Mineral Assessment Report 21

The sand and gravel resources of the Thames and Kennet Valleys, the country around Pangbourne, Berkshire
Description of 1:25 000 resource sheet SU 67

H. C. Squirrell, BSc, PhD

The Institute of Geological Sciences was formed by the
incorporation of the Geological Survey of Great Britain
and the Museum of Practical Geology with
Overseas Geological Surveys and is a constituent body
of the Natural Environment Research Council.

*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 No. 13 onward will
appear in the Mineral Assessment Report Series of the Institute.
Details of published reports appear at the end of this report.*

PREFACE

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

Sand and gravel, considered together as naturally occurring aggregate, was selected as the bulk mineral demanding the most urgent attention, initially in the south-east of England, where about half the national output is won and very few sources of alternative aggregates are available. Following a short feasibility project, initiated in 1966 by the Ministry of Land and Natural Resources, the 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 84.4 km^2 of country around Pangbourne, shown on the accompanying 1:25 000 resource map SU 67. The survey was conducted by Dr H. C. Squirrell, assisted by Mr C. E. Corser, Dr P. G. Hoare and Mr P. Robson as field officers who supervised the drilling and sampling programme. Mr E. J. Raynor organised a study of the composition of gravel samples, the results of which are incorporated in the report. An account of the ironstone in the gravels was prepared by Mr J. Dangerfield of the Petrographic Department. The work is based on a geological survey at 1:10 560 in 1895 by J. H. Blake, revised by H. C. Squirrell in 1972-3.

Mr A. P. Mace (Land Agent) was responsible for negotiating access to land for drilling; the ready cooperation of landowners and tenants in this work is appreciated. Information provided by local gravel operators and the Berkshire County Council is gratefully acknowledged.

<div align="right">Kingsley Dunham
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1 June 1975

Dr. A. W. Woodland succeeded Sir Kingsley Dunham as Director on 1 January 1976.

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The geological maps of the Institute of Geological Sciences, pre-existing borehole information and 72 boreholes drilled for the Mineral Assessment Unit, form the basis of the assessment of sand and gravel resources in the Pangbourne area, Berkshire.

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

The 1:25 000 map is divided into five resource blocks, each containing between 9.0 and 11.2 km^2 of sand and gravel. For each block the geology of the deposits is described and the mineral-bearing area, the mean thicknesses of overburden and mineral and the mean gradings are stated. Detailed borehole data are also given. The geology, the position of the boreholes and the. outlines of the resource blocks are shown on the accompanying map SU 67.

Sommaire

Les sources des renseignements qui constituent la base de l'évaluation des ressources en sable et en gravier dans la région de Pangbourne, Berkshire, comprennent les cartes géologiques de l'Institute of Geological Sciences, des données obtenues de trous de sonde déjà en existence et 72 trous de sonde forés pour le Mineral Assessment Unit.

Tous les dépôts dans la région qui pourraient être exploités pour le sable et le gravier ont été étudiés et on s'est servi d'une méthode statistique simple pour en évaluer le volume. Les évaluations de volume ont été tenues d'être à 95 pour cent exactes.

La carte 1:25 000 est divisée en cinq blocs de ressources avec d'entre 9.0 et 11.2 km^2 de sable et de gravier. Pour chaque bloc on décrit la géologie des dépôts et on donne l'étendue du terrain minéralisé, l'épaisseur moyenne de recouvrement et de minéral et les triages moyens. Des données détaillées des trous de sonde aussi présentées. La géologie, la situation des trous de sonde et les profils des blocs de ressources sont montrées sur la carte SU 67.

Zusammenfassung

Die geologischen Karten vom Institute of Geological Sciences, vorher-existierende Information, und 72 für die Mineral Assessment Unit gebohrten Bohrlöcher, bilden den Grund der Einschätzung von Sand- und Schottermittel in Pangbourne Gebiet, Berkshire.

Alle Ablagerungen im Gebiet, die möglich bearbeitbar für Sand und Schotter sind, wurden untersucht, und eine einfache statistische Methode wurde benutzt, um den Volumen zu schätzen. Man gibt die Zuverlässigkeit der Volumen schatzungen mit symmetrischen 95 Prozent Ventrauenswerten.

Man teilt die 1:25 000 Karte in 5 Mittelsblöcke, die zwischen 9.0 und 11.2 km^2 von Sand und Schotter umfassen. Für jeden Block beschreibt man die Geologie der Ablageringen, und das mineralhaltige Gebiet, die mittleren Dicken von Überlastung und Mineral und die mittleren Klassifizierungen werden erklärt. Ausfuhrliche Bohrlöcherdaten werden auch gegeben. Die Geologie die Lage der Bohrlöcher und die Skizzen der Mittelsblöcke werden auf der Begleitkarte gezeigt.

The sand and gravel resources of the Thames and Kennet Valleys, the country around Pangbourne, Berkshire

Description of 1:25 000 resource sheet SU 67

H. C. SQUIRRELL[1], BSc, PhD,

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).

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 geological evidence. The sites available for inspection, measurement, and sampling are too widely spaced to permit the mineral bodies to be outlined completely or the grade established throughout" (Anon., 1948, p. 15).

It follows that the whereabouts of reserves must still be established and their size and quality proved by the customary detailed exploration and evaluation undertaken by the industry. However, the information provided by this survey should assist in the selection of the best targets for such further work. The following arbitrary physical criteria have been adopted:
a. The deposit should average at least 1 m in thickness.

b. The ratio of overburden to sand and gravel should be no more than 3:1.
c. The proportion of fines (particles passing the No. 200 mesh BS sieve, about 1/16 mm) should not exceed 40 per cent.
d. The deposit must lie within 25 m of the surface, this being taken as the likely maximum working depth under most circumstances. It follows from the second criterion that boreholes are drilled no deeper than 18 m if no sand and gravel has been proved.

If a deposit of sand and gravel broadly meets these criteria, it 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 1/16 mm, 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 grade material, are placed at 1/16 mm and 4 mm respectively (see Appendix C).

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

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

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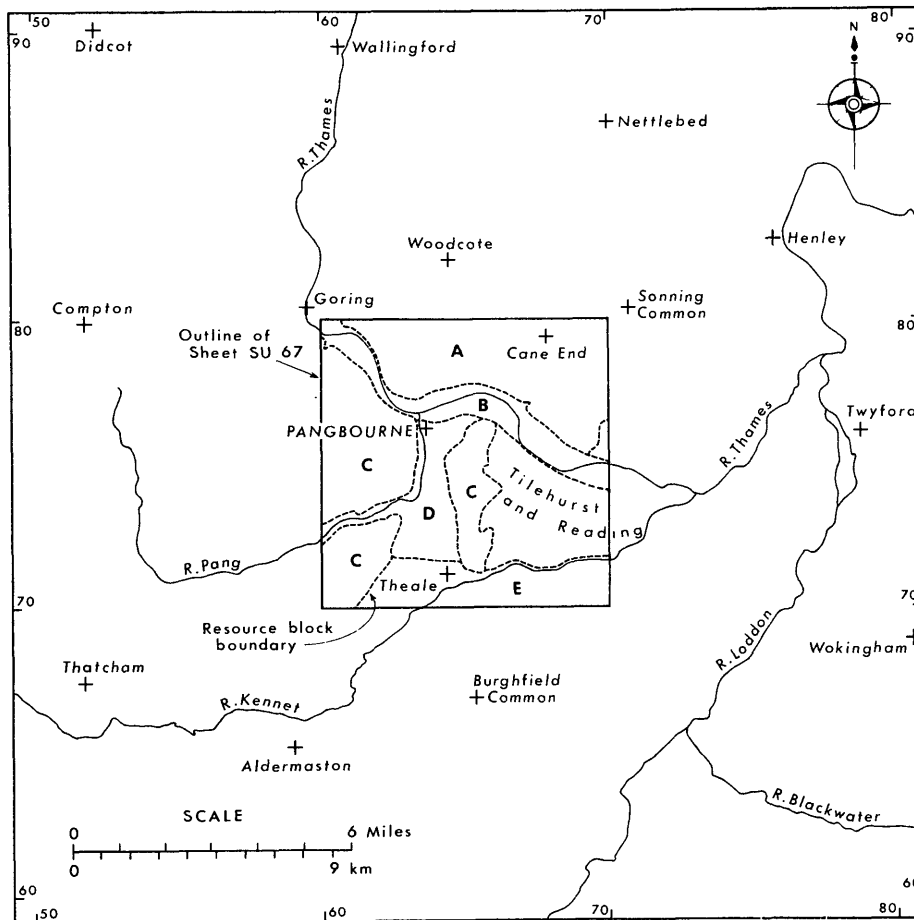
Fig. 1. Sketch-map showing the location of the Pangbourne area and the position of the resource block boundaries

Description of resource sheet SU 67

GENERAL

The area assessed statistically covers 84.4 km^2 (32.6 square miles) of country around Pangbourne, Berkshire, of which nearly two-thirds (52.1 km^2) is gravel bearing. No assessment has been made of the drift deposits in the built-up area (15.6 km^2) of Reading and Tilehurst.

The gravel-bearing deposits fall into two main categories, the river deposits and the glacial deposits. The river deposits (blocks B, D and E) occupy 30.4 km^2 of the valleys of the Thames, Pang and Kennet and the glacial deposits (blocks A and C) occupy 21.7 km^2 of the high plateau-like area above those valleys. The Kennet Valley has been an important source of flint aggregate for many years, while the deposits of the Pang and Thames valleys have remained unexploited. On account of their high fines content and variable nature the glacial deposits have been worked at only a few places.

TOPOGRAPHY

The area is dominated by the courses of the easterly flowing Thames, Pang and Kennet rivers (Fig. 1) that have cut deeply to form wide, fairly steep-sided valleys. They are floored by almost flat, continuous spreads of alluvial deposits lying at between 37 m (120 ft) and 55 m (180 ft) above OD. The present rivers flow sluggishly and have meandering courses of low gradient, for example, the Thames falls from 41 m (135 ft) in the north-west to 36.5 m (120 ft) in the east, a drop of only 4.5 m (15 ft) in a distance of 7 miles. Less than one-third of the area is occupied by remnants of the original surface on which the rivers were established. They form four gently sloping plateau-like areas covered by plateau gravel and Clay-with-flints lying at between 76 m (250 ft) and 143 m (470 ft). Each plateau area is further dissected by

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numerous minor valleys many of which are now dry.

GEOLOGY

The area around Pangbourne was first surveyed for the Geological Survey on the six inches to one mile scale by J. H. Blake in 1895. The one inch to one mile Reading (268) Sheet was published in 1898 and the accompanying memoir (Blake) in 1903. During the course of the present survey amendments were made by H. C. Squirrell to the drift and solid geological lines and some of the drift deposits were re-classified. The classification is shown in Table 1, in which the deposits are listed in order of increasing age, as far as possible.

Solid Deposits

The solid deposits range from near the middle of the Middle Chalk through the Upper Chalk and Reading Beds into the lower part of the London Clay. Their structure is simple; the beds, which are almost free of faults, dip gently (usually between 2 and 6°) towards the south-east. The Chalk forms the bedrock over a large part of the area, mainly in the north and in the river valleys in the south, while the Reading Beds and London Clay outcrop in more restricted areas on the high ground around Reading and Tilehurst [670 740][1], west of Englefield [625 719], around Chazey Heath [694 774] and north of Goring Heath [636 793].

The Middle Chalk commences with the Melbourne Rock, a bed of particularly hard chalk up to 3 m thick. This is overlain by softer, thickly bedded, white chalk containing only scattered flint nodules. About 30 m of the Middle Chalk are present in the Thames Valley north-west of Pangbourne.

The Upper Chalk, 90 m thick, commences with the Chalk Rock which consists of beds of hard chalk interbedded with nodular chalk. The hard chalk commonly contains scattered green grains of glauconite. Above the Chalk Rock the sequence is continued by thick and massive beds of soft white chalk characteristically containing numerous bands of black flint nodules. The Reading Beds lie unconformably on the eroded chalk surface and consist of clays and sands totalling 15 to 23 m. The sequence usually commences with the Bottom Bed, up to 3 m thick, consisting of stiff bluish grey clay interbedded with brown and olive green glauconitic sands. These are followed by up to 6 m of laterally impersistent buff, brown, white or greenish grey quartz sands, locally containing flint pebbles, overlain by 12 to 15 m of varie-

[1]National Grid References in this report all lie within the 100 km square SU

gated clays, most commonly grey, green, red, brown and orange. In the past these clays were widely used for the production of bricks and tiles.

The conformably overlying London Clay commences with interstratified clays, silts and glauconitic sands, which form a distinctive 'basement-bed' up to 5.5 m thick. This is overlain by stiff, bluish grey, brown-weathering clay, which reaches a maximum thickness of about 30 m.

Drift Deposits

The Recent and Pleistocene deposits containing potentially workable sand and gravel are the river terrace deposits and the plateau gravel.

The Clay-with-flints extends over about 7 km^2 of country mainly north of the Thames Valley and to a small extent in the west between the Pang and Thames valleys. The deposit consists typically of stiff clay containing unworn flint nodules and varying proportions of sub-angular to rounded pebbles of flint and rounded pebbles of quartz and quartzite. The clay, silty and sandy in parts, is the dominant constituent and generally accounts for 50 to 80 per cent of the deposit. It is usually grey, brown, reddish brown or orange brown. Clay-with-flints varies in thickness from less than 1 m to 10.8 m and averages around 4 m. Its variable nature and thickness suggest that it had a glacial origin. Sand and gravel is absent, except possibly in localised beds and lenses.

The 'pebble gravel', as mapped and described by Blake (1903, p. 61), is composed almost wholly of quartz pebbles and a little flint; it is further distinguished by the absence of brown quartzite pebbles, believed to be of Triassic origin, that are commonly found in the plateau gravel. The only outcrop, capping the Reading Beds outlier at Cold Harbour [632 799] in the north of the area, is too small to be of economic significance and was therefore not investigated.

Plateau gravel occurs extensively on the high ground above the main river valleys and is closely associated with the more or less contemporaneous Clay-with-flints. The exact relationships between these deposits are not clear, but it is probable that one passes laterally into the other, there being no recognisable boundary between them. Plateau gravel is an ill-sorted deposit of glacial or fluvioglacial origin, the product perhaps of an ice sheet with abundant englacial debris containing clay, silt, sand and gravel in widely varying proportions. The volume of fines (clay and silt) only rarely falls below 10 per cent, ranges up to over 40 per cent in some areas and averages about 24 per cent. These figures contrast significantly with those for the river valley

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deposits which have a much smaller fines fraction. The sand content ranges between 15 and 83 per cent and the gravel from practically nil to as much as 70 per cent.

Plateau gravel varies considerably in thickness, being thin in some areas, but reaching as much as 21 m (70 ft) north-east of Sulham [644 742] and averaging 6.2 m (20 ft). The composition of the deposit is discussed below.

The main river valleys (Thames, Pang and Kennet) are floored by a continuous spread of clays, silts, sands and gravels mapped either as alluvium or as undifferentiated river terrace deposits. The latter consist mainly of varying proportions of sand and gravel with a small fines content only (for details see descriptions of resource blocks). They are overlain by alluvium along the present-day flood plain: elsewhere the uppermost part of the river terrace deposits consists of patchily distributed silt and clay which averages just under 1 m in thickness. In this report no attempt has been made to correlate the terraces with the standard sequence of the lower reaches of the Thames Valley, and for this reason they are designated 'undifferentiated'. The deposits range up to 8.1 m in thickness and average 5.1 m. Details of the composition of the sand and gravel are given below.

Alluvium consists dominantly of brown silty clay, sandy in parts, with a small percentage of fine flint pebbles at some localities and does not contain any potentially workable sand and gravel. In seven of the thirteen Mineral Assessment Unit boreholes drilled through the alluvium the base is marked by a bed of dark brown peat up to 1.1 m thick. Both the peat and the overlying silty clays commonly contain lamellibranchs and gastropods, usually fragmentary. The thickness of the alluvium ranges from 0.4 to 3.9 m and averages 1.8 m.

Table 1. Classification of mapped deposits.

DRIFT

Recent and Pleistocene Alluvium
                        River Terrace deposits
                        (undifferentiated)
                        Plateau gravel
                        Pebble gravel
                        Clay-with-flints
SOLID
Eocene   London Clay
                        Reading Beds
Cretaceous   Upper Chalk
                        Middle Chalk

COMPOSITION OF THE SAND AND GRAVEL

Because deleterious material is present in the sand and gravel of this area, the normal examination of samples was supplemented by a detailed laboratory study of the gravel fraction. From each bulk sample collected (see borehole logs, Appendix F) the proportions by weight of different pebble types was determined in about 130 g of material (approximately 350 pebbles) in the 4.75 to 9.5 mm size fraction. This size range was selected because coarser fractions of the graded material from borehole samples, did not yield enough pebbles (more than 200 are required for statistical analysis).

The river deposits make up blocks B, D and E. The gravel fraction accounts for a mean of 59 per cent of the deposit in block B, 67 per cent in block D and 74 per cent in block E. In terms of composition two types of gravel can be recognised: the Thames gravels and the Kennet and Pang gravels. The Thames gravels (block B) are notable for their content of Jurassic limestone, up to 61 per cent in the north-west, and averaging 44 per cent for the block. The remainder of the gravel is made up of flint 37 per cent, ferruginous material 9 per cent, quartz and quartzite 5 per cent and chalk 5 per cent. The ferruginous fraction contains mainly goethite and iron-cemented sandstone with small quantities of oolitic iron-stone and a trace of hematite. In this report all the ferruginous material will be called 'ironstone', although the iron-cemented sandstone may not fall within the definition of iron-stone. The Kennet gravels (blocks D and E) contain 99 per cent flint with traces of quartz, quartzite and chalk. The Pang gravels (block D) contain over 90 per cent flint with quartz, quartzite, chalk, ironstone and Jurassic lime-stone making up the remainder. In the river deposits the sand averages around 30 per cent and consists dominantly of quartz, with flint common in the coarser fraction. In block B part of the sand is made up of limestone frag-ments and ooliths. The fines, usually silt with some clay, only rarely make up more than 10 per cent of the deposit and average around 4 per cent. The only mineral-bearing glacial deposit, plateau gravel, is present in blocks A and C. The gravel, which comprises about 40 per cent of the deposit is broadly of two types. The northern type accounts for most of the gravel in block A and the northern part of block C (Fig. 2). It is characterised by a relatively low proportion of flint, commonly less than 50 per cent in the 4.75 to 9.5 mm fraction, the remainder consisting of quartz, quartzitic sandstone and a small amount of ironstone. The proportion of flint generally increases southwards. The southern type, found in the

BUILT-UP AREA OF TILEHURST AND READING

0   1   2   3   4 Miles

0   1   2   3   4   5   6 Kilometres

Plateau Gravel — northern type c.50% flint and c.50% quartz, quartzite and sandstone

Plateau Gravel — southern type over 90% flint

River gravel — Thames Valley up to 60% Jurassic limestone

River gravel — Pang and Kennet valleys over 90% flint

Worked — out areas
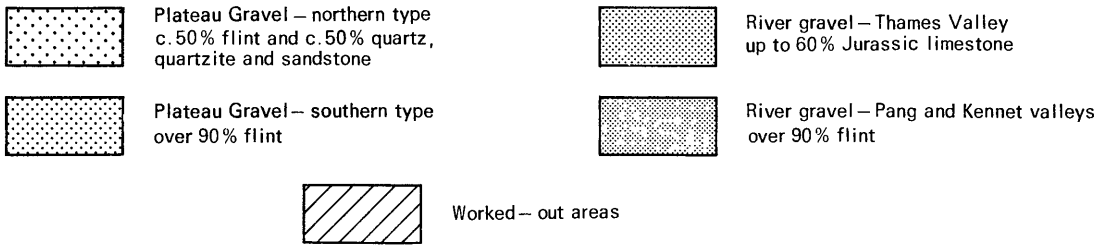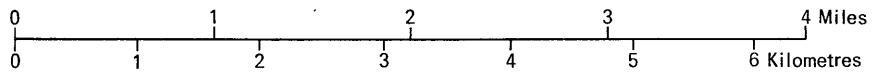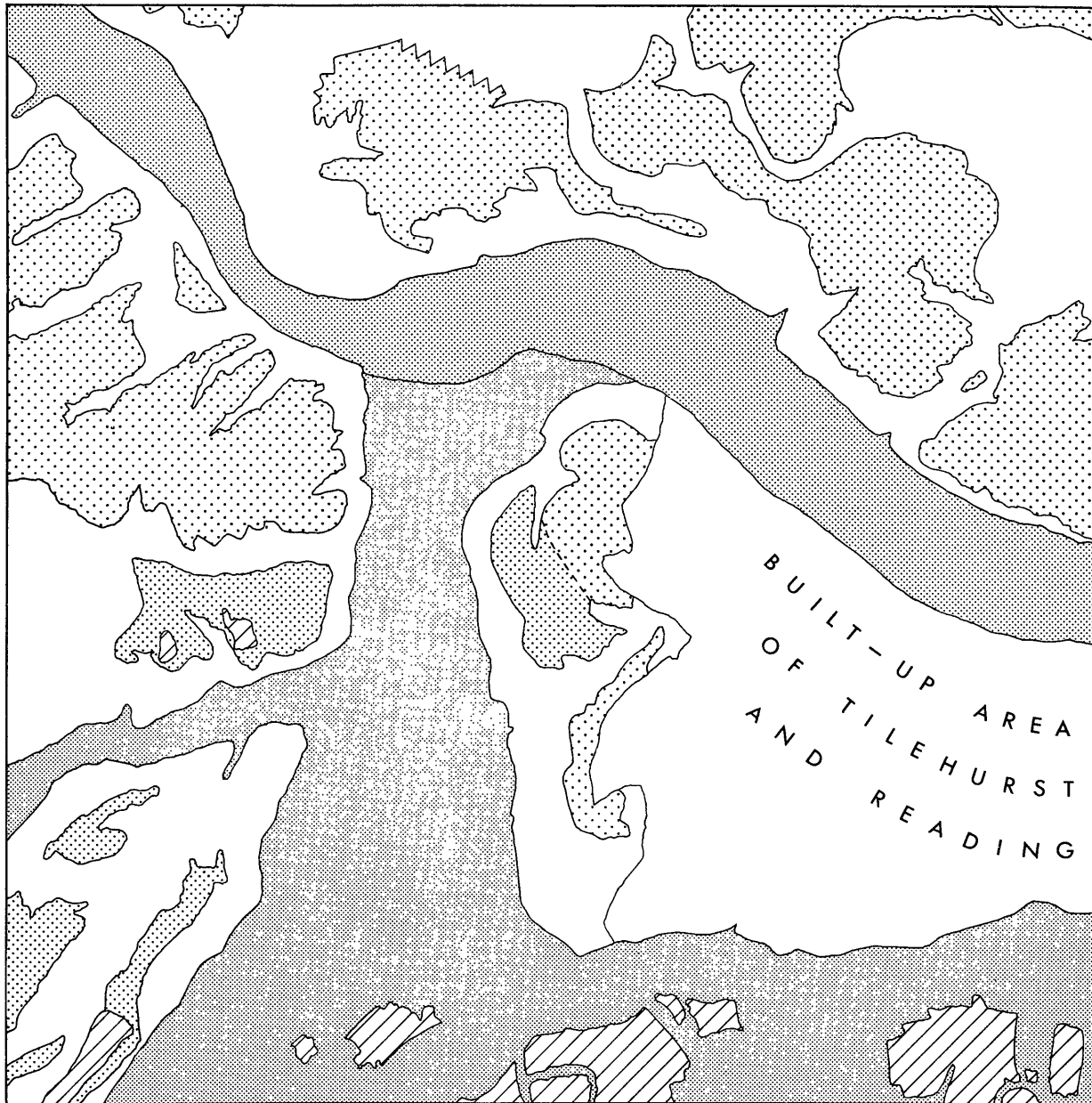
Fig. 2. Diagram showing the major constituents of the 4.75 to 9.5 mm fraction of the evaluated gravel-bearing deposits of the area

southern part of block C, is distinctive in that it consists of around 99 per cent flint, with quartz a very minor constituent.

The sand in the plateau gravel makes up 33 to 38 per cent of the deposit and consists mainly of subrounded quartz and flaky flint, the latter being predominant in the coarse fraction. There is a much higher proportion of fines, (silt and clay), than in the river gravels, averaging 22 per cent in block A and 25 per cent in block C. Where clay, as distinct from silt, occurs in appreciable amounts the plateau gravel has a hoggin-like texture. In this report these two components of the fines fraction are not distinguished so that the percentages quoted may consist entirely of silt or clay, or any combination of both. However, as a general rule the higher the fines content the more likely it is that the deposit contains enough clay to give it the characteristics of hoggin.

THE MAP

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

Geological Data

The geological boundary lines, symbols, etc., shown are taken from the geological maps of this area, which was surveyed at the scale of 1:10 560. Borehole data, which include the stratigraphic relations and mean particle size distribution of the sand and gravel samples collected during the assessment survey, are also shown.

The geological boundaries show the best available interpretation of the information available at the time of survey. However, it is inevitable, particularly with glacial deposits (such as those included in the area of sheet SU 67) which change rapidly vertically and laterally, that local irregularities or discrepancies will be revealed by some boreholes (for example, at borehole SW51). These are taken into account in the assessment of resources (see below and Appendix B).

Mineral Resource Information

The mineral-bearing ground is subdivided into resource blocks (see Appendix A). Within a resource block the mineral is subdivided into areas where it is 'exposed' and areas where it is present in continuous (or almost continuous) spreads beneath overburden. The mineral is identified as 'exposed' where the overburden,

commonly consisting only of soil and subsoil, averages less than 1.0 m (3.5 ft) in thickness. Beneath overburden the mineral may be continuous (or almost continuous) or discontinuous. The recognition of these categories is dependent upon the importance attached to the proportion of boreholes which did not find potentially workable sand and gravel and the distribution of barren boreholes within the block. The mineral is described as 'almost continuous' if it is present in 75 per cent or more of the boreholes in a resource block. The 'discontinuous' category has not been recognised on the present sheet.

Areas where bedrock outcrops, where boreholes indicate absence of sand and gravel beneath cover and where sand and gravel beneath cover is interpreted to be not potentially workable are uncoloured on the Map; where appropriate the relevant criterion is noted. In such areas it has been assumed that mineral is absent except in infrequent and relatively minor patches which can neither be outlined nor assessed quantitatively in the context of this survey. Areas of unassessed sand and gravel, for example, built-up areas, are indicated by a red stipple.

The area of the exposed sand and gravel is measured from the mapped geological boundary lines. The whole of this area is considered as mineral, although it may include small areas where sand and gravel is not present or is not potentially workable. Inferred boundaries have been inserted where sand and gravel beneath cover is interpreted to be not potentially workable or absent. Such boundaries (for which a distinctive symbol is used) are drawn primarily for the purpose of volume estimation. The symbol is intended to convey an approximate location within a likely zone of occurrence rather than to represent the breadth of the zone, its size being limited only by cartographic considerations. For the purpose of measuring areas the centre-line of the symbol is used.

RESULTS

The statistical results are summarised in Table 2. Fuller grading particulars are shown in Fig. 3.

Accuracy of Results

For the five resource blocks the accuracy of the results at the symmetrical 95 per cent probability level varies between 28 per cent and 57 per cent (that is, it is probable that 19 times out of 20 the true volumes present lie within these limits). However the true values are more likely to be nearer the figures estimated than the limits. Moreover, it is probable that in each block roughly the same percentage
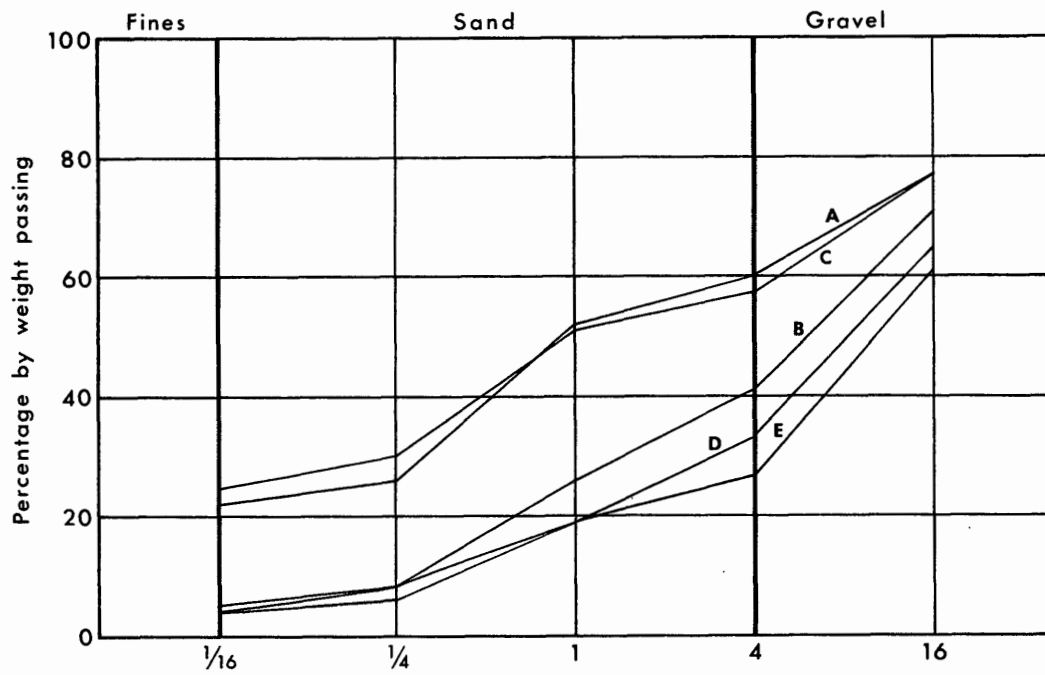
Resource Block	Percentage by weight passing				
	1/16 mm	$\frac{1}{4}$ mm	1 mm	4 mm	16 mm
A	22	26	52	60	77
B	4	8	26	41	71
C	25	30	51	58	77
D	5	8	19	33	66
E	4	6	19	26	61

Fig. 3. Particle size distribution for the assessed thickness of sand and gravel in resource blocks A to E

Table 2. Summary of statistical results.

Resource Block	Area		Mean thickness				Volume of mineral				Mean grading percentage		
	Block	Mineral	Overburden		Mineral				Limits at the 95 per cent confidence level		Fines	Sand	Gravel
	km^2	km^2	m	ft	m	ft	million m^3	million yd^3	$\pm$ %	$\pm$ Vol. million m^3	-1/16mm	-4 +1/16mm	+4mm
A	24.6	10.5	1.3	4.5	5.4	18.0	57	75	40	23	22	38	40
B	10.2	10.2	1.4	5.5	5.4	18.0	55	72	19	10	4	37	59
C	26.9	11.2	2.5	8.0	3.8	12.5	43	56	31	13	25	33	42
D	9.0	9.0	1.1	4.0	4.9	16.0	44	58	20	9	5	28	67
E	13.7	11.2	1.3	4.5	4.9	16.0	55	72	26	14	4	22	74
A to E	84.4	52.1	1.5	5.5	4.9	16.0	254	332	11	28			

limits would apply for the estimate of volume of a very much smaller parcel of ground (say, 200 acres) containing similar sand and gravel deposits if the results from the same number of sample points (as provided by, say, ten boreholes) were used in the calculation. Thus, if closer limits are needed for the quotation of reserves of part of a block, it can be expected that data from more than 10 sample points will be required, even if the area is quite small. This point can be illustrated by considering the whole of the potentially workable sand and gravel on this sheet. The volume (254 million m^3) can be estimated to limits of $\pm$ 11 per cent at the 95 per cent probability level, by a calculation based on the data from 65 sample points spread across the five resource blocks.

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

NOTES ON RESOURCE BLOCKS A to E
Block A

The mineral-bearing deposits, 10.5 km^2 of plateau gravel, lie on the high ground to the north of the Thames Valley, their surface reaching over 140 m (460 ft) at Goring Heath [636 793] and falling to under 79 m (260 ft) in the south-east. The plateau gravel has been dissected by several streams which cut deeply into the bedrock leaving valleys that are now dry. The deposits are underlain mainly by the Chalk and to a small extent by the Reading Beds around Mapledurham [680 770] and Chazey Heath [694 774]. Sand and gravel has not been exploited on a commercial scale. The assessment of resources is based on 11 Mineral Assessment Unit boreholes and one other record. The mineral has a mean thickness of 5.4 m, ranging from 2.2 m in borehole NW 19 to 11.4 m in borehole NE 20. There is no regional trend to this variation, but it is significant that approximately 2 km^2 of plateau gravel around Blagrave Farm [6958 7624], which lies over 21 m (70 ft) lower than the adjacent plateau gravel to the north-west, has a mean thickness of 9 m (based on boreholes NE 14, 19 and 20), almost twice that for the block as a whole. The estimated volume of the mineral is 57 million $m^3 \pm$ 40 per cent. The overburden is everywhere less than 1.3 m thick and averages 0.6 m, except at Goring Heath and Chazey Heath where Clay-with-flints overlies the plateau gravel. In the former area borehole NW 13 proved 5.2 m of Clay-with-flints and in the latter, borehole NE 19 proved 3.4 m.

The fines content generally ranges between 13 and 30 per cent, but is as low as 9 per cent in borehole NE 14 and reaches 35 per cent in borehole NE 12. The proportion of sand, which is dominantly medium grained, varies widely from 23 per cent in borehole NW 13 to 55 per cent in borehole NE 13. Increases in the sand content are usually at the expense of the gravel rather than the fines. The proportion of gravel most commonly lies between 37 and 52 per cent, but falls to only 15 per cent in borehole NE 13 and reaches a maximum of 60 per cent in borehole NE 14. The deposits around Blagrave Farm are significant in that, as well as being of above average thickness, they contain more gravel and less fines than the means for the block, which are, fines 22 per cent, sand 38 per cent and gravel 40 per cent.

Block B

This block has been drawn to include 10.2 km^2 of the river terrace deposits of the Thames Valley, that occupy a sinuous belt of ground nearly 13 km long and up to 1.1 km wide lying between the outskirts of Goring in the north-west and Reading in the east. These deposits are overlain by alluvium over an area of nearly 5 km^2. The valley floor falls gently from 43 m (141 ft) in the north-west to 37 m (120 ft) in the east and is completely covered by superficial deposits, overlying the Middle Chalk to the north-west of Pangbourne and the Upper Chalk to the south-east of Pangbourne. Gravel working has been only on a very small scale.

The assessment of resources is based on information from 12 Mineral Assessment Unit boreholes and nine other records. The mineral has a mean thickness of 5.4 m, ranging from 1.9 m in borehole NW 15 to 9.1 m in borehole 268/544. There is no particular regional trend to this variation. The estimated volume of the mineral is 55 million $m^3 \pm$ 19 per cent. For the block as a whole the overburden has a mean thickness of 1.4 m. Where alluvium covers the river terrace deposits the overburden reaches 3.9 m and has a mean of 3.0 m; elsewhere the mean thickness of overburden is 0.9 m.

The fines content of the mineral usually ranges between 2 and 5 per cent, but reaches 7 per cent in borehole NW 1 and 10 per cent in borehole NW 15. The proportion of sand generally ranges between 29 and 36 per cent, but increases to 45, 46 and 49 per cent in boreholes SE 25, NE 15 and NW 1 respectively, whilst the proportion of gravel commonly exceeds 60 per cent, but falls respectively to 51, 49 and 44 per cent in the same three boreholes. There is no significant trend to these grading variations. The mean grading for the block is fines 4 per cent, sand 37 per cent, gravel 59 per cent.

Table 3. Data from assessment boreholes: block A.

| Borehole No. | Recorded thickness | | | Mean grading percentage | | | | | |
| | Mineral (m) | Overburden (m) | Fines | Fine sand | Medium sand | Coarse sand | Fine gravel | Medium to coarse gravel |
			-1/16mm	$-\frac{1}{4}$+1/16mm	$-1+\frac{1}{4}$mm	-4+1mm	-16+4mm	+16mm
NW 13	3.6	5.2	28	5	14	4	10	39
NW 14	7.3	0.2	33	16	34	6	11	10
NW 19	2.2	0.9	19	3	22	7	20	29
NE 2	3.1	1.2	24	3	21	4	12	36
NE 8	8.0	0.2	31	4	39	7	9	10
NE 9	4.6	0.8	14	5	26	10	20	25
NE 12	3.3	0.3	35	6	20	2	5	32
NE 13	3.0	1.1	30	4	31	20	6	9
NE 14	4.7	0.1	9	2	16	13	37	23
NE 19	11.0	3.4	16	3	25	8	24	24
NE 20	11.4	0.3	18	2	20	8	21	31

Table 4. Data from assessment boreholes: block B.

| Borehole No. | Recorded thickness | | | Mean grading percentage | | | | | |
| | Mineral (m) | Overburden (m) | Fines | Fine sand | Medium sand | Coarse sand | Fine gravel | Medium to coarse gravel |
			-1/16mm	$-\frac{1}{4}$+1/16mm	$-1+\frac{1}{4}$mm	-4+1mm	-16+4mm	+16mm
NW 1	7.9	0.3	7	3	33	13	22	22
NW 6	5.1	0.7	3	9	10	17	30	31
NW 10	3.5	3.9	3	3	15	18	40	21
NW 15	1.9	1.5	10	2	13	15	34	26
NW 20	6.3	1.1	4	3	19	9	32	33
NE 3	6.1	0.6	2	2	13	17	32	34
NE 6	7.8	0.4	4	3	12	15	33	33
NE 10	4.1	1.6	2	1	15	20	30	32
NE 15	6.4	0.6	5	5	28	13	25	24
SE 23	3.3	2.9	3	2	11	16	38	30
SE 25	4.4	3.7	4	2	16	27	29	22
SE 26	6.9	1.0	5	3	19	10	30	33

Table 5.   Data from assessment boreholes: block C.

Borehole No.	Recorded thickness		Mean grading percentage					
	Mineral (m)	Overburden (m)	Fines	Fine sand	Medium sand	Coarse sand	Fine gravel	Medium to coarse gravel
			$-1/16$mm	$-\frac{1}{4}+1/16$mm	$-1+\frac{1}{4}$mm	$-4+1$mm	$-16+4$mm	$+16$mm
NW 2	3.4	1.9	15	3	12	7	20	43
NW 3	1.0	0.2	18	3	10	11	22	36
NW 4	5.4	0.4	23	4	15	5	17	36
NW 5	5.6	0.9	30	6	19	6	14	25
NW 8	6.0	3.4	34	12	23	4	9	18
NW 11	2.3	0.6	27	11	16	4	11	31
NW 12	5.2	5.7	23	7	46	7	10	7
SW 42	3.9	0.3	21	3	16	11	37	12
SW 44	Absent							
SW 45	6.8	0.3	24	5	20	8	27	16
SW 55	9.7	11.6	24	6	18	8	23	21
NE 4	5.1	8.8	21	3	20	8	8	40
NE 5	3.0	0.3	39	3	15	7	13	23
SE 17	4.0	0.1	23	5	13	12	31	16
SE 18	3.2	0.7	21	2	33	9	16	19

Block C

This block consists of three parts, in the west, south-west and centre of the area. Mineral-bearing plateau gravel extends over 11.2 km[2], of which 2.9 km[2] in the west has an appreciable thickness of overburden. Most of the plateau gravel rests on the Chalk, but it is underlain by the Reading Beds and London Clay in the south-west and centre. The drift deposits lie at between 76 m (250 ft) and 113 m (370 ft). Sand and gravel has been worked at Sawyer's Copse [623 743], Dark Lane [616 742] and May Ridge [609 705].

The assessment of resources is based on information from 15 Mineral Assessment Unit boreholes and 119 other records. The mineral has a mean thickness of 3.8 m ranging from nil in borehole SW 44 to 9.7 m in borehole SW 55. Generally speaking the thinnest mineral occurs in the south-west and the thickest to the west

of Pangbourne [635 764] and north-east of Sulham [644 742]. The estimated volume of the mineral is 43 million m^3 $\pm$ 31 per cent. The overburden is usually less than 1 m thick, except in two areas where a substantial thickness of the upper part of the plateau gravel contains more than 40 per cent of fines. Around the Pangbourne Nautical College [620 755] boreholes NW 8 and NW 12 proved 3.4 and 5.7 m respectively of overburden, and north-east of Sulham boreholes SW 55 and NE 4 proved, respectively, 11.6 and 8.8 m. The total thickness of 21.3 m of plateau gravel in borehole SW 55 and 13.9 m in borehole NE 4 is noteworthy in view of the thinness of the deposit in the nearby boreholes NE 5 and SE 17, where only 3.3 and 4.1 m respectively of plateau gravel occur. The form of the sub-drift (bedrock) surface in this area is thus greatly different from that of the present day surface.

The fines content of the mineral usually

Table 6.   Data from assessment boreholes: block D

Borehole No.	Recorded thickness		Mean grading percentage					
	Mineral (m)	Overburden (m)	Fines	Fine sand	Medium sand	Coarse sand	Fine gravel	Medium to coarse gravel
			-1/16mm	$-\frac{1}{4}$+1/16mm	$-1+\frac{1}{4}$mm	-4+1mm	-16+4mm	+16mm
NW 16	5.8	0.8	2	1	11	10	37	39
NW 17	3.8	1.2	12	4	15	8	25	36
NW 21	4.1	1.0	4	3	12	7	36	38
NW 22	5.5	2.3	5	3	13	10	39	30
SW 41	7.3	0.4	4	2	14	10	36	34
SW 46	8.1	1.3	7	2	12	34	5	40
SW 49	5.4	0.2	2	2	17	11	47	21
SW 50	6.6	0.8	7	3	8	7	38	37
SW 51	Absent							
SW 52	4.9	1.3	3	5	8	9	36	39
SW 56	5.6	1.1	4	2	12	8	37	37
SW 57	5.4	0.7	2	3	7	7	37	44

ranges between 20 and 30 per cent, but locally falls to 15 and 18 per cent in boreholes NW 2 and NW 3 respectively and increases to 34 and 39 per cent in boreholes NW 8 and NE 5 respectively. The proportion of sand is nowhere less than 22 per cent and usually ranges between 24 and 39 per cent. Exceptionally it increases, at the expense of the gravel content, to 44 per cent in borehole SE 18 and to 60 per cent in borehole NW 12. The amount of gravel varies widely, between 17 per cent in borehole NW 12 and 63 per cent in borehole NW 2, but is generally in the range 35 to 49 per cent. The mean grading for the block is fines 25 per cent, sand 33 per cent, gravel 42 per cent.

Block D

This block includes 9 km^2 of river terrace deposits occupying the former north-south course of the River Kennet and the narrow east-west valley of the River Pang of which about 3 km^2 are overlain by alluvium. The alluvial deposits lie at between 40 m (130 ft) and 53 m (175 ft) and are everywhere underlain by the Upper Chalk. Sand and gravel has been worked on a small scale only.

The assessment of resources is based on information from 12 Mineral Assessment Unit boreholes and 37 other records. The mineral has a mean thickness of 4.9 m, ranging from nil in borehole SW 51 to 8.4 m in Hydrogeological Department borehole 268/357. The thickest mineral, over 7.3 m, lies in the Pang Valley west of Hogmoor Copse [634 740], while in the remainder of the block 4 to 6 m is usual. The estimated volume of the mineral is 44 million m^3 $\pm$ 20 per cent. The thickness of the overburden, which is generally soil overlying alluvial silt with some clay and sand, averages 1.1 m, it ranges from 0.2 m in borehole SW 49 to 2.3 m in borehole NW 22. Where alluvium covers the river terrace deposits the mean overburden thickness is 1.1 m, only 0.1 m higher than for the remainder of the area.

The fines content of the mineral commonly falls between 2 and 7 per cent, except in borehole NW 17 drilled through river terrace deposits, where it shows an apparently localised increase to 12 per cent. The proportion of sand varies between 17 and 30 per cent, apart from in borehole SW 46 where it increases to 48 per cent at the

Table 7. Data from assessment boreholes: block E.

| Borehole No. | Recorded thickness | | Mean grading percentage | | | | | |
	Mineral (m)	Overburden (m)	Fines -1/16mm	Fine sand -1/4+1/16mm	Medium sand -1+1/4mm	Coarse sand -4+1mm	Fine gravel -16+4mm	Medium to coarse gravel +16mm
SW 47	6.8	0.9	4	2	12	8	35	39
SW 48	6.3	1.0	7	3	16	12	50	12
SW 53	7.4	0.4	7	3	13	7	35	35
SW 54	4.8	1.3	6	2	9	6	27	50
SW 58	3.2	2.0	2	1	9	8	36	44
SE 19	6.1	0.7	1	2	8	7	35	47
SE 20	6.1	0.3	5	1	9	8	34	43
SE 21	7.2	1.0	2	1	10	7	36	44
SE 22	9.6	0.2	4	2	26	6	25	37
SE 24	4.2	2.8	2	0	4	3	40	51
SE 27	4.3	1.2	3	5	16	6	38	32

expense of the gravel fraction. The percentage of gravel generally ranges between 68 and 81 per cent and is lower in only one borehole, SW 46, where it is 45 per cent. There is no significant difference between the grading of the deposits of the Pang Valley and the remainder of the block.

The mean grading for the block is fines 5 per cent, sand 28 per cent, gravel 67 per cent.

Block E

This block includes 11.2 km² of river terrace deposits of a 7 km stretch of the Kennet Valley in the south of the area of which about 4.5 km² are overlain by alluvium. The valley floor is continuously covered by fluviatile deposits, the surface of which slopes gently from 50 m (165 ft) in the west to 38 m (125 ft) in the east, which overlie the Upper Chalk in the north and the Reading Beds in the south. The terrace gravels have been worked extensively at Theale Green [336 707], Love's Farm [658 702] and around Searl's Farm [687 704].

The assessment of resources is based on information from 11 Mineral Assessment Unit boreholes and 88 other records. The thickness of the mineral, mean 4.9 m, varies from under 1 m in a few boreholes to 9.6 m in borehole SE 22. No particular trend to the thickness variation can be recognised. The estimated volume of mineral is 55 million m³ ± 26 per cent. The overburden, usually soil overlying alluvial

clay and silt, averages 1.3 m and ranges from 0.2 m in borehole SE 22 to 2.8 m in borehole SE 24. Where alluvium covers the river terrace deposits the overburden has a mean thickness of 1.7 m, elsewhere the overburden has a mean of 1 m.

The fines content of the mineral varies within narrow limits, from 1 per cent in borehole SE 19 and 7 per cent in boreholes SW 48 and 53. The proportion of sand varies widely from 7 per cent in borehole SE 24 to 34 per cent in borehole SE 22, but usually falls within the range 17 to 27 per cent. The amount of gravel is consistently over 60 per cent and is most commonly between 70 and 80 per cent. An exceptional content of 91 per cent was obtained in borehole SE 24.

The mean grading for the block is fines 4 per cent, sand 22 per cent, gravel 74 per cent.

Appendix A: Field Procedure

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

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

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

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

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

A continuous series of bulk samples is taken throughout the sand and gravel. Ideally samples are composed exclusively of the whole of the material encountered in the borehole between stated depths. However, care is taken to discard, as far as possible, material which has caved or has been pumped from the bottom of the hole. A new sample is commenced whenever there is an appreciable lithological change within the sand and gravel, or at every 1 m (3.3 ft) depth. The samples each weighing between 25 and 45 kg (55 and 100 lb), are despatched in heavy duty polythene bags to a laboratory for grading. The grading procedure is based on British Standard 1377 (Anon., 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, Mineral Assessment Unit.

Appendix B: Statistical Procedure

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

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

4. The above relationship may be transposed such that

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

From this it can be seen that as $\dfrac{S_A^2}{S_{\bar{l}_m}^2}$ 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}, ... l_{m_n}, then the best estimate of mean thickness, $\bar{l}_m$ =

$$\frac{\sum (l_{m_1} + l_{m_2} \ldots\ldots l_{m_n})}{n}$$

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

$$S_{\bar{l}} = \frac{1}{\bar{l}_m} \sqrt{\frac{(l_m - \bar{l}_m)^2}{(n - 1)}}$$

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 a 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

$$\frac{S_A}{S_{\bar{l}_m}} \leqslant 1/3 \text{ is assumed in all cases}$$

It follows from equation (2) that

$$S_{\bar{l}_m} \leqslant S_V \leqslant 1.05 \, S_{\bar{l}_m} \quad \ldots\ldots(3)$$

7. The limits on the estimate of mean thickness of mineral, $L_{\bar{l}_m}$, may be expressed in absolute units

$$\pm \frac{t}{\sqrt{n}} \times S_{\bar{l}_m}$$

or as a percentage

$$\pm \frac{t}{\sqrt{n}} \times S_{\bar{l}_m} \times \frac{100}{\bar{l}_m} \text{ per cent}$$

where t is Student's t at the 95 per cent probability level for (n - 1) degrees of freedom, evaluated by reference to statistical tables. (In applying Student's t it is assumed that the measurements are distributed normally).

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

n	t	n	t
1	∞	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 Ed. Cambridge University Press, 1962). When n is greater than 20, 1.96 is used (the value of t when n is infinity).

9. In calculating confidence limits for volume, L_V, the following inequality corresponding to equation (3) is applied:

$$L_{\bar{l}_m} \leqslant L_V \leqslant 1.05 \, L_{\bar{l}_m}$$

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

$$\frac{1.05 \times t}{\bar{l}_m} \times \sqrt{\frac{\sum(l_m - \bar{l}_m)^2}{n(n-1)}} \times 100 \text{ per cent}$$

and when n is greater than 20, as

$$\frac{1.05 \times 1.96}{\bar{l}_m} \times \sqrt{\frac{\sum(l_m - \bar{l}_m)^2}{n(n-1)}} \times 100 \text{ per cent}$$

11. The application of this procedure to a fictitious area is illustrated in Figs. 4 and 5.

INFERRED ASSESSMENT

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

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

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

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

Appendix C: Classification and Description of Sand and Gravel

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

The terminology commonly used by geologists when describing sedimentary rocks (Wentworth, 1922) is not entirely satisfactory for this purpose. For example, Wentworth proposed that a deposit should be described as a 'gravelly sand' when it contains more sand than gravel and there is at least 10 per cent of gravel, provided that there is less than 10 per cent of material finer than sand (less than 1/16 mm) and coarser than pebbles (more than 64 mm 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 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 Fig. 6). 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, p. 21).

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

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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 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 8), 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 ($-\frac{1}{4}$ +1/16 mm), medium (-1 $+\frac{1}{4}$ mm) and coarse (-4 +1 mm). The boundary at 16 mm distinguishes a range of finer gravel (-16 +4 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 (Anon., 1967)). In this report the grading is tabulated on the borehole record sheets (Appendix F), the intercepts corresponding with the simple geometric scale 1/16 mm, $\frac{1}{4}$ mm, 1 mm, 4 mm, 16 mm and so on as required. Original sample grading curves are available for reference at the appropriate office of the Institute.

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

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

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

Angular: showing little or no evidence of wear; sharp edges and corners.
Subangular: showing definite effects of wear. Fragments still have their original form but edges and corners begin to be rounded off.
Subrounded: showing considerable wear. The edges and corners are rounded off to smooth curves. Original grain shape is still distinct.
Rounded: original faces almost completely destroyed, but some comparatively flat surfaces may still remain. All original edges and corners have been smoothed off to rather broad curves. Original shape is still apparent.
Well-rounded: no original faces, edges or corners left. The entire surface consists of broad curves; flat areas are absent. The original shape is suggested by the present form of the grain.

Table 8. Classification of gravel, sand and fines

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

Block Calculation   1:25 000 } Fictitious
                          Block }

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

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

Mean Thickness
     Overburden: 2.5 m
     Mineral: 6.5 m

Confidence limits of the estimate of mineral volume
at the 95 per cent probability level: $\pm$ 20 per cent
That is, the volume of mineral (with 95 per cent
probability): $54 \pm 11 \text{ million m}^3$

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

Sample point	Weighting w	Overburden l_o	wl_o	Mineral l_m	wl_m	Remarks
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	MAU boreholes
SE 22	1	0.7	0.7	6.4	6.4	
SE 23	1	6.2	6.2	4.1	4.1	
SE 24	1	4.3	4.3	6.4	6.4	
SE 17	$\frac{1}{2}$	1.2 }	1.6	9.8 }	7.2	Hydrogeological Dept record
123/45	$\frac{1}{2}$	2.0 }		4.6 }		
1	$\frac{1}{4}$	2.7 }		7.3 }		Close group of four boreholes (commercial)
2	$\frac{1}{4}$	4.5 }	2.5	3.2 }	5.8	
3	$\frac{1}{4}$	0.4 }		6.8 }		
4	$\frac{1}{4}$	2.8 }		5.9 }		
Totals	$\Sigma w = 8$	$\Sigma wl_o = 20.1$		$\Sigma wl_m = 52.0$		
Means		$\bar{l}_o = 2.5$		$\bar{l}_m = 6.5$		

Calculation of confidence limits

l_m	$(l_m - \bar{l}_m)$	$(l_m - \bar{l}_m)^2$
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

$\Sigma (l_m - \bar{l}_m)^2 = 15.82$

$n = 8$

$t = 2.365$

L_V is calculated as

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

$$= 1.05 \times \frac{2.365}{6.5} \sqrt{\frac{15.82}{8 \times 7}} \times 100$$

$$= 20.3$$

$$\simeq 20 \text{ per cent}$$

Fig. 4. Example of resource block assessment: calculation and results
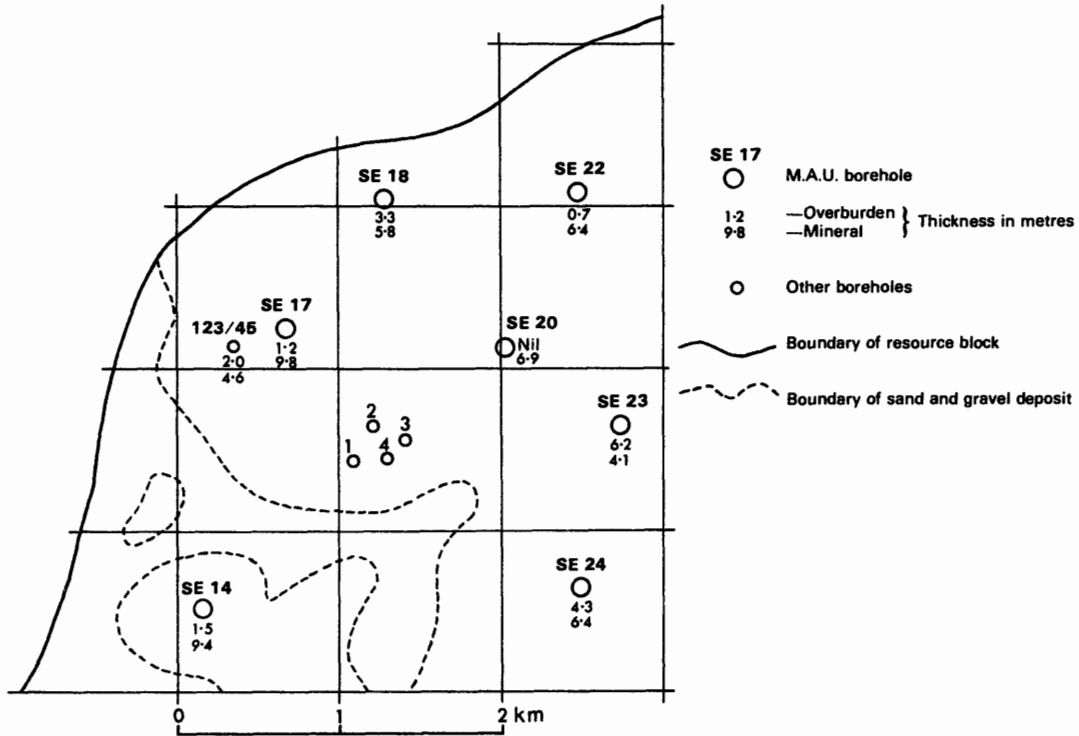
Fig. 5. Example of resource block assessment: map of a fictitious block

I	Gravel	VII	Pebbly sand
II	'Clayey' gravel	VIII	'Clayey' pebbly sand
III	'Very clayey' gravel	IX	'Very clayey' pebbly sand
IV	Sandy gravel	X	Sand
V	'Clayey sandy gravel	XI	'Clayey' sand
VI	'Very clayey' sandy gravel	XII	'Very clayey' sand
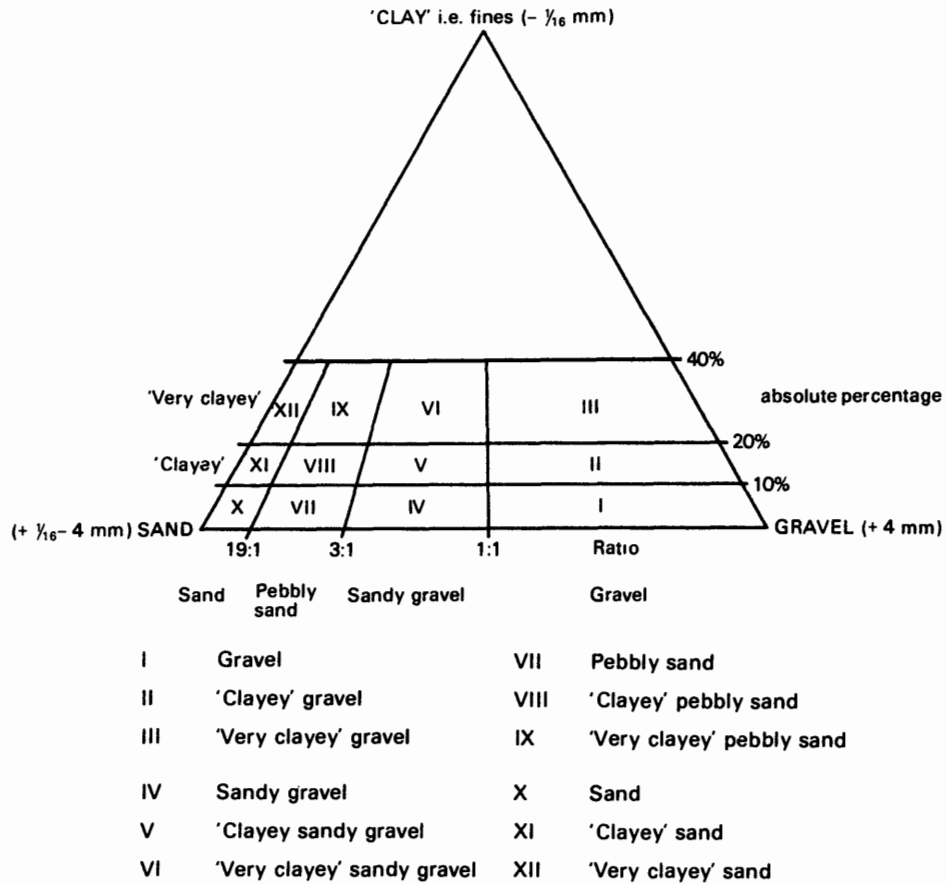
Fig. 6. Diagram to show the descriptive categories used in the classification of sand and gravel

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Appendix D: Explanation of the Borehole Records

ANNOTATED EXAMPLE

SU 67 NE 15[1]   6837 7534[2]   New Farm, Mapledurham[3]   Block B

Surface level +38. 6 m (+127 ft)[4]   Overburden 0. 6 m (2. 0 ft)[7]
Water struck at +37. 0 m[5]   Mineral 6. 4 m (21. 0 ft)
Shell and auger (modified), 6 in (152 mm) diameter[6] Bedrock 0. 4 m+ (1. 5 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft[8]
	Soil	0.1	(0.5)	0.1	(0.5)
[10]River terrace	[11]Clay, silty and sandy	0.5	(1.5)	0.6	(2.0)
deposits	gravel	6.4	(21.0)	7.0	(23.0)
(undifferentiated)	Gravel: fine to coarse,				
	with cobbles towards				
	base, angular to				
	rounded flint and				
	limestone with				
	ironstone and some				
	quartz and chalk				
	Sand: medium with coarse				
	and some fine quartz,				
	flint and limestone				
Upper Chalk	Chalk, white with flint				
	nodules	0.4+[9]	(1.5+)	7.4	(24.5)

GRADING

Mean tor deposit   Bulk samples

[15]Gravel	%	mm	%	Depth below surface (m)	Fines	Percentages Sand	Gravel
[15]Gravel	49	+16	24				
		-16+4	25	1.6-2.6[12]	20	78	2[13]
				[14]* 2.6-3.6	2	32	66
		-4+1	13	* 3.6-4.6	1	40	59
Sand	46	-1+¼	28	* 4.6-5.6	0	45	55
		-¼+1/16	5	* 5.6-7.0	4	36	60
Fines	5	-1/16	5				

COMPOSITION[16]

Depth below surface (m)	Flint	Quartz	Percentages (in 4.75 to 9.5 mm fractions) Limestone	Chalk	Ironstone
1.6-2.6		Gravel content too low for analysis			
2.6-3.6	41	5	50	1	3
3.6-4.6	39	3	45	5	8
4.6-5.6	45	2	42	5	6
5.6-7.0	19	6	61	3	11
MEAN	33	4	53	3	7

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The numbered paragraphs below corres-
pond with the annotations given on the specimen
record above.

1. Borehole Registration Number
Each Mineral Assessment Unit (MAU) 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 67.
　　2) The quarter of the 1:25 000 sheet
　　　　on which the borehole lies and
　　　　its number in a series for that
　　　　quarter, for example SE 20.
　　Thus the full Registration Number is
SU 67 SE 20. Usually this is abbreviated to
SE 20 in the text.

2. The National Grid Reference
All National Grid References in this publication
lie within the 100 km square SU unless other-
wise stated. Grid references are given to
eight figures, accurate to within 10 m for bore-
hole 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.
Measurements were made in either metres or
feet; approximate conversions to feet or
metres are given in brackets.

5. Groundwater Conditions
If groundwater was present the level at which
it was encountered is normally given (in metres
above OD).

6. Type of Drill and Date of Drilling
Modified shell and auger rigs were used in
this survey. The type of machine, the ex-
ternal diameter of the casing used, and 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' below which potentially workable
sand and gravel will not be found. Waste is
any material other than bedrock or mineral.
Where waste occurs between the surface and
mineral it is classified as overburden.

8. Thickness and Depth
All measurements were made in metres; imperial
conversions appear in brackets. Imperial con-
versions of measurements of the thicknesses of
beds and the depths from the surface of their
bases have been rounded off to the nearest 0.5 ft,
because a more detailed quotation would imply a
higher order of accuracy than could be justified
by the original figures. Where figures have been
rounded in this way there may be a discrepancy
between the sum of the thicknesses and the
recorded depths.

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

10. Geological Classification
The geological classification 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+1/16 mm; fines, -1/16 mm. If,
exceptionally, grading results are not available,
an attempt is made to give grading information
by comparing the grading and field descriptions
of adjacent samples with the samples in question.
Such estimates are shown in brackets.

14. Bailed Samples
Samples obtained by the bailing technique (that
is, from deposits below the water table) are indi-
cated by an asterisk.

15. 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 thick-
nesses represented, if these vary. The classi-
fication used is shown in Table 8.
　　Fully representative sampling of sand and
gravel is difficult to achieve particularly where
groundwater levels are high. Comparison bet-
ween 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.

16. Composition

Where deleterious material is present in substantial amounts, details of the compositions (percentages by weight of each constituent) of the 4.75 to 9.5 mm fractions of bulk samples are given.

Appendix E: List of Boreholes Used in the Assessment of Resources

MINERAL ASSESSMENT UNIT BOREHOLES

Borehole No. by sheet quadrant	Grid references (all fall in 100 km square SU)	Borehole No. by sheet quadrant	Grid references (all fall in 100 km square SU)
67 NW 1	6049 7971	67 NE 1	6560 7979
2	6030 7845	2	6602 7891
(pp. 24 to 45) 3	6043 7758	(pp. 46 to 64) 3	6567 7728
4	6073 7674	4	6577 7590
5	6066 7596	5	6553 7527
6	6154 7867	6	6612 7672
7	6145 7712	7	6612 7526
8	6145 7618	8	6721 7974
9	6235 7963	9	6779 7804
10	6226 7745	10	6715 7626
11	6262 7606	11	6808 7929
12	6195 7561	12	6860 7832
13	6364 7930	13	6823 7692
14	6356 7843	14	6876 7615
15	6374 7670	15	6837 7534
16	6374 7544	16	6909 7961
17	6349 7514	17	6975 7880
18	6436 7964	18	6920 7775
19	6470 7886	19	6963 7688
20	6431 7733	20	6946 7576
21	6478 7660		
22	6464 7594		
67 SW 40	6033 7485	67 SE 17	6546 7428
41	6090 7319	18	6531 7330
(pp. 65 to 83) 42	6086 7241	(pp. 84 to 94) 19	6502 7109
43	6113 7457	20	6667 7044
44	6157 7151	21	6748 7106
45	6240 7455	22	6762 7027
46	6248 7366	23	6861 7477
47	6276 7162	24	6849 7118
48	6213 7036	25	6983 7498
49	6380 7437	26	6964 7441
50	6398 7371	27	6972 7096
51	6304 7296		
52	6339 7231		
53	6388 7155		
54	6316 7074		
55	6480 7478		
56	6435 7316		
57	6414 7232		
58	6415 7036		

OTHER BOREHOLES

Hydrogeological Department records: 268/2, 23a, 38, 93, 100, 113, 119, 160, 215a, 215b, 215c, 215d, 293a, 307, 308, 320, 334, 339, 341, 350b, 357, 445a, 445b, 501, 506, 514, 517, 537, 544. (Details of these wells are held in The National Well Record Collection of the Hydrogeological Department of the Institute and may be inspected upon application to the Director, Institute of Geological Sciences, Exhibition Road, London SW7 2DE)

Field Staff records (M4 road site investigation boreholes): SU 67 SW 16, 17, 18, 19, 20, 24, 28, 29, 30, 31, 32, 33, 35, 36, 39, SU 67 SE 2, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16.

Confidential records: 198 boreholes.

Appendix F: Mineral Assessment Unit Borehole Records

SU 67 NW 1   6049 7971   Near Gatehampton Farm, Goring   Block B

Surface level (+43.0 m) +141 ft   Overburden 0.3 m (1.0 ft)
Water struck at (+40.0 m)   Mineral 7.9 m (26.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.3	(1.0)	0.3	(1.0)
River terrace deposits (undifferentiated)	Sandy gravel	7.9	(26.0)	8.2	(27.0)
	Gravel: fine to coarse with cobbles in the basal 2.2 m. Mainly limestone and flint with ironstone, chalk and quartz				
	Sand: medium with coarse and fine, mainly quartz with some flint				
Middle Chalk	Chalk, with flint nodules	0.5+	(1.5+)	8.7	(28.5)

GRADING

Mean for Deposit				Bulk samples depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	44	+16	22	0.3 - 0.9	32	67	1
		-16+4	22	0.9 - 1.9	13	76	11
				1.9 - 2.9	10	50	40
				*2.9 - 3.9	2	52	46
		-4+1	13	*3.9 - 4.9	5	60	35
Sand	49	$-1+\frac{1}{4}$	33	*4.9 - 5.9	2	49	49
		$-\frac{1}{4}+1/16$	3	*5.9 - 6.9	1	21	78
				*6.9 - 8.2	1	31	68
Fines	7	-1/16	7				

COMPOSITION

Depth below surface (m)	Percentages (in 4.75 to 9.5 mm fraction)				
	Flint	Quartz	Limestone	Chalk	Ironstone
0.3 - 0.9			no information available		
0.9 - 1.9			no information available		
1.9 - 2.9	22	6	57	4	11
2.9 - 3.9	20	4	63	6	7
3.9 - 4.9	10	6	67	7	10
4.9 - 5.9	13	7	65	8	7
5.9 - 6.9	19	8	52	4	17
6.9 - 8.2	18	5	59	7	11
MEAN	17	6	61	6	10

SU 67 NW 2   6030 7845   Near Upper House Farm, Basildon   Block C

Surface level (+99.1 m) +325 ft
Water not struck
Shell and auger (modified)   6 in (152 mm) diameter
May 1972

Overburden 1.9 m (6.0 ft)
Mineral 3.4 m (11.0 ft)
Bedrock 0.5 m+ (1.5 ft+)

	LOG	Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Plateau gravel	Clay, sandy, with fine to medium flint gravel; orange-brown passing to reddish brown at base	1.1	(3.5)	1.3	(4.5)
	Clay, silt and sand with a trace of fine flint gravel	0.6	(2.0)	1.9	(6.0)
	'Clayey' gravel Gravel: fine to coarse, with scattered cobbles, subrounded to rounded flint and well rounded quartz and quartzite Sand: medium and coarse with fine, mainly quartz	3.4	(11.0)	5.3	(17.5)
Upper Chalk	Chalk, soft, with flint nodules	0.5+	(1.5+)	5.8	(19.0)

GRADING

	Mean for deposit				Bulk samples			
	%	mm	%		Depth below surface (m)	Fines	Sand	Gravel
Gravel	63	+16	43		1.9 - 5.3	15	22	63
		-16+4	20					
		-4+1	7					
Sand	22	$-1+\frac{1}{4}$	12					
		$-\frac{1}{4}+1/16$	3					
Fines	15	-1/16	15					

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SU 67 NW 3   6043 7758   Basildon Park, Basildon   Block C

Surface level (+108. 5 m) + 356 ft   Overburden 0. 2 m (0. 5 ft)
Water not struck   Mineral 1. 0 m (3. 5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Waste 1. 6 m (5. 0 ft)
May 1972   Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Plateau gravel	'Clayey' gravel	1. 0	(3. 5)	1. 2	(4. 0)
	Gravel: fine to coarse, scattered cobbles, subangular to subrounded flint, with a trace of rounded quartz				
	Sand: medium and coarse with some fine quartz				
	Clay, reddish brown with flint nodules	1. 6	(5.0)	2. 8	(9. 0)
Upper Chalk	Chalk, with clay and flint nodules	0. 5+	(1. 5+)	3. 3	(11.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	58	+16	36
		- 16+4	22
		-4+1	11
Sand	24	-1+$\frac{1}{4}$	10
		-$\frac{1}{4}$+1/16	3
Fines	18	-1/16	18

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0. 2 - 1. 2	18	24	58

SU 67 NW 4   6073 7674   Pennycroft Copse, Basildon   Block   C

Surface level (+ 113. 1 m) + 371 ft   Overburden 0. 4 m (1. 5 ft)
Water not struck   Mineral 5. 4 m (17.5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft +)
February 1972

LOG

		Thickness			Depth	
		m	ft	m	m	ft
Soil		0. 2	(0. 5)		0. 2	(0. 5)
Plateau gravel	Clay, sandy, dark brown, with some flint and quartzite pebbles	0. 2	(0. 5)		0. 4	(1. 5)
	'Very clayey' gravel	5. 4	(17.5)		5. 8	(19.0)
	Gravel: fine to coarse, with cobbles, subangular to subrounded flint and well rounded quartz and quartzite with a trace of ironstone					
	Sand: medium with coarse and fine quartz					
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)		6. 3	(20. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	53	+16 mm	36
		-16+4	17
		-4+1	5
Sand	24	$-1+\frac{1}{4}$	15
		$-\frac{1}{4}+1/16$	4
Fines	23	-1/16	23

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0. 4 - 1. 1	17	26	57
1. 1 - 2. 1	23	28	49
2. 1 - 3. 1	29	19	52
3. 1 - 4. 1	23	37	40
4. 1 - 5. 1	13	26	61
5. 1 - 5. 8	32	28	40

Surface level (+ 112. 8 m) + 370 ft   Overburden 0. 9 m (3. 0 ft)
Water not struck   .   Mineral 5. 6 m (18. 5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
February 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 1	(0. 5)	0. 1	(0. 5)
Plateau gravel	Clay, sandy, brown, with scattered pebbles	0. 8	(2. 5)	0. 9	(3.0)
	'Very clayey' gravel Gravel: fine to coarse, with some cobbles, sub-angular to subrounded flint and well rounded quartz and quartzite with a trace of ironstone Sand: medium with fine and coarse quartz	5. 6	(18. 5)	6. 5	(21. 5)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	7. 0	(23.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	39	+16 mm	25
		-16+4	14
		-4+1	6
Sand	31	$-1+\frac{1}{4}$	19
		$-\frac{1}{4}+1/16$	6
Fines	30	-1/16	30

Bulk samples

| Depth below surface (m) | Fines | Percentages | |
		Sand	Gravel
0. 9 - 1. 9	28	47	25
1. 9 - 2. 9	34	28	38
2. 9 - 3. 9	21	32	47
3. 9 - 4. 9	40	16	44
4. 9 - 5. 6	29	26	45

Surface level (+ 39. 6 m) + 130 ft   Overburden 0. 7 m (2. 5 ft)
Water struck at (+ 38. 8 m)   Mineral 5. 1 m (17. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Waste 0. 2 m (0. 5 ft)
February 1972   Bedrock 0. 5 m + (1. 5 ft +)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Clay, silty, slightly sandy, brown, with scattered fine flint	0. 5	(1. 5)	0. 7	(2. 5)
	Gravel	5. 1	(17.0)	5. 8	(19.0)
	Gravel: fine to coarse, scattered cobbles. Mainly limestone with flint, chalk, ironstone and quartz Sand: coarse, with medium and fine quartz with trace of chalk and oolitic limestone				
	Clay, silty, creamy brown, with pebbles of chalk and flint	0. 2	(0. 5)	6. 0	(19. 5)
Middle Chalk	Chalk and flint nodules	0. 5+	(1. 5+)	6. 5	(21. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	61	+16	31	*0. 7 - 1. 7	5	37	58
		-16+4	30	*1. 7 - 2. 7	1	24	75
				*2. 7 - 3. 7	2	31	67
		-4+1	17	*3. 7 - 4. 7	1	48	51
Sand	36	-1+$\frac{1}{4}$	10	*4. 7 - 5. 8	4	43	53
		-$\frac{1}{4}$+1/16	9				
Fines	3	-1/16	3				

COMPOSITION

Depth below surface (m)	Percentages (in 4. 75 to 9. 5 mm fraction)				
	Flint	Quartz	Limestone	Chalk	Ironstone
0. 7 - 1. 7	30	5	48	9	8
1. 7 - 2. 7	13	6	62	9	10
2. 7 - 3. 7	14	9	54	12	11
3. 7 - 4. 7	6	11	57	15	11
4. 7 - 5. 8	12	5	57	13	13
MEAN	15	7	55	12	11

SU 67 NW 7   6145 7712   Near Meandown Copse, Basildon   Block C

Surface level (+ 39. 9 m) + 131 ft   Waste 3. 5 m (11. 5 ft)
Water not struck   Bedrock 0. 5 m + (1. 5 ft +)
Shell and auger (modified) 6 in (152 mm) diameter
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Clay-with-flints	Clay, sandy, dark brown with scattered flint pebbles	0. 4	(1. 5)	0. 6	(2. 0)
	Clay, silty, orange-brown passing to brown, containing fine to cobble-size flint with a little well rounded quartzite	2. 5	(8.0)	3. 1	(10.0)
	Clay, silty, reddish brown	0. 4	(1. 5)	3. 5	(11. 5)
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	4. 0	(13.0)

Surface level (+ 105. 8 m) + 347 ft   Overburden 3. 4 m (11. 0 ft)
Water not struck   Mineral 6. 0 m (19. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m + (1. 5 ft +)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Plateau gravel	Clay, silty, orange-brown mottled grey, with scattered fine flint	0.6	(2.0)	0.8	(2.5)
	Clay, silty and sandy, reddish brown mottled grey, with scattered fine flint	0.5	(1.5)	1.3	(4.5)
	Silt, sandy, buff and orange brown mottled grey, with scattered fine to medium flint	2.1	(7.0)	3.4	(11.0)
	'Very clayey' sandy gravel Gravel: fine to coarse, with cobbles, mainly subangular to rounded flint with some well rounded quartz and quartzite Sand: medium with fine and some coarse quartz	6.0	(19.5)	9.4	(31.0)
Upper Chalk	Chalk, soft, with flints	0.5+	(1.5+)	9.9	(32.5)

GRADING

Mean for deposit				Bulk samples			
	%	mm	%	Depth below surface (m)	Percentages		
					Fines	Sand	Gravel
Gravel	27	+16	18	3.3 - 4.3	33	56	11
		-16+4	9	4.3 - 5.2	40	45	15
				5.2 - 6.2	44	34	22
		-4+1	4	6.2 - 7.2	49	26	25
Sand	39	$-1+\frac{1}{4}$	23	7.2 - 8.2	14	42	44
		$-\frac{1}{4}+1/16$	12	8.2 - 9.4	27	27	46
Fines	34	-1/16	34				

Surface level (+ 139. 0 m) + 456 ft   Waste 2. 9 m (9. 5 ft)
Water not struck   Bedrock 0. 8 m + (2. 5 ft +)
Shell and auger (modified)   6 in (152 mm) diameter
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Clay-with-flints	Clay, sandy, dark-brown with fine and medium flint	0. 4	(1. 5)	0. 7	(2. 5)
	Clay, silty with trace of sand, with fine to medium flint and chalk gravel, the latter increasing in amount with depth	2. 2	(7.0)	2. 9	(9. 5)
Upper Chalk	Chalk, soft, with brown clay	0. 8+	(2. 5+)	3. 7	(12.0)

SU 67 NW 10   6226 7745   Near Coombe Park, Whitchurch   Block B

Surface level (+ 39.5 m) + 131 ft   Overburden 3.9 m (13.0 ft)
Water struck at (+ 35.6 m)   Mineral 3.5 m (11.5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Alluvium	Clay, silty, dark brown at top passing to green and bluish green, mottled brown and speckled grey	2.6	(8.5)	2.8	(9.0)
	Peat, dark brown, with small scattered shell fragments	1.1	(3.5)	3.9	(13.0)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, scattered cobbles. Mainly limestone and flint with ironstone, chalk and quartz Sand: medium and coarse with fine, mainly quartz	3.5	(11.5)	7.4	(24.5)
Middle Chalk	Chalk, with flint nodules	0.5+	(1.5+)	7.9	(26.0)

GRADING

	Mean for deposit			Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	61	+16	21	*3.9 - 4.9	2	38	60
		-16+4	40	*4.9 - 5.9	1	33	66
		-4+1	18	*5.9 - 7.4	6	35	59
Sand	36	-1+$\frac{1}{4}$	15				
		-$\frac{1}{4}$+1/16	3				
Fines	3	-1/16	3				

COMPOSITION

Depth below surface (m)	Percentages (in 4.75 to 9.5 mm fraction)				
	Flint	Quartz	Limestone	Chalk	Ironstone
3.9 - 4.9	20	6	56	7	11
4.9 - 5.9	11	6	62	5	16
5.9 - 7.4	10	4	61	6	19
MEAN	12	.5	61	6	16

Surface level (+ 92. 7 m) + 304 ft   Overburden 0. 6 m (2. 0 ft)
Water not struck   Mineral 2. 3 m (7. 5 ft)
Shell and auger (modified), 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Plateau gravel	Clay , silty and pebbly, dark brown	0. 6	(2. 0)	0. 8	(2. 5)
	'Very clayey' gravel Gravel: fine to coarse with cobbles, subangular to subrounded flint with some quartz and quartzite Sand: medium with fine and coarse quartz and flint	2. 3	(7. 5)	3. 1	(10.0)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	3. 6	(12.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	42	+16	31
		-16+4	11
Sand	31	-4+1	4
		$-1+\frac{1}{4}$	16
		$-\frac{1}{4}+1/16$	11
Fines	27	-1/16	27

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0. 8 – 3. 1	27	31	42

Surface level (+ 102. 8 m) + 370 ft   Overburden 5. 7 m (18. 5 ft)
Water not struck   Mineral 5. 2 m (17. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Waste 0. 4 m (1. 5 ft)
February 1972   Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Plateau gravel	Sand, fine to medium and gravel, fine to coarse subangular to subrounded flint with a little quartzite	0. 5	(1. 5)	0. 7	(2. 5)
	Silt, with sand and trace of fine to medium flint and quartzite gravel	5. 0	(16. 5)	5. 7	(18. 5)
	'Very clayey' pebbly sand Gravel: fine to coarse, scattered cobbles, sub-angular to rounded flint with quartz Sand: mainly medium with fine and coarse quartz, some flint in the coarse fraction	5. 2	(17.0)	10. 9	(36.0)
	Clay, sandy, brown with large flint nodules	0. 4	(1. 5)	11. 3	(37.0)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	11. 8	(38. 5)

GRADING

Mean for deposit					Bulk samples			
	%	mm	%		Depth below surface (m)	Percentages		
						Fines	Sand	Gravel
Gravel	17	+16	7		5. 7 - 6. 7	32	46	22
		-16+4	10		6. 7 - 7. 7	19	64	17
					7. 7 - 8. 7	24	51	25
		-4+1	7		8. 7 - 9. 6	18	56	26
Sand	60	$-1+\frac{1}{4}$	46		9. 6 -10. 6	15	83	2
		$-\frac{1}{4}+1/16$	7					
Fines	23	-1/16	23					

Surface level (+ 141. 4 m) + 464 ft
Water not struck
Shell and auger (modified) 6 in (152 mm) diameter
February 1972

Overburden 5. 2 m (17. 0 ft)
Mineral 3. 6 m (12. 0 ft)
Bedrock 0. 5 m + (1. 5 ft +)

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Clay-with-flints	Clay, sandy, reddish brown with grey streaks, with scattered flint pebbles	1. 3	(4. 5)	1. 6	(5. 5)
	Silt, clayey and sandy, reddish brown streaked grey, with scattered flint pebbles from 3. 0 to 3. 8 m	3. 6	(12.0)	5. 2	(17.0)
Plateau gravel	'Very clayey' gravel Gravel: fine to cobble sized, angular to subangular flint with a trace of quartz Sand: medium with fine and coarse quartz and flint	3. 6	(12.0)	8. 8	(29.0)
Upper Chalk	Chalk, soft, white	0. 5+	(1. 5+)	9. 3	(30. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	49	+16	39
		-16+4	10
Sand	23	-4+1	4
		-1+¼	14
		-¼+1/16	5
Fines	28	-1/16	28

Bulk samples

| Depth below surface (m) | Percentages | | |
	Fines	Sand	Gravel
5. 2 - 6. 2	25	15	60
6. 2 - 7. 2	15	29	56
7. 2 - 8. 8	39	23	38

Surface level (+ 132. 0 m) + 433 ft
Water not struck
Shell and auger (modified)   6 in (152 mm) diameter
January 1972

Overburden 0. 2 m (0. 5 ft)
Mineral 7. 3 m (24. 0 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Plateau gravel	'Very clayey' sandy gravel with a band of clay from 3. 6 to 4. 4 m Gravel: fine to coarse, mainly subangular to subrounded flint with some rounded quartz and quartzite Sand: medium and fine with coarse quartz	7. 3	(24.0)	7. 5	(24. 5)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	8. 0	(26.0)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	21	+16	10	0. 2 - 1. 1	26	18	56
		-16+4	11	1. 1 - 2. 1	48	33	19
				2. 1 - 3. 6	27	51	22
		-4+1	6	3. 6 - 4. 4		CLAY	
Sand	46	$-1+\frac{1}{4}$	34	4. 4 - 5. 6	48	48	4
		$-\frac{1}{4}+1/16$	6	5. 6 - 6. 6	22	76	2
				6. 6 - 7. 5	30	47	23
Fines	33	-1/16	33				

SU 67 NW 15   6374 7670   Whitchurch Bridge, Whitchurch   Block B

Surface level (+ 40. 2 m) + 132 ft   Overburden 1. 5 m (5. 0 ft)
Water struck at (+ 37. 8 m)   Mineral 1. 9 m (6. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
River terrace deposits (undifferentiated)	Clay, silty and sandy, dark brown, with scattered flint pebbles	1. 2	(4. 0)	1. 5	(5. 0)
	Gravel Gravel: fine to coarse, scattered cobbles, mainly flint with limestone, chalk, quartz and ironstone Sand: coarse and medium with fine, mainly quartz with flint	1. 9	(6. 0)	3. 4	(11.0)
Middle Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	3. 9	(13.0)

GRADING

Mean for deposit				Bulk samples			
	%	mm	%	Depth below surface (m)	Fines	Sand	Gravel
					Percentages		
Gravel	60	+16	26	*1. 5 - 2. 5	15	27	58
		-16+4	34	*2. 5 - 3. 4	5	32	63
		-4+1	15				
Sand	30	$-1+\frac{1}{4}$	13				
		$-\frac{1}{4}+1/16$	2				
Fines	10	-1/16	10				

COMPOSITION

Depth below surface (m)	Percentages (in 4. 75 to 9. 5 mm fraction)				
	Flint	Quartz	Limestone	Chalk	Ironstone
1. 5 - 2. 5	74	3	14	7	2
2. 5 - 3. 4	83	2	9	6	0
MEAN	80	2	11	6	1

SU 67 NW 16   6374 7544   Near Flower's Court, Pangbourne   Block D

Surface level (+ 43. 0 m) + 141 ft   Overburden 0. 8 m (2. 5 ft)
Water struck at (+ 41. 9 m)   Mineral 5. 8 m (19. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1.5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Made ground	0. 8	(2. 5)	0. 8	(2. 5)
River terrace	Gravel	5. 8	(19.0)	6. 6	(21. 5)
deposits	Gravel: fine to coarse, with				
(undifferentiated)	scattered cobbles, mainly sub-				
	angular to rounded flint with				
	some rounded quartz and chalk				
	Sand: medium and coarse, with				
	trace of fine quartz				
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	7. 1	(23. 5)

GRADING

Mean for deposit				Bulk samples			
				Depth below	Percentages		
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	76	+16	39	0. 8 - 1. 8	3	23	74
		-16+4	37	*1. 8 - 2. 8	2	27	71
				*2. 8 - 3. 8	2	32	66
		-4+1	10	*3. 8 - 4. 8	1	18	81
Sand	22	$-1+\frac{1}{4}$	11	*4. 8 - 5. 8	1	13	86
		$-\frac{1}{4}+1/16$	1	*5. 8 - 6. 6	1	20	79
Fines	2	-1/16	2				

SU 67 NW 17   6349 7514   Near Tidmarsh   Block D

Surface level (+ 44. 8 m) + 147 ft
Water level not recorded
Shell and auger (modified), 6 in (152 mm) diameter
February 1972

Overburden 1. 2 m (4. 0 ft)
Mineral 3. 8 m (12. 5 ft)
Waste 2. 1 m (7. 0 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	1. 2	(4.0)	1. 2	(4.0)
River terrace deposits (undifferentiated)	'Clayey' gravel	3. 8	(12. 5)	5. 0	(16. 5)
	Gravel: fine to coarse scattered cobbles, mainly subrounded to rounded flint, with rounded quartz and quartzite, and chalk in the basal 2.0 m				
	Sand: coarse, with medium and fine quartz				
	Clay, sandy, brown, and fine to coarse chalk and flint gravel	2. 1	(7.0)	7. 1	(23. 5)
Upper Chalk	Chalk, with flint	0. 5+	(1. 5+)	7. 6	(25.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	61	+16	36
		-16+4	25
		-4+1	8
Sand	27	$-1+\frac{1}{4}$	15
		$-\frac{1}{4}+1/16$	4
Fines	12	-1/16	12

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
1. 2 - 2. 2	12	29	59
2. 2 - 3. 2	9	23	68
3. 2 - 5. 0	14	27	59

SU 67 NW 18   6436 7964   Hill Bottom, Goring Heath   Block A

Surface level (+ 138. 4 m) + 454 ft   Waste 11. 1 m (36. 5 ft)
Water not struck   Bedrock 0. 3 m+ (1. 0 ft+)
Shell and auger (modified), 6 in (152 mm) diameter
September 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Clay-with-flints	Clay, sandy, brown to yellowish brown, with fine to medium flint, quartz and quartzite	1. 5	(5. 0)	1. 8	(6. 0)
	Clay and silt, brown to orange brown, with sand and fine to medium gravel containing angular to subrounded flint, quartz and quartzite. A few cobbles of flint are also present	8. 8	(29.0)	10. 6	(35.0)
	Clay, sandy, and gravel containing fine flint, quartz and quartzite	0. 5	(1. 5)	11. 1	(36. 5)
Upper Chalk	Chalk	0. 3+	(1. 0+)	11. 4	(37. 5)

Surface level (+ 126.7 m) + 416 ft   Overburden 0.9 m (3.0 ft)
Water not struck   Mineral 2.2 m (7.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Waste 3.0 m (10.0 ft)
January 1972   Bedrock 0.7 m+ (2.5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Plateau gravel	Clay, sandy, with some gravel	0.7	(2.5)	0.9	(3.0)
	'Clayey' gravel Gravel: fine to coarse scattered cobbles, subangular to subrounded flint and subrounded to well rounded quartz and quartzite Sand: medium with coarse and fine, mainly quartz with some flint	2.2	(7.0)	3.1	(10.0)
Upper Chalk	Chalk, soft, with flint nodules	0.7+	(2.5+)	3.8	(12.5)

GRADING

Mean for deposit

	%	mm	%
Gravel	49	+16	29
		-16+4	20
		-4+4	7
Sand	32	$-1+\frac{1}{4}$	22
		$-\frac{1}{4}+1/16$	3
Fines	19	-1/16	19

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0.9 - 1.9	20	39	41
1.9 - 3.1	17	26	57

SU 67 NW 20   6431 7733   Bozedown Farm, Whitchurch   Block B

Surface level (+ 40. 5 m) + 133 ft   Overburden 1. 1 m (3.5 ft)
Water struck at (+ 37. 6 m)   Mineral 6. 3 m (20. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 6 m+ (2.0 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Clay, silty, with flint pebbles in lower 0. 3 m	0. 9	(3.0)	1. 1	(3. 5)
	Gravel	6. 3	(20. 5)	7. 4	(24. 5)
	Gravel: fine to coarse, scattered cobbles. Subangular to well rounded limestone and flint with some quartz, chalk and ironstone from 1.1 to 3.1 m. Dominantly flint with some quartz, limestone, chalk and ironstone from 3.1 to 7.4 m				
	Sand: medium with coarse and some fine quartz				
Upper Chalk	Chalk, soft, with flint nodules	0. 6+	(2.0+)	8. 0	(26.0)

GRADING

Mean for deposit

	%	mm	%		Bulk samples Depth below surface (m)	Percentages Fines	Sand	Gravel
Gravel	65	+16	33		1. 1 - 2. 1	8	50	42
		-16+4	32		*2. 1 - 3. 1	7	43	50
					*3. 1 - 4. 1	1	15	84
		-4+1	9		*4. 1 - 5. 1	1	34	65
Sand	31	$-1+\frac{1}{4}$	19		*5. 1 - 6. 1	3	21	76
		$-\frac{1}{4}+1/16$	3		*6. 1 - 7. 4	2	36	62
Fines	4	-1/16	4					

COMPOSITION

Depth below surface (m)	Flint	Quartz	Percentages (in 4. 75 to 9. 5 mm fraction) Limestone	Chalk	Ironstone
1. 1 - 2. 1	37	2	53	3	5
2. 1 - 3. 1	35	6	46	5	8
3. 1 - 4. 1	90	2	5	3	0
4. 1 - 5. 1	93	2	2	1	2
5. 1 - 6. 1	94	1	4	0	1
6. 1 - 7. 4	95	2	2	0	1
MEAN	74	3	18	2	3

Surface level (+ 40. 8 m) + 134 ft
Water struck at (+ 39. 0 m)
Shell and auger (modified)   6 in (152 mm) diameter
March 1972

Overburden 1. 0 m (3. 5 ft)
Mineral 4. 1 m (13. 5 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 4	(1. 5)	0. 4	(1. 5)
River terrace deposits (undifferentiated)	Silt and sand, with clay and trace of gravel	0. 6	(2.0)	1. 0	(3. 5)
	Gravel	4. 1	(13. 5)	5. 1	(17.0)
	Gravel: fine to coarse, mainly flint, with a trace of quartz, chalk and ironstone Sand: medium and coarse with fine quartz				
Upper Chalk	Chalk	0. 5+	(1. 5+)	5. 6	(18. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	74	+16	38
		-16+4	36
		-4+1	7
Sand	22	$-1+\frac{1}{4}$	12
		$-\frac{1}{4}+1/16$	3
Fines	4	-1/16	4

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
1. 0 - 2. 0	6	35	59
*2. 0 - 3. 0	5	29	66
*3. 0 - 4. 0	2	11	87
*4. 0 - 5. 1	3	11	86

SU 67 NW 22   6464 7594   Purley Hall, *Purley*   Block D

Surface level (+ 44. 5 m) + 146 ft   Overburden 2. 3 m (7. 5 ft)
Water struck at (+ 39. 6 m)   Mineral 5. 5 m (18. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Silt, with sand and some flint gravel, brown and reddish brown	2. 1	(7.0)	2. 3	(7. 5)
	Gravel Gravel: fine to coarse, scattered cobbles. Mainly subangular to subrounded flint with some quartz. Chalk common below 7.5 m Sand: medium and coarse, with fine quartz	5. 5	(18.0)	7. 8	(25. 5)
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	8. 3	(27.0)

GRADING

	%	mm	%	Depth below surface (m)	Percentages Fines	Sand	Gravel
Gravel	69	+16	30	2. 3 - 3. 3	16	26	58
		-16+4	39	3. 3 - 4. 3	7	43	50
		-4+1	10	4. 3 - 5. 3	0	26	74
Sand	26	-1+¼	13	5. 3 - 6. 3	1	24	75
		-¼+1/16	3	6. 3 - 7. 8	2	16	82
Fines	5	-1/16	5				

SU 67 NE 1   6560 7979   Charity Farm, Goring Heath   Block A

Surface level + 125. 0 m (+ 410 ft)   Waste 5. 7 m (18. 5 ft)
Water not struck   Bedrock 0. 2 m + (0. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
December 1971

<div align="center">LOG</div>

		Thickness		Depth	
		m	ft	m	ft
	Soil, gravelly	0. 4	(1. 5)	0. 4	(1. 5)
Clay-with-flints	Clay, sandy, orange brown, with medium flint and quartz gravel	0. 4	(1. 5)	0. 8	(2. 5)
	Clay, sandy, reddish brown with large flint nodules	4. 9	(16.0)	5. 7	(18. 5)
Upper Chalk	Chalk, soft, white	0. 2+	(0. 5+)	5. 9	(19. 5)

SU 67 NE 2   6602 7891   Collins End, Goring Heath   Block A

Surface level + 120. 2 m (+ 328 ft)   Overburden 1. 2 m (4. 0 ft)
Water not struck   Mineral 3. 1 m (10.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1.5 ft+)
December 1971

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil and subsoil	0. 4	(1. 5)	0. 4	(1. 5)
Plateau gravel	Clay, sandy, buff mottled reddish brown, with scattered quartz and flint pebbles	0. 4	(1. 5)	0. 8	(2. 5)
	Clay, sandy, brick red, with scattered flint and quartzite pebbles	0. 4	(1. 5)	1. 2	(4.0)
	'Very clayey' gravel Gravel: fine to coarse with cobbles, subrounded flint with rounded quartz and quartzite Sand: medium with some coarse and fine, quartz	3. 1	(10.0)	4. 3	(14.0)
Upper Chalk	Chalk, soft, white	0. 5+	(1. 5+)	4. 8	(15.5)

GRADING

Mean for deposit

	%	mm	%
Gravel	48	+16	36
		-16+4	12
		-4+1	4
Sand	28	$-1+\frac{1}{4}$	21
		$-\frac{1}{4}+1/16$	3
Fines	24	-1/16	24

Bulk samples

| Depth below surface (m) | Percentages | | |
	Fines	Sand	Gravel
1. 2 - 2. 2	25	46	29
2. 2 - 3. 2	20	17	63
3. 2 - 4. 3	28	20	52

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SU 67 NE 3   6567 7728   Westbury Farm, Purley   Block B

Surface level + 38.1 (+ 125 ft)   Overburden 0.6 m (2.0 ft)
Water struck at + 36.3 m   Mineral 6.1 m (20.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.1	(0.5)	0.1	(0.5)
Alluvium	Clay, silty and sandy, with scattered flint pebbles, dark brown	0.3	(1.0)	0.4	(1.5)
	Clay, sandy, with fine to medium flint pebbles, light brown	0.2	(0.5)	0.6	(2.0)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, with trace of cobbles; mainly limestone and flint with ironstone, chalk and quartz Sand: coarse and medium with fine quartz	6.1	(20.0)	6.7	(22.0)
Upper Chalk	Chalk, with flint nodules	0.5+	(1.5+)	7.2	(23.5)

GRADING

Mean for deposit				Bulk samples Depth below	Percentages		
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	66	+16	34	0.6 - 1.6	6	41	53
		-16+4	32	*1.6 - 2.6	1	48	51
				*2.6 - 3.6	2	33	65
		-4+1	17	*3.6 - 4.6	0	16	84
Sand	32	-1+$\frac{1}{4}$	13	*4.6 - 5.6	1	24	75
		-$\frac{1}{4}$+1/16	2	*5.6 - 6.7	1	33	66
Fines	2	-1/16	2				

COMPOSITION

Depth below surface	Percentages (in 4.75 - 9.5 mm fractions)				
	Flint	Quartz	Limestone	Chalk	Ironstone
0.6 - 1.6	36	5	46	5	8
1.6 - 2.6	20	5	60	5	10
2.6 - 3.6	18	4	61	4	13
3.6 - 4.6	40	8	32	8	12
4.6 - 5.6	25	3	49	7	16
5.6 - 6.7	[25	3	49	7	16]
MEAN	28	5	49	6	12

SU 67 NE 4   6577 7590   Long Lane, Purley   Block C

Surface level + 77. 3 m (+ 254 ft)   Overburden 8. 8 m (29. 0 ft)
Water not struck   Mineral 5. 1 m (17.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Plateau gravel	Clay, sandy, brown, with fine, angular to rounded flint	8. 8	(29.0)	9. 1	(30.0)
	'Very clayey' gravel Gravel: fine to coarse with scattered cobbles, subangular to subrounded flint with a trace of rounded quartz and quartzite Sand: medium with coarse and some fine quartz	5. 1	(17.0)	14. 2	(46. 5)
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	14. 7	(48.0)

GRADING

Mean for deposit				Bulk samples			
	%	mm	%	Depth below surface (m)	Percentages		
					Fines	Sand	Gravel
Gravel	48	+16	40	8. 8 - 9. 8	29	42	29
		-16+4	8	9. 8 - 10. 8	16	32	52
				10. 8 - 11. 8	20	27	53
		-4+1	8	11. 8 - 12. 8	13	36	51
Sand	31	$-1+\frac{1}{4}$	20	12. 8 - 13. 9	28	19	53
		$-\frac{1}{4}+1/16$	3				
Fines	21	-1/16	21				

Surface level + 85. 5 m (+ 280 ft)   Overburden 0. 3 m (1.0 ft)
Water not struck   Mineral 3.0 m (10.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1.5 ft+)
October 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1.0)	0. 3	(1.0)
Plateau gravel	'Very clayey' gravel	3.0	(10.0)	3. 3	(11.0)
	Gravel: fine to coarse with some cobbles, angular to rounded flint and well rounded quartz and quartzite Sand: medium with coarse and some fine quartz				
Upper Chalk	Chalk	0. 5+	(1. 5+)	3. 8	(12. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	36	+16	23				
		-16+4	13	0. 3 - 1. 2	43	24	33
				1. 2 - 2. 2	34	25	41
		-4+1	7	2. 2 - 3. 3	41	25	34
Sand	25	$-1+\frac{1}{4}$	15				
		$-\frac{1}{4}+1/16$	3				
Fines	39	-1/16	39				

SU 67 NE 6   6612 7672   Home Farm, Purley   Block   B

Surface level + 39.7 m (+ 130 ft)   Overburden 0. 4 m (1. 5 ft)
Water struck at + 37. 5 m   Mineral 7. 8 m (25. 5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Clay, silty and sandy, dark brown, with scattered flint pebbles	0. 2	(0. 5)	0. 4	(1. 5)
	Gravel Gravel: fine to coarse, with trace of cobbles, mainly subrounded flint and limestone with ironstone and chalk and some quartz Sand: coarse and medium with some fine quartz	7. 8	(25. 5)	8. 2	(27.0)
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	8. 7	(28. 5)

GRADING

Mean for deposit				Bulk samples			
				Depth below	Percentages		
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	66	+16	33				
		-16+4	33	0. 4 - 1. 2	15	28	57
				1. 2 - 2. 2	2	40	58
		-4+1	15	*2. 2 - 3. 2	4	40	56
Sand	30	$-1+\frac{1}{4}$	12	*3. 2 - 4. 2	1	24	75
		$-\frac{1}{4}+1/16$	3	*4. 2 - 5. 2	2	32	66
				*5. 2 - 6. 2	1	22	77
Fines	4	-1/16	4	*6. 2 - 7. 2	[3	26	71]
				*7. 2 - 8. 2	6	29	65

COMPOSITION

Depth below surface (m)	Flint	Quartz	Percentages (in 4. 75 to 9. 5 mm fractions)		
			Limestone	Chalk	Ironstone
0. 4 - 1. 2	96	2	0	0	2
1. 2 - 2. 2	No sample				
2. 2 - 3. 2	35	4	45	7	9
3. 2 - 4. 2	No sample				
4. 2 - 5. 2	31	3	47	7	12
5. 2 - 6. 2	52	2	31	8	7
6. 2 - 7. 2	No sample				
7. 2 - 8. 2	No sample				

SU 67 NE 7   6612 7526   Westwood, Tilehurst

Surface level + 80. 4 m (+ 264 ft)   Overburden 0. 5 m (1. 5 ft)
Water not struck   Mineral 3. 1 m (10.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Made Ground	0. 5	(1. 5)	0. 5	(1. 5)
Plateau gravel	'Very clayey' gravel Gravel: fine to coarse, subangular to subrounded flint, with trace of well rounded quartz Sand: medium with coarse and fine quartz	3. 1	(10.0)	3. 6	(12.0)
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5+)	4. 1	(13. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	47	+16	29
		-16+4	18
		-4+1	6
Sand	31	$-1+\frac{1}{4}$	19
		$-\frac{1}{4}+1/16$	6
Fines	22	-1/16	22

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0. 5 - 1. 5	27	26	47
1. 5 - 2. 5	20	35	45
2. 5 - 3. 6	18	34	48

SU 67 NE 8   6721 7974   Near Little College Wood, Cane End   Block A

Surface level + 125.2 m (+ 411 ft)   Overburden 0.2 m (0.5 ft)
Water not struck   Mineral 8.0 m (26.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0.3 m+ (1.0 ft+)
September 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Plateau gravel	'Very clayey' sandy gravel Gravel: fine to coarse with scattered cobbles, sub-angular to rounded flint, quartz, quartzite and sandstone Sand: medium with some coarse and fine quartz	8.0	(26.0)	8.2	(27.0)
Upper Chalk	Chalk, soft, white	0.3+	(1.0+)	8.5	(28.0)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%	mm	%			Fines	Sand	Gravel
Gravel	19	+16	10		0.2 - 1.1	43	25	32
		-16+4	9		1.1 - 2.1	29	61	10
		-4+1	7		2.1 - 3.1	23	70	7
Sand	50	$-1+\frac{1}{4}$	39		3.1 - 4.0	47	47	6
		$-\frac{1}{4}+1/16$	4		4.0 - 5.0	30	54	16
					5.0 - 5.9	20	61	19
					5.9 - 6.4	21	77	2
Fines	31	-1/16	31		6.4 - 7.4	34	46	20
					7.4 - 8.2	29	16	55

Surface level + 97. 3 m (+ 319 ft)   Overburden 0. 8 m (2. 5 ft)
Water not struck   Mineral 4. 6 m (15.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil and subsoil, pebbly	0. 8	(2. 5)	0. 8	(2. 5)
Plateau gravel	'Clayey' gravel	4. 6	(15.0)	5. 4	(18.0)
	Gravel: fine to coarse scattered cobbles, subangular to subrounded flint and rounded quartz, quartzite and trace of siltstone				
	Sand: medium with coarse and some fine quartz				
Upper Chalk	Chalk, white, firm to soft, with flint nodules	0. 5+	(1. 5+)	5. 9	(19. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	45	+16	25				
		-16+4	20	0. 8 - 1. 6	11	56	33
				1. 6 - 2. 6	17	39	44
		-4+1	10	2. 6 - 3. 6	15	32	53
Sand	41	$-1+\frac{1}{4}$	26	3. 6 - 4. 9	14	47	39
		$-\frac{1}{4}+1/16$	5	4. 9 - 5. 4	13	23	64
Fines	14	-1/16	14				

Surface level + 38.0 m (+ 125 ft)   Overburden 1.6 m (5.0 ft)
Water struck at + 36.1 m   Mineral 4.1 m (13.5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil and subsoil	0.3	(1.0)	0.3	(1.0)
Alluvium	Clay, silty, light greyish brown, with scattered gastropod shells and rare quartzite pebbles	1.2	(4.0)	1.5	(5.0)
	Clay, with gravel	0.1	(0.5)	1.6	(5.0)
River terrace deposits (undifferentiated)	Gravel	4.1	(13.5)	5.7	(18.5)
	Gravel: fine to coarse, scattered cobbles, mainly subangular to rounded limestone and flint with ironstone and some quartz and chalk				
	Sand: coarse and medium, trace of fine, quartz limestone and ironstone				
Upper Chalk	Chalk, white, soft to firm	0.5+	(1.5+)	6.2	(20.5)

GRADING

Mean for deposit					Bulk samples			
					Depth below	Percentages		
	%	mm	%		surface (m)	Fines	Sand	Gravel
Gravel	62	+16	32					
		-16+4	30		*1.6 - 2.6	6	29	65
					*2.6 - 3.6	1	33	66
		-4+1	20		*3.6 - 4.6	0	35	65
Sand	36	$-1+\frac{1}{4}$	15		*4.6 - 5.7	2	44	54
		$-\frac{1}{4}+1/16$	1					
Fines	2	-1/16	2					

COMPOSITION

Depth below surface (m)	Percentages (in 4.75 - 9.5 mm fractions)				
	Flint	Quartz	Limestone	Chalk	Ironstone
1.6 - 2.6	33	7	45	3	12
2.6 - 3.6	15	2	56	2	25
3.6 - 4.6	28	4	53	7	8
4.6 - 5.7	28	5	46	5	16
MEAN	27	5	49	4	15

SU 67 NE 11   6808 7929   Cane End Farm, Cane End   Block A

Surface level + 103. 4 m (+ 339 ft)   Waste 3. 7 m (12.0 ft)
Water not struck   Bedrock 0. 5 m+ (1. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
January 1972

<div align="center">LOG</div>

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Clay-with-flints	Clay, silty and sandy, with flint and quartzite pebbles, brown to orange brown	0. 3	(1.0)	0. 5	(1. 5)
	Clay, silty and sandy, brown to orange brown, with mainly coarse and cobble-size angular to rounded flint and a little quartzite	3. 2	(10.5)	3. 7	(12. 0)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	4. 2	(14.0)

Surface level + 92.1 m (+ 302 ft)   Overburden 0.3 m (1.0 ft)
Water not struck   Mineral 3.3 m (11.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter Bedrock 0.4 m+ (1.5 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil and subsoil, pebbly	0.3	(1.0)	0.3	(1.0)
Plateau gravel	'Very clayey' gravel, with slightly pebbly, very clayey sand from 1.8 to 2.4 m Gravel: fine to coarse with scattered cobbles, subangular to rounded flint, quartz and quartzite Sand: medium with some fine and coarse quartz	3.3	(11.0)	3.6	(12.0)
Upper Chalk	Chalk, white, soft to firm	0.4+	(1.5+)	4.0	(13.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	37	+16	32
		-16+4	5
		-4+1	2
Sand	28	$-1+\frac{1}{4}$	20
		$-\frac{1}{4}+1/16$	6
Fines	35	-1/16	35

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0.3 - 1.3	40	40	20
1.3 - 1.8	27	36	37
1.8 - 3.6	34	15	51

SU 67 NE 13   6823 7692   Lilley Farm, Mapledurham   Block A

Surface level +98.0 m (+ 321 ft)   Overburden 1.1 m (3.5 ft)
Water struck at + 94.6 m   Mineral 3.0 m (10.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter Bedrock 0.5 m+ (1.5 ft+)
January 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil and subsoil, pebbly	0.4	(1.5)	0.4	(1.5)
Plateau gravel	Clay, sandy and silty, light brown to orange and reddish brown, with fine to medium flint and quartzite pebbles	0.6	(2.0)	1.0	(3.5)
	Sand, silty, bright orange	0.1	(0.5)	1.1	(3.5)
	'Very clayey' pebbly sand	3.0	(10.0)	4.1	(13.5]
	Gravel: fine to coarse sub-angular to rounded flint with some quartz and quartzite Sand: medium and coarse with some fine quartz and flint				
Reading Beds	Clay, purplish red and bluish green	0.5+	(1.5+)	4.6	(15.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	15	+16	9
		-16+4	6
		-4+1	20
Sand	55	$-1+\frac{1}{4}$	31
		$-\frac{1}{4}+1/16$	4
Fines	30	-1/16	30

Bulk samples

| Depth below surface (m) | Percentages | | |
	Fines	Sand	Gravel
1.1 – 2.2	36	42	22
2.2 – 3.2	23	64	13
3.2 – 4.1	31	60	9

Surface level + 81. 4 m (+ 267 ft)   Overburden 0. 1 m (0. 5 ft)
Water not struck   Mineral 4. 7 m (15. 5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m + (1. 5 ft +)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 1	(0. 5)	0. 1	(0. 5)
Plateau gravel	Gravel	4. 7	(15. 5)	4. 8	(15.5)
	Gravel: fine to coarse, with some cobbles, angular to rounded flint with some quartz and quartzite				
	Sand: medium and coarse with some fine quartz and flint				
Upper Chalk	Chalk, soft, white, with flint nodules	0. 5+	(1. 5+)	5. 3	(17. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	60	+16	23				
		-16+4	37	0. 1 - 1. 1	13	28	59
				1. 1 - 2. 1	7	36	57
		-4+1	13	2. 1 - 3. 1	6	25	69
Sand	31	$-1+\frac{1}{4}$	16	3. 1 - 4. 8	10	33	57
		$-\frac{1}{4}+1/16$	2				
Fines	9	-1/16	9				

Surface level + 38. 6 m (+ 127 ft)   Overburden 0. 6 m (2.0 ft)
Water struck at + 37. 0 m   Mineral 6. 4 m (21. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 4 m+ (1. 5 ft+)
January 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 1	(0. 5)	0. 1	(0. 5)
River terrace	Clay, silty and sandy	0. 5	(1. 5)	0. 6	(2.0)
deposits	Gravel	6. 4	(21.0)	7.0	(23.0)
(undifferentiated)	Gravel: fine to coarse, with				
	cobbles towards base, angular				
	to rounded flint and limestone				
	with ironstone and some quartz				
	and chalk				
	Sand: medium with coarse and				
	some fine quartz, flint and				
	limestone				
Upper Chalk	Chalk, white, with flint nodules	0. 4+	(1. 5+)	7. 4	(24. 5)

GRADING

| Mean for deposit | | | | Bulk samples | | | |
| | | | | Depth below | Percentages | | |
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	49	+16	24				
		-16+4	25	1. 6 - 2. 6	20	78	2
				*2. 6 - 3. 6	2	32	66
		-4+1	13	*3. 6 - 4. 6	1	40	59
Sand	46	-1+$\frac{1}{4}$	28	*4. 6 - 5. 6	0	45	55
		-$\frac{1}{4}$+1/16	5	*5. 6 - 7. 0	4	36	60
Fines	5	-1/16	5				

COMPOSITION

| Depth below | | | Percentages (in 4. 75 to 9 .5 mm fractions) | | |
surface (m)	Flint	Quartz	Limestone	Chalk	Ironstone
1. 6 - 2. 6	Gravel content too low for analysis				
2. 6 - 3. 6	41	5	50	1	3
3. 6 - 4. 6	39	3	45	5	8
4. 6 - 5. 6	45	2	42	5	6
5. 6 - 7.0	19	6	61	3	11
MEAN	33	4	53	3	7

SU 67 NE 16   6909 7961   Wood Lane, Kidmore End   Block A

Surface level + 103. 3 m (+ 338 ft)   Waste 5. 1 m (17.0 ft)
Water not struck   Bedrock 0. 5 m+ (1. 5 ft+)
Shell and auger (modified) 6 in (152 mm) diameter
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1.0)	0. 3	(1.0)
Clay-with-flints	Clay, brown silty and sandy, with scattered flint pebbles	0. 9	(3.0)	1. 2	(4.0)
	Clay, dark reddish brown, with coarse and cobble-size subangular to subrounded flint	3. 6	(12.0)	4. 8	(15.5)
	Clay, silty, reddish brown	0. 3	(1.0)	5. 1	(17.0)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	5. 6	(18. 5)

SU 67 NE 17   6975 7880   Near Cross Farm, Kidmore End   Block A

Surface level + 90.0 m (+ 295 ft)   Waste 3. 2 m (10. 5 ft)
Water not struck   Bedrock 0. 5 m + (1. 5 ft+)
Shell and auger (modified) 6 in (152 mm) diameter
February 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1.0)	0. 3	(1.0)
Clay-with-flints	Clay, sandy, brown, pebbly	0. 8	(2. 5)	1. 1	(3. 5)
	Clay, reddish brown, silty and sandy, with subangular to subrounded coarse and cobble-size flint and quartzite	2. 1	(7.0)	3. 2	(10.5)
Upper Chalk	Chalk, soft with flint nodules	0. 5+	(1. 5+)	3. 7	(12.0)

SU 67 NE 18   6920 7775   Near Chazey Heath, Mapledurham   Block A

Surface level + 95.0 m (+ 312 ft)   Waste 1. 6 m (5. 0 ft)
Water not struck   Bedrock 1. 4 m+ (4. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil and subsoil, pebbly	0. 5	(1. 5)	0. 5	(1. 5)
Clay-with-flints	Clay, silty and sandy, orange yellowish grey and reddish brown, with scattered flint pebbles	1. 1	(3. 5)	1. 6	(5. 0)
Reading Beds	Clay, pale green, mottled purplish red, slightly silty	0. 2	(0. 5)	1. 8	(6.0)
	Sand, light brown to dark green, with thin layers of light green silty clay	0. 4	(1. 5)	2. 2	(7.0)
	Silt, clayey, orange to dark brown	0. 2	(0. 5)	2. 4	(8.0)
Upper Chalk	Chalk, soft, with a layer of flint nodules at top	0. 6+	(2.0+)	3.0	(10.0)

Surface level + 79.2 m (+ 260 ft)   Overburden 3.4 m (11.0 ft)
Water not struck   Mineral 11.0 m (36.0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 1.0 m+ (3.5 ft +)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Clay-with-flints	Clay, silty and sandy with flint pebbles in upper 0.2 m	1.6	(5.0)	1.8	(6.0)
	Clay, light brown, with fine to medium flint	0.4	(1.5)	2.2	(7.0)
	Clay, silty and sandy, orange-brown with black patches	1.2	(4.0)	3.4	(11.0)
Plateau gravel	'Clayey' gravel, with a clay band from 7.6 to 7.8 m	11.0	(36.0)	14.4	(47.0)
	Gravel: fine to coarse, with scattered cobbles, subangular to rounded flint with some quartz and quartzite				
	Sand: medium with coarse and some fine quartz				
Upper Chalk	Chalk	1.0+	(3.5+)	15.4	(50.5)

GRADING

Mean for deposit

	%	mm	%
Gravel	48	+16	24
		-16+4	24
		-4+1	8
Sand	36	-1+$\frac{1}{4}$	25
		-$\frac{1}{4}$+1/16	3
Fines	16	-1/16	16

Bulk samples

Depth below surface (m)	Fines	Sand	Gravel
		Percentages	
3.4 - 4.4	3	31	66
4.4 - 5.4	16	31	53
5.4 - 6.2	14	43	43
6.2 - 7.6	16	34	50
7.6 - 7.8		CLAY	
7.8 - 8.8	47	50	3
8.8 - 9.8	22	43	35
9.8 - 10.8	9	46	45
10.8 - 11.8	9	28	63
11.8 - 12.8	9	41	50
12.8 - 13.8	12	25	63
13.8 - 14.4	13	25	62

Surface level (+ 77. 3 m) + 254 ft
Water not struck
Shell and auger (modified)   6 in (152 mm) diameter
October 1972

Overburden 0. 3 (1. 0 ft)
Mineral 11. 4 m (37. 5 ft)
Bedrock 0. 8 m+ (2. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Plateau gravel	'Clayey' gravel	11. 4	(37. 5)	11. 7	(38. 5)
	Gravel: fine to coarse, scattered cobbles, subangular to rounded flint, quartz and quartzite with a trace of limestone and sandstone				
	Sand: medium with coarse and some fine quartz				
Upper Chalk	Chalk	0. 8+	(2. 5+)	12. 5	(41.0)

GRADING

Mean for deposit

	%	mm	%
Gravel	52	+16	31
		-16+4	21
		-4+1	8
Sand	30	$-1+\frac{1}{4}$	20
		$-\frac{1}{4}+1/16$	2
Fines	18	-1/16	18

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
0. 3 - 1. 4	17	22	61
1. 4 - 2. 4	22	32	46
2. 4 - 3. 4	22	32	46
3. 4 - 4. 4	17	33	50
4. 4 - 5. 4	25	39	36
5. 4 - 6. 4	8	22	70
6. 4 - 7. 4	16	29	55
7. 4 - 8. 4	20	35	45
8. 4 - 9. 4	14	23	63
9. 4 - 10.4	14	29	57
10.4 - 11.7	20	33	47

SU 67 SW 40   6033 7485   Herons Farm, Bradfield   Block C

Surface level (+ 93. 3 m) + 306 ft   Waste 2. 8 m (9. 0 ft)
Water not struck   Bedrock 0. 5 m+ (1. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil and made ground	0. 3	(1.0)	0. 3	(1.0)
Clay-with-flints	Clay, silty, light brown, with scattered fine to coarse flint pebbles	2. 5	(8.0)	2. 8	(9.0)
Upper Chalk	Chalk, soft, with flint nodules	0. 5+	(1. 5+)	3. 3	(11.0)

Surface level (+ 52.2 m)   + 172 ft   Overburden 0.4 m (1.5 ft)
Water struck at (+ 51.4 m)   Mineral 7.3 m (24.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m + (1.5 ft +)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.1	(0.5)	0.1	(0.5)
Alluvium	Clay, silty, slightly sandy, peaty dark brown	0.3	(1.0)	0.4	(1.5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, scattered cobbles, mainly subangular to subrounded flint with a trace of well rounded quartz Sand: medium and coarse with some fine quartz	7.3	(24.0)	7.7	(25.5)
Upper Chalk	Chalk, white, with flint nodules	0.5+	(1.5+)	8.2	(27.0)

GRADING

Mean for deposit					Bulk samples			
					Depth below		Percentages	
	%	mm	%		surface (m)	Fines	Sand	Gravel
Gravel	70	+16	34		*0.4 - 1.4	3	35	62
		-16+4	36		*1.4 - 2.4	4	14	82
					*2.4 - 3.4	3	22	75
		-4+1	10		*3.4 - 4.4	2	38	60
Sand	26	-1+$\frac{1}{4}$	14		*4.4 - 5.4	4	21	75
		-$\frac{1}{4}$+1/16	2		*5.4 - 6.4	3	25	72
					*6.4 - 7.7	5	27	68
Fines	4	-1/16	4					

Surface level (+ 89. 9 m) + 295 ft
Water struck at (+ 83 . 7 m)
Shell and auger (modified)   6 in (152 mm) diameter
October 1972

Overburden 0. 3 m (1. 0 ft)
Mineral 3. 9 m (13. 0 ft)
Bedrock 4. 2 m+ (14. 0 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Plateau gravel	'Very clayey' gravel 　Gravel: fine to coarse, mainly 　　subangular to well rounded 　　flint with a trace of quartzite 　Sand: medium and coarse with 　　fine quartz, brown to grey	3. 9	(13. 0)	4. 2	(14. 0)
Reading Beds	Clay, silty, orange brown and 　grey in mottles and stripes	0. 8	(2. 5)	5. 0	(16. 5)
	Silt, clayey, orange brown	2. 8	(9. 0)	7. 8	(25. 5)
	Clay, yellowish brown, 　mottled red and blue	0. 6+	(2. 0+)	8. 4	(27. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	49	+16	12
		-16+4	37
		-4+1	11
Sand	30	$-1+\frac{1}{4}$	16
		$-\frac{1}{4}+1/16$	3
Fines	21	-1/16	21

Bulk samples

Depth below	Percentages		
surface (m)	Fines	Sand	Gravel
0. 3 – 1. 3	15	22	63
1. 3 – 2. 3	23	30	47
2. 3 – 3. 3	24	36	40
3. 3 – 4. 2	20	32	48

SU 67 SW 43   6113 7457   Great Bear, Pangbourne   Block C

Surface level (+ 89. 9 m) + 295 ft   Waste 4. 7 m (15. 5 ft)
Water not struck   Bedrock 0. 5 m+ (1. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Clay-with-flints	Clay, sandy, brown, with scattered flint pebbles up to cobble size	0. 4	(1. 5)	0. 6	(2. 0)
	Clay, silty, reddish brown mottled grey, with fine to medium flint pebbles	0. 9	(3. 0)	1. 5	(5. 0)
	Clay, sandy, orange brown mottled reddish brown, and fine to medium flint gravel	0. 8	(2. 5)	2. 3	(7. 5)
	Clay, sandy, with a few lenses of flint gravel	2. 4	(8. 0)	4. 7	(15. 5)
Upper Chalk	Chalk, with large flint nodules	0. 5+	(1. 5+)	5. 2	(17. 0)

GRADING

Mean for deposit

	%	mm	%
Gravel	44	+16	21
		-16+4	23
Sand	12	-4+1	6
		$-1+\frac{1}{4}$	3
		$-\frac{1}{4}+1/16$	3
Fines	44	-1/16	44

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
1. 5 - 2. 3	44	12	44

68

Surface level (+ 90.2 m) + 296 ft
Water not struck
Shell and auger (modified) 6 in (152 mm) diameter
March 1972

Waste 1.7 m (5.5 ft)
Bedrock 8.3 m+ (27.0 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
Plateau gravel	Clay, silty and sandy, dark brown, with a few flint pebbles	0.6	(2.0)	0.8	(2.5)
	Clay, silty, orange brown mottled grey, with a few flint pebbles	0.9	(3.0)	1.7	(5.5)
London Clay	Clay, silty, light brown mottled grey	6.2	(20.5)	7.9	(26.0)
	Siltstone, orange brown with shells	0.4	(1.5)	8.3	(27.0)
	Clay, silty, greyish brown mottled orange, numerous shells	1.7+	(5.5+)	10.0	(33.0)

SU 67 SW 45   6240 7455   Tidmarsh Lane, Tidmarsh   Block C

Surface level (+ 84. 7 m) + 278 ft   Overburden 0. 3 m (1. 0 ft)
Water not struck   Mineral 6. 8 m (22. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Plateau gravel	'Very clayey' gravel 　Gravel: fine to coarse, cobbles 　　towards base, subangular to 　　subrounded flint, trace of well 　　rounded quartz 　Sand: medium with coarse and 　　fine quartz, reddish brown	6. 8	(22. 5)	7. 1	(23. 5)
Upper Chalk	Chalk, soft, with large flint 　nodules	0. 5+	(1. 5+)	7. 6	(25. 0)

GRADING

Mean for deposit

	%	mm	%
Gravel	43	+16	16
		-16+4	27
		-4+1	8
Sand	33	$-1+\frac{1}{4}$	20
		$-\frac{1}{4}+1/16$	5
Fines	24	-1/16	24

Bulk samples

Depth below	Percentages		
surface (m)	Fines	Sand	Gravel
0. 3 - 1. 3	34	32	34
1. 3 - 2. 3	42	36	22
2. 3 - 3. 3	31	44	25
3. 3 - 4. 3	20	37	43
4. 3 - 5. 3	14	31	55
5. 3 - 6. 3	12	28	60
6. 3 - 7. 1	17	23	60

Surface level (+47.5 m) +156 ft
Water struck at (+46.2 m)
Shell and auger (modified) 6 in (152 mm) diameter
March 1972

Overburden 1.3 m (4.5 ft)
Mineral 8.1 m (26.5 ft)
Bedrock 0.5 m+ (1.5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.3	(1.0)	0.3	(1.0)
Alluvium	Clay, sandy, brown, with scattered pebbles	0.4	(1.5)	0.7	(2.5)
	Peat, silty, dark brown, with wood fragments	0.6	(2.0)	1.3	(4.5)
River terrace deposits (undifferentiated)	Sandy gravel Gravel: fine to coarse scattered cobbles, sub-angular to rounded flint with a trace of quartz. Chalk in basal 2.8 m Sand: coarse with medium and some fine quartz	8.1	(26.5)	9.4	(31.0)
Upper Chalk	Chalk, with flint	0.5+	(1.5+)	9.9	(32.5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	45	+16	40	*1.3 - 2.3	5	25	70
		-16+4	5	*2.3 - 3.3	1	20	79
				*3.3 - 4.3	3	29	68
		-4+1	34	*4.3 - 5.3	6	16	78
Sand	48	-1+¼	12	*5.3 - 6.6	9	24	67
		-¼+1/16	2	*6.6 - 7.6	12	21	67
				*7.6 - 8.6	14	26	60
				*8.6 - 9.4	7	12	81
Fines	7	-1/16	7				

Surface level (+ 47.9 m) + 157 ft   Overburden 0.9 m (3.0 ft)
Water struck at (+ 45.3 m)   Mineral 6.8 m (22.5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5)
River terrace deposits (undifferentiated)	Clay, silty and sandy, with fine to medium flint gravel	0.7	(2.5)	0.9	(3.0)
	Gravel, with clayey silt from 4.8 to 5.9 m	6.8	(22.5)	7.7	(25.5)
	Gravel: fine, with some coarse, subangular to subrounded flint with a trace of quartz				
	Sand: medium with coarse and fine quartz				
Upper Chalk	Chalk, soft	0.5+	(1.5+)	8.2	(27.0)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%		mm	%		Fines	Sand	Gravel
Gravel	74		+16	39	0.9 - 1.9	7	23	70
			-16+4	35	1.9 - 2.9	5	35	60
					2.9 - 3.9	1	19	80
			-4+1	8	*3.9 - 4.8	4	24	72
Sand	22		-1+¼	12	4.8 - 5.9	CLAYEY SILT		
			-¼+1/16	2	*5.9 - 6.9	3	16	81
					*6.9 - 7.7	3	18	79
Fines	4		-1/16	4				

Surface level (+ 50. 3 m) + 165 ft
Water struck at (+ 45. 2 m)
Shell and auger (modified)   6 in (152 mm) diameter
March 1972

Overburden 1. 0 m (3. 5 ft)
Mineral 6. 3 m (20. 5 ft)
Bedrock 0. 8 m+ (2. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Clay, silt and sand, with fine to medium flint gravel	0. 8	(2. 5)	1. 0	(3. 5)
	Gravel Gravel: fine to coarse with scattered cobbles, subangular to rounded flint Sand: medium and coarse with some fine quartz	6. 3	(20. 5)	7. 3	(24. 0)
Reading Beds	Clay, silty, olive green, mottled brown	0. 3	(1. 0)	7. 6	(25. 0)
	Clay, silty, bluish grey	0. 5+	(1. 5+)	8. 1	(26. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	62	+16	12
		-16+4	50
		-4+1	12
Sand	31	$-1+\frac{1}{4}$	16
		$-\frac{1}{4}+1/16$	3
Fines	7	-1/16	7

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
1. 0 - 2. 0	23	27	50
2. 0 - 3. 0	6	23	71
3. 0 - 4. 0	6	33	61
4. 0 - 5. 0	3	29	68
*5. 0 - 6. 0	1	26	73
*6. 0 - 7. 3	3	48	49

SU 67 SW 49   6380 7437   Near Tidmarsh Grange, Tidmarsh   Block D

Surface level (+ 44. 2 m) + 145 ft   Overburden 0. 2 m (0.5 ft)
Water struck at (43. 5 m)   Minerals 5. 4 m (17.5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

<div align="center">LOG</div>

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, cobbles in lower part, angular to subrounded flint Sand: medium and coarse with some fine quartz and flint	5. 4	(17.5)	5. 6	(18. 5)
Upper Chalk	Chalk, with flint	0. 5+	(1. 5+)	6. 1	(20. 0)

<div align="center">GRADING</div>

Mean for deposit				Bulk samples			
	%	mm	%	Depth below surface (m)	Fines	Sand	Gravel
					Percentages		
Gravel	68	+16	21	0. 2 - 1. 2	1	26	73
		-16+4	47	*1. 2 - 2. 2	1	17	82
				*2. 2 - 3. 2	1	21	78
		-4+1	11	*3. 2 - 4. 2	3	29	68
Sand	30	-1+$\frac{1}{4}$	17	*4. 2 - 5. 6	3	27	70
		-$\frac{1}{4}$+1/16	2				
Fines	2	-1/16	2				

SU 67 SW 50   6398 7371   Moor Copse, Tidmarsh   Block D

Surface level (+ 44.5m) + 146 ft   Overburden 0.8 m (2.5 ft)
Water struck at (+ 43.2 m)   Mineral 6.6 m (21.5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
March 1972

<div align="center">LOG</div>

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.3	(1.0)	0.3	(1.0)
Alluvium	Clay, silty, dark brown with a little sand and scattered flint pebbles	0.1	(0.5)	0.4	(1.5)
	Clay, sandy, grey mottled orange brown, with scattered flint pebbles	0.4	(1.5)	0.8	(2.5)
River terrace deposits (undifferentiated)	Gravel	6.6	(21.5)	7.4	(24.5)
	Gravel: fine to coarse subangular to subrounded flint				
	Sand: medium and coarse with fine quartz				
Upper Chalk	Chalk, with flint nodules	0.5+	(1.5+)	7.9	(26.0)

<div align="center">GRADING</div>

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%	mm	%			Fines	Sand	Gravel
Gravel	75	+16	37		0.8 - 1.8	31	25	44
		-16+4	38		*1.8 - 2.8	7	20	73
					*2.8 - 3.8	2	10	88
		-4+1	7		*3.8 - 4.8	2	21	77
Sand	18	-1+$\frac{1}{4}$	8		*4.8 - 5.8	2	22	76
		-$\frac{1}{4}$+1/16	3		*5.8 - 7.4	2	13	85
Fines	7	-1/16	7					

SU 67 SW 51   6304 7296   Chalkpit Farm, Englefield   Block D

Surface level (+ 51. 2 m) + 168 ft   Waste 1. 0 m (3. 5 ft)
Water not struck   Bedrock 0. 5 m+ (1. 5 ft+)
Shell and auger (modified)   6 in (152 mm) diameter
October 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 4	(1. 5)	0. 4	(1. 5)
River terrace deposits (undifferentiated)	Clay, sand and fine to medium flint gravel with a trace of quartz and quartzite	0. 6	(2. 0)	1. 0	(3. 5)
Upper Chalk	Chalk	0. 5+	(1. 5+)	1. 5	(5. 0)

Surface level (+ 46.0 m) + 151 ft   Overburden 1.3 m (4.5 ft)
Water struck at (+ 44.2 m)   Mineral 4.9 m (16.0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0.5 m+ (1.5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.3	(1.0)	0.3	(1.0)
River terrace deposits (undifferentiated	Clay, silt and sand, with fine to medium flint gravel	1.0	(3.5)	1.3	(4.5)
	Gravel Gravel: fine to coarse, scattered cobbles, sub-angular to subrounded flint. Trace of Chalk from 4.2 m to base Sand: medium and coarse with fine quartz	4.9	(16.0)	6.2	(20.5)
Upper Chalk	Chalk with flint nodules	0.5+	(1.5+)	6.7	(22.0)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	75	+16	39	1.3 - 2.3	1	21	78
		-16+4	36	*2.3 - 3.3	1	25	74
				*3.3 - 4.3	6	26	68
		-4+1	9	*4.3 - 5.3	4	21	75
Sand	22	-1+$\frac{1}{4}$	8	*5.3 - 6.2	4	14	82
		-$\frac{1}{4}$+1/16	5				
Fines	3	-1/16	3				

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SU 67 SW 53   6388 7155   Theale   Block E

Surface level (+ 47. 2 m) + 155 ft   Overburden 0. 4 m (1. 5 ft)
Water struck at (+ 43. 3 m)   Mineral 7. 4 m (24. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 4	(1. 5)	0. 4	(1. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, subangular to subrounded flint Sand: medium with coarse and fine quartz	7. 4	(24. 5)	7. 8	(25. 5)
Upper Chalk	Chalk, soft, white, with flint nodules	0. 5+	(1. 5+)	8. 3	(27. 0)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	70	+16	35	0. 4 - 1. 2	19	20	61
		-16+4	35	1. 2 - 2. 2	4	25	71
				2. 2 - 3. 2	9	32	59
		-4+1	7	3. 2 - 4. 2	2	26	72
Sand	23	$-1+\frac{1}{4}$	13	*4. 2 - 5. 2	1	11	88
		$-\frac{1}{4}+1/16$	3	*5. 2 - 6. 2	1	17	82
				*6. 2 - 6. 9	4	21	75
Fines	7	-1/16	7	*6. 9 - 7. 8	20	31	49

SU 67 SW 54   6316 7074   Theale Green, Theale   Block E

Surface level (+ 48. 2 m) + 158 ft   Overburden 1. 3 m (4. 5 ft)
Water struck at (+ 45. 0 m)   Mineral 4. 8 m (15.5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Made ground	1. 3	(4. 5)	1. 3	(4. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse subangular to rounded flint with a trace of rounded quartz Sand: medium and coarse with fine quartz and flint	4. 8	(15.5)	6. 1	(20.0)
Reading Beds	Clay, silty, dark grey	0. 5+	(1. 5+)	6. 6	(21. 5)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%		mm	%		Fines	Sand	Gravel
Gravel	77		+16	50	1. 3 – 2. 3	5	25	70
			-16+4	27	2. 3 – 3. 3	6	23	71
					*3. 3 – 4. 3	5	2	93
			-4+1	6	*4. 3 – 5. 3	8	17	75
Sand	17		$-1+\frac{1}{4}$	9	*5. 3 – 6. 1	7	14	79
			$-\frac{1}{4}+1/16$	2				
Fines	6		-1/16	6				

Surface level (+ 91.1 m) + 299 ft
Water not struck
Shell and auger (modified)   6 in (152 mm) diameter
March 1972

Overburden 11.6 m (35.0 ft)
Mineral 9.7 m (32.0 ft)
Bedrock 0.5 m+ (1.5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.2	(0.5)	0.2	(0.5
Plateau gravel	Clay, sandy, scattered flint pebbles	0.4	(1.5)	0.6	(2.0)
	Clay, silt and sand, trace of fine flint gravel, reddish orange brown, greyish brown at base	3.7	(12.0)	4.3	(14.0)
	Clay, silt and sand, orange-brown, grey, reddish brown and greenish brown, trace of fine to medium flint gravel	7.3	(24.0)	11.6	(38.0)
	'Very clayey' gravel Gravel: fine to coarse, scattered cobbles, subangular to rounded flint Sand: medium with coarse and fine quartz	9.7	(32.0)	21.3	(70.0)
Upper Chalk	Chalk, with flint nodules	0.5+	(1.5+)	21.8	(71.5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	44	+16	21	11.6 - 12.6	28	34	38
		-16+4	23	12.6 - 13.6	22	40	38
				13.6 - 14.6	39	24	37
		-4+1	8	14.6 - 15.6	16	22	62
Sand	32	$-1+\frac{1}{4}$	18	15.6 - 16.6	12	45	43
		$-\frac{1}{4}+1/16$	6	16.6 - 17.6	15	49	36
				17.6 - 18.6	35	41	24
Fines	24	-1/16	24	18.6 - 19.6	43	19	38
				19.6 - 21.3	15	19	66

Surface level (+ 45. 7 m) + 150 ft   Overburden 1. 1 m (3. 5 ft)
Water struck at (+ 42. 4 m)   Mineral 5. 6 m (18. 5 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
October 1972

LOG

| | | Thickness | | Depth | |
		m	ft	m	ft
	Soil	0. 3	(1.0)	0. 3	(1.0)
River terrace deposits (undifferentiated)	Clay, sandy, with some fine flint gravel	0. 8	(2. 5)	1. 1	(3. 5)
	Gravel	5. 6	(18. 5)	6. 7	(22.0)
	Gravel: fine to coarse scattered cobbles, angular to subrounded flint with some quartz and quartzite. Some chalk from 6.1 m to base				
	Sand: medium with coarse and some fine quartz and flint				
Upper Chalk	Chalk	0. 5+	(1. 5+)	8. 2	(27.0)

GRADING

| Mean for deposit | | | | Bulk samples | | | |
	%	mm	%	Depth below surface (m)	Fines	Sand	Gravel
Gravel	74	+16	37	1.1 - 2.1	8	28	64
		-16+4	37	2.1 - 3.1	10	29	61
				*3.1 - 4.1	3	21	76
		-4+1	8	*4.1 - 5.1	1	18	81
Sand	22	-1+¼	12	*5.1 - 6.1	1	12	87
		-¼+1/16	2	*6.1 - 6.7	2	18	80
Fines	4	-1/16	4				

Surface level (+ 44. 8 m) + 147 ft   Overburden 0. 7 m (2. 5 ft)
Water struck at (+ 44. 1 m)   Mineral 5. 4 m (17.5 ft)
Shell and auger (modified)   6 in (152 mm) diameter Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Alluvium	Clay, silty, brown, with scattered fine flint pebbles	0. 5	(1. 5)	0. 7	(2. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse scattered cobbles, subangular to rounded flint with trace of chalk below 5.2 m Sand: medium and coarse with some fine quartz	5. 4	(17.5)	6. 1	(20.0)
Upper Chalk	Chalk, soft with flint nodules	0. 5+	(1. 5+)	6. 6	(21. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	81	+16	44	*0. 7 - 1. 7	6	11	83
		-16+4	37	*1. 7 - 2. 7	1	25	74
				*2. 7 - 3. 7	1	11	88
		-4+1	7	*3. 7 - 4. 7	3	32	65
Sand	17	-1+$\frac{1}{4}$	7	*4. 7 - 6. 1	1	7	92
		-$\frac{1}{4}$+1/16	3				
Fines	2	-1/16	2				

Surface level (+ 46. 3 m) + 152 ft   Overburden 2.0 m (6. 5 ft)
Water struck at (+ 44. 3 m)   Mineral 3. 2 m (10. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
April 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1.0)	0. 3	(1.0)
Alluvium	Clay, silty, firm, greyish brown, with scattered, small gastropod shells	0. 1	(0. 5)	0. 4	(1. 5)
	Clay, silty, firm to soft, light brownish grey mottled and streaked reddish brown, scattered gastropod shells	0. 4	(1. 5)	0. 8	(2. 5)
	Clay, firm to soft, orange and reddish brown, scattered gastropod shells	0. 1	(0. 5)	0. 9	(3. 0)
	Clay, very soft, dark grey	0. 5	(1. 5)	1. 4	(4. 5)
	Peat, silty, soft, dark brown	0. 3	(1. 0)	1. 7	(5. 5)
	Silt, clayey, very soft, grey	0. 3	(1. 0)	2. 0	(6. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, some cobbles, subangular to sub-rounded flint Sand: medium and coarse with some fine quartz and flint	3. 2	(10. 5)	5. 2	(17.0)
Reading Beds	Clay, shaly, firm, pale green mottled red and light brown	0. 5+	(1. 5+)	5. 7	(18. 5)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%	mm	%			Fines	Sand	Gravel
Gravel	80	÷16	44		*2. 0 - 3. 0	2	5	93
		-16	36		*3. 0 - 4. 0	1	22	77
					*4. 0 - 5. 2	4	25	71
Sand	18	-4+1	8					
		-1+$\frac{1}{4}$	9					
		-$\frac{1}{4}$+1/16	1					
Fines	2	-1/16	2					

Surface level (+ 93.3 m) + 306 ft

Water struck at (+ 91.1 m)

Shell and auger (modified) 6 in (152 mm) diameter

May 1972

Overburden 0.1 m (0.5 ft)

Mineral 4.0 m (13.0 ft)

Bedrock 1.0 m+ (3.5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0.1	(0.5)	0.1	(0.5)

Plateau gravel	'Very clayey' gravel
	  Gravel: fine to coarse,
	    scattered cobbles, mainly
	    subangular to subrounded
	    flint with some rounded quartz
	  Sand: medium and coarse with
	    fine, mainly quartz with some
	    flint
		4.0	(13.0)	4.1	(13.5)

Reading Beds	Clay, mottled grey, red and orange	1.0+	(3.5+)	5.1	(17.0)

GRADING

Mean for deposit				Bulk samples Depth below	Percentages		
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	47	+16	16	0-¹ - 0.6	19	44	37
		-16+4	31	0.6 - 1.2	57	15	28
				1.2 - 2.2	11	31	58
		-4+1	12	2.2 - 3.2	[16	32	52]
Sand	30	-1+¼	13	3.2 - 4.1	21	32	47
		-¼+1/16	5				
Fines	23	-1/16	23				

Surface level (+ 104. 2 m) + 342 ft
Water not struck
Shell and auger (modified)   6 in (152 mm) diameter
May 1972

Overburden 0. 7 m (2. 5 ft)
Mineral 3. 2 m (10. 5 ft)
Waste 0. 4 m (1. 5 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 7	(2. 5)	0. 7	(2. 5)
Plateau gravel	'Very clayey' sandy gravel Gravel: fine to coarse, scattered cobbles. Mainly quartz with flint in upper 1.0 m; quartz and flint in approximately equal proportions in lower 2.2 m Sand: medium with coarse and fine, mainly quartz with a little flint	3. 2	(10. 5)	3. 9	(13. 0)
	Clay, orange brown, grey and red with scattered flint pebbles	0. 4	(1. 5)	4. 3	(14. 0)
London Clay	Clay, bluish grey, mottled brown red and orange	0. 5+	(1. 5+)	4. 8	(15. 5)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages Fines	 Sand	 Gravel
	%		mm	%				
Gravel	35		+16	19	0. 7 - 1. 7	24	43	33
			-16+4	16	1. 7 - 2. 7	19	45	36
					2. 7 - 3. 9	19	44	37
			-4+1	9				
Sand	44		$-1+\frac{1}{4}$	33				
			$-\frac{1}{4}+1/16$	2				
Fines	21		-1/16	21				

Surface level (+ 44. 2 m) + 145 ft   Overburden 0. 7 m (2. 5 ft)
Water struck at (+ 43. 5 m)   Mineral 6. 1 m (20. 0 ft)
Shell and auger (modified)   6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
April 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Alluvium	Clay, silty, orange brown passing to light greyish brown	0. 2	(0. 5)	0. 4	(1. 5)
	Clay, peaty, soft, dark grey to black	0. 3	(1. 0)	0. 7	(2. 5)
River terrace deposits (undifferentiated)	Gravel	6. 1	(20.0)	6. 8	(22. 5)
	Gravel: fine to coarse, scattered cobbles. Mainly subangular to subrounded flint with a trace of quartz, sandstone, limestone and chalk				
	Sand: medium and coarse with fine quartz, with some flint				
Upper Chalk	Chalk, white, firm	0. 5+	(1. 5+)	7. 3	(24.0)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%		mm	%		Fines	Sand	Gravel
Gravel	82		+16	47	*0. 7 - 1. 7	3	20	77
			-16+4	35	*1. 7 - 2. 7	2	9	89
			-4+1	7	*2. 7 - 3. 7	1	19	80
Sand	17		-1+$\frac{1}{4}$	8	*3. 7 - 4. 7	1	16	8 3
			-$\frac{1}{4}$+1/16	2	*4. 7 - 5. 7	0	16	84
Fines	1		-1/16	1	*5. 7 - 6. 8	1	19	80

Surface level (+ 42. 7 m) + 140 ft
Water struck at (+ 40. 8)
Shell and auger (modified) 6 in (152 mm) diameter
April 1972

Overburden 0. 3 m (1.0 ft)
Mineral 6. 1 m (20. 0 ft)
Bedrock 0. 7 m+ (2. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0, 3	(1. 0)	0. 3	(1. 0)
River terrace deposits (undifferentiated)	Gravel	6. 1	(20.0)	6. 4	(21.0)
	Gravel: fine to coarse and a trace of cobbles, mainly subangular to subrounded flint and a trace of rounded quartz				
	Sand: medium and coarse with fine quartz				
Reading Beds	Clay, silty, greenish blue	0. 7+	(2. 5+)	7. 1	(23. 5)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	77	+16	43				
		-16+4	34	0. 3 – 1. 3	6	23	71
				*1. 3 – 2. 3	2	29	69
		-4+1	8	*2. 3 – 3. 3	3	23	74
Sand	18	-1+$\frac{1}{4}$	9	*3. 3 – 4. 3	5	9	86
		-$\frac{1}{4}$+1/16	1	*4. 3 – 5. 3	4	15	81
				*5. 3 – 6. 4	9	6	85
Fines	5	-1/16	5				

Surface level (+ 42. 1 m) + 138 ft
Water struck at (+ 41. 1 m)
Shell and auger (modified) 6 in (152 mm) diameter
April 1972

Overburden 1. 0 m (3. 5 ft)
Mineral 7. 2 m (23. 5 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Alluvium	Clay, silty and sandy, greyish brown to orange brown, scattered small gastropod shells	0. 8	(2. 5)	1. 0	(3. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, mainly subangular to rounded flint with a trace of rounded quartz, sandstone and chalk Sand: medium and coarse with fine quartz and flint	7. 2	(23. 5)	8. 2	(27. 0)
Upper Chalk	Chalk, firm, white	0. 5+	(1. 5+)	8. 7	(28. 5)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%		mm	%		Fines	Sand	Gravel
Gravel	80		+16	44	*1.0 - 2.0	6	24	70
			-16+4	36	*2.0 - 3.0	1	16	83
					*3.0 - 4.0	3	19	78
			-4+1	7	*4.0 - 5.0	1	15	84
Sand	18		$-1+\frac{1}{4}$	10	*5.0 - 6.0	1	20	79
			$-\frac{1}{4}+1/16$	1	*6.0 - 7.0	1	16	83
					*7.0 - 8.2	1	16	83
Fines	2		-1/16	2				

Surface level (+ 42. 4 m) + 139 ft   Overburden 0. 2 m (0. 5 ft)
Water struck at (+ 41. 2 m)   Mineral 9. 6 m (31. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
April 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, dominantly subangular to subrounded flint with a trace of rounded vein quartz and limestone Sand: medium with coarse and fine quartz and some flint	9. 6	(31. 5)	9. 8	(32.0)
Reading Beds	Clay, silty, greyish blue	0. 5+	(1. 5+)	10. 3	(34.0)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%	mm	%			Fines	Sand	Gravel
Gravel	62	+16	37		0. 2 - 1. 2	10	39	51
		-16+4	25		*1. 2 - 2. 2	1	34	65
					*2. 2 - 3. 2	4	3	93
		-4+1	6		*3. 2 - 4. 2	1	8	91
Sand	34	$-1+\frac{1}{4}$	26		*4. 2 - 5. 2	4	21	75
		$-\frac{1}{4}+1/16$	2		*5. 2 - 6. 2	2	11	87
					*6. 2 - 7. 6	1	6	93
Fines	4	-1/16	4		*7. 6 - 8. 6	6	93	1
					*8. 6 - 9. 8	4	96	0

Surface level (+ 36. 6 m) + 120 ft   Overburden 2. 9 m (9. 5 ft)
Water struck at (+ 33. 7 m)   Mineral 3. 3 m (11. 0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 6 m+ (2.0 ft+)
January 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
Alluvium	Clay, silty, brown	0. 3	(1. 0)	0. 5	(1. 5)
	Silt, clayey, greyish green mottled brown, with scattered pebbles	2. 0	(6. 5)	2. 5	(8. 0)
	Peat, dark greyish brown, with small fragmentary shells	0. 4	(1. 5)	2. 9	(9. 5)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, subangular to well rounded limestone and flint with quartz and ironstone and some chalk Sand: coarse and medium with fine, mainly quartz, with a trace of flint and chalk	3. 3	(11.0)	6. 2	(20.5)
Upper Chalk	Chalk, with flint nodules	0. 6+	(2.0+)	6. 8	(22. 5)

GRADING

Mean for deposit				Bulk samples			
				Depth below	Percentages		
	%	mm	%	surface (m)	Fines	Sand	Gravel
Gravel	68	+16	30	*2. 9 - 3. 9	6	26	68
		-16+4	38	*3. 9 - 4. 9	2	36	62
				*4. 9 - 6. 2	1	26	73
		-4+1	16				
Sand	29	$-1+\frac{1}{4}$	11				
		$-\frac{1}{4}+1/16$	2				
Fines	3	-1/16	3				

COMPOSITION

Depth below surface (m)		Percentages (in 4. 75 to 9. 5 mm fraction)			
	Flint	Quartz	Limestone	Chalk	Ironstone
2. 9 - 3. 9	51	4	30	7	8
3. 9 - 4. 9	22	8	64	1	5
4. 9 - 6. 2	23	11	56	4	6
MEAN	26	9	56	3	6

Surface level (+ 40. 5 m) + 133 ft   Overburden 2. 8 m (9. 0 ft)
Water struck at (+ 39. 1 m)   Mineral 4. 2 m (14. 0 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
April 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 3	(1. 0)	0. 3	(1. 0)
Alluvium	Clay, sandy, light brown mottled orange brown, with scattered flint pebbles	0. 3	(1. 0)	0. 6	(2. 0)
	Silt, sandy, light grey, with shell fragments	0. 2	(0. 5)	0. 8	(2. 5)
	Silt, sandy and peaty, dark brown, with trace of fine flint gravel	2. 0	(6. 5)	2. 8	(9. 0)
River terrace deposits (undifferentiated)	Gravel Gravel: fine to coarse, scattered cobbles, mainly subangular to rounded flint with a trace of quartz and chalk Sand: medium to coarse quartz and flint	4. 2	(14. 0)	7. 0	(23. 0)
Reading Beds	Clay, silty, green, mottled brown and blue	0. 5+	(1. 5+)	7. 5	(24. 5)

GRADING

Mean for deposit

	%	mm	%
Gravel	91	+16	51
		-16+4	40
		-4+1	3
Sand	7	-1+$\frac{1}{4}$	4
		-$\frac{1}{4}$+1/16	0
Fines	2	-1/16	2

Bulk samples

Depth below surface (m)	Percentages		
	Fines	Sand	Gravel
*2. 8 – 3. 8	2	6	92
*3. 8 – 4. 8	1	4	95
*4. 8 – 5. 8	0	3	97
*5. 8 – 7. 0	3	17	80

Surface level (+ 37. 5 m) + 123 ft
Water struck at (+ 37. 3 m)
Shell and auger (modified) 6 in (152 mm) diameter
March 1972

Overburden 3. 7 m (12. 0 ft)
Mineral 4. 4 m (14. 5 ft)
Bedrock 0. 5 m+ (1. 5 ft+)

LOG

		Thickness m	ft	Depth m	ft
	Made ground	0. 4	(1. 5)	0. 4	(1. 5)
Alluvium	Clay, silty, light brown at top passing to greenish brown and blue at base	2. 6	(8. 5)	3. 0	(10.0)
	Peat, dark brown	0. 7	(2. 5)	3. 7	(12.0)
River terrace deposits (undifferentiated)	Gravel	4. 4	(14. 5)	8. 1	(26. 5)
	Gravel: fine to coarse sub-angular to rounded limestone and flint with well rounded chalk and ironstone and some quartz				
	Sand: coarse, with medium and trace of fine oolitic limestone and quartz				
Upper Chalk	Chalk, with flint nodules	0. 5+	(1. 5÷)	8. 6	(28.0)

GRADING

Mean for deposit				Bulk samples Depth below surface (m)	Percentages		
	%	mm	%		Fines	Sand	Gravel
Gravel	51	+16	22	*3. 4 - 4. 7	6	47	47
		-16+4	29	*4. 7 - 5. 7	2	47	51
				*5. 7 - 6. 7	2	44	54
		-4+1	27	*6. 7 - 8. 1	3	43	54
Sand	45	$-1+\frac{1}{4}$	16				
		$-\frac{1}{4}+1/16$	2				
Fines	4	-1/16	4				

COMPOSITION

Depth below surface (m)	Flint	Quartz	Percentages (in 4. 75 to 9. 5 mm fraction) Limestone	Chalk	Ironstone
3. 4 - 4. 7	9	3	65	3	10
4. 7 - 5. 7	No information				
5. 7 - 6. 7	52	4	28	9	7
6. 7 - 8. 1	50	6	30	8	6
MEAN	32	4	49	6	9

Surface level (+ 39. 3 m) + 129 ft   Overburden 1. 0 m (3. 5 ft)
Water struck at (+ 37. 7 m)   Mineral 6. 9 m (22. 5 ft)
Shell and auger (modified) 6 in (152 mm) diameter   Bedrock 0. 5 m+ (1. 5 ft+)
March 1972

LOG

		Thickness		Depth	
		m	ft	m	ft
	Soil	0. 2	(0. 5)	0. 2	(0. 5)
River terrace deposits (undifferentiated)	Sand, clayey, dark brown, with fine gravel	0. 8	(2. 5)	1. 0	(3. 5)
	Gravel	6. 9	(22. 5)	7. 9	(26.0)
	Gravel: fine to coarse, a few cobbles in the lower part, mainly subangular to rounded flint with limestone and chalk, and some quartz and ironstone				
	Sand: medium and coarse with fine quartz				
Upper Chalk	Chalk, with large flint nodules	0. 5+	(1. 5+)	8. 4	(27. 5)

GRADING

Mean for deposit				Bulk samples			
	%	mm	%	Depth below surface (m)	Percentages		
					Fines	Sand	Gravel
Gravel	63	+16	33	1.0 - 2.0	16	34	50
		-16+4	30	2.0 - 3.0	3	54	43
				3.0 - 4.0	3	40	57
		-4+1	10	4.0 - 5.0	3	36	61
Sand	32	$-1+\frac{1}{4}$	19	5.0 - 6.0	1	14	85
		$-\frac{1}{4}+1/16$	3	6.0 - 7.0	2	21	77
				7.0 - 7.9	8	27	65
Fines	5	-1/16	5				

COMPOSITION

Depth below surface (m)	Percentages (in 4. 75 to 9. 5 mm fraction)				
	Flint	Quartz	Limestone	Chalk	Ironstone
1.0 - 2.0	76	5	12	6	1
2.0 - 3.0	78	2	14	5	1
3.0 - 4.0	66	4	20	8	2
4.0 - 5.0	51	3	35	4	7
5.0 - 6.0	63	4	21	8	4
6.0 - 7.0	56	5	25	6	8
7.0 - 7.9	No information				
MEAN	64	4	22	6	4

Surface level (+ 38.1 m) + 125 ft
Water struck at (+ 36.2 m)
Shell and auger (modified) 6 in (152 mm) diameter
April 1972

Overburden 1.2 m (4.0 ft)
Mineral 4.3 m (14.0 ft)
Bedrock 4.7 m+ (15.5 ft+)

LOG

		Thickness		Depth	
		m	ft	m	ft
	Made ground	0.6	(2.0)	0.6	(2.0)
River terrace deposits (undifferentiated)	Clay, silty and slightly sandy, reddish brown and light grey passing to orange brown	0.6	(2.0)	1.2	(4.0)
	Gravel	4.3	(14.0)	5.5	(18.0)
	Gravel: fine to coarse mainly subangular to rounded flint with a trace of quartzite and chalk				
	Sand: medium with coarse and fine quartz and flint				
Reading Beds	Sand, silty, pale greenish grey. Silty clay lenses below 7.4 m. Trace of flint pebbles towards base	4.7	(15.5)	10.2	(33.5)
	Silt, sandy, dark green, very glauconitic, clayey towards base	0.3+	(1.0+)	10.5	(34.5)

GRADING

Mean for deposit					Bulk samples Depth below surface (m)	Percentages		
	%		mm	%		Fines	Sand	Gravel
Gravel	70		+16	32	1.2 - 2.2	3	36	61
			-16+4	38	*2.2 - 3.2	0	22	78
					*3.2 - 4.2	1	14	85
			-4+1	6	*4.2 - 5.5	9	33	58
Sand	27		-1+$\frac{1}{4}$	16				
			-$\frac{1}{4}$+1/16	5				
Fines	3		-1/16	3				

Appendix G: List of Workings

In 1973 two sand and gravel pits were known to be operational and workings in four pits had been discontinued. A list of active and disused workings is given below.

Location	Grid References	Deposit Worked
Active		
Love's Farm	658 702	River terrace deposits
Searl's Farm	687 704	River terrace deposits
Disused		
Sawyers Copse	623 743	Plateau gravel
Dark Lane	616 742	Plateau gravel
May ridge	609 705	Plateau gravel
Theale Green	636 707	River terrace deposits

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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REPORTS OF THE INSTITUTE OF GEOLOGICAL SCIENCES

Assessment of British Sand and Gravel Resources

No. 1   The sand and gravel resources of the country south-east of Norwich, Norfolk : Description of 1 : 25 000 resource sheet TG 20. By E. F. P. Nickless. Price £1.15.   Report No. 71/20

No. 2   The sand and gravel resources of the country around Witham, Essex: Description of 1 : 25 000 resource sheet TL 81. By H. J. E. Haggard. Price £1.20.   Report No. 72/6

No. 3   The sand and gravel resources of the area south and west of Woodbridge, Suffolk: Description of 1 : 25 000 resource sheet TM 24. By R. Allender and S. E. Hollyer. Price £1.70.
Report No. 72/9

No. 4   The sand and gravel resources of the country around Maldon, Essex: Description of 1 : 25 000 resource sheet TL 80. By J. D. Ambrose. Price £1.20.   Report No. 73/1

No. 5   The sand and gravel resources of the country around Hethersett, Norfolk: Description of 1 : 25 000 resource sheet TG 10. By E. F. P. Nickless. Price £1.60.   Report No. 73/4

No. 6   The sand and gravel resources of the country around Terling, Essex: Description of 1 : 25 000 resource sheet TL 71. By C. H. Eaton. Price £1.20.   Report No. 73/5.

No. 7   The sand and gravel resources of the country around Layer Breton and Tolleshunt D'Arcy, Essex: Description of 1 : 25 000 resource sheet TL 91 and part of TL 90. By J. D. Ambrose. Price £1.30.   Report No. 73/8

No. 8   The sand and gravel resources of the country around Shotley and Felixstowe, Suffolk: Description of 1 : 25 000 resource sheet TM 23. By R. Allender and S. E. Hollyer. Price £1.60.   Report No. 73/13

No. 9   The sand and gravel resources of the country around Attlebridge, Norfolk: Description of 1 : 25 000 resource sheet TG 11. By E. F. P. Nickless. Price £1.85.   Report No. 73/15

No. 10   The sand and gravel resources of the country west of Colchester, Essex: Description of 1 : 25 000 resource sheet TL 92. By J. D. Ambrose. Price £1.45.   Report No. 74/6

No. 11   The sand and gravel resources of the country around Tattingstone, Suffolk: Description of 1 : 25 000 resource sheet TM 13. By S. E. Hollyer. Price £1.95.   Report No. 74/9

No. 12   The sand and gravel resources of the country around Gerrards Cross, Buckinghamshire: Description of 1 : 25 000 resource sheets SU 98, SU 99, TQ 08 and TQ 09. By H. C. Squirrell. Price £2.20.   Report No. 74/14

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No. 14   The sand and gravel resources of the country east of Colchester, Essex. Description of 1 : 25 000 resource sheet TM 02. By J. D. Ambrose. Price £3.25.

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No. 16   The sand and gravel resources of the country around Braintree, Essex. Description of 1 : 25 000 resource sheet TL 72. By M. R. Clarke and J. D. Ambrose. Price £3.50.

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No. 18   The sand and gravel resources of the Thames Valley, the country around Cricklade, Wiltshire. Description of 1:25 000 resource sheets SU 09/19 and parts of SP 00/10. By P. Robson. Price £3.00.

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REPORTS OF THE INSTITUTE OF GEOLOGICAL SCIENCES
Other Reports

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INSTITUTE OF GEOLOGICAL SCIENCES

MINERAL ASSESSMENT UNIT

THE SAND & GRAVEL RESOURCES OF SHEET SU67 (PANGBOURNE, BERKS)

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

ORDNANCE SURVEY
SHEET SU67
PROVISIONAL EDITION

This map should be read in conjunction with the accompanying Report which contains details of the assessment of resources.
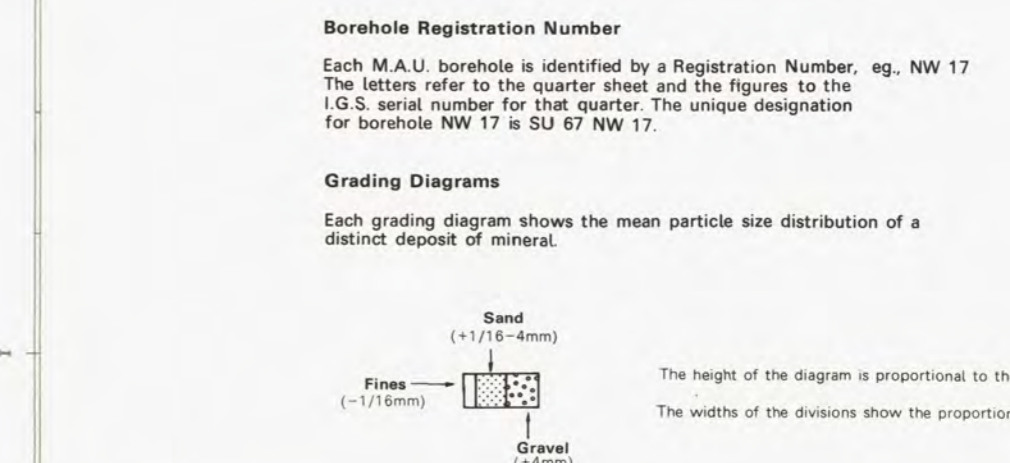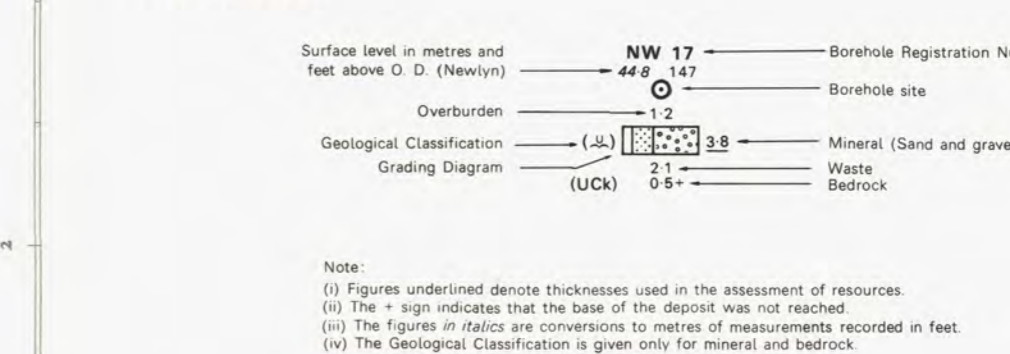
21

EXPLANATION OF SYMBOLS AND ABBREVIATIONS

DRIFT

RECENT AND PLEISTOCENE

A-3	~	Alluvium - river clays and silts
RT-4		River Terrace Deposits, undifferentiated - mainly sand and gravel
CF-2		Clay-with-flints - silty and sandy clay with some gravel
PL-1		Plateau Gravel - clayey sands and gravels
PG-1		Pebble Gravel - mainly sand and gravel

SOLID

EOCENE / CRETACEOUS

LC	London Clay - stiff silty clay, bluish grey weathering to brown
RB	Reading Beds - sands at base variegated clays above
UCk	Upper Chalk
MCk	Middle Chalk

WO-5 — Worked out areas - sand and gravel

BOUNDARY LINES

-------- Geological boundary, Drift

— — — Geological boundary, Solid

ΛΛΛ Inferred boundary between categories of deposits recognised

▬▬▬ Resource Block boundary

Broken lines denote uncertainty

BOREHOLE DATA
SITE LOCATIONS

⊙ Mineral Assessment Unit (M.A.U.) Boreholes

⊙ Other Boreholes

M.A.U. BOREHOLES

Surface level in metres and feet above O. D. (Newlyn) — NW 17 — Borehole Registration Number
— Borehole site
Overburden
Geological Classification — Mineral (Sand and gravel)
Grading Diagram — Waste / Bedrock

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

Borehole Registration Number

Each M.A.U. borehole is identified by a Registration Number, eg. NW 17. The letters refer to the quarter sheet and the figures to the I.G.S. serial number for that quarter. The unique designation for borehole NW 17 is SU 67 NW 17.

Grading Diagrams

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

Sand (+1/16 - 4mm)
Fines (-1/16mm)
Gravel (+4mm)

The height of the diagram is proportional to the mineral thickness.
The width of the divisions show the proportions of Fines, Sand and Gravel

OTHER BOREHOLES

The layout of information is the same as for M.A.U. boreholes, although data available may not be as comprehensive. They are registered in the same series, except for records in the Hydrogeological Department: for example, 268/160 signifies Hydrogeological Department record 160 on New Series One-Inch Geological Sheet 268 (Reading).

CATEGORIES OF DEPOSITS

Exposed mineral, (average thickness of overburden less than 1·0m) — CAT-E1

Continuous or almost continuous spreads of mineral beneath overburden (average thickness of overburden greater than 1·0m) — CAT-C3

Sand and gravel not assessed (exposed and beneath cover) — CAT-N3

Sand and gravel absent — CAT-A3

RESOURCE BLOCKS

For the purpose of assessment the mineral-bearing land is divided into Resource Blocks (see report). Each is designated by a letter.

Detailed records may be consulted on application to the Head, Mineral Assessment Unit, Institute of Geological Sciences, Exhibition Road, London SW7 2DE.

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

Original geological survey on the one-inch scale by H.W. Bristow, W.T. Aveline, W. Whitaker, T.R. Polwhele and R. Trench in 1860-62.
Surveyed on the six-inch scale by J.H. Blake in 1895.
Published on the one-inch scale in 1898. Sir Archibald Geikie, D.C.L., F.R.S., Director General
Colour printed on the one-inch scale in 1904. Reprinted in 1946 and 1971.
Amended by H.C. Squirrell in 1972-73.

Sand and Gravel Survey by H.C. Squirrell, C. E. Corser, P. G. Hoare and P. Robson in 1972-73.
R. G. Thurrell, Head, Mineral Assessment Unit.

1:25 000 Sand and Gravel Resource Sheet published 1976.
Austin W. Woodland, C.B.E., Director, Institute of Geological Sciences, incorporating the Geological Survey of Great Britain, and the Museum of Practical Geology and Overseas Geological Surveys.
1550/76

The GRID lines on this sheet are at 1 Kilometre interval.
Heights are in feet above Mean Sea Level at Newlyn.

1 square inch on this map represents
99·639 acres on the ground.

Compiled from 6" sheets last fully revised 1909-32.
Other partial systematic revision 1938-56 has been incorporated.
Major roads revised 1963.

Made and published by the Director General of the Ordnance Survey, Chessington, Surrey.

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

SU 58	SU 68	SU 78
SU 57	SU 67	SU 77
SU 56	SU 66	SU 76

253 254
267 268

Diagram showing the relation of the National Grid 1:25,000 sheets with the New Series One-Inch Geological Sheets 253, 254,267 and 268.

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OXFORDSHIRE

BERKSHIRE