Total Fe as Fe_2O_3	TiO_2	Al_2O_3
Barton Beds						
L522	75 NE 69	0.37	96.7	0.87	0.05	0.92
Bracklesham Beds						
L281	75 SE 45	0.13	97.8	0.18	0.04	0.93
Bagshot Beds						
L487	76 SE 8	0.20	97.5	0.24	0.05	1.23
L539	76 SW 5	0.27	96.5	0.29	0.06	1.66
L552	75 NW 2	0.34	97.4	0.75	0.06	0.99

Discussion of results
British Standard 2975 gives specifications for sand for making colourless glasses in which the items of particular relevance to the present investigation are particle-size distribution, silica content and iron content. At least 80 per cent of the sand grains constituting the sample of raw material should pass a No. 36 sieve and be retained on a No. 100 sieve. All of the samples fall well below this requirement, mainly owing to the large proportion of fine sand (−100 +240 mesh) which they contain.

Again, BS 2975 specifies a minimum silica content of 98.5 per cent and a maximum total iron (as Fe_2O_3) content of 0.03 per cent for sand to be used in the manufacture of general colourless glassware, including containers. No samples meet the silica specification or the specification for total iron.

Sand for use in the manufacture of glass for coloured containers is subject to a somewhat less stringent specification for silica and iron contents than those given in BS 2975, though the particle-size distribution requirement remains the same. Thus a minimum silica content of 97.0 per cent and a total iron (as Fe_2O_3) content of 0.25 per cent is generally acceptable for this purpose. Of the samples examined, two (L 281 and L 487) meet the silica and iron specification, but do not have a satisfactory grain-size distribution.

The least demanding specification for glass sand is that for sand used in the manufacture of glass fibre insulation, though of course the material commands a commensurately low price. A minimum silica content of 94.5 per cent, a total iron (as Fe_2O_3) content of 0.3 per cent and a size grading of 80 per cent passing a No. 60 sieve are the main requirements. All of these are met by samples L 281, L 487 and L 539.

In the manufacture of colourless glasses of all kinds, trace mineralogy of the sand is important. However, since none of the present samples qualified for this use on the basis of size grading and chemical composition, no attempt was made to characterise the trace minerals present. For the same reason, colouring oxides such as chromium, vanadium, copper, lead and cobalt were not determined.

Conclusion
None of the samples submitted for examination met the specification for sand for making colourless glasses, or coloured containers, but three were acceptable for manufacture of glass-fibre insulation.

The main shortcomings of this group of sands for glass-making purposes are the large proportion of fine sand and clay and relative abundance of iron-containing minerals.

APPENDIX J

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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ORDNANCE SURVEY
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THE SAND & GRAVEL RESOURCES OF THE LODDON VALLEY AREA
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48

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

EXPLANATION OF SYMBOLS AND ABBREVIATIONS

DRIFT

Alluvium - silty clays and silts of fluvial origin, with scattered pebbles and occasional thin peat beds. A-32

Brickearth - orange-brown, clays and silty clays overlying River Terrace Deposits. B-9

Downwash Gravel (Head Gravel) - thin and patchy sands and gravels of variable composition, derived by solifluxion from adjacent bedrock and Drift deposits. D-1

River Terrace Deposits (Valley Gravel) - fluviatile sands and gravels comprising mainly flint with quartz and, in some areas, sandstone. RT-12

River Terrace Deposits (Plateau Gravel) RT-13

River Terrace Deposits (Undifferentiated) - thin and patchy sands and gravels of limited extent and uncertain origin. RT-9

Clay with Flints - red and brown, silty clays with nodular flints and angular flint fragments. CF-4

SOLID

Barton Beds - silty, fine quartz sands, yellow and pale grey, with glauconite at some levels. Ba

Bracklesham Beds - mainly fine with medium quartz sands; dark grey and yellow, but becoming greenish yellow with increasing glauconite content. B+B

Bagshot Beds - fine and medium quartz sands; orange, yellow and pale grey. Bg

London Clay - firm, bluish grey clay, silty in parts and with bluish grey sands near the top of the formation. LC

Reading Beds - mottled red, grey and green, sands and clays. RB

Upper Chalk - soft, white chalk with nodular flints. UCh

Worked-out areas of sand and gravel. WO-9

BOUNDARY LINES

Geological boundary, Drift.

Geological boundary, Solid.

Inferred boundary between recognized categories of deposits.

Resource Block boundary.

BOREHOLE DATA

SITE LOCATIONS

○ Industrial Minerals Assessment Unit (I.M.A.U.) Boreholes.

○ Other Boreholes.

I.M.A.U. BOREHOLES

Borehole Registration Number — 76 NE 79
Borehole Site
Geological Classification

Surface level in metres and feet above O.D. (Newlyn)
Overburden
Mineral (sand and gravel)
Bedrock

Grading Diagram

Thickness in metres

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 the metric conversions of the 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, e.g. 76 NE 79. The first numbers and letters refer to the quarter sheet and the final figures to the I.G.S. serial numbers for that quarter. The unique designation for borehole 76 NE 79 is SU 75 NE 79.

Grading Diagrams

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

Sand (+1/16-4mm) — The height of the diagram is proportional to the mineral thickness.
Fines (-1/16mm) — Gravel (+4mm) — 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 may not be as comprehensive. They are registered in the same series, except for records in the Hydrogeological Department. For example 268/415 signifies Hydrogeological Department borehole 415 on New Series One-inch Geological Sheet 268.

CATEGORIES OF DEPOSITS

Exposed mineral CAT-E6

Sand and gravel either not potentially workable (see Report) or absent CAT-A2

Sand and gravel not assessed CAT-N1

RESOURCE BLOCKS

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

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

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Diagram showing the relation of the National Grid 1:25,000 sheets with the One-inch Geological sheets 268,269,284 and 285.